PLANNING COMMISSION
Regular Meeting

Agenda

Thursday, July 11, 2019 at 7:00 PM
City Hall Council Chamber – 14177 Frederick Street

CALL TO ORDER

ROLL CALL

PLEDGE OF ALLEGIANCE

APPROVAL OF AGENDA

Approval of Agenda

PUBLIC COMMENTS PROCEDURE

Any person wishing to address the Commission on any matter, either under the Public Comments section of the Agenda or scheduled items or public hearings, must fill out a "Request to Speak" form available at the door. The completed form must be submitted to the Secretary prior to the Agenda item being called by the Chairperson. In speaking to the Commission, members of the public may be limited to three minutes per person, 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.

PUBLIC COMMENTS

CONSENT CALENDAR

All matters listed under Consent Calendar are considered to be routine and all will be enacted by one roll call vote. There will be no discussion of these items unless Members of the Planning Commission request specific items be removed from the Consent Calendar for separate action.

1. Planning Commission Minutes – Regular Meeting – June 27, 2019 7:00 PM

NON-PUBLIC HEARING ITEMS

None

PUBLIC HEARING ITEMS

1.	Case:	PEN19-0047 Plot Plan PEN19-0102 Expanded Initial Study
	Applicant:	Matthew Phillips, MV Holdings, LLC
	Property Owner	MV Holdings, LLC
	Representative	Andrea Arcilla, EPD Solutions Inc.
	Location:	The northeast corner of Moreno Beach Drive and Auto Mall Drive, APNs: 488-390-015 and 488-390-016
	Case Planner:	Jerry Guarracino
	Council District:	3
	Proposal	Plot Plan and Expanded Initial Study to develop a new Car Pros Kia Dealership in the Moreno Valley Auto Mall, within Specific Plan 209.

OTHER COMMISSION BUSINESS

None

STAFF COMMENTS

PLANNING COMMISSIONER COMMENTS

ADJOURNMENT

Planning Commission Regular Meeting, July 25, 2019 at 7:00 P.M., City of Moreno Valley, City Hall Council Chamber, 14177 Frederick Street, Moreno Valley, CA 92553.

OFFICIAL MINUTES OF THE PLANNING COMMISSION OF THE CITY OF MORENO VALLEY

REGULAR MEETING – 7:00 PM
June 27, 2019

CALL TO ORDER

This Regular meeting of the Planning Commission of the City of Moreno Valley was called to order at 7:05 p.m., by Chairperson Sims in the Council Chambers located at 14177 Frederick Street, Moreno Valley, California.

ROLL CALL

Planning Commission:	Jeffrey Sims	Chairperson	Present
	Ray L. Baker	Vice Chairperson	Present
	Patricia Korzec	Commissioner	Present
	Robert Harris	Commissioner	Present
	JoAnn Stephan	Commissioner	Present
	Rafael Brugueras	Commissioner	Present
	Alvin Dejohnette	Commissioner	Present

PLEDGE OF ALLEGIANCE

The Pledge of Allegiance was led by Commissioner Brugueras.

APPROVAL OF AGENDA

Motion to approve the agenda was made by Vice Chairperson Baker and seconded by Commissioner Harris.

Vote: 6-1
Ayes: Vice Chairperson Baker, Commissioner Harris, Korzec, Stephan, Chairperson Sims and Commissioner DeJohnette
Abstain: Rafael Brugueras
Action: **Approved**

STAFF PRESENT

Paul Early	City Attorney
Darren Ziegler	Deputy City Attorney
Richard Sandzimier	Community Development Director
Patty Nevins	Planning Official
Chris Ormsby	Senior Planner
Sean P. Kelleher	Senior Planner
Jeff Bradshaw	Associate Planner
Jeff Zwack	Contract Planner
Michael Koehler	Lt. Administration/Division Commander
Paul Villalobos	Fire Marshal
John Kerenyi	Senior Engineer, P.E.

PUBLIC COMMENTS PROCEDURE

PUBLIC COMMENTS

No public speakers.

CONSENT CALENDAR

1. Planning Commission Minutes - Regular Meeting - May 23, 2019 7:00 PM

   Motion to approve the minutes of May 23, 2019 was made by Commissioner Korzec and seconded by Vice Chairperson Baker.

   Vote: 6-1
   Ayes: Commissioner Korzec, Vice Chairperson Baker, Commissioner Harris, DeJohnette, Chairperson Sims and Commissioner Stephan
   Abstain: Rafael Brugueras
   Action: **Approved**

NON-PUBLIC HEARING ITEMS

No items for discussion.

PUBLIC HEARING ITEMS

1. Conditional Use Permit for a Retail Cannabis Dispensary in a 2,358 square foot Retail Space located at 12199 Heacock Street (Report of: Planning Commission)

   A. Staff amended recommendation that the Planning Commission CONTINUE Conditional Use Permit PEN19-0005 to an unspecified date.

      Public Hearing opened: 7:08 p.m.

      No public speakers

      Public Hearing closed: 7:08 p.m.

      Motion to approve the continuance to a date unspecified was made by Commissioner Brugueras and seconded by Vice Chairperson Baker.

      Vote: 7-0
      Ayes: Commissioner Brugueras, Vice Chairperson Baker, Commissioner Korzec, Harris, Stephan, DeJohnette and Chairperson Sims
      Action: **Approved**

2. Conditional Use Permit for a 2,479 square foot coffee shop with drive-through located at the southwest corner of State Route 60 off-ramp and Frederick Street (Report of: Planning Commission)

A. Staff recommends that the Planning Commission APPROVE Resolution No. 2019-29 and thereby:

1. Certify that Conditional Use Permit PEN19-0004 is categorically exempt from the provisions of the California Environmental Quality Act (CEQA), as a Class 32 Exemption, CEQA Guidelines Section 15332 (In-fill Development Projects); and

2. Approve Conditional Use Permit PEN19-0004, subject to the attached Conditions of Approval included as Exhibit A.

Public Hearing opened: 7:20 p.m.

No public speakers

Public Hearing closed: 7:20 p.m.

Motion to approve Resolution Number 2019-29 was made by Commissioner Stephan and seconded by Commissioner Harris.

Vote: 7-0
Ayes: Commissioner Stephan, Harris, Korzec, Brugueras, Chairperson Sims, Vice Chairperson Baker and Commissioner DeJohnette
Action: **Approved**

3. Conditional Use Permit for a retail cannabis dispensary in a 5,100 square foot retail space located within the Canyon Springs shopping center. (Report of: Planning Commission)

A. Staff recommends that the Planning Commission APPROVE Resolution No. 2019-24, and thereby:

1. Certify that Conditional Use Permit PEN18-0262 is categorically exempt from the provisions of the California Environmental Quality Act (CEQA) as a Class 1 Exemption (Section 15301, Existing Facilities); and

2. Approve Conditional Use Permit PEN18-0262 subject to the attached Conditions of Approval included as Exhibit A.

Public Hearing opened: 7:49 p.m.

Daniel Reed opposed the item.
Frank Tovar opposed the item.

Public Hearing closed: 8:00 p.m.

Motion to approve Resolution Number 2019-24 was made by Commissioner Korzec and seconded by Commissioner Stephan.

Vote: 7-0
Ayes: Commissioner Korzec, Stephan, Harris, Brugueras, Vice Chairperson Baker, Commissioner DeJohnette and Chairperson Sims
Action: **Approved**

OTHER COMMISSION BUSINESS

No items for discussion.

STAFF COMMENTS

Paul Early, City Attorney, introduced Darren Ziegler, Deputy City Attorney, who will be taking on the role as an alternate for Mr. Early. Mr. Ziegler is currently the legal advisor for the remaining Boards and Commissions of the City of Moreno Valley and when Mr. Early is not available Mr. Ziegler will be attending in his place. If a meeting occurs on July 25, 2019, this will be the first meeting for Mr. Ziegler to attend.

PLANNING COMMISSIONER COMMENTS

Chairperson Sims asked for an update on the Moreno Valley Ranch Apartment and Golf Course project.

Patty Nevins, Planning Official addressed the Commission noting that the developer is currently working on plans and hopes to start construction by end of the year.

Richard Sandzimier, Community Development Director added that Bridge Development, the developer, has obtained a stockpile permit to perform the grading needed to move the dirt from the driving range to rehabilitate the golf course. The applicant has indicated that they are looking at opening the golf course in October of this year with the apartments being under construction by the end of year. There are conditions on the project that do not allow them to move forward without the golf course being up and running as well as having a deposit in place prior to securing building permits. For a further update on the project, staff can bring this to the next meeting.

Chairperson Sims had asked if the clubhouse would be running by October given the short time frame. Mr. Sandzimier replied that the City has been working with them on their tenant improvements as the clubhouse is needed to operate the golf course. He stated that there is still time to pull those permits though the time frame is running a little close.

Commissioner JoAnn Stephan asked for an update on the Yum Yum Donut projects.

Chris Ormsby, Senior Planner advised that the Alessandro/Day Street Yum Yum Donuts project has their grading plans in review but no building plans.

Commissioner Alvin DeJohnette asked about the Nason Corridor project and how far down the road do we see it being developed.

Ms. Nevins addressed the Commission, stating the project completed was a high-level study for the corridor and the next step would be a specific plan or something similar and there is still more work to be completed prior to development.

ADJOURNMENT

There being no further business to come before the Planning Commission, Chairman Sims adjourned the meeting at 8:13 PM.

Submitted by:

_____
Ashley Aparicio
Planning Commission Secretary

Approved by:

_____
Jeffrey Sims
Chairperson

PLANNING COMMISSION

STAFF REPORT

Meeting Date: July 11, 2019

PLOT PLAN AND EXPANDED ENVIRONMENTAL REVIEW FOR A 41,511 SQUARE FOOT KIA SALES AND SERVICE FACILITY LOCATED AT THE NORTHEAST CORNER OF MORENO BEACH DRIVE AND AUTO MALL DRIVE

Case:	PEN19-0047 Plot Plan PEN19-0102 Expanded Initial Study
Applicant:	Matthew Phillips, MV Holdings, LLC
Property Owner	MV Holdings, LLC
Representative	Andrea Arcilla, EPD Solutions Inc.
Location:	The northeast corner of Moreno Beach Drive and Auto Mall Drive, APNs: 488-390-015 and 488-390-016
Case Planner:	Jerry Guarracino
Council District:	3
Proposal	Plot Plan and Expanded Initial Study to develop a new Car Pros Kia Dealership in the Moreno Valley Auto Mall, within Specific Plan 209.

SUMMARY

The applicant, MV Holdings, LLC, is requesting approval of a Plot Plan and Expanded Initial Study for the development of a Car Pros Kia Dealership in the Moreno Valley Auto Mall. The proposal includes the construction of a 41,511 square foot dealership on two vacant parcels totaling 6.14 acres; construction will take place in two phases. The property in question is currently zoned Specific Plan 209 (SP209, Planning Area C). The

project as designed and conditioned is consistent with the goals, policies, and objectives of the City's General Plan as well as the requirements of Specific Plan 209 and the City's Municipal Code.

BACKGROUND

The Project is located in Specific Plan 209, which was originally adopted in 1988. The Specific Plan has been subsequently amended on five different occasions since its original adoption. Amendments to the specific Plan include:

- Expanding the Specific Plan area to cover approximately 151.89 acres;
- Expanding the list of permitted uses to include commercial and office uses, other auto related and auto service uses, and residential uses; and
- Various Amendment to the development regulations and design guidelines.

PROJECT DESCRIPTION

Project

The applicant, MV Holdings, LLC, is requesting approval of a Plot Plan and Expanded Initial Study for the development of a Car Pros Kia Dealership to be constructed and operated in two phases as described below.

Phase 1 of the project includes the development of a 23,858 square-foot, two-story, automotive sales and service facility for a Car Pros Kia Dealership. The building would be located on the southwestern portion of the site and would be surrounded by parking for vehicle display and sale. The building includes a showroom, a service department with 13-vehicle service bays, and a car wash. Phase 2 includes the construction of a 17,653 square-foot expansion to the building providing for additional 10-vehicle service bays and expansion of the showroom and office space. The expansion would be located on the southwest side of the proposed building.

Site

The 6.14-acre project site is located at the northeast corner of Auto Mall Drive and Moreno Beach Drive. Development of the site, as previously identified, will occur over two phases and will include the construction of a 41,511 square foot dealership building including a showroom, office space, a service department with 23-vehicle service bays, and car wash, associated vehicle inventory and customer parking.

As previously identified, the project site is comprised of two parcels. An existing property line between the two parcels currently runs through the proposed building. Therefore, the project has been conditioned to complete a Lot Line Adjustment prior to issuance of any building permit.

Surrounding Area

The project site is located within the Moreno Valley Auto Mall and is located at the northeast corner of Auto Mall Drive and Moreno Beach Drive. Existing development includes a combination of vacant land and surface parking to the north across Auto Mall Drive and Pettit Street; vacant land to the east; and multiple family housing across Moreno Beach Drive to the south and west.

Access/Parking

The project would include two vehicular access points via Auto Mall Drive and Pettit Street. The Auto Mall Drive entrance would be the main entrance and would provide access to both the sales and service areas of the dealership. The driveway on Pettit Street would be used for commercial vehicle transport and to facilitate movement of the vehicle inventory.

Phase 1 of the proposed project would provide 50 customer parking spaces where 14 customer parking spaces are required. In addition, the project would provide 383 parking spaces to display sale vehicles. Phase 2 would increase the number of customer parking spaces to 56 spaces, where 21 parking spaces are required. The number of vehicle display parking spaces would decrease to 304. Additionally, one 18' X 50' off-street loading space will be provided for the off-loading of vehicles and other deliveries.

Design / Landscaping

The proposed 23,858 square-foot, two-story, automotive sales and service facility proposed in Phase 1 has been designed to incorporate a contemporary architectural design that is consistent with Kia's corporate architectural design language and includes a combination of gloss white metal panels, split-face block, and clear and spandrel glazing.

The applicant has not submitted architectural plans for Phase 2. Therefore, a condition of approval is included requiring the submittal of an Administrative Plot Plan for the phase 2 architectural design.

Landscaping on the project site would surround the exterior boundary of the lot and would be located around the building as well as throughout the parking lot. The project proposes 24-inch box trees planted throughout the vehicle display parking lot and 24-inch box flowering accent trees at the project's driveways and surrounding the proposed building. Various shrubs and ground cover requiring low water needs are proposed. The shrubs and ground cover would line the north side of the service reception, the south side of the building, and the outer edges of the site.

Along the west edge of the site, the project proposes four feature display areas for vehicles, facing Auto Mall Drive, and two feature display areas at the northwest corner of the building in-between the main entrance and the service reception area. Feature display areas generally are vehicles parked in-place on decorative concrete pads and surrounded by accent planting. These display areas have been designed in

conformance with the Auto Mall Specific Plan (SP209) and are similar to display areas at existing dealerships in the Moreno Valley Auto Mall.

Pursuant to the requirements of the Specific Plan 209 the proposed sales and service of automobiles, and car washes, are permitted uses in Planning Area C.

REVIEW PROCESS

In accordance with established procedures, the project application materials were circulated for review by appropriate City Departments and Divisions, as well as required outside agencies. Staff met with the applicant during Project Review Staff Committee meetings as well as additional meetings to discuss various project components such as site design, architecture, environmental, and circulation until all issues were appropriately resolved prior to the Planning Commission consideration.

ENVIRONMENTAL

The project has been evaluated in accordance with the California Environmental Quality Act (CEQA) Guidelines. The City prepared an Initial Study and based upon the thorough analysis of potential environmental impacts, it was determined the proposed project will not have a significant effect on the environment with the implementation of mitigation measures identified, therefore a Mitigated Negative Declaration was found to be appropriate for this project. Technical studies prepared for the project included an Air Quality and Greenhouse Gas Analysis, Biological Report, Cultural Resource Assessment, Geotechnical and Paleontological Assessment, Phase 1, Drainage Study, Water Quality Management Plan, Noise Report, and a Trip Generation Memorandum. The Mitigated Negative Declaration represents the City's independent judgment and analysis.

A Mitigation Monitoring Program has been prepared to ensure implementation of the mitigation measures (see Attachment 2).

Public notice of the availability of the Initial Study / Mitigated Negative Declaration was mailed to all property owners within 300 feet of the Project Site on June 20, 2019 for a 20-day public review period consistent with requirements of the CEQA Guidelines, prior to taking any final action on the determination.

NOTIFICATION

The public hearing notice for this project was published in the local newspaper on June 21, 2019. Public notice was sent to all property owners of record within 300 feet of the project site on June 20, 2019. The public hearing notice for this project was posted on the project site on June 29, 2019.

As of the date of report preparation, staff has received no phone calls or correspondence in response to the noticing for this project.

STAFF RECOMMENDATION

Staff recommends that the Planning Commission **APPROVE** Resolution No. 2019-30, and thereby:

1. **CERTIFY** that the Mitigated Negative Declaration prepared for Plot Plan (PEN19-0047) on file with the Community Development Department, incorporated herein by this reference, has been completed in compliance with the California Environmental Quality Act, that the Planning Commission reviewed and considered the information contained in the Mitigated Negative Declaration and that the Document reflects the City's independent judgment and analysis. Attached hereto as Exhibit A; and

2. **ADOPT** the Mitigation Monitoring and Reporting Program for Plot Plan (PEN19-0047), attached hereto as Exhibit B.

3. **APPROVE** Plot Plan PEN19-0047, based on the findings contained in Resolution 2019-31, and subject to the attached Conditions of Approval included as Exhibit A.

Prepared by:
Jerry Guarracino
Planning Consultant

Approved by:
Patty Nevins
Planning Official

ATTACHMENTS

1. Resolution No. 2019-30 Initial Study and MND
2. Exhibit A to Resolution No. 2019-30 Initial Study - Mitigated Negative Declaration
3. Appendix A & B AQ GHG & Bio Report to Exhibit A
4. Appendix C, D, E Cultural Assessment, Geotech and Paleo Assessment to Exhibit A
5. Appendix F Phase I ESA to Exhibit A
6. Appendix G Drainage to Exhibit A
7. Appendix H WQMP to Exhibit A
8. Appendix I & J Noise Report and Tripgen Memo to Exhibit A
9. Exhibit B to Resolution No. 2019-30 Mitigation Monitoring and Reporting Program
10. Resolution 2019-31 Plot Plan
11. Exhibit A to Resolution No. 2019-31 Conditions of Approval
12. Aerial Map
13. Phase 1 Project Plans
14. Phase 2 Project Plans
15. Public Hearing Notice
16. Radius Map

RESOLUTION NO. 2019-30

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF MORENO VALLEY, CALIFORNIA, ADOPTING A MITIGATED NEGATIVE DECLARATION AND MITIGATION MONITORING AND REPORTING PROGRAM FOR CAR PROS KIA DEALERSHIP LOCATED AT THE NORTHEAST CORNER OF MORENO BEACH DRIVE AND AUTO MALL DRIVE (ASSESSOR PARCEL NUMBERS 488-390-015 AND 488-390-016)

WHEREAS, the applicant, MV Holdings, LLC, has filed applications for the approval of Plot Plan (PEN19-0047) and Expanded Initial Study (PEN19-0102) for the project described in the heading. The Plot Plan application shall not be approved unless the Final Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program prepared as part of the Expanded Initial Study Application (PEN19-0102) is adopted; and

WHEREAS, the applications for the Project have been evaluated in accordance with established City of Moreno Valley (City) procedures, and with consideration of the General Plan, Moreno Valley Auto Mall Specific Plan No. 209 (SP209), and other applicable regulations; and

WHEREAS, an Initial Study, supporting technical studies, and Mitigated Negative Declaration for the Project were prepared, consistent with the California Environmental Quality Act (CEQA); and

WHEREAS, a 20-day public review period of the Initial Study and Mitigated Negative Declaration commenced on June 21, 2019 and concluded on July 11, 2019. The public Notice of Intent to adopt the Mitigated Negative Declaration was mailed to interested parties, public agencies, and filed with the Riverside County Clerk on June 20, 2019; and

WHEREAS, the City, in conducting its own independent analysis of the Final Mitigated Negative Declaration, determined that a Mitigated Negative Declaration is an appropriate environmental determination for the Project as there is substantial evidence that demonstrates the Project with mitigation would not result in any significant environmental impacts; and

WHEREAS, a Mitigation Monitoring and Reporting Program (MMRP) has been prepared in accordance with CEQA Guidelines, and is designed to ensure compliance with the identified mitigation measures outlined in the Final Mitigated Negative Declaration through Project implementation; and

WHEREAS, the City of Moreno Valley, Community Development Department, located at 14177 Frederick Street, Moreno Valley, California 92552 is the custodian of documents and other materials that constitute the record of proceedings upon which the decision to adopt the Mitigated Negative Declaration is based; and

WHEREAS, the Planning Commission of the City of Moreno Valley considered the Project, including all environmental documentation, at a public hearing held on July 11, 2019; and

WHEREAS, all legal prerequisites to the adoption of this Resolution have occurred; and

WHEREAS, the Planning Commission considered the Initial Study prepared for the Project for the purpose of compliance with the California Environmental Quality Act (CEQA), and based on the Initial Study including all supporting technical evidence, determined that the project impacts are expected to be less than significant with mitigation, and approval of a Mitigated Negative Declaration is an appropriate environmental determination for the Project.

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

A. This Planning Commission specifically finds that all of the facts set forth above in the Resolution are true and correct.

B. Based upon substantial evidence presented to this Planning Commission during the above-referenced meeting on July 11, 2019, including written and oral staff reports, and the record from the public hearing, this Planning Commission finds as follows:

1. Independent Judgment and Analysis – City staff coordinated the preparation of the Initial Study/Mitigated Negative Declaration and related technical studies with Environment Planning Development Solutions, Inc. (EPD), for the Car Pros Kia Dealership. The documents were properly circulated for public review in accordance with the California Environmental Quality Act Guidelines. The Initial Study/Mitigated Negative Declaration has been completed along with the Mitigation Monitoring and Reporting Program (MMRP) to ensure compliance with all mitigation through project implementation. All environmental documents that comprise the Mitigated Negative Declaration, including all technical studies, were independently reviewed by the City. On the basis of the whole record, there is no substantial evidence that the Project as designed, conditioned, and mitigated, will have a significant effect on the environment. The Mitigated Negative Declaration prepared and completed, in accordance

with the CEQA Guidelines, reflects the independent judgment and analysis of the City.

BE IT FURTHER RESOLVED that the Planning Commission HEREBY APPROVES Resolution No. 2019-30 and thereby:

1. **CERTIFIES that** the Mitigated Negative Declaration prepared for Plot Plan (PEN19-0047) on file with the Community Development Department and incorporated herein by this reference, has been completed in compliance with the California Environmental Quality Act, that the Planning Commission reviewed and considered the information contained in the Mitigated Negative Declaration and that the Document reflects the City's independent judgment and analysis. Attached hereto as Exhibit A; and

2. **APPROVES** the Mitigation Monitoring and Reporting Program for Plot Plan (PEN19-0047), attached hereto as Exhibit B.

APPROVED this 11th day of July, 2019.

_____
Jeffrey Sims
Chairperson, Planning Commission

ATTEST:

_____
Patricia Nevins, Planning Official
Secretary to the Planning Commission

APPROVED AS TO FORM:

_____
City Attorney

ATTACHMENTS:

Exhibit A: Initial Study/Mitigated Negative Declaration
Exhibit B: Mitigation Monitoring and Reporting Program

CAR PROS KIA DEALERSHIP

DRAFT INITIAL STUDY/
MITIGATED NEGATIVE DECLARATION

Lead Agency:
City of Moreno Valley
Community & Economic Development Department
Planning Division
14177 Frederick Street
Moreno Valley, California 92552

Project Applicant:
MV Holdings, LLC
181 South 333rd Street, Suite #C
Federal Way, WA 98003

ENVIRONMENT | PLANNING | DEVELOPMENT SOLUTIONS, INC.

2 Park Plaza, Suite 1120
Irvine, California 92614

June 2019

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A Air Quality and Greenhouse Gas Assessment Report
B Biological Technical Report
C Phase I Cultural Resources Assessment
D Geotechnical Investigation and Percolation Test Results
E Phase I Paleontological Resources Assessment
F Phase I Environmnetal Site Assessment
G Preliminary Drainage Study
H Preliminary Project Specific Water Quality Management Plan
I Noise Impact Analysis
J Trip Generation Analysis

1 INTRODUCTION

1.1 PURPOSE OF THE INITIAL STUDY

This Initial Study has been prepared in accordance with the following:

- California Environmental Quality Act (CEQA) of 1970 (Public Resources Code Sections 21000 et seq.); and
- California Code of Regulations, Title 14, Division 6, Chapter 3 (State CEQA Guidelines, Sections 15000 et seq.).

Pursuant to CEQA, this Initial Study has been prepared to analyze the potential for significant impacts on the environment resulting from implementation of the proposed project. As required by State CEQA Guidelines Section 15063, this Initial Study is a preliminary analysis prepared by the Lead Agency, Moreno Valley, in consultation with other jurisdictional agencies, to determine if a Negative Declaration (ND) or an Environmental Impact Report (EIR) is required for the project.

This Initial Study informs Moreno Valley decision-makers, affected agencies, and the public of potentially significant environmental impacts associated with the implementation of the project. A "significant effect" or "significant impact" on the environment means "*a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project*" (Guidelines §15382). As such, the intent of the Initial Study is to adhere to the following CEQA principles:

- Provide meaningful early evaluation of site planning constraints, service and infrastructure requirements, and other local and regional environmental considerations. (Pub. Res. Code §21003.1)
- Encourage the applicant to incorporate environmental considerations into project conceptualization, design, and planning at the earliest feasible time. (State CEQA Guidelines §15004[b][3])
- Specify mitigation measures for reasonably foreseeable significant environmental effects and commit Moreno Valley and the applicant to future measures containing performance standards to ensure their adequacy when detailed development plans and applications are submitted. (State CEQA Guidelines §15126.4)

Existing Plans, Programs, or Policies (PPPs)

Throughout the impact analysis in this Initial Study, reference is made to requirements that are applied to all development on the basis of federal, state, or local law, and Existing Plans, Programs, or Policies currently in place which effectively reduce environmental impacts. Existing Plans, Programs, or Policies are collectively identified in this document as PPPs. Where applicable, PPPs are listed to show their effect in reducing potential environmental impacts. Where the application of these measures does not reduce an impact to below a level of significance, a project-specific mitigation measure is introduced. The project's mitigation measures are summarized in the Mitigation Monitoring and Reporting Program (MMRP), provided as Section 6.

1.2 DOCUMENT ORGANIZATION

This IS/MND includes the flowing sections:

Section 1.0 Introduction

Provides information about CEQA and its requirements for environmental review and explains that an Initial Study/MND was prepared by Moreno Valley to evaluate the proposed project's potential to impact the physical environment.

Section 2.0 Project Setting

Provides information about the proposed project's location.

Section 3.0 Project Description

Includes a description of the proposed project's physical features and construction and operational characteristics.

Section 4.0 Discretionary Approvals

Includes a list of the discretionary approvals that would be required by the proposed project.

Section 5.0 Environmental Checklist

Includes the Environmental Checklist and evaluates the proposed project's potential to result in significant adverse effects to the physical environment.

Section 6.0 Document Preparers and Contributors

Includes a list of the persons that prepared this IS/MND.

2 PROJECT SETTING

2.1 PROJECT LOCATION

The project site is located at the intersection of Auto Mall Drive and Moreno Beach Drive in the City of Moreno Valley, Riverside County, California. Regional access to the project site is provided by State Route 60 (SR-60) and Moreno Beach Drive. Moreno Beach Drive and Auto Mall Drive provide local access to the project site. In addition, the project site is located within the U.S. Geological Survey (USGS) Sunnymead 7.5 Minute Series Topographic Quadrangle. The location of the project site is shown in Figure 1, *Regional Location*

The 6.35-acre project site consists of two parcels (APN 488-390-015-4 and 488-309-016-5) that is adjacent to Pettit Street to the north, Auto Mall Drive to the west, Moreno Beach Drive to the south, and a vacant land to the east.

2.2 EXISTING LAND USES AND DESIGNATION

The project site is a vacant lot. The vegetation onsite ranges from barren on the eastern edge of the site to dense cover of grasses on the south end of the site. The eastern edge of the site is bound by a powerline easement with four powerline poles onsite and a concrete retaining wall. The topography is relatively flat ranging from 1,750-1,755 feet above mean sea level, with a small mound located at the south end of the site. A landscaped sidewalk borders the northern, western, and southern project boundaries along Auto Mall Drive and Moreno Beach Drive. Figure 2, *Aerial Photograph*, provides an aerial of the existing project site.

The project site is located within the Moreno Valley Auto Mall Specific Plan (SP-209) and has land use and zoning designations of Commercial. The project site is located within Planning Area C of SP-209, which allows auto and other vehicular related uses with approval of a plot plan per Municipal Code 9.02.070. SP-209 was adopted to provide for the development of automobile sales uses, auto related uses, office, manufacturing, commercial recreation, and commercial uses.

2.3 SURROUNDING LAND USES AND ZONING DESIGNATIONS

The land use, General Plan, and zoning designations of the areas surrounding the project site are listed below.

Direction	Land Use	General Plan Designation	Zoning Designation
North	Vacant/Undeveloped	Auto Mall Specific Plan	SP 209 Planning Area C Commercial SP 209 Planning Area A Commercial
South	Multi-family Residential	Auto Mall Specific Plan	SP 209 Planning Area D Commercial
East	Vacant/Undeveloped	East: Residential Max 2 du/ac (R2) Northeast: Business Park/Light Industrial (BP)	East: Residential Agriculture 2 du/ac (RA2) Northeast: Industrial/Business Park (LI)
West	Vacant/Undeveloped	Auto Mall Specific Plan	SP 209 Planning Area B Commercial

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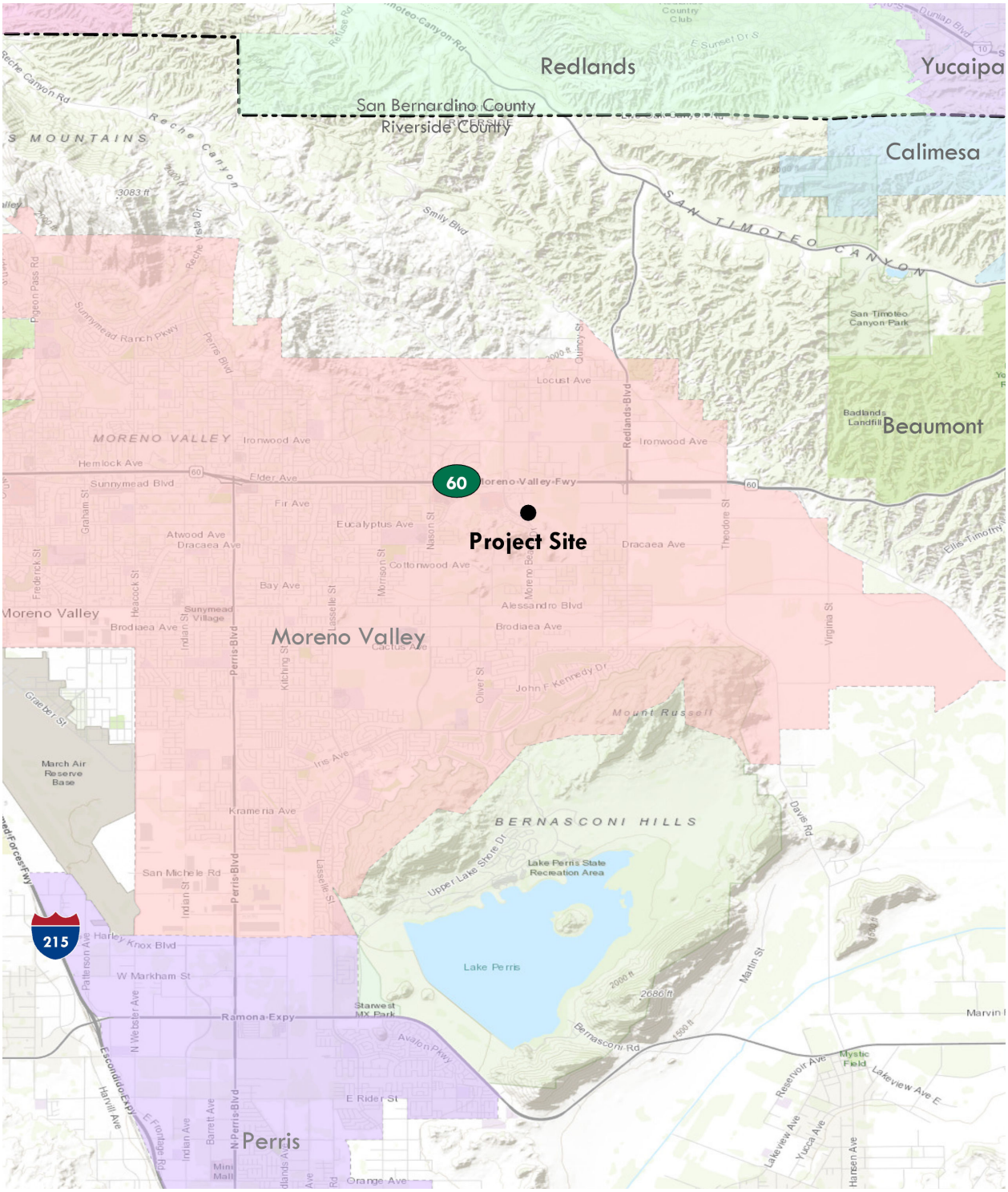
Regional Location



Car Pros Kia Dealership

Figure 1

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Aerial Photograph

Car Pros Kia Dealership

Figure 2

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3 PROJECT DESCRIPTION

3.1 PROPOSED PROJECT

The Car Pros Kia Dealership would be constructed and operated in two phases as described below.

Phase 1
Phase 1 of the project proposes to develop a 23,858 square-foot, two-story, approximately 29 feet tall, automotive sales and service facility for a Car Pros Kia Dealership. The building would be located on the southwestern portion of the site and would be surrounded by parking for vehicle display and sale. The building includes a showroom and service department on the first floor, with office space on both floors. The dealership's service department includes 13 auto service bays for auto service and repair. The main entrance to the showroom is on the west side of the building. The main entrance to the service department is from the north side of the building which includes a 2,562 square-foot covered loading area. An 856 square-foot car wash would be located on the eastern side of the building.

The site plan and exterior elevations for Phase 1 is shown in Figure 3, *Phase 1 Site Plan*. A summary of Phase 1 is provided in Table 1. Building elevations are show in Figure 4, Phase 1 *Exterior Elevations* and conceptual floor plans for both stories are shown in Figure 5, Phase 1 *Floor Plans*.

Table 1: Summary of Phase 1

First Floor	
Building Use	**Size (square feet)**
Showroom	4,291
Office Space	5,816
Parts Storage Area	841
Service Area (13 Bays)	7,066
Car Wash	856
Total First Floor	**18,870**
Second Floor	
Office Space	2,988
Parts Storage Area	919
Technician Area	1,081
Total Second Floor	**4,988**
Total Building Area	**23,858**

Phase 2
Phase 2 of the proposed project would construct a 17,653 square-foot expansion to the facility providing additional vehicle service bays to the service department and additional showroom and office space. As shown in Figure 4, *Phase 2 Site Plan*, the expansion would be located on the southwest side of the proposed building. See Figure 6, Phase 2 Site Plan.

Access and Parking
The project would include two vehicular access points via Auto Mall Drive and Pettit Street. The Auto Mall Drive entrance would be the main entrance and would provide access to both the sales and service areas of the dealership. The driveway on Pettit Street would be used for commercial vehicle transport and to facilitate circulation of the vehicle inventory.

Phase 1 of the proposed project would provide a total of 50 parking spaces that would surround the proposed building. In addition, the project would provide 383 parking spaces to display sale vehicles. Phase 2 of the proposed project would increase the number of provided parking spaces from 50 to 56 spaces. The number of vehicle display parking spaces would decrease to 304.

Signage, Vehicle Displays, and Landscaping
Directional signs are proposed at the entrance on Auto Mall Drive. Along the west edge of the site, the project proposes four feature display areas for vehicles, facing Auto Mall Drive, and two feature display areas at the northwest corner of the building in-between the main entrance and the service reception area. Feature display areas generally are vehicles parked in-place on decorative concrete pads and surrounded by accent planting. See Figure 7, *Phase 1 Landscape Plans*.

Landscaping on the project site would surround the exterior boundary of the lot and be located around the building as well as throughout the parking lot. The project proposes 24-inch box trees planted throughout the vehicle display parking lot and 24-inch box flowering accent trees at the project's driveways and surrounding the proposed building. Various shrubs and ground cover requiring low water needs are proposed. The shrubs and ground cover would line the northside of the service reception, the southside of the building, and the outer edges of the site.

Infrastructure Improvements
The project would install onsite water and sewer lines that would connect to the existing 6-inch water line and 10-inch sewer line located in Auto Mall Drive. For stormwater, the project would install a drainage system where half of the site would drain into the existing 96-inch storm drain and the other half would drain to the existing headwall at the southeast corner of the site. The project would also install two biofiltration systems on the project site that would capture and treat runoff. After treatment, the runoff would flow via underground storm drain pipes to the existing Riverside County Flood Control and Water Conservation District (RCFC&WCD) Line "G" 96-inch storm drain line north of the site along Pettit Street, which connects to an existing 96-inch storm drain in Auto Mall Drive. Likewise, the project would connect to the existing electricity, gas, and telecommunication infrastructure that is adjacent to the site and serves the project area.

Project Operations
Operations would include sale and service of automobiles. Sale hours would be from 9:00 a.m. to 9:00 p.m. seven days per week and vehicle service hours would be 8:00 am to 6:00 pm, Monday through Saturday.

3.2 CONSTRUCTION

Construction activities for the project would occur over 14 months in the following stages: site preparation, grading, building construction, architectural coating, and paving. Pursuant to the Chapter 8.14.040 of the Moreno Valley Municipal Code, construction activities would be limited to between the hours of 7:00 a.m. to 8:00 p.m. Monday through Friday, excluding holidays and from 8:00 a.m. to 4:00 p.m. on Saturday, unless written approval is obtained from the city building official or city engineer. The project would not require the import or export of soil, as the site would be balanced during grading.

Table 2: Construction Schedule

Construction Phase	Total Working Days	Work Weeks(1)
Site Preparation	10	2
Grading	30	6
Building Construction	230	46
Paving	20	4
Architectural Coating	20	4

(1) Work week = 5 working days, Monday through Friday

4 DISCRETIONARY APPROVALS

The following discretionary approvals by the City of Moreno Valley, as Lead Agency, are anticipated to be necessary for implementation of the proposed project:

- Adoption of a Mitigated Negative Declaration (MND)
- Plot Plan

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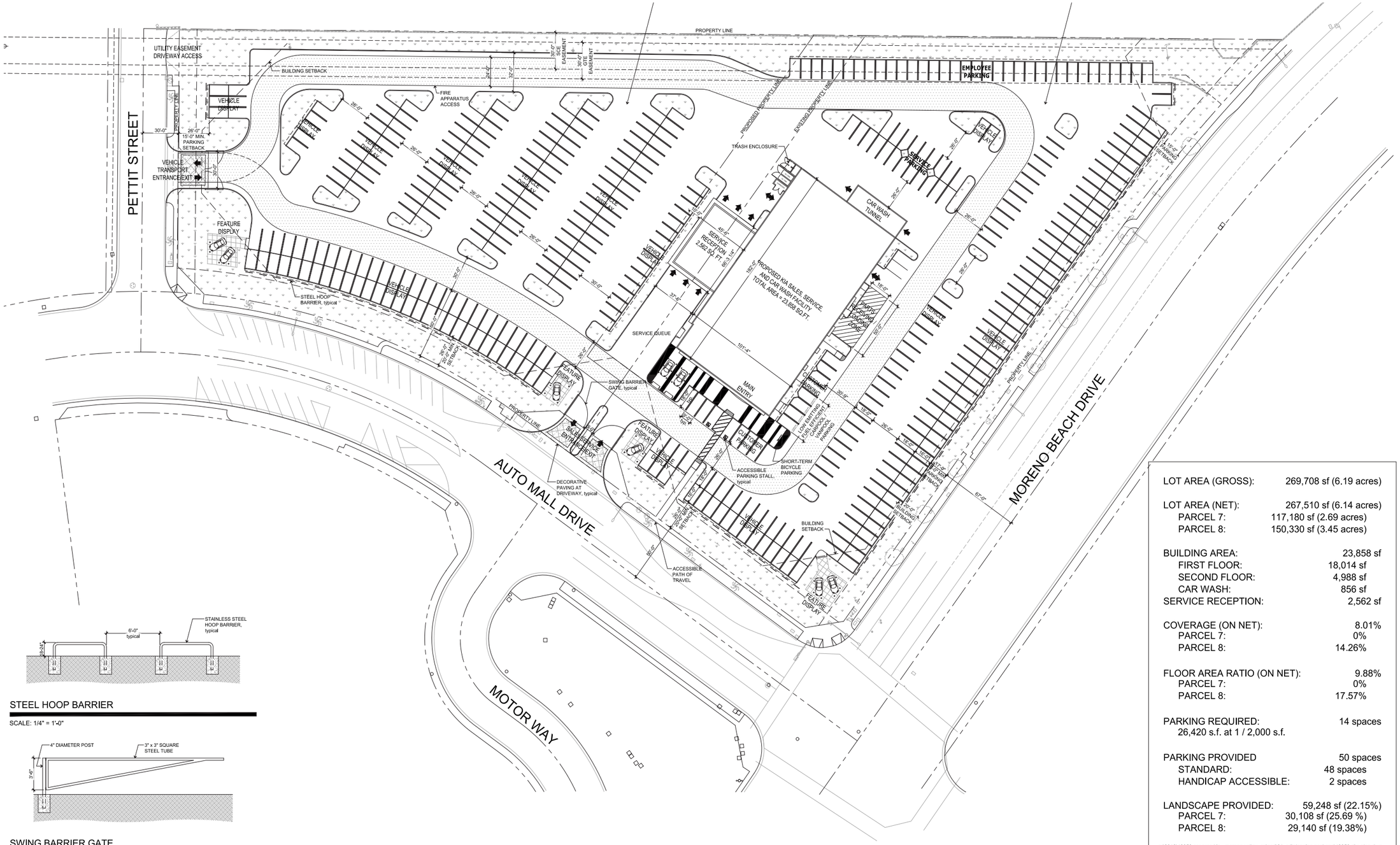
Phase 1 Site Plan



STEEL HOOP BARRIER

SCALE: 1/4" = 1'-0"

SWING BARRIER GATE

SCALE: 1/4" = 1'-0"

LOT AREA (GROSS):	269,708 sf (6.19 acres)
LOT AREA (NET):	267,510 sf (6.14 acres)
PARCEL 7:	117,180 sf (2.69 acres)
PARCEL 8:	150,330 sf (3.45 acres)
BUILDING AREA:	23,858 sf
FIRST FLOOR:	18,014 sf
SECOND FLOOR:	4,988 sf
CAR WASH:	856 sf
SERVICE RECEPTION:	2,562 sf
COVERAGE (ON NET):	8.01%
PARCEL 7:	0%
PARCEL 8:	14.26%
FLOOR AREA RATIO (ON NET):	9.88%
PARCEL 7:	0%
PARCEL 8:	17.57%
PARKING REQUIRED: 26,420 s.f. at 1 / 2,000 s.f.	14 spaces
PARKING PROVIDED	50 spaces
STANDARD:	48 spaces
HANDICAP ACCESSIBLE:	2 spaces
LANDSCAPE PROVIDED:	59,248 sf (22.15%)
PARCEL 7:	30,108 sf (25.69 %)
PARCEL 8:	29,140 sf (19.38%)

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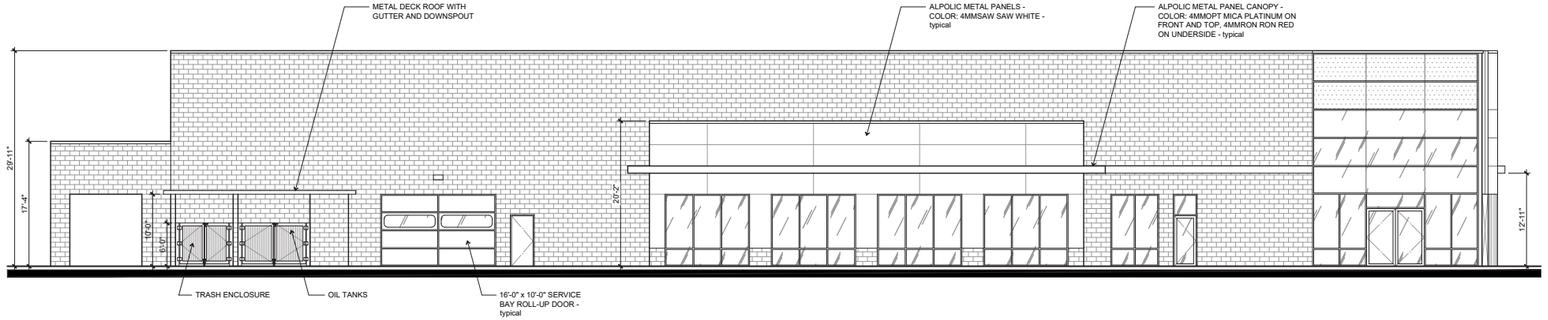
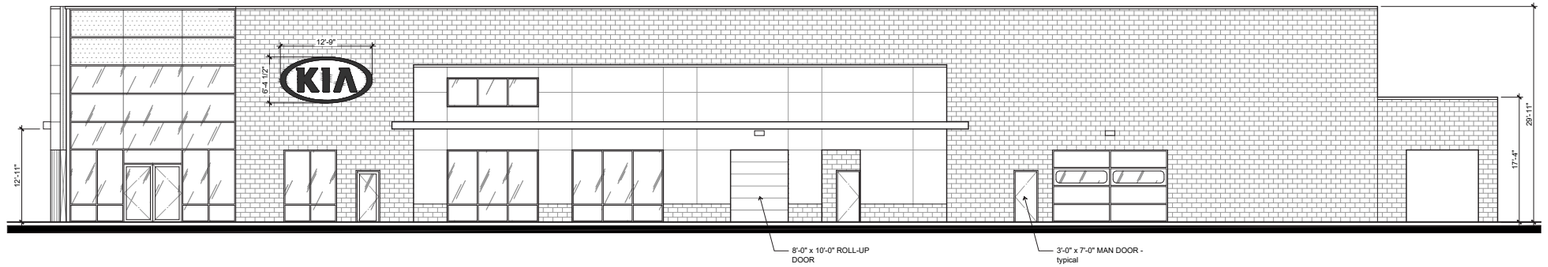
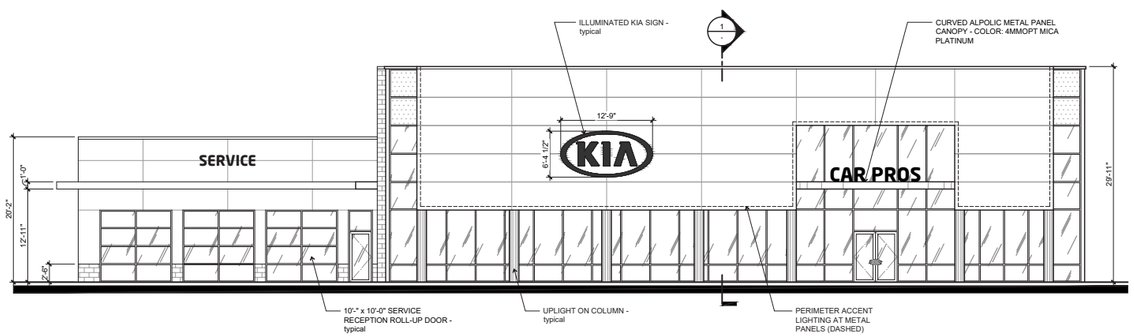
Phase 1 Exterior Elevations



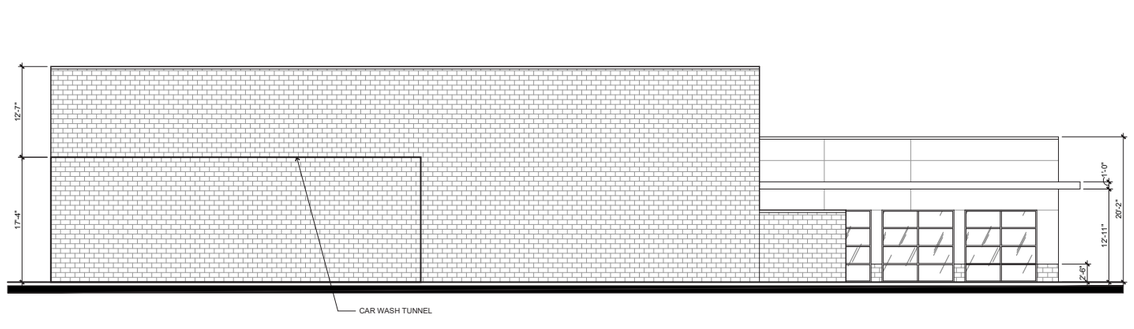
NORTH ELEVATION



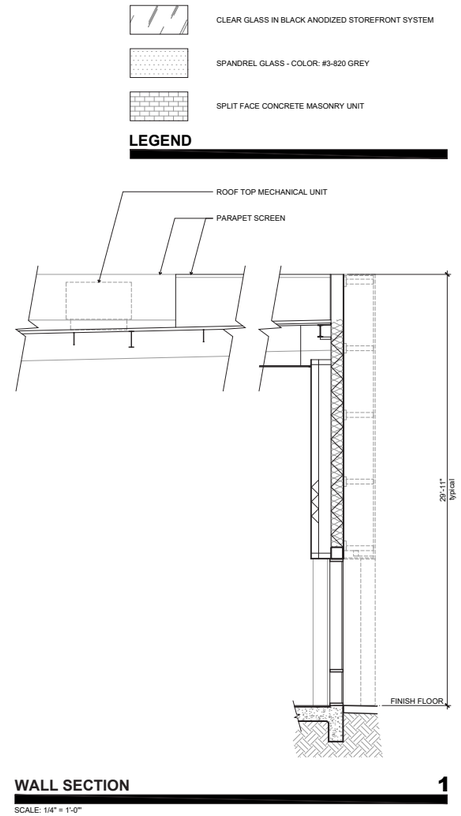
SOUTH ELEVATION



WEST ELEVATION



EAST ELEVATION



WALL SECTION 1

SCALE: 1/4" = 1'-0"

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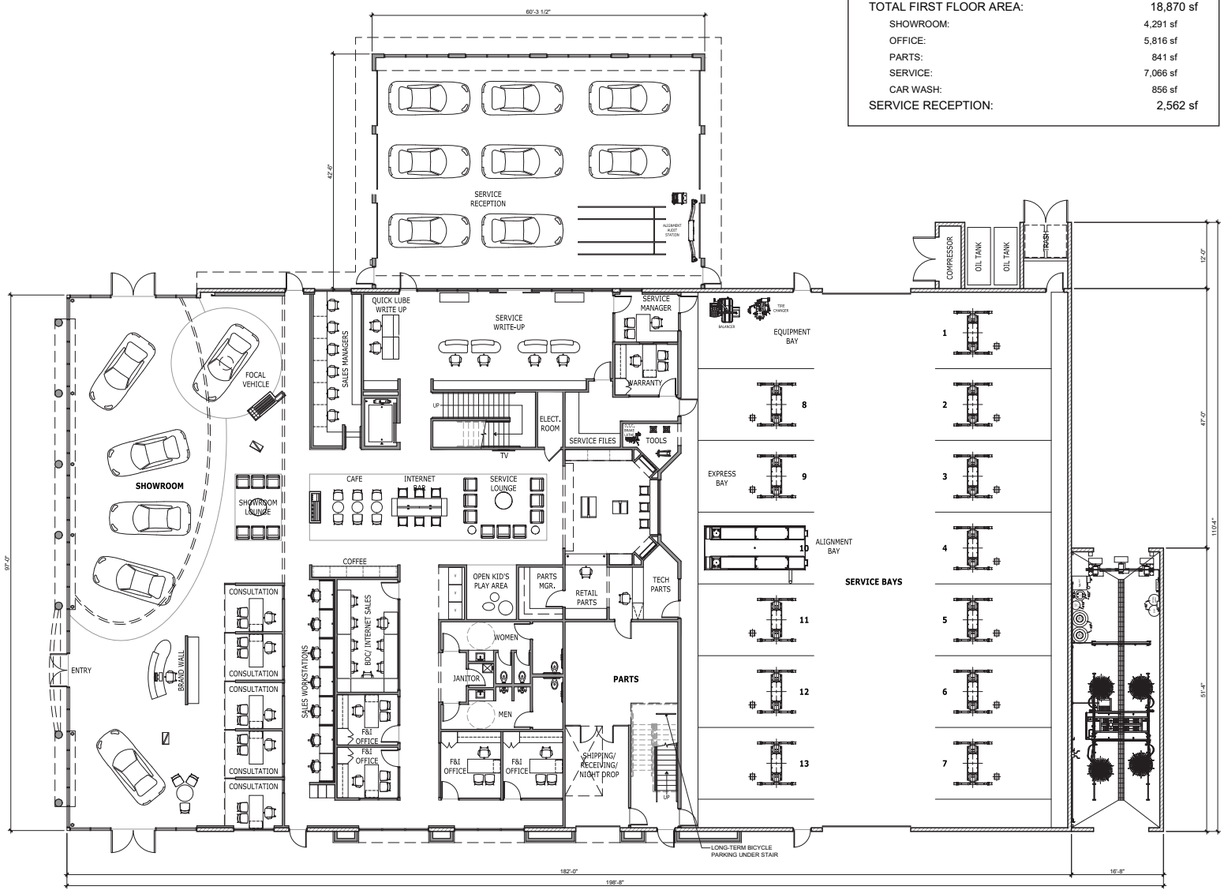
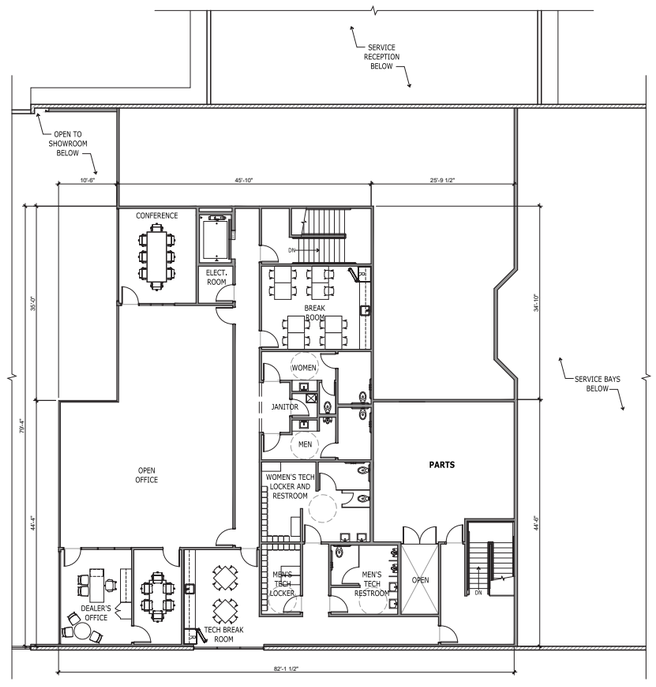
Phase 1 Floor Plans

TOTAL FIRST FLOOR AREA:	18,870 sf
SHOWROOM:	4,291 sf
OFFICE:	5,816 sf
PARTS:	841 sf
SERVICE:	7,066 sf
CAR WASH:	856 sf
SERVICE RECEPTION:	2,562 sf



TOTAL SECOND FLOOR AREA:	4,988 sf
OFFICE:	2,988 sf
PARTS:	919 sf
TECHNICIAN AREA:	1,081 sf



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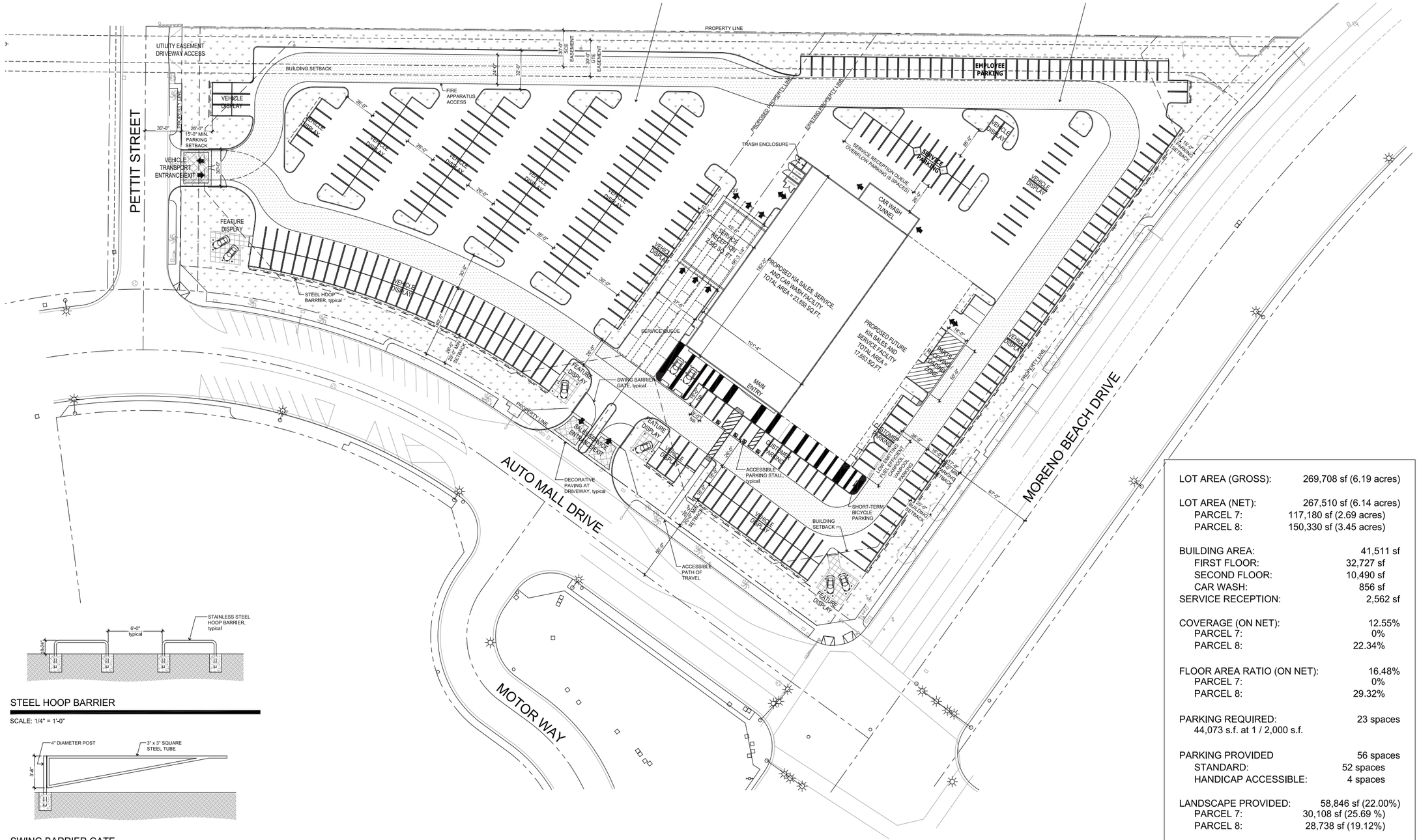
Phase 2 Site Plan



STEEL HOOP BARRIER

SCALE: 1/4" = 1'-0"

SWING BARRIER GATE

SCALE: 1/4" = 1'-0"

LOT AREA (GROSS):	269,708 sf (6.19 acres)
LOT AREA (NET):	267,510 sf (6.14 acres)
PARCEL 7:	117,180 sf (2.69 acres)
PARCEL 8:	150,330 sf (3.45 acres)
BUILDING AREA:	41,511 sf
FIRST FLOOR:	32,727 sf
SECOND FLOOR:	10,490 sf
CAR WASH:	856 sf
SERVICE RECEPTION:	2,562 sf
COVERAGE (ON NET):	12.55%
PARCEL 7:	0%
PARCEL 8:	22.34%
FLOOR AREA RATIO (ON NET):	16.48%
PARCEL 7:	0%
PARCEL 8:	29.32%
PARKING REQUIRED:	23 spaces
44,073 s.f. at 1 / 2,000 s.f.	
PARKING PROVIDED	56 spaces
STANDARD:	52 spaces
HANDICAP ACCESSIBLE:	4 spaces
LANDSCAPE PROVIDED:	58,846 sf (22.00%)
PARCEL 7:	30,108 sf (25.69 %)
PARCEL 8:	28,738 sf (19.12%)

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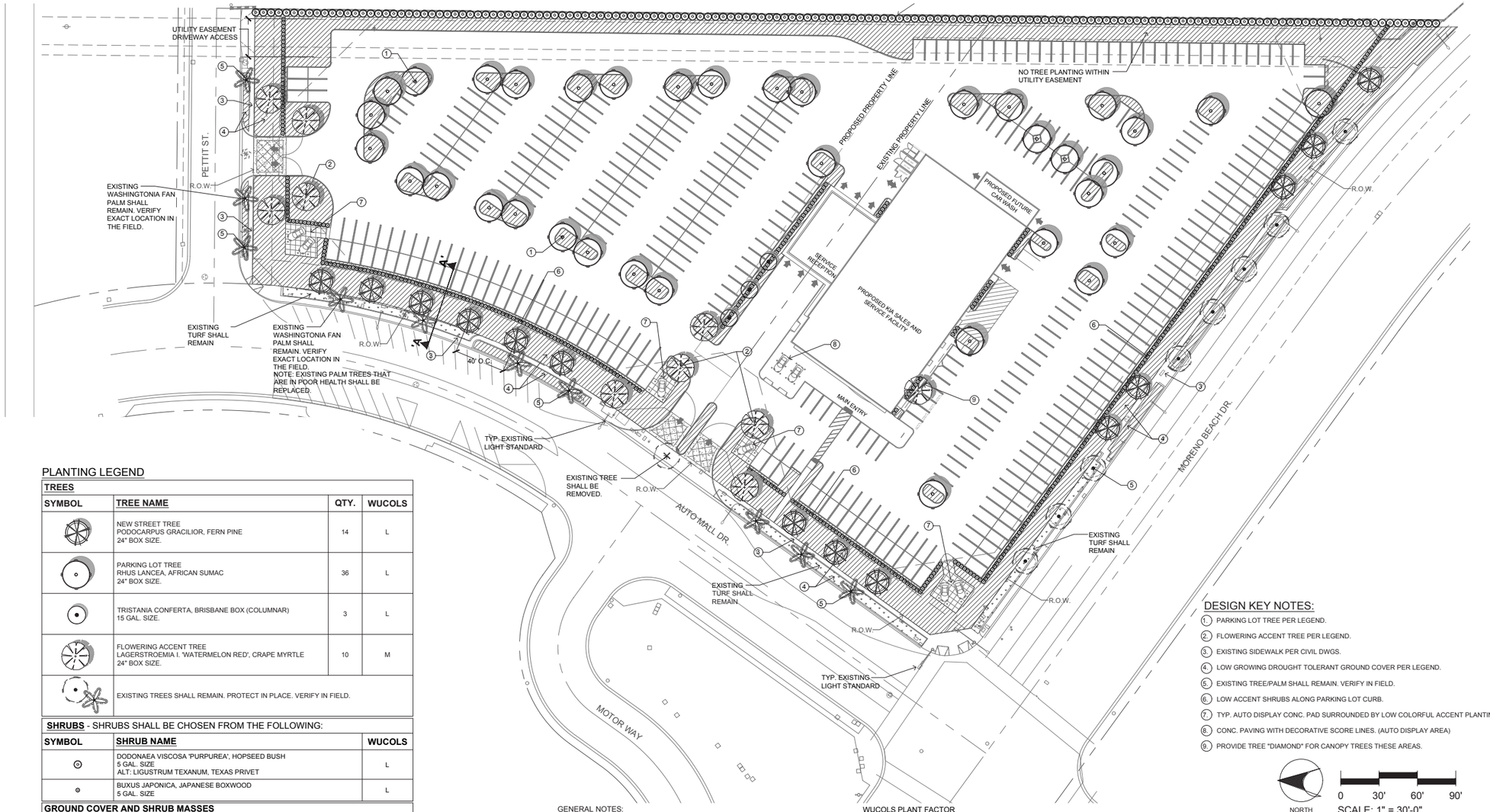
Phase 1 Landscape Plan



PLANTING LEGEND

TREES			
SYMBOL	**TREE NAME**	**QTY.**	**WUCOLS**
	NEW STREET TREE PODOCARPUS GRACILIOR, FERN PINE 24" BOX SIZE.	14	L
	PARKING LOT TREE RHUS LANCEA, AFRICAN SUMAC 24" BOX SIZE.	36	L
	TRISTANIA CONFERTA, BRISBANE BOX (COLUMNAR) 15 GAL. SIZE.	3	L
	FLOWERING ACCENT TREE LAGERSTROEMIA I. 'WATERMELON RED', CRAPE MYRTLE 24" BOX SIZE.	10	M
	EXISTING TREES SHALL REMAIN. PROTECT IN PLACE. VERIFY IN FIELD.		

SHRUBS - SHRUBS SHALL BE CHOSEN FROM THE FOLLOWING:		
SYMBOL	**SHRUB NAME**	**WUCOLS**
	DODONAEA VISCOSA 'PURPUREA', HOPSEED BUSH 5 GAL. SIZE ALT: LIGUSTRUM TEXANUM, TEXAS PRIVET	L
	BUXUS JAPONICA, JAPANESE BOXWOOD 5 GAL. SIZE	L

GROUND COVER AND SHRUB MASSES		
SYMBOL	**GROUND COVER/SHRUB MASS NAME**	**WUCOLS**
	ROSMARINUS O. 'PROSTRATUS', CREEPING ROSEMARY 1 GAL. SIZE @ 30" O.C.	L
	LANTANA 'DWARF YELLOW', YELLOW LANTANA 1 GAL. SIZE @ 24" O.C.	L
	MYOPORUM P. 'PINK', PINK MYOPORUM 1 GAL. SIZE @ 36" O.C.	L
	FESTUCA GLAUCA, BLUE FESCUE 5 GAL. SIZE @ 36" O.C.	L
	DIANELLA TASMANICA 'VARIEGATA', VARIEGATED FLAX LILY 5 GAL. SIZE @ 36" O.C.	L
	EXISTING TURF SHALL REMAIN. "PROTECT IN PLACE." VERIFY IN FIELD.	

GENERAL NOTES:

- SLOPES GREATER THAN 3:1 SHALL BE STABILIZED WITH EROSION CONTROL GROUND COVER PER LEGEND, AND MULCH MATERIAL WITH "BINDER" MATERIAL SHALL BE APPLIED FOR EROSION CONTROL.
- ROCK RIP-RAP MATERIAL SHALL BE INSTALLED WHERE DRAIN LINES CONNECT TO INFILTRATION AREAS.
- ALL UTILITY EQUIPMENT SUCH AS BACKFLOW UNITS, FIRE DETECTOR CHECKS AND FIRE CHECK VALVES WILL BE SCREENED WITH EVERGREEN PLANT MATERIAL ONCE FINAL LOCATIONS HAVE BEEN DETERMINED.
- ENSURE ANY TREES SURROUNDING BUILDING ROOFTOPS BE KEPT AT A DISTANCE TO PREVENT ROOF ACCESSIBILITY BY POTENTIAL BURGLARS. BRANCHES MUST BE PRUNED TO HAVE AT LEAST SIX-FOOT CLEARANCE FROM BUILDINGS.

CONCEPTUAL PLAN NOTE:

THIS IS A CONCEPTUAL LANDSCAPE PLAN. IT IS BASED ON PRELIMINARY INFORMATION WHICH IS NOT FULLY VERIFIED AND MAY BE INCOMPLETE. IT IS MEANT AS A COMPARATIVE AID IN EXAMINING ALTERNATE DEVELOPMENT STRATEGIES AND ANY QUANTITIES INDICATED ARE SUBJECT TO REVISION AS MORE RELIABLE INFORMATION BECOMES AVAILABLE.

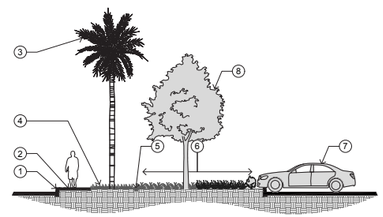
IRRIGATION NOTE:

THE PROJECT WILL BE EQUIPPED WITH A LOW FLOW IRRIGATION SYSTEM CONSISTING OF ET WEATHER BASED SMART CONTROLLER, LOW FLOW ROTORS, BUBBLER AND/ OR DRIP SYSTEMS USED THROUGHOUT. THE IRRIGATION WATER EFFICIENCY WILL MEET OR SURPASS THE CURRENT STATE MANDATED AB-1881 WATER ORDINANCE.

WUCOLS PLANT FACTOR

THIS PROJECT IS LOCATED IN 'WUCOLS' REGION '4-SOUTH INLAND VALLEY'.

H = HIGH WATER NEEDS
M = MODERATE WATER NEEDS
L = LOW WATER NEEDS
VL= VERY LOW WATER NEEDS



SECTION 'A-A'
SCALE: 1/8" = 1'-0"

DESIGN KEY NOTES:

1. PARKING LOT TREE PER LEGEND.
2. FLOWERING ACCENT TREE PER LEGEND.
3. EXISTING SIDEWALK PER CIVIL DWGS.
4. LOW GROWING DROUGHT TOLERANT GROUND COVER PER LEGEND.
5. EXISTING TREE/PALM SHALL REMAIN. VERIFY IN FIELD.
6. LOW ACCENT SHRUBS ALONG PARKING LOT CURB.
7. TYP. AUTO DISPLAY CONC. PAD SURROUNDED BY LOW COLORFUL ACCENT PLANTING.
8. CONC. PAVING WITH DECORATIVE SCORE LINES. (AUTO DISPLAY AREA)
9. PROVIDE TREE "DIAMOND" FOR CANOPY TREES THESE AREAS.

NORTH

0 30' 60' 90'

SCALE: 1" = 30'-0"

SECTION 'A-A' KEY NOTES:

1. EXISTING STREET CURB
2. EXISTING CONC. SIDEWALK
3. EXISTING WASHINGTONIA FAN PALM TREE TO REMAIN.
4. EXISTING LAWN (GRASS) SHALL REMAIN.
5. PROVIDE NEW CONC. HDR. SEPARATING EXISTING LANDSCAPE ALONG STREET FRONTAGE FROM 'ON-SITE' LANDSCAPE.
6. NEW LOW GROUND DROUGHT TOLERANT PLANTING.
7. AUTO DISPLAY PARKING.
8. NEW STREET TREE PER LEGEND.

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5 ENVIRONMENTAL CHECKLIST

This section includes the completed environmental checklist form. The checklist form is used to assist in evaluating the potential environmental impacts of the proposed project. The checklist form identifies potential project effects as follows: 1) Potentially Significant Impact; 2) Less Than Significant with Mitigation Incorporated; 3) Less Than Significant Impact; and, 4) No Impact. Substantiation and clarification for each checklist response is provided in Section 5 (Environmental Evaluation). Included in the discussion for each topic are standard condition/regulations and mitigation measures, if necessary, that are recommended for implementation as part of the proposed project.

5.1 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.

Environmental Factors Potentially Affected

☐	Aesthetics	☐	Agriculture and Forest Resources	☐	Air Quality
☐	Biological Resources	☐	Cultural Resources	☐	Energy
☐	Geology/Soils	☐	Greenhouse Gas Emissions	☐	Hazards and 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

5.2 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 impact" 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.

Signature	Date
	City of Moreno Valley
Printed Name	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 may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Potentially Significant Unless Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less 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 "Earlier Analysis," as described in (5) below, may be cross-referenced).

5) Earlier analysis may be used where, pursuant to the tiering, program EIR, or other 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 Analysis 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 analysis of each issue should identify: (a) the significance criteria or threshold used to evaluate each question; and (b) the mitigation measure identified, if any, to reduce the impact to less than significance.

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5.3 ENVIRONMENTAL CHECKLIST QUESTIONS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
1. AESTHETICS. Except as provided in Public Resources Code Section 21099 would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings 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?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

a) Have a substantial adverse effect on a scenic vista?

Less Than Significant Impact. Scenic vistas consist of expansive, panoramic views of important, unique, or highly valued visual features that are seen from public viewing areas. This definition combines visual quality with information about view exposure to describe the level of interest or concern that viewers may have for the quality of a particular view or visual setting.

The project site is located within a partially developed area and is not within or adjacent to a scenic vista. The site is adjacent to roadways on three sides and near existing residential and commercial land uses. The Moreno Valley General Plan Figure 7-2, *Major Scenic Resources* identifies the scenic resources within the City that include: Box Springs Mountains, Moreno Peak, Russell Mountains, Reche Mountains, and the Badlands.

The site is located 510 feet from the Moreno Peak area. However, this area is on the other side of Moreno Beach Drive and beyond 3-story multi-family residential buildings. The proposed building would be a 29-foot 11-inch high two-story structure that would be lower than the existing apartment buildings and would not have a substantial adverse effect on this scenic vista.

In addition, the project site is located 5.6 miles from Box Springs Mountains, 2 miles from Russell Mountains, 1.5 miles from Reche Mountains, and 2.4 miles from the Badlands. However, because

developed land uses exist between the site and these scenic vistas, the proposed two-story building would result in a less than significant impact on scenic vistas.

b) Substantially damage scenic resources, including, trees, rock outcroppings, and historic buildings within a state scenic highway?

No Impact. There are no designated state scenic highways in the City of Moreno Valley. The closest eligible state scenic highway is State Route (SR) 74, which travels east/west and is approximately 10.5 miles to the south of the project site. The closest officially designated state scenic highway is SR 243 from Interstate 10 (I-10) south of the City of Banning limits (Caltrans 2018), which is located approximately 17 miles East of the project site. Neither of the scenic highways are visible from the project site, so no impacts to state scenic highways would occur from implementation of the proposed project.

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?

Less Than Significant Impact. The project site is located in a developing portion of the City of Moreno Valley and is adjacent to roadways on three sides. Nearby parcels are developed for automotive dealerships, commercial retail uses, and multi-family residential uses. In addition, the site is adjacent to undeveloped land.

Pursuant to the Auto Mall Specific Plan, the project site is intended for commercial uses. The proposed project would construct and operate an automobile dealership that would be consistent with the existing developed land uses to the north and northwest of the site, which include automobile dealerships, automobile repair, and automotive storage. Because the project would be consistent with the existing developed uses near the project site and would include landscaping the project would not substantially degrade the existing visual character or quality of public views of the site and its surroundings.

In addition, the project would be developed in consistency with the Auto Mall Specific Plan and Municipal Code, which would be verified during the City's permitting process. As a result, impacts related to scenic quality would less than significant.

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

Less Than Significant Impact. The project site is undeveloped and has no existing source of nighttime lighting. However, the project site is surrounded by sources of nighttime lighting including street lights along Auto Mall Drive and Moreno Beach Drive, illumination from vehicle headlights, offsite exterior residential and retail related lighting, and interior illumination passing through windows. Sensitive receptors relative to lighting and glare include residents, motorists, and pedestrians.

The proposed project would include installation of new lighting sources on the project site that would include exterior lighting for the parking lot, security lighting, interior lighting, which could be visible through windows to the outside, and headlights from vehicles. The exterior security and parking lot lighting would be hooded, appropriately angled to focus on the project site, and would comply

with the City's Municipal Code Section 9.10.110 Light and Glare (included as PPP AES-1), which states that all lighting shall be designed to project downward and shall not create glare on adjacent properties. In addition, SP-209 includes specific lighting standards for automobile dealerships that specifies light locations, wattage, pole heights, and other specifications to specifically provide for onsite security, while not shining upon adjacent areas (included at PPP AES-2). SP-209 also requires submittal of a lighting plan during the permitting process to ensure compliance with the City's lighting requirements. Therefore, although the project would result in new light sources compared to existing conditions, compliance of PPP AES-2 would ensure the new light source is not substantial and would reduce the potential impacts of light exposure to a less than significant level.

Reflective light (glare) can be caused by sunlight or artificial light reflecting from finished surfaces such as window glass or other reflective materials. Reflective light is common in urban areas and is typically associated with mid-rise and high-rise buildings with exterior façades largely or entirely comprised of highly reflective glass or mirror-like materials from which the sun can reflect, particularly following sunrise and prior to sunset. Glare can also be produced during evening and nighttime hours by artificial light directed toward a light-sensitive land use. Glare sensitive uses in the project area are residential uses across the street and motorists along the adjacent roadway.

The project site is surrounded by a variety of auto dealership and residential uses. Existing daytime sources of glare in the project vicinity predominantly consist of vehicles in parking lots and on roadways, as well as the windows of buildings adjacent to the site, which reflect the sunlight. However, the project area contains existing conditions where glare is interrupted. Landscaping such as trees across street, parkways surrounding the adjacent roads, and landscaping in front of the residences to the south, help block reflective light. Existing auto dealerships to the north contain similar amount of glass to the proposed project.

Buildings constructed of highly reflective materials from which the sun reflects at a low angle can cause adverse glare. The dealership is a low-rise building and the majority of the building's exterior consists of concrete masonry, which is not a highly reflective surface. The building's windows and glass storefront would use glass materials that are manufactured to reduce glare. In addition, the glass panels along the storefront would be interrupted by panel trimming design, thereby further reducing the potential for glare. Motorists driving along Moreno Beach Drive and Auto Mall Drive would be exposed to intermitted glare typical of parking lots and commercial buildings, as they drive past the project site. Daytime glare from windows and windshields would be disrupted by building landscaping, by street trees, and would not be sufficient to distract motorists. Likewise, residential views of the building are interrupted street landscaping, which would limit daytime glare during those limited times of the day when the sun reflects at a low angle. Nighttime glare is addressed by the City's existing lighting regulations included in Municipal Code Section 9.10.110 and SP-209 (included as PPP AES-1 and PPP AES-2) which require the proposed light fixtures to be directed downward and shielded, cutting off any potential glare onto adjacent properties.

Impacts related to light and glare, resulting from development of the site, would be less than significant.

Existing Plans, Programs, or Policies

PPP AES-1: Lighting: Pursuant to Municipal Code Section 9.10.110, 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 shall be designed to project downward and shall not create glare on adjacent properties.

PPP AES-2: Lighting Plans: Lighting plans shall be submitted showing the design layout and exact fixture/pole locations and wattages proposed. A point-by-point foot-candle review of the lighting plan shall ensure that the proposed lighting is compliant with Specific Plan 209 Amendment 5, Section 4.4 Development Regulations. Development Standard 2, Onsite Lighting Standards, a. Automobile Dealerships.

Mitigation Measures

No mitigation measures related to aesthetics are required.

Sources

California Department of Transportation, California Scenic Highway Mapping System, Accessed: at http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/

City of Moreno Valley, General Plan, 2006, Element 7: Conservation.

City of Moreno Valley, Specific Plan 209 Amendment No. 5, Moreno Valley Auto Mall Specific Plan. Accessed: http://www.moreno-valley.ca.us/cdd/specificplans/sp209-5_20110915083050.pdf

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
2. AGRICULTURE AND FORESTRY 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?	☐	☐	☐	☒
b) 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))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

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

No Impact. The project site is identified by the California Department of Conservation Important Farmland Finder as "Farmland of Local Importance" (CDC 2019). The project site is not designated as Prime, Unique, or Farmland of Statewide Importance. Thus, the proposed project would not result in impacts related to conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use.

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

No Impact. The project site has an existing zoning designation for commercial. The project site is not zoned for agricultural use and is not subject to a Williamson Act contract. Thus, the proposed project would not result in impacts related to conflict with an existing agricultural zoning or Williamson Act contract, and impacts would not occur.

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))?

No Impact. No forest land exists on or adjacent to the project site. The project site has a zoning designation for commercial and is not zoned for forest land or timberland uses. Thus, the proposed project would not result in impacts related to conflict with an existing forest land or timberland zoning, and impacts would not occur.

d) Result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. No forest land exists on the project site. Thus, the proposed project would not result in the loss of forest land or conversion of forest land to non-forest use, and impacts would not occur.

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?

No Impact. As described in the responses above, the project area does not include farmland or forest land; thus, implementation of the proposed project would not involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland, to non-agricultural use or conversion of forest land to non-forest use. Impacts would not occur.

Existing Plans, Programs, or Policies

There are no impact reducing Plans, Programs, or Policies related to agriculture and forestry that are applicable to the project.

Mitigation Measure

No mitigation measures related to agriculture and forestry are required.

Sources

California Department of Conservation, Important Farmland Finder, Riverside, 2016. Accessed 28 February 28, 2019. Available: https://maps.conservation.ca.gov/dlrp/ciff/

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
3. 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?	☐	☐	☒	☐
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?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) affecting a substantial number of people?	☐	☐	☒	☐

The discussion below is based on the Air Quality and Greenhouse Gas Assessment Report, prepared by Vince Mirabella (included as Appendix A).

a) Conflict with or obstruct implementation of the applicable air quality plan?

Less Than Significant Impact. The project site is located in the South Coast Air Basin, which is under the jurisdictional boundaries of the South Coast Air Quality Management District (SCAQMD). The SCAQMD and Southern California Association of Governments (SCAG) are responsible for preparing the Air Quality Management Plan (AQMP), which addresses federal and state Clean Air Act (CAA) requirements. The AQMP details goals, policies, and programs for improving air quality in the Basin. In preparation of the AQMP, SCAQMD and SCAG use land use designations contained in General Plan documents to forecast, inventory, and allocate regional emissions from land use and development-related sources. For purposes of analyzing consistency with the AQMP, if a proposed project would have a development density and vehicle trip generation that is substantially greater than what was anticipated in the General Plan, then the proposed project would conflict with the AQMP. On the other hand, if a project's density is consistent with the General Plan, its emissions would be consistent with the assumptions in the AQMP, and the project would not conflict with SCAQMD's attainment plans. In addition, the SCAQMD considers projects consistent with the AQMP if the project would not result in an increase in the frequency or severity of existing air quality violations or cause a new violation.

The project site is designated by the Auto Mall Specific Plan for Commercial uses. The proposed project would develop an auto sales and service dealership, which is consistent with the permitted

uses of automobile sales uses, auto related uses, and commercial uses identified by the Auto Mall Specific Plan. Additionally, the Specific Plan requires a minimum one-acre sites for auto dealerships. The proposed project is located on a 6.35-acre lot. Therefore, the proposed project would be consistent with the land use assumptions in the AQMP and would not conflict with SCAQMD's attainment plans.

In addition, emissions generated by construction and operation of the project would not exceed thresholds as described in the analysis below, which are based on the AQMP and are designed to bring the Basin into attainment for the criteria pollutants for which it is in nonattainment. Therefore, because the project does not exceed any of the thresholds it would not conflict with SCAQMD's goal of bringing the Basin into attainment for all criteria pollutants and, as such, is consistent with the AQMP. As a result, impacts related to conflict with the AQMP from the project 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?

Less Than Significant Impact. The South Coast Air Basin (SCAB) is in a non-attainment status for federal ozone standards, federal carbon monoxide standards, and state and federal particulate matter standards. Any development in the SCAB, including the proposed project, could cumulatively contribute to these pollutant violations. The methodologies from the SCAQMD CEQA Air Quality Handbook are used in evaluating project impacts. SCAQMD has established daily mass thresholds for regional pollutant emissions, which are shown in Table AQ-1. Should construction or operation of the proposed project exceed these thresholds a significant impact could occur; however, if estimated emissions are less than the thresholds, impacts would be considered less than significant.

Table AQ-1: SCAQMD Regional Daily Emissions Thresholds

Pollutant	Construction (lbs/day)	Operations (lbs/day)
NOx	100	55
VOC	75	55
PM10	150	150
PM2.5	55	55
SOx	150	150
CO	550	550
Lead	3	3

Source: Air Quality and Greenhouse Gas Assessment Report

Construction

Construction activities associated with the proposed project would generate pollutant emissions from the following: (1) site preparation and (2) grading. The amount of emissions generated on a daily basis would vary, depending on the intensity and types of construction activities occurring.

It is mandatory for all construction projects to comply with several SCAQMD Rules, including Rule 403 for controlling fugitive dust, PM_{10}, and $PM_{2.5}$ emissions from construction activities. Rule 403 requirements include, but are not limited to, applying water in sufficient quantities to prevent the generation of visible dust plumes, applying soil binders to uncovered areas, reestablishing ground cover as quickly as possible, utilizing a wheel washing system to remove bulk material from tires and vehicle undercarriages before vehicles exit the proposed project site, covering all trucks hauling soil with a fabric cover and maintaining a freeboard height of 12-inches, and maintaining effective

cover over exposed areas. Compliance with Rule 403 was accounted for in the construction emissions modeling and is included as PPP AQ-1. In addition, implementation of SCAQMD Rule 1113 that governs the VOC content in architectural coating, paint, thinners, and solvents, was accounted for in the construction emissions modeling, and is included as PPP AQ-2. As shown in Table AQ-2, CalEEMod results indicate that construction emissions generated by the proposed project would not exceed SCAQMD regional thresholds. Therefore, construction activities would result in a less than significant impact.

Table AQ-2: Construction Emissions Summary

Activity	Emissions (lbs/day)					
	VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
Site Preparation	5.7	63.9	23.1	0.1	9.7	6.4
Grading	3.6	42.4	17.3	0.0	4.3	2.8
Building Construction (2020)	2.8	24.1	22.0	0.0	2.6	1.5
Building Construction (2021)	2.5	21.8	21.4	0.0	2.5	1.3
Paving	2.0	12.9	15.3	0.0	0.9	0.6
Architectural Coatings	21.9	1.6	2.6	0.0	0.3	0.2
Maximum Daily Emissions	**21.9**	**63.9**	**23.1**	**0.1**	**9.7**	**6.4**
Significance Threshold	75	100	550	150	150	55
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: NOx = nitrogen oxides CO = carbon monoxide
PM10 and PM2.5 = particular matter VOC = volatile organic compounds
SOx = sulfur oxides
Source: Air Quality and Greenhouse Gas Assessment Report (Vince Mirabella 2019)

Operation

Implementation of the proposed project (Phase 1 and 2) would result in long-term regional emissions of criteria air pollutants and ozone precursors associated with area sources, such as natural gas consumption, landscaping, applications of architectural coatings, and consumer products. However, operational vehicular emissions would generate a majority of the emissions generated from the project.

Operational emissions associated with the proposed project were modeled using CalEEMod and are presented in Table AQ-3. As shown, the proposed project would result in long-term regional emissions of the criteria pollutants that would be below the SCAQMD's applicable thresholds. Therefore, the project's operational emissions would not exceed the NAAQS and CAAQS, would not result in a cumulatively considerable net increase of any criteria pollutant impacts, and would be less than significant.

Table AQ-3: Summary of Peak Operational Emissions

Operational Year (Summer Season)	Emissions (lbs/day)					
	VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
Mobile	3.4	22.4	25.1	0.1	6.1	1.7
Area	1.1	0.0	0.0	0.0	0.0	0.0
Energy	0.0	0.3	0.3	0.0	0.0	0.0
Total	**4.5**	**22.7**	**25.4**	**0.2**	**6.2**	**1.7**
SCAQMD Significance Threshold	55	55	550	150	150	55
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**
Operational Year (Winter Season)						
Mobile	2.9	22.0	23.4	0.1	6.1	1.7
Area	1.0	0.0	0.0	0.0	0.0	0.0
Energy	0.0	0.4	0.3	0.0	0.0	0.0
Total	**3.9**	**22.4**	**23.7**	**0.1**	**6.1**	**1.7**
SCAQMD Significance Threshold	55	55	550	150	150	55

Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: NOx = nitrogen oxides; CO = carbon monoxide; PM_{10} and $PM_{2.5}$ = particular matter; VOC = volatile organic compounds; SOx = sulfur oxides

Source: Air Quality and Greenhouse Gas Assessment Report (Vince Mirabella 2019)

c) Expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact. The SCAQMD recommends the evaluation of localized NO_2, CO, PM_{10}, and $PM_{2.5}$ construction-related impacts to sensitive receptors in the immediate vicinity of the project site. Such an evaluation is referred to as a localized significance threshold (LST) analysis. The impacts were analyzed pursuant to the SCAQMD's Final Localized Significance Threshold Methodology (SCAQMD 2009). According to the LST Methodology, "off-site mobile emissions from the project should not be included in the emissions compared to the LSTs" (SCAQMD 2009). SCAQMD has developed LSTs that represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standards, and thus would not cause or contribute to localized air quality impacts. LSTs are developed based on the ambient concentrations of NOx, CO, PM_{10}, and $PM_{2.5}$ pollutants for each of the 38 source receptor areas (SRAs) in the SCAB. The project site is located in SRA 24, Perris Valley.

Sensitive receptors can include uses such as long-term health care facilities, rehabilitation centers, and retirement homes. Residences, schools, playgrounds, child care centers, and athletic facilities can also be considered sensitive receptors. The nearest sensitive receptor from the project site is located at an existing residence 131 feet south of the project site across Moreno Beach Drive/Auto Mall Parkway.

Construction

The localized thresholds from the mass rate look-up tables in SCAQMD's Final Localized Significance Threshold Methodology document, were developed for use on projects that are less than or equal to 5-acres in size or have a disturbance of less than or equal to 5 acres daily. The air quality analysis determined that the proposed project would disturb a maximum of 3.5 acres per day.

As shown in Table AQ-4, with implementation of SCAQMD Rules 403 and 1113 (included as PPP AQ-1 and PPP AQ-2), the maximum daily construction emissions from the proposed project would not exceed the applicable SCAQMD LST thresholds.

Table AQ-4: Localized Significance Summary of Construction

Activity	Emissions (lbs/day)			
	NOx	**CO**	**PM10[1]**	**PM2.5[1]**
Site Preparation	63.8	22.4	9.5	6.3
Grading	42.4	16.7	4.1	2.8
Building Construction (2020)	19.2	16.8	1.1	1.1
Building Construction (2021)	17.4	16.6	1.0	0.9
Paving	12.9	14.7	0.7	0.6
Architectural Coatings	1.5	1.8	0.1	0.1
Maximum Daily Emissions[1]	**63.8**	**22.4**	**9.5**	**6.3**
Localized Significance Threshold	238	1,530	18.0	7.2
Threshold Exceeded?	**No**	**No**	**No**	**No**

Notes: NOx = nitrogen oxides; CO = carbon monoxide; PM_{10} and $PM_{2.5}$ = particular matter; VOC = volatile organic compounds; SOx = sulfur oxides

Source: Air Quality and Greenhouse Gas Assessment Report (Vince Mirabella 2019)

Operation

For operational LSTs, on-site passenger car and truck travel emissions were modeled. As shown on Table AQ-5, operational emissions would not exceed the SCAQMD's LST thresholds for any criteria pollutant at the nearest sensitive receptor. Therefore, the project would result in a less than significant impact related to localized emissions from operational activities.

Table AQ-5: Comparison of Operational LSTs and Project On-site Operational Emissions

Summer Season	Emissions (lbs/day)			
	VOC	NOx	CO	SOx
Mobile	0.1	1.2	0.0	0.0
Area	0.0	0.0	0.0	0.0
Energy	0.4	0.3	0.0	0.0
Total	**0.5**	**1.5**	**0.0**	**0.0**
SCAQMD Significance Threshold	289	1,937	7.6	3.0
Threshold Exceeded?	**No**	**No**	**No**	**No**
Winter Season				
Mobile	0.1	1.2	0.0	0.0
Area	0.0	0.0	0.0	0.0
Energy	0.4	0.3	0.0	0.0
Total	**0.5**	**1.5**	**0.0**	**0.0**
SCAQMD Significance Threshold	289	1,937	7.6	3.0
Threshold Exceeded?	**No**	**No**	**No**	**No**

Notes: PM_{10} and $PM_{2.5}$ = particular matter; VOC = volatile organic compounds; SOx = sulfur oxides
Air Quality and Greenhouse Gas Assessment Report (Vince Mirabella 2019)

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

Less Than Significant Impact. The proposed project would not generate other emissions, not described previously. Also, typical land uses generally associated with odor complaints includes agricultural uses (livestock and farming), wastewater treatment plants, food processing plants, chemical plants, composting operations, refineries, landfills, dairies, and fiberglass molding facilities.

The project does not contain land uses typically associated with emitting objectionable odors. Potential odor sources associated with the proposed project may result from construction equipment exhaust and the application of asphalt and architectural coatings during construction activities and the temporary storage of typical solid waste (refuse) associated with the proposed project's (long-term operational) uses. Standard construction requirements would minimize odor impacts from construction. The construction odor emissions would be temporary, short-term, and intermittent in nature and would cease upon completion of the respective phase of construction and is thus considered less than significant. It is expected that project-generated refuse would be stored in covered containers and removed at regular intervals in compliance with the City's solid waste regulations. The proposed project would also be required to comply with SCAQMD Rule 402 (included as PPP AQ-3) to prevent odor nuisances on sensitive land uses. Based on the proposed auto dealership use of the site and with compliance with SCAQMD Rule 402, impacts related to odors would be less than significant.

Existing Plans, Programs, or Policies

PPP AQ-1: The project is required to comply with the provisions of South Coast Air Quality Management District (SCAQMD) Rule 403, which includes the following:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.
- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the project are watered, with complete coverage of disturbed areas, at least 3 times daily during dry weather; preferably in the mid-morning, afternoon, and after work is done for the day.
- The contractor shall ensure that traffic speeds on unpaved roads and project site areas are reduced to 15 miles per hour or less.

PPP AQ-2: The project is required to comply with the provisions of South Coast Air Quality Management District Rule (SCAQMD) Rule 1113. Only "Low-Volatile Organic Compounds" paints (no more than 50 gram/liter of VOC) and/or High Pressure Low Volume (HPLV) applications shall be used.

PPP AQ-3: The project is required to comply with the provisions of South Coast Air Quality Management District (SCAQMD) Rule 402. The project 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 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.

Mitigation Measures

No mitigation measures related to air quality are required.

Sources

City of Moreno Valley, Specific Plan 209 Amendment No. 5, Moreno Valley Auto Mall Specific Plan. Accessed: http://www.moreno-valley.ca.us/cdd/specificplans/sp209-5_20110915083050.pdf

Air Quality and Greenhouse Gas Assessment Report, Car Pros Kia Dealership Project, City of Moreno Valley, California, 2019, prepared by Vince Mirabella (Appendix A).

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
4. 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?	☐	☒	☐	☐
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 US Fish and Wildlife Service?	☐	☐	☐	☒
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?	☐	☐	☐	☒
d) 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?	☐	☒	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

The discussion below is based on the Biological Technical Report, prepared by Blackhawk Environmental, Inc. (Blackhawk 2019) (included as Appendix B)

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?

Less Than Significant Impact with Mitigation Incorporated. The project site is vacant and undeveloped and has been disturbed. Review of historic aerials of the project site indicate that the

site has undergone mass grading and periodic vegetation maintenance in the form of site leveling, mowing, and disking since at least 1996. A Biological Habitat Assessment was prepared for the proposed project, which included a literature search to identify special status plants, wildlife, and habitats known to occur in the vicinity of the project site. General plant and wildlife surveys were also conducted to identify any biological resources on or adjacent to the project site. The habitat assessment identified that a large portion of the project site consists of disturbed and developed areas that include:

- 0.18 acres of Disturbed Coastal Sage Scrub – Brittlebush Series
- 5.71 acres of Disturbed Areas
- 0.23 acres of Developed Areas
- 0.23 acres of Residential/Urban/Exotic (composed of exotic trees, shrubs, grasses and/or flowering plants typical of ornamental landscaping)

The Habitat Assessment identified that of the 30 special-status wildlife species that to have the potential to occur within the project vicinity, one was present, 15 have a low to moderate potential for occurrence based on proximity of historic records and quality habitat on site and 14 are absent due to lack of suitable habitat. In addition, two MSHCP-listed avian species are present, the site supports suitable habitat for burrowing owl, and is located within a designated area requiring surveys for burrowing owl. The special status species with potential to occur onsite are listed below:

- California horned lark (*Eremophila alpestris actia*) (Present)
- Burrowing owl (*Athene cunicularia*) (Moderate)
- Coastal whiptail (*Aspidoscelis tigris steinegeri*) (Moderate)
- San Diego black tailed jackrabbit (*Lepus californicus bennettii*) (Moderate)
- Western mastiff bat (*Eumops perotis californicus*) (Moderate foraging potential)
- Western yellow bat (*Lasiurus xanthinus*) (Moderate)
- Bell's sage sparrow (*Artemisiospiza belli belli*) (Low)
- Ferruginous hawk (*Buteo regalis*) (Low)
- Loggerhead shrike (*Lanius ludovicianus*) (Low)
- Southern California rufous-crowned sparrow (*Aimophilia ruficeps canescens*) (Low)
- California glossy snake (*Arizona elegans occidentalis*) (Low)
- Coast horned lizard (*Phrynosoma blainvillii*) (Low)
- Coast patch-nosed snake (*Salvadora hexalepis virgultea*) (Low)
- Orange-throated whiptail (*Aspidoscelis hyperythra*) (Low)
- Red-diamond rattlesnake (*Crotalus ruber ruber*) (Low)
- Los Angeles Pocket mouse (*Perognathus longimembris brevinasus*) (Low)
- Northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*) (Low)
- Cooper's hawk (*Accipiter cooperii*) (Present, MSHCP)
- Northern harrier (*Circus cyaneus*) (Present, MSHCP)

The Biological Assessment identified 8 special-status plant species that to have the potential to occur within the project vicinity; however, only the Parry's spineflower (*Chorizanthe parryi var. parryi*) was determined to have a low potential for occurrence. The remaining seven special-status plant species were determined to be absent from the project site.

The Habitat Assessment describes that the special-status wildlife and plant species with the potential to occur on the project site are covered by compliance with the MSHCP, which requires payment of fees, included as existing Plans, Programs, or Policies "PPP BIO 1". In addition, because the site supports suitable habitat for burrowing owl the MSHCP requires focused surveys pursuant to the Western Riverside County Regional Conservation Authority (RCA) Burrowing Owl Survey Instructions for the MSHCP area. Hence, Mitigation Measure BIO-1 requires a preconstruction burrowing owl survey to be conducted pursuant to the RCA Survey Instructions prior to start of ground disturbance activities. With implementation of Mitigation Measure BIO-1, impacts related to burrowing owl would be less than significant.

In addition, the Habitat Assessment identified suitable habitat and substrate for migratory birds that are protected under the Migratory Bird Treaty Act and Section 3503.5 of the California Department of Fish and Wildlife (CDFW) code. Therefore, Mitigation Measure BIO-2 is included to require a nesting bird survey if construction activities begin during the nesting season. With implementation of Mitigation Measure BIO-2 impacts related to protected bird species would also be reduced to a less than significant level.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service?

No Impact. The project site consists of vacant land that has been heavily disturbed by grading. The assessment done by Blackhawk Environmental identified no riparian/riverine habitats, and no potentially jurisdictional waters within the project site. This exempts the Project from Army Corps of Engineers, California Department of Fish and Wildlife, and the Regional Water Quality Control Board permits. In addition, the project does not contain any vernal pools, wetland habitats, creeks, or rivers. Thus, impacts to riparian habitat or other sensitive natural community would not occur from implementation of the proposed project.

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?

No Impact. As described in the response above, the project site does not contain any drainages, creeks, rivers, or other wetland areas (Blackhawk 2019). The project site does not contain any jurisdictional areas that would be subject to Section 404 of the Clean Water Act, and the proposed project does not involve any hydrological interruption on any existing water resources. Thus, impacts to federally protected wetlands as defined by Section 404 of the Clean Water Act would not occur from implementation of the proposed project.

d) 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?

Less Than Significant Impact with Mitigation Incorporated. The project site is vacant and undeveloped but is adjacent to roadways, disturbed, and developed land uses. Due to the existing conditions of the project site and the surrounding land uses, the project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with

established native resident or migratory wildlife corridors (Blackhawk 2019). However, as described previously, the site includes areas that are suitable for nesting birds that are protected under the Migratory Bird Treaty Act and Section 3503.5 of the CDFW code. Therefore, Mitigation Measure BIO-2 is included to require a nesting bird survey if construction activities begin during the nesting season. With implementation of Mitigation Measure BIO-2 impacts related to native wildlife nursery sites would be reduced 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?

No Impact. There are no local biological related policies or ordinances, such as a tree preservation policy or ordinance that is applicable to the proposed project. The project site is adjacent existing non-native ornamental trees that are on the right-of-way on Moreno Beach Drive and to Auto Mall Drive and are not subject to any ordinances. The project site contains non-protected native shrubs and herbs as well as non-native grasses and shrubs, but there are no trees on the project site. Therefore, implementation of the proposed project would not conflict with local polices or ordinances protecting trees and no impact would occur.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Impact. The project site occurs within the Western Riverside County Multiple Species Habitat Conservation Plan. The site and the surrounding area is urbanized and does not support any sensitive habitat and/or species that are protected by an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or state habitat conservation plan because it does not overlap or occur adjacent to any area conserved or targeted for conservation by the plan (Blackhawk 2019). Development of the project site would not conflict with local, regional, or state resource preservation and/or conservation policies. Therefore, no significant impacts would occur as a result of project implementation.

Existing Plans, Programs, or Policies

PPP BIO 1: MSHCP Development Impact Fee Prior to issuance of a grading or building permit, the project applicant will be required to pay relevant City of Moreno Valley mitigation fees to the City.

Mitigation Measures

Mitigation Measure BIO 1: Pre-construction Burrowing Owl Survey. Preconstruction burrowing owl (BUOW) surveys shall be complete a maximum of 30 days prior to the start of construction. A total of 4 focused BUOW preconstruction surveys shall be conducted on separate days, preferably during the BUOW breeding season (March 1 through August 31) (not including the initial habitat assessment and burrow survey). The survey area shall include the project site and the 150-meter survey area surrounding the project site pursuant to the Western Riverside County Regional Conservation Authority Burrowing Owl Survey Instructions for the Plan Area (2006).

If burrowing owls are observed during take avoidance surveys or incidentally during construction, the City of Moreno Valley Planning Division shall be notified, and avoidance measures implemented during the breeding season (March 1 through August 31). If burrowing owls are present during the

non-breeding season (September 1 through February 28), burrowing owl exclusion measures may be implemented in accordance with the MSHCP.

Mitigation Measure BIO 2: Nesting Birds Survey. To the extent feasible, the project shall conduct vegetation removal outside of the nesting bird season (generally between February 15 and August 31). If vegetation removal is required during the nesting bird season, a nesting bird survey should be conducted for areas within 100-feet of the vegetation removal. Surveys shall be conducted by a qualified biologist(s) within three days of vegetation removal. If active nests are observed, a qualified biologist shall determine appropriate minimum disturbance buffers or other adaptive mitigation techniques (e.g., biological monitoring of active nests during construction-related activities, staggered schedules, etc.) to ensure that impacts to nesting birds are avoided until the nest is no longer active.

Sources

Western Riverside MSHCP Habitat Assessment Report. Prepared by Blackhawk Environmental, Inc. 2019 (Blackhawk 2019) (Appendix B)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
5. CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to in § 15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

The discussion below is based on the Phase I Cultural Resources Assessment prepared by Material Culture Consultants (MCC 2019) (included as Appendix C).

a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

No Impact. The project site is currently vacant and undeveloped and does not contain any historic resources (MCC 2019). Review of historic aerials of the project site indicate that the site has undergone mass grading and periodic vegetation maintenance in the form of site leveling, mowing, and disking since at least 1996. In addition, the project site is not located within a historic area. The adjacent roadway, multi-family residential across Moreno Beach Drive, and the nearby commercial uses are recently developed and are not historic structures. Therefore, the project would not cause a substantial adverse change in the significance of a historical resource, and no impact would occur.

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

Less Than Significant with Mitigation Incorporated. The records search conducted by the Phase I Cultural Resources Assessment found 55 cultural resources within a 1-mile radius of the project site. Five were located within 0.25-mile of the project site, and 21 within 0.5-mile of the project site. Thus, the project area has a moderate to low sensitivity for presence of archaeological deposits. However, no cultural resources have been identified on site or were observed during the archaeological survey for the project, and due to the previous ground disturbance on the project site and the surrounding area, any archaeological deposits have likely been eradicated (MCC 2019). However, there still remains the possibility that undiscovered, buried archaeological resources may be encountered during construction. Therefore, Mitigation Measure CR-1 has been included to provide an on-call archaeologist and CR-2 to halt work within 100 feet of uncovering any potential archaeological resources. In addition to Mitigation Measure CR-1 requires that the Soboba Band of Luiseno Indians shall be contacted and consult with the archaeologist if a pre-contact cultural resource is found. Mitigation Measure CR-2 through CR-6 detail procedures for inadvertent discoveries of archeological and/or precultural resources. With implementation of these

mitigation measures, potential impacts related to archaeological resources would be less than significant.

c) Disturb any human remains, including those interred outside of formal cemeteries?

Less Than Significant Impact. The project site has not been used for and is not located adjacent to any known cemeteries and has undergone previous disturbance. It is possible, though, that construction activities could unearth previously unknown human remains. However, compliance with California Health and Safety Code Section 7050.5 (included as MM CR-1), would ensure that human remains were treated with dignity and as specified by law, which would reduce the impact to less than significant level.

Existing Plans, Programs, or Policies

None.

Mitigation Measures

Mitigation Measure CR-1: Prior to the issuance of a grading permit, the Developer shall retain a professional archaeologist meeting Secretary of Interior's Professional Qualifications for Archaeology as defined at 36 CFR Part 61, Appendix A stating that the archaeologist has been retained to provide on-call services in the event archaeological resources are discovered . 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 Consulting Tribe(s), 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 AB 52 (Soboba Band of Luiseno Indians and Rincon Band of Luiseno Indians). Details in the Plan shall include:

a. Project grading and development scheduling;

b. The Project archeologist and the Consulting Tribes(s) as defined in CR-1 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 Consulting Tribe(s) shall make themselves available to provide 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.

Mitigation Measure CR-2: Prior to the issuance of a grading permit, the Applicant shall secure agreements with the Soboba Band of Luiseno Indians for tribal monitoring. The Applicant 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.

Mitigation Measure CR-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.

   ii. Onsite reburial of the discovered items as detailed in the treatment plan required pursuant to Mitigation Measure CR-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 CR-1. The location for the future reburial area shall be identified on a confidential exhibit on file with the City and concurred to by the Consulting Native American Tribal Governments prior to certification of the environmental document.

Mitigation Measure CR-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."

Mitigation Measure CR-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 CR-1 before any further work commences in the affected area.

Mitigation Measure CR-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 24 hours 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

Phase I Cultural Resources Assessment. Prepared by Material Culture Consultants (MCC 2019) (Appendix C).

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
6. 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?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Less Than Significant Impact.

Construction
During construction of the proposed project, energy would be consumed in three general forms:

1. Petroleum-based fuels used to power off-road construction vehicles and equipment on the project sites, construction worker travel to and from the project sites, as well as delivery truck trips;
2. Electricity associated with providing temporary power for lighting and electric equipment; and
3. Energy used in the production of construction materials, such as asphalt, steel, concrete, pipes, and manufactured or processed materials such as lumber and glass.

Construction activities related to the proposed building and the associated infrastructure would not be expected to result in demand for fuel greater on a per-unit-of-development basis than other development projects in southern California. In addition, the extent of construction activities that would occur is limited to a 14-month period, and the demand for construction-related electricity and fuels would be limited to that time frame.

In addition, construction contractors are required to demonstrate compliance with applicable California Air Resources Board (CARB) regulations governing the accelerated retrofitting, repowering, or replacement of heavy-duty diesel on- and off-road equipment. In addition, compliance with existing CARB idling restrictions and the use of newer engines and equipment would reduce fuel combustion and energy consumption. Overall, construction activities would require limited energy consumption, would comply with all existing regulations, and would therefore not be expected to use large amounts of energy or fuel in a wasteful manner. Thus, impacts related to construction energy usage would be less than significant.

Operation
Once operational, the project would generate demand for electricity, natural gas, as well as gasoline for motor vehicle trips. Operational use of energy includes the heating, cooling, and

lighting of the building, water heating, operation of electrical systems and plug-in appliances, parking lot and outdoor lighting, and the transport of electricity, natural gas, and water to the areas where they would be consumed. This use of energy is typical for urban development, and no operational activities or land uses would occur that would result in extraordinary energy consumption.

The proposed project would be required to meet the current Title 24 energy efficiency standards (as provided in Chapter 8.20 of the City's Municipal Code and included as PPP GHG-1) and be compliant with the City's Energy Efficiency and Climate Action Strategy, which would be ensured through the City's building permitting process. Thus, operation of the project would not use large amounts of energy or fuel in a wasteful manner, and impacts would be less than significant.

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

No Impact. The State of California has established a comprehensive framework for the use of efficient energy. This occurs through the implementation of the Clean Energy and Pollution Reduction Act of 2015 (SB 350), Title 24 Energy Efficiency Standards, and the California Green (CalGreen) Building Standards (included as PPP ENG-1). The proposed project would comply with existing regulations as ensured through the City's permitting process. Thus, construction and operation of the proposed project would not conflict with or obstruct State or local plans for energy efficiency or renewable energy.

Existing Plans, Programs, or Policies

PPP GHG-1: CalGreen Compliance. The project is required to comply with the CalGreen Building Code as included in the City's Municipal Code to ensure efficient use of energy. CalGreen specifications are required to be incorporated into building plans as a condition of building permit approval.

Mitigation Measures

No mitigation measures related to energy are required.

Sources

Air Quality and Greenhouse Gas Assessment Report, Car Pros Kia Dealership Project, City of Moreno Valley, California, 2019. Prepared by Vince Mirabella. (Appendix A).

City of Moreno Valley Energy Efficiency and Climate Action Strategy. Accessed at: http://www.moval.org/pdf/efficiency-climate112012nr.pdf

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
7. 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 Division of Mines and Geology Special Publication 42?	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
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?	☐	☐	☒	☐
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?	☐	☐	☒	☐
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?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

The discussion below is based on the Geotechnical Investigation, prepared by Geocon West, Inc, 2019 (GEO 2019), included as Appendix D.

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?

No Impact. In 1972, the Alquist-Priolo Special Studies Zones Act was signed into law and renamed the Alquist-Priolo Earthquake Fault Zoning Act (A-P Act) in 1994. The primary purpose of the Act is to mitigate the hazard of fault rupture by prohibiting the location of structures for human occupancy access the trace of an active fault. The A-P Act requires the State Geologist (Chief of the California Geology Survey) to delineate "Earthquake Fault Zones" along with faults that are "sufficiently active" and "well-defined." The boundary of an "Earthquake Fault Zone" is generally about 500 feet from major active faults and 200 to 300 feet from well-defined minor faults. The A-P Act dictates that cities and counties withhold development permits for sites within an Alquist-Priolo Earthquake Zone until geologic investigations demonstrate that the site zones are not threatened by surface displacements from future faulting.

As described by the Geotechnical Investigation for the proposed project, there are 18 known active faults located within a 50-mile search radius of the project site (GEO 2019). The nearest known active fault is the Claremont fault segment of the San Jacinto fault zone, located approximately 2 miles northeast of the site. However, the project site is not within an Alquist-Priolo Earthquake Fault Zone or a Riverside County Fault Hazard Zone for surface fault rupture hazards (GEO 2019). Therefore, development of this project would not directly or indirectly cause potential risk of loss, injury, or death involving the rupture of a known earthquake fault. No impact would occur.

ii. Strong seismic ground shaking?

Less Than Significant Impact. The project site is located within a seismically active region of Southern California. As mentioned previously, the Claremont fault segment of the San Jacinto fault zone is located approximately 2 miles northeast of the project site (GEO 2019). Thus, moderate to strong ground shaking can be expected at the site. The amount of motion can vary depending upon the distance to the fault, the magnitude of the earthquake, and the local geology. Greater movement can be expected at sites located closer to an earthquake epicenter, that consists of poorly consolidated material such as alluvium, and in response to an earthquake of great magnitude.

Structures built in the City are required to be built in compliance with the California Building Code (CBC [California Code of Regulations, Title 24, Part 2]), included in the Municipal Code as Chapter 8.20 and included as PPP GEO-1, that contains provisions for earthquake safety based on factors including occupancy type, the types of soils onsite, and the probable strength of the ground motion. Compliance with the CBC would include the incorporation of: 1) seismic safety features to minimize the potential for significant effects as a result of earthquakes; 2) proper building footings and foundations; and 3) construction of the building structures so that it would withstand the effects of strong ground shaking. Implementation of CBC standards would be verified by the Moreno Valley Department of Building and Safety during the permitting process. Because the proposed project would be constructed in compliance with the CBC, the proposed project would result in a less than significant impact related to strong seismic ground shaking.

iii. Seismic-related ground failure, including liquefaction?

Less Than Significant Impact. Soil liquefaction is a phenomenon in which saturated, cohesionless soils layers, located within approximately 50 feet of the ground surface, lose strength due to cyclic pore water pressure generation from seismic shaking or other large cyclic loading. During the loss of stress, the soil acquires "mobility" sufficient to permit both horizontal and vertical movements. Soil properties and soil conditions such as type, age, texture, color, and consistency, along with historical depths to ground water are used to identify, characterize, and correlate liquefaction susceptible soils.

Soils that are most susceptible to liquefaction are clean, loose, saturated, and uniformly graded fine-grained sands that lie below the groundwater table within approximately 50 feet below ground surface and with a relative density less than about 70 percent (GEO 2019). Lateral spreading is a form of seismic ground failure due to liquefaction in a subsurface layer.

According to the Geotechnical Investigation for the proposed project, the depth of groundwater is in excess of 190 feet below the ground surface and the onsite soils consist of dense to very dense old alluvial fan deposits (GEO 2019). Thus, the Geotechnical Investigation determined that the liquefaction potential for the site is negligible (GEO 2019). As described previously, the proposed project would be required to be constructed in compliance with the CBC and the City's Municipal Code, included as PPP GEO-1, which would be verified through the City's plan check and permitting process Thus, impacts related to seismically related ground failure and liquefaction would be less than significant.

iv. Landslides?

No Impact. Landslides and other slope failures are secondary seismic effects that are common during or soon after earthquakes. Areas that are most susceptible to earthquakes induced landslides are steep slopes underlain by loose, weak soils, and areas on or adjacent to existing landslide deposits.

As described above, the project site is located in a seismically active region subject to strong ground shaking. However, the Geotechnical Investigation states that the site is not within an area identified to have a potential for seismic slope instability, there are no known landslides near the site, nor is the site in the path of any known or potential landslides (GEO 2019). Therefore, the project would not cause potential substantial adverse effects related to slope instability or seismically induced landslides.

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

Less Than Significant Impact.

Construction

Construction of the proposed project has the potential to contribute to soil erosion and the loss of topsoil. Excavation and grading activities that would be required for the project would expose and loosen topsoil, which could be eroded by wind or water.

The City's Municipal Code Chapter 8.10 Stormwater/Urban Runoff Management and Discharge Controls implements the requirements of the Santa Ana Regional Water Quality Control Board (RWQCB) National Pollutant Discharge Elimination System (NPDES) Storm Water Permit Order No. R4-2012-0175 (MS4 Permit), as amended, establishes minimum stormwater management

requirements and controls that are required to be implemented for construction activities for the project.

To reduce the potential for soil erosion and the loss of topsoil, a Stormwater Pollution Prevention Plan (SWPPP) is required by these City and RWQCB regulations to be developed by a Qualified SWPPP Developer (QSD), which would be implemented by PPP WQ-1. The SWPPP is required to address site-specific conditions related to specific grading and construction activities that could cause erosion and the loss of topsoil and provide erosion control Best Management Practices (BMPs) to reduce or eliminate the erosion and the loss of topsoil. Erosion control BMPs include use of: silt fencing, fiber rolls, or gravel bags, stabilized construction entrance/exit, hydroseeding, etc. With compliance the City's Municipal Code stormwater management requirements, RWQCB SWPPP requirements, and installation of BMPs, which would be implemented during the City's permitting process, construction impacts related to erosion and loss of topsoil would be less than significant.

Operation
The proposed project includes installation of landscaping throughout the project site and areas of loose topsoil that could erode by wind or water would not exist upon operation of the proposed commercial uses. In addition, as described in Section 10, Hydrology and Water Quality the hydrologic features of the proposed project have been designed to flow to biofiltration systems and landscaping that would reduce the potential for stormwater to erode topsoil. Furthermore, pursuant to the City's Municipal Code Chapter 8.10, Stormwater/Urban Runoff Management and Discharge Controls, implementation of the project requires a Water Quality Management Plan (WQMP), which is included as PPP WQ-2. The WQMP describes the operational BMPs that would be implemented to minimize or eliminate the potential for soil erosion or loss of topsoil during operation of the project. As a result, potential impacts related to substantial soil erosion or 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 offsite landslide, lateral spreading, subsidence, liquefaction or collapse?

Less Than Significant Impact. As described above, the project site is relatively level, and does not contain nor is adjacent to any significant slope or hillside area. The project would not create slopes. Thus, on or off-site landslides would not occur from implementation of the project.

Lateral spreading, a phenomenon associated with seismically-induced soil liquefaction, is a display of lateral displacement of soils due to inertial motion and lack of lateral support during or post liquefaction. It is typically exemplified by the formation of vertical cracks on the surface of liquefied soils, and usually takes place on gently sloping ground or level ground with nearby free surface such as drainage or stream channel. The Geotechnical Investigation describes that the depth of groundwater is in excess of 190 feet below the ground surface and the onsite soils consist of dense to very dense old alluvial fan deposits, which are not potentially liquefiable. Thus, the soils are not susceptible to lateral spreading (GEO 2019) and impacts related to liquefaction and lateral spreading would not occur.

Subsidence is a general lowering of the ground surface over a large area that is generally attributed to lowering of the ground water levels within a groundwater basin. Localized or focal subsidence or settlement of the ground can occur as a result of earthquake motion in an area where groundwater in a basin is lowered. As described previously, the depth of groundwater is in excess of 190 feet below the ground surface and the project would not pump water from the project area

(as further described below), impacts related to subsidence would not occur from implementation of the project.

Seismic related ground failure or settlements can occur within loose to moderately dense, dry or saturated granular soil. The Geotechnical Investigation identified that the undocumented fill and upper portion of the very old alluvium on the site are considered susceptible to seismically-induced settlement of up to 2.2 percent. The Geotechnical Investigation recommends that the upper 12 inches of soils providing foundations for buildings and pavement areas be overexcavated and recompacted pursuant to the CBC compaction regulations. With implementation of the overexcavation requirements per the CBC, as included as PPP GEO-1, the potential for settlement or collapse of soils would be reduced to a less than significant level. Therefore, compliance with the requirements of the CBC as identified in the site geotechnical design recommendations that would be reviewed by the City for appropriate inclusion, as part of the permitting process, would reduce potential impacts related to ground collapse 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?

Less Than Significant Impact. Expansive soils contain certain types of clay minerals that shrink or well as the moisture content changes; the shrinking or swelling can shift, crack, or break structures built on such soils. Arid or semiarid areas with seasonal changes of soil moisture experiences, such as southern California, have a higher potential of expansive soils than areas with higher rainfall and more constant soil moisture.

The Geotechnical Investigation describes that the project site's older alluvium generally consists of silty or clayey sands with lesser amounts of sandy silts and sandy clays, and testing results indicate that these soils have a "very low" expansion potential (GEO 2019). In addition, as described previously, the project would be required to be constructed in compliance with the CBC and the City's Municipal Code (included as PPP GEO-1), that requires appropriate back fill, compaction of soils, and foundation design to ensure stable soils, which would be verified through the City's permitting process. Thus, impacts related to expansive soils would be less than significant.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No Impact. No septic tanks or alternative wastewater disposal systems are proposed. Therefore, no impacts related to the use of such facilities would occur from implementation of the project.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less Than Significant with Mitigation Incorporated. The paleontological study (Appendix E) prepared for the project did not identify any fossils within the project site; however, nearby fossils have been found in the same sedimentary deposits as within the project site. The paleontological study identified 7 previously found fossils localities within 5 miles of the project site. The closest vertebrate fossil locality from similar deposits is just west of the Jack Rabbit Trail, to the east-southeast of the project site. In addition, the Riverside County Land Information System (RCLIS) GIS data indicates that the project site is within an area with a high potential (High B) for paleontological resources within 5 feet of the ground surface (MCC 2019). Project excavation has the potential to

reach paleontologically sensitive deposits, and, as a result, could impact paleontological resources. Thus, Mitigation Measure GEO-1 (MM GEO-1) is included to provide a paleontological resource monitoring plan that requires monitoring for excavations deeper than 5 feet, provides procedures to follow for monitoring and fossil discovery, and requires a curation agreement with an appropriate, accredited institution. With implementation of Mitigation Measure CUL-1, impacts related to paleontological resources would be less than significant.

Existing Plans, Programs, or Policies

PPP GEO-1: California Building Code. The project is required to comply with the California Building Code as included in the City's Municipal Code Chapter 8.20 to preclude significant adverse effects associated with seismic hazards. California Building Code related and geologist and/or civil engineer specifications for the project are required to be incorporated into grading plans and specifications as a condition of project approval.

PPP WQ-1: Stormwater Pollution Prevention Plan, provided in Section 10, Hydrology and Water Quality.

PPP WQ-2: Water Quality Management Plan, provided in Section 10, Hydrology and Water Quality.

Mitigation Measures

Mitigation Measure GEO-1: Paleontological Resources. Prior to the issuance of the first grading permit, the applicant shall provide a letter to the City of Moreno Valley Building and Safety Division, or designee, from a paleontologist selected from the roll of qualified paleontologists maintained by Riverside County, stating that the paleontologist has been retained to provide services for the project. The paleontologist shall develop a Paleontological Resources Impact Mitigation Plan (PRIMP) to mitigate the potential impacts to unknown buried paleontological resources that may exist onsite for the review and approval by the City. The PRIMP shall require that the paleontologist be present at the pre-grading conference to establish procedures for paleontological resource surveillance. The PRIMP shall require paleontological monitoring of excavation that exceeds depths of four feet. The PRIMP shall state that the project paleontologist may re-evaluate the necessity for paleontological monitoring after 50 percent or greater of the excavations deeper than four feet have been completed.

In the event that paleontological resources are encountered, ground-disturbing activity within 100 feet of the area of the discovery shall cease. The paleontologist shall examine the materials encountered, assess the nature and extent of the find, and recommend a course of action to further investigate and protect or recover and salvage those resources that have been encountered.

Criteria for discard of specific fossil specimens will be made explicit. If a qualified paleontologist determines that impacts to a sample containing significant paleontological resources cannot be avoided by project planning, then recovery may be applied. Actions may include recovering a sample of the fossiliferous material prior to construction, monitoring work and halting construction if an important fossil needs to be recovered, and/or cleaning, identifying, and cataloging specimens for curation and research purposes. Recovery, salvage and treatment shall be done at the applicant's expense. All recovered and salvaged resources shall be prepared to the point of identification and permanent preservation by the paleontologist. Resources shall be identified and

curated into an established accredited professional repository. The paleontologist shall have a repository agreement in hand prior to initiating recovery of the resource.

Sources

Geotechnical Investigation and Percolation Test Results, Kia Moreno Valley East of Moreno Beach Drive and Auto Mall Way, Moreno Valley, California. Prepared by Geocon West, Inc. 2019 (GEO 2019) (Appendix D).

Phase I Paleontological Resources Assessment: Cars Pros Kia Project, The City of Moreno Valley, Riverside County, California. Prepared by Material Culture Consulting, 2019 (MCC 2019) (Appendix E).

City of Moreno Valley General Plan Safety Element. Accessed: http://www.moreno-valley.ca.us/city_hall/general-plan/06gpfinal/gp/6-safety.pdf

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
8. GREENHOUSE GAS EMISSIONS. Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

The discussion below is based on the Air Quality and Greenhouse Gas Assessment Report, prepared by Vince Mirabella, included as Appendix A.

Explanation

Constituent gases of the Earth's atmosphere, called atmospheric greenhouse gases (GHGs), play a critical role in the Earth's radiation amount by trapping infrared radiation from the Earth's surface, which otherwise would have escaped to space. Prominent greenhouse gases contributing to this process include carbon dioxide (CO_2), methane (CH_4), ozone (O_3), water vapor, nitrous oxide (N_2O), and chlorofluorocarbons (CFCs). This phenomenon, known as the Greenhouse Effect, is responsible for maintaining a habitable climate. Anthropogenic (caused or produced by humans) emissions of these greenhouse gases in excess of natural ambient concentrations are responsible for the enhancement of the Greenhouse Effect and have led to a trend of unnatural warming of the Earth's natural climate, known as global warming or climate change. Emissions of gases that induce global warming are attributable to human activities associated with industrial/manufacturing, agriculture, utilities, transportation, and residential land uses.

Section 15364.5 of the California Code of Regulations defines GHGs to include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. Transportation is responsible for 37 percent of the state's greenhouse gas emissions, followed by electricity generation. Emissions of CO_2 and N_2O are byproducts of fossil fuel combustion. Methane, a potent greenhouse gas, results from off-gassing associated with agricultural practices and landfills. Sinks of CO_2, where CO_2 is stored outside of the atmosphere, include uptake by vegetation and dissolution into the ocean.

California has passed several bills and the Governor has signed at least three executive orders regarding greenhouse gases. GHG statues and executive orders (EO) include AB 32, SB 1368, EO S-03-05, EO S-20-06 and EO S-01-07. These regulations require the use of alternative energy, such as solar power. Solar projects produce electricity with no GHG emissions and assist in offsetting GHG emissions produced by fossil-fuel-fired power plants.

Thresholds

The City of Moreno has not adopted a specific numerical significance threshold for GHGs. The analysis methodologies from SCAQMD are used in evaluating potential impacts related to GHG from implementation of the proposed project. SCAQMD does not have approved thresholds; however, does have thresholds that provides a tiered approach to evaluate GHG impacts. For this analysis the Tier 3 All Land Use Types: 3,000 $MTCO_2e$ per year threshold has been utilized.

In addition, SCAQMD methodology for project's construction are to average them over 30-years and then add them to the project's operational emissions to determine if the project would exceed the screening values listed above.

Climate Action Plan

The City of Moreno Valley adopted an Energy Efficiency and Climate Action Strategy document in 2012. The Energy Efficiency and Climate Action Strategy is a policy document which identifies ways that the City can reduce energy and water consumption and GHG emissions as an organization (its employees and the operation of its facilities) and outlines the actions that the City can encourage and community members can employ to reduce their own energy and water consumption and GHG emissions. The project involves the construction and operation of an automobile dealership that would fall under the scope of these policies.

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less Than Significant Impact. Global climate change describes alterations in weather features (e.g., temperature, wind patterns, precipitation, and storms) that occur across the Earth as a whole. Climate change is not confined to a particular project area and is generally accepted as the consequence of global industrialization over the last 200 years. A typical project, even a very large one, does not generate enough GHG emissions on its own to influence global climate change significantly; hence, the issue of global climate change is, by definition, a cumulative environmental impact.

The principal GHGs of concern contributing to the greenhouse effect are CO2, CH4, N2O, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. GHGs are produced by both direct and indirect emissions sources. Direct emissions include consumption of natural gas, heating and cooling of buildings, landscaping activities and other equipment used directly by land uses. Indirect emissions include the consumption of fossil fuels for vehicle trips, electricity generation, water usage, and solid waste disposal. The large majority of GHG emissions generated from residential projects are related to vehicle trips.

Construction

During construction, temporary sources of GHG emissions include construction equipment and workers' commutes to and from the site. As shown on Table GHG-1, the project would generate a total of approximately 19 MTCO2e per year from construction emissions amortized over 30 years and added to the operational emissions per SCAQMD methodology.

Table GHG-1: Construction Greenhouse Gas Emissions

Pollutant	Construction (lbs/day)
Construction	575
Amortized over 30 years[1]	**19**

Source: Air Quality and Greenhouse Gas Assessment Report

Operation

During operations, the project would generate long-term GHG emissions from vehicular trips; water, natural gas, and electricity consumption; and solid waste generation. Natural gas use results in the emission of 2 GHGs: CH4 (the major component of natural gas) and CO2 (from the combustion of natural gas). Electricity use can result in GHG production if the electricity is generated by combusting fossil fuel. The proposed project would develop an automotive dealership with a sales and service facility. The large majority of GHG emissions generated from the project are from mobile source emissions coming from vehicle trips to and from the project site. Table GHG-2 shows the operational emissions for the project. The construction and operation of the project would result in an increase in GHG emissions of 1,338 MTCO2e per year which would not exceed the significance threshold of 3,000 MTCO2e per year. Therefore, the project would not result in an exceedance of the SCAQMD threshold, and impacts would be less than significant.

Table GHG-2: Project Greenhouse Gas Emissions

Source	Annual MT CO_2e
Area	0
Energy	241
Mobile	993
Waste	76
Water	29
Total	**1,319**
Construction (amortized over 30 years)	**19**
Total	**1,338**
Threshold	3,000
Exceed Threshold?	**No**

Notes: MT CO_2e = metric tons of carbon dioxide equivalents
Source: Air Quality and Greenhouse Gas Assessment Report

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

No Impact. The proposed project would result in development of new commercial uses on the project site. The design of the building would comply with state and federal programs that are designed to be energy efficient. The proposed project would comply with all mandatory measures under the California Title 24, California Energy Code, and the CALGreen Code (as provided in Chapter 8.20 of the City's Municipal Code and included as PPP GHG-1) through the City's building permitting processes, which would provide for energy efficient infrastructure and limited GHG emissions.

In addition, the CARB Scoping Plan provides strategies to reduce GHG emissions that are applicable to the proposed project. Emissions from vehicles, which are the main source of operational GHG emissions associated with the project (as shown in Table GHG-2), would be reduced through implementation of the state and federal fuel and vehicle emission standards. In addition, the project would not exceed the screening threshold, as shown in Table GHG-2. Therefore, implementation of the proposed project would not conflict with existing plans, policies, and regulations adopted for the purpose of reducing the emissions of greenhouse gas, and impacts would not occur.

Existing Plans, Programs, or Policies

PPP GHG-1: CalGreen Compliance. The project is required to comply with the CalGreen Building Code as included in the City's Municipal Code to ensure efficient use of energy. CalGreen specifications are required to be incorporated into building plans as a condition of building permit approval.

Mitigation Measures

No mitigation measures related to greenhouse gas emissions are required.

Sources

Air Quality and Greenhouse Gas Assessment Report, Car Pros Kia Dealership Project, City of Moreno Valley, California, 2019. Prepared by Vince Mirabella. (Appendix A).

City of Moreno Valley Energy Efficiency and Climate Action Strategy. Accessed at: http://www.moval.org/pdf/efficiency-climate112012nr.pdf

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
9. 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?	☐	☐	☒	☐
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?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☐	☒

The discussion below is based on the Phase I Environmental Site Assessment, 2018, prepared by Hazard Management Consulting, Inc. (Phase I 2018), which is included as Appendix F.

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

Less Than Significant Impact. A hazardous material is defined as any material that, due to its quantity, concentration, or physical or chemical characteristics, poses a significant present or

potential hazard to human health and safety or to the environment if released into the environment. Hazardous materials include, but are not limited to, hazardous substances, hazardous wastes, and any material that regulatory agencies have a reasonable basis for believing would be injurious to the health and safety of persons or harmful to the environment if released into the home, workplace, or environment. Hazardous wastes require special handling and disposal because of their potential to damage public health and the environment.

Construction
The proposed construction activities would involve the transport, use, and disposal of hazardous materials such as paints, solvents, oils, grease, and caulking. In addition, hazardous materials would be needed for fueling and servicing construction equipment on the site. These types of materials are not acutely hazardous, and all storage, handling, use, and disposal of these materials are regulated by federal and state requirements, which the project construction activities are required to strictly adhere to. These regulations include: the federal Occupational Safety and Health Act and Hazardous Materials Transportation Act; Title 8 of the California Code of Regulations (CalOSHA), and the state Unified Hazardous Waste and Hazardous Materials Management Regulatory Program. As a result, the routine transport, use or disposal of hazardous materials during construction activities of the project would be less than significant.

Operation
The proposed project would operate a new automobile dealership, which includes a service facility that would use, store, and dispose of hazardous materials for auto repair/maintenance including: motor oil, brake fluid, transmission fluid, and hydraulic fluid. In addition, hazardous substances may be used for routine cleaning, building maintenance, landscaping, and pest repellent. However, all hazardous materials would be contained, stored, used, and disposed of in accordance with the manufacturer's instructions and handled in compliance with the applicable regulations, such as the Hazardous Materials Transportation Act (Title 42, Section 11022 of the United States Code), which is the principal federal law that regulates the transportation of hazardous materials; California Hazardous Materials Release Response Plans and Inventory Law (Health and Safety Code Section 25500 et. seq.) that governs hazardous materials handling, reporting, employee training, and agency oversight; and the California Health and Safety Code Chapter 6.95, which establishes standards for Hazardous Materials Business Plans for operations that handle quantities of hazardous materials.

Adherence to these existing regulations that were implemented to avoid and/or limit potential impacts on the environment would reduce potential impacts related to routine transport, use, or disposal of hazardous materials to a less than significant level.

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?

Less Than Significant Impact.

Construction
As described above, construction of the proposed project would involve the limited use and disposal of hazardous materials. Equipment that would be used in construction of the project has the potential to release gas, oils, greases, solvents; and spills of paint and other finishing substances. However, the amount of hazardous materials onsite would be limited, and construction activities would be required to adhere to all applicable regulations regarding hazardous materials storage and

handling, as well as to implement construction BMPs (through implementation of a required SWPPP implemented by PPP WQ-1) to prevent a hazardous materials release and to promptly contain and clean up any spills, which would minimize the potential for harmful exposures. With compliance to existing laws and regulations, which is mandated by the City through construction permitting, the project's construction-related impacts would be less than significant.

Operation
As described previously, the proposed project would operate a new automobile dealership, which includes a service facility that would use, store, and dispose of hazardous materials for auto repair/maintenance including motor oil, brake fluid, transmission fluid, and hydraulic fluid. In addition, hazardous substances may be used for routine cleaning, building maintenance, landscaping, and pest repellent. However, all hazardous materials would be contained, stored, used, and disposed of in accordance with the manufacturer's instructions and handled in compliance with the applicable federal and state regulations. Adherence to these existing regulations that were implemented to avoid and/or limit potential impacts on the environment would reduce potential impacts related to reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment to a less than significant level.

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

Less Than Significant Impact. The project site is 0.94 mile east of the closest school (Valley View High School), approximately 1 mile from the Audeo Charter School, and 1.27 miles east of Moreno Elementary School. Thus, the proposed project is not within one-quarter mile of an existing school. In addition, typical transportation to the project site would be to and from SR-60 via Moreno Beach Drive, which would not pass by any school facilities. Furthermore, construction and operation of the project would involve the use, storage and disposal of small amounts of hazardous materials on the project site. These hazardous materials would be limited and used and disposed of in compliance with federal, state, and local regulations, which would reduce the potential for accidental release into the environment near the school. The emissions that would be generated from construction and operation of the project were evaluated in the air quality analysis discussed above, and the emissions generated from the project would not cause or contribute to an exceedance of the federal or state air quality standards. Thus, the project would not emit hazardous or handle acutely hazardous materials, substances, or waste near the school, and impacts would be less than significant.

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?

No Impact. The Phase I Environmental Site Assessment (Phase I 2019) prepared for the project conducted a database search to determine if the project site or any nearby properties are identified as having hazardous materials. The Phase I record search determined that the project site is not located on or near by a site which is included on a list of hazardous materials sites. As a result, impacts related to hazards from being located on or adjacent to a hazardous materials site would not occur from implementation of the proposed project.

e) For a project 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?

No Impact. The project site is not within 2 miles of an airport. The closest airport is the March Air Reserve Base that is located approximately 5.36 miles southwest of the project site. The project site is not located within any land use compatibility zone for the nearest airport, nor is it within an airport safety zone. Therefore, the project would not result in a safety hazard for people residing or working in the project area, and no impacts would occur.

f) Impair implementation of an adopted emergency response plan or emergency evacuation plan?

Less Than Significant Impact.

Construction
The proposed construction activities, including equipment and supply staging and storage, would occur within the project site and would not restrict access of emergency vehicles to the project site or adjacent areas. During construction of the project driveways Auto Mall Drive and Moreno Beach Drive would remain open to ensure adequate emergency access to the project area and vicinity, and impacts related to interference with an adopted emergency response of evacuation plan during construction activities would be less than significant.

Operation
Operation of the proposed project would also not result in a physical interference with an emergency response evacuation. Direct access to the project site would be provided from Auto Mall Drive and Pettit Street, which are adjacent to the project site. The project is also required to design and construct internal access and provide fire suppression facilities (e.g., hydrants and sprinklers) in conformance with the City Municipal Code and the Fire Department would review the development plans prior to approval to ensure adequate emergency access pursuant to the requirements in Section 503 of the California Fire Code (Title 24, California Code of Regulations, Part 9, included in the City's Municipal Code (Chapter 8.36, Fire Code). As a result, the proposed project would not impair implementation of or physically interfere with an adopted emergency response plan 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?

No Impact. The project site is not located within a fire hazard area (Moreno Valley General Plan FEIR Figure 5.5-2). The project would be required to adhere to the California Fire Code (included as Municipal Code Chapter 8.36, Fire Code), and would be reviewed by the Fire Department during the project permitting process to ensure that the project plans meet the fire protection requirements. Therefore, the proposed project would not expose people or structures to a significant risk of loss, injury, or death from wildfires.

Existing Plans, Programs, or Policies

PPP WQ-1: Stormwater Pollution Prevention Plan, provided in Section 10, Hydrology and Water Quality.

Mitigation Measures

No mitigation measures related to hazards and hazardous materials are required.

Sources

City of Moreno Valley, General Plan Final Program Environmental Impact Report, Section 5.5 Hazards. July 2006. Accessed: http://www.moreno-valley.ca.us/city_hall/general-plan/06gpfinal/ieir/5_5-hazards.pdf

Phase I Environmental Site Assessment, Vacant Land, APN 488-390-015-4 & 488-390-016-5, Moreno Valley, California. Prepared by Hazard Management Consulting, Inc. July 27, 2018. (HMC 2018) (Appendix F)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
10. 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?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
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; or	☐	☐	☒	☐
iv) impede or redirect flood flows?	☐	☐	☒	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	☒

The discussion below is based on the Preliminary Drainage Study, 2019, prepared by Kimley-Horn and Associates (Drainage 2019) (Appendix G) and the Preliminary Project Specific Water Quality Management Plan (WQMP 2019) (Appendix H), prepared by Kimley-Horn and Associates (WQMP 2019).

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Less Than Significant Impact.

Construction

Construction of the project would require grading and excavation of soils, which would loosen sediment, and then have the potential to mix with surface water runoff and degrade water quality. Additionally, construction would require the use of heavy equipment and construction-related chemicals, such as concrete, cement, asphalt, fuels, oils, antifreeze, transmission fluid, grease, solvents and paints. These potentially harmful materials could be accidentally spilled or improperly disposed of during construction and, if mixed with surface water runoff, could wash into and pollute waters.

These types of water quality impacts during construction of the project would be prevented through implementation of a stormwater pollution prevention plan (SWPPP). Construction of the project would disturb more than one acre of soil; therefore, the proposed project would be required to obtain coverage under the NPDES General Permit for Discharges of Storm Water Associated with Construction Activity. Construction activity subject to this permit includes clearing, grading, and ground disturbances such as trenching, stockpiling, or excavation. The Construction General Permit requires implementation of a SWPPP that is required to identify all potential sources of pollution that are reasonably expected to affect the quality of storm water discharges from the construction site. The SWPPP would generally contain a site map showing the construction perimeter, proposed buildings, stormwater collection and discharge points, general pre- and post-construction topography, drainage patterns across the site, and adjacent roadways. The SWPPP would also include construction BMPs such as:

- Silt fencing, fiber rolls, or gravel bags,
- Street sweeping and vacuuming
- Storm drain inlet protection
- Stabilized construction entrance/exit
- Vehicle and equipment maintenance, cleaning, and fueling
- Hydroseeding
- Material delivery and storage
- Stockpile management
- Spill prevention and control
- Solid waste management
- Concrete waste management

Adherence to the existing requirements and implementation of the appropriate BMPs as ensured through the City's construction permitting process are included as PPP WQ-1, which would ensure that the project would not violate any water quality standards or waste discharge requirements, potential water quality degradation associated with construction activities would be minimized, and impacts would be less than significant.

Operation

The project would operate a new automotive dealership sales and service facility, which would introduce the potential for pollutants such as, chemicals from household cleaners, nutrients from fertilizer, pesticides and sediments from landscaping, trash and debris, and oil and grease from vehicles. These pollutants could potentially discharge into surface waters and result in degradation

of water quality. Thus, the project would be required to comply with existing regulations that limit the potential for pollutants to discharge from the site.

Stormwater/Urban Runoff Management and Discharge Controls, includes as Chapter 8.10 of the City's Municipal Code (and PPP WQ-2) requires implementation of Water Quality Management Plan (WQMP) based on the anticipated pollutants that could result from the project. The BMP would include pollutant source control features and pollutant treatment control features. In addition, the City requires the project to infiltrate, evapotranspire, or biotreat/biofilter the 85th percentile 24-hour storm event. Project drainage would be comprised of two drainage subareas, where runoff would drain to a bio-filtration system via underground storm drain pipes. The biotreatment would remove pollutants (i.e., sediments, nutrients, heavy metals, oxygen demanding substances, oil and grease, bacteria, and pesticides) prior to discharge into the existing storm drain system.

With implementation of the WQMP, pursuant to the City Municipal Code, (included as PPP WQ-2); which would be verified during the permitting process for the proposed project, potential pollutants would be reduced to the maximum extent feasible, and development of the proposed project would not violate any water quality standards or waste discharge requirements, and 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?

Less Than Significant Impact. The project is within the service boundaries of, and would be served by, the Eastern Municipal Water District. The Water District operates several groundwater wells within the San Jacinto Groundwater Basin. The Basin is managed by the Water District, which regulates the amount of groundwater pumped from the Basin and sets the Basin Production Percentage for all pumpers. In addition, the project would not extract groundwater. Thus, the proposed project would not result in the lowering of the local groundwater table, and 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;

Less Than Significant Impact. The project site does not contain, nor is adjacent to, a stream, river, creek, or other flowing water body. Thus, impacts related to alteration of the course of a stream or river would not occur. The project site has varying topography and generally drains to the east. An existing retaining wall on the eastern property line conveys runoff to the north onto Pettit Street via the northeast corner of the site. The storm water continues east via surface flow until it reaches the Quincy Street channel (WQMP 2019).

Construction
Construction of the project would require grading and excavation of soils, which would loosen sediment and could result in erosion or siltation. However, as described previously, construction of the proposed project requires City approval of a SWPPP

prepared by a Qualified SWPPP Developer, as included by PPP WQ-1. The SWPPP is required by City's Land Development Division, prior to provision of permits for the project, and would include construction BMPs to reduce erosion or siltation. Typical BMPs for erosion or siltation, include use of silt fencing, fiber rolls, gravel bags, stabilized construction driveway, and stockpile management (as described in the previous above). Adherence to the existing requirements and implementation of the required BMPs per the permitting process would ensure that erosion and siltation associated with construction activities would be minimized, and impacts would be less than significant.

Operation
The 6.35-acre project site is currently undeveloped and pervious. After development of the project, the site would have a total of 225,635 square feet of impervious surfaces. Pervious areas onsite would be landscaped and would not generate soils that could erode. In addition, the proposed drainage infrastructure would slow and retain stormwater, which would also limit the potential for erosion or siltation. Also, as described previously, the City requires the project to implement a WQMP (as included by PPP WQ-2) that would implement BMPs, which reduce erosion and siltation. As a result, stormwater runoff and the potential for erosion and siltation would not increase with implementation of the proposed project. Therefore, the proposed project would not alter the existing drainage pattern in the project area and would not result in substantial erosion or siltation on- or off-site. Impacts would be less than significant.

ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;

Less Than Significant Impact. As described in the previous response, the project site does not contain, nor is adjacent to, a stream, river, creek, or other flowing water body. Thus, impacts related to alteration of the course of a stream or river would not occur. In addition, the proposed project would be required to implement a SWPPP (included as PPP WQ-1) during construction that would implement BMPs, such as the use of silt fencing, fiber rolls, and gravel bags, that would ensure that runoff would not substantially increase during construction, and flooding on or off-site would not occur.

Also, as described above, the project would implement an operational WQMP (as included by PPP WQ-2) that would install an onsite storm drain system and biotreatment devices such as catch basin planters and tree box filters that would infiltrate, evapotranspire, or biotreat/biofilter the 85th percentile 24-hour storm event. Thus, operation of the proposed project would not substantially increase stormwater runoff, and flooding on or off-site would not occur.

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; or

Less Than Significant Impact. As described in the previous responses, the proposed project would be required to implement a SWPPP (included as PPP WQ-1) during construction that would implement BMPs, such as the use of silt fencing, fiber rolls, and gravel bags, that would ensure that runoff would not substantially increase during construction, and that pollutants would not discharge from the project site, which would

reduce potential impacts to drainage systems and water quality to a less than significant level.

Also, the project would implement an operational WQMP (included as PPP WQ-2) that would install an onsite storm drain system and biotreatment devices such as biofiltration planters as part of the project, that would infiltrate, evapotranspire, or biotreat/biofilter the 85th percentile 24-hour storm event. Thus, operation of the proposed project would not substantially increase stormwater runoff, and pollutants would be filtered onsite. Impacts related to drainage systems and polluted runoff would be less than significant with implementation of the existing requirements, which would be verified during the permitting process.

iv. Impede or redirect flood flows?

Less Than Significant Impact. The project site is located in Zone X per the Federal Emergency Management Administration (FEMA) Flood Insurance Rate Map (FIRM) panel 06065C0770G (Kimley-Horn 2019). Flood Zone X is defined by FEMA as the area determined to be outside the 500-year flood. In addition, no portion of the site is located with the special flood hazard area inundated by the 100-year flood (Kimley-Horn 2019). Thus, the proposed project would not impede or redirect flood flows, and impacts would not occur.

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

No Impact. A seiche is a surface wave created when an inland body of water is shaken, usually by earthquake activity. The site also is not subject to flooding hazards associated with a seiche because the nearest large body of surface water, Lake Perris, is located 5.1 miles south of the site and is too far away from the project site to result in effects related to a seiche, which could result in release in pollutants due to inundation of the site.

The Pacific Ocean is located more than 45 miles southwest of the project site; consequently, there is no potential for the project site to be inundated by a tsunami that could release pollutants. In addition, the project site is flat and not located near any steep hillsides; therefore, there is no potential for the site to be adversely affected by mudflow. Thus, implementation of the proposed project would not expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow that could release pollutants due to inundation of the project site. No impact would occur.

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

No Impact. As described previously, the project would be required to have an approved SWPPP, which would include construction BMPs to minimize the potential for construction related sources of pollution. For operations, the proposed project would be required to implement source control BMPs to minimize the introduction of pollutants; and treatment control BMPs to treat runoff. With implementation of the operational source and treatment control BMPs that would be required by the City during the project permitting and approval process (pursuant to PPP WQ-1 and PPP WQ-

2), potential pollutants would be reduced to the maximum extent feasible, and implementation of the proposed project would not obstruct implementation of a water quality control plan.

As described previously, water supplies are provided by the Eastern Municipal Water District that extracts water from the San Jacinto Groundwater Basin. Groundwater pumping is regulated through a Basin Production Percentage to ensure the groundwater supply is sustainable. In addition, the project would not extract groundwater. Thus, the proposed project would not result in the lowering of the local groundwater table, and impacts would be less than significant.

Existing Plans, Programs, or Policies

PPP WQ-1: Stormwater Pollution Prevention Plan. Prior to grading permit issuance, the project developer shall have a Stormwater Pollution Prevention Plan (SWPPP) prepared by a Qualified SWPPP Developer (QSD) in accordance with the City's Municipal Code Chapter 8.10 and the Santa Ana Regional Water Quality Control Board National Pollution Discharge Elimination System (NPDES) Storm Water Permit Order No. R4-2012-0175 (MS4 Permit). The SWPPP shall incorporate all necessary Best Management Practices (BMPs) and other NPDES regulations to limit the potential of erosion and polluted runoff during construction activities. Project contractors shall be required to ensure compliance with the SWPPP and permit periodic inspection of the construction site by the City of Moreno Valley staff or its designee to confirm compliance.

PPP WQ-2: Water Quality Management Plan, Prior to grading permit issuance, the project applicant shall have a Water Quality Management Plan (WQMP) approved by the City for implementation. The project shall comply with the City's Municipal Chapter 8.10 and the Municipal Separate Storm Sewer System (MS4) permit requirements in effect for the Regional Water Quality Control Board (RWQCB) at the time of grading permit to control discharges of sediments and other pollutants during operations of the project.

Mitigation Measures

No mitigation measures related to hydrology and water quality are required.

Sources

Geotechnical Investigation and Percolation Test Results, Kia Moreno Valley East of Moreno Beach Drive and Auto Mall Way, Moreno Valley, California. Prepared by Geocon West, Inc. 2019 (GEO 2019) (Appendix D).

Preliminary Drainage Study, Car Pros-Kia Sales and Service Facility, 2019. Kimley-Horn and Associates. (Appendix G)

Preliminary Project Specific Water Quality Management Plan, 2019. Prepared by Kimley-Horn and Associates. (Appendix H)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
11. LAND USE AND PLANNING. Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
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?	☐	☐	☐	☒

a) Physically divide an established community?

No Impact. The physical division of an established community could occur if a major road (expressway or freeway, for example) were built through an existing community or neighborhood, or if a major development was built which was inconsistent with the land uses in the community such that it divided the community. The environmental effects caused by such a facility or land use could include lack of, or disruption of, access to services, schools, or shopping areas. It might also include the creation of blighted buildings or areas due to the division of the community.

The proposed project site is vacant and surrounded by a combination of developed areas including multi-family residential across Moreno Beach Drive from the project site and automotive related uses to the north of the site and undeveloped land to the east. The project would result in development of the vacant site. As further described below, the proposed project is consistent with the General Plan land use and zoning designations of the site as an automotive use consistent with other automotive uses to the north. The project would also be consistent with the existing automotive uses to the north of the project site. Thus, the project would not divide an established community, and impacts would not occur.

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?

No Impact. The project site is located within the Moreno Valley Auto Mall Specific Plan (SP-209) and has land use and zoning designations of Commercial. The project site is located within Planning Area C of SP-209, which allows auto and other vehicular related uses with approval of a plot plan per Municipal Code 9.02.070. SP-209 was adopted to provide for the development of automobile sales uses, auto related uses, office, manufacturing, commercial recreation, and commercial uses.

The proposed project would develop a new automotive dealership on the project site, which would be consistent with the existing Commercial designations of the project site. In addition, the City's permitting process would ensure that the project complies with the applicable Specific Plan and Municipal Code requirements. Thus, impacts related to conflict with a policy adopted for the purpose of avoiding or mitigating an environmental effect would not occur.

Existing Plans, Programs, or Policies

There are no impact reducing Plans, Programs, or Policies related to land use and planning that are applicable to the project.

Mitigation Measures

No mitigation measures related to land use and planning are required.

Sources

City of Moreno Valley, General Plan, 2006. Accessed: http://www.moreno-valley.ca.us/city_hall/general_plan.shtml

City of Moreno Valley, Specific Plan 209 Amendment No. 5, Moreno Valley Auto Mall Specific Plan. Accessed: http://www.moreno-valley.ca.us/cdd/specificplans/sp209-5_20110915083050.pdf

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
12. 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?	☐	☐	☐	☒
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?	☐	☐	☐	☒

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?

No Impact. The project site is located in Mineral Resource Zone 3 (MRZ-3), according to the Mineral Land Classification Map provided by the California Department of Conservation. The MRZ-3 zone within the Significant Mineral Aggregate Resource Area (SMARA) Study Area is defined as areas containing mineral deposits which the significance cannot be evaluated from available data.

The City's General Plan EIR states that no locally, regionally, or statewide significant mineral resources are located within the City. Therefore, development of the site would not result in the loss of availability of a known mineral resource that would be of value to the region, and impacts would not occur.

b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on the general plan, specific plan or other land use plan?

No Impact. As described in the previous response, the City's General Plan EIR states that no locally, regionally, or statewide significant mineral resources are located within the City. Therefore, implementation of the project would not result in the loss of locally important mineral resources, and impacts would not occur.

Existing Plans, Programs, or Policies

There are no impact reducing Plans, Programs, or Policies related to mineral resources that are applicable to the project.

Mitigation Measures

No mitigation measures related to mineral resources are required.

Sources

City of Moreno Valley, General Plan, Conservation Element, Section 7.8 Mineral Resources.

Mineral Land Classification Map, Aggregate Resources Only, San Bernardino P-C Region, Sunnymead Quadrangle, Special Report 143.

State of California Department of Conservation. Division of Mines and Geology. Special Report 143, Mineral Land Classification of the Greater Los Angeles Area, Part IV Classification of Sand and Gravel Resource Areas, San Bernardino Production-Consumption Region, 1984. Accessed: https://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=mlc

City of Moreno Valley General Plan EIR Section 5.14, Mineral Resources. Accessed: http://www.moreno-valley.ca.us/city_hall/general-plan/06gpfinal/ieir/5_14-min-resources.pdf

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
13. 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?	☐	☐	☒	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
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?	☐	☐	☐	☒

The discussion below is based on the Noise Impact Analysis, 2019, prepared by Vista Environmental (Noise 2019), which is included as Appendix I.

City of Moreno Valley Municipal Code

Sound level limits: Chapter 11.80.03 of the City's Municipal Code establishes maximum noise levels permitted within the city, which are listed in Table N-1:

Table N-1: City of Moreno Valley Maximum Continuous Sound Levels

Duration per Day (Continuous Hours)	Sound Level [dBA]
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
.5	110
.25	115

Source: Noise Impact Analysis, 2019

Sensitive Receptor Noise Levels: Chapter 11.80.03 of the City's Municipal Code establishes the permissible noise level that may be received at nearby sensitive uses (e.g., residential). For noise-sensitive residential properties 200 feet from the source, the exterior noise level shall not exceed

60 dBA during daytime hours (8:00 a.m. to 10:00 p.m.) and shall not exceed 55 dBA during the nighttime hours (10:01 p.m. to 7:59 a.m.) (Municipal Code, Chapter 11.80).

Construction Noise: Chapter 11.80.03 of the City's Municipal Code also provides construction noise standards, which state that 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 8:00 p.m. and 7:00 a.m. the following day such that the sound there from creates a noise disturbance.

Section 9.10.170 of the City's Municipal Code prohibits any vibration which can be felt at or beyond the property line.

Sensitive Receptors

The nearest sensitive receptors to the project site are the multi-family homes located as near as 180 feet to the southwest of the project site. The nearest offsite worker is located at Caliber Collison, that is as near as 265 feet northwest of the project site.

Existing Ambient Noise Levels

To identify the existing ambient noise levels in the project area, noise level measurements were taken on and adjacent to the project site on February 25-26, 2019. As shown on Table N-2, the average noise levels in the project area range from 71.9 dBA to 73.4 dBA. Table N-2 also shows that the both the daytime and nighttime noise levels at the nearby multi-family residential uses currently exceeds the City's residential noise standards of 60 dBA Leq during the daytime and 55 dBA Leq during the nighttime.

Table N-2: 24-Hour Ambient Noise Level Measurements

Site No.	Site Description	Average (dBA Leq)		1-hr Average (dBA Leq/Time)		Average (dBA CNEL)
		Daytime	Nighttime	Minimum	Maximum	
A	Southwest of the project site approximately 80 feet east of the Auto Mall Drive centerline and 100 feet south of the Moreno Beach Drive centerline	70.7	66.0	60.4 2:22 a.m.	74.1 6:36 p.m.	73.4
B	Located south of the project site on a palm tree approximately 450 feet east of the Auto Mall Drive centerline and 95 feet south of the Moreno Beach Drive centerline	69.6	64.7	58.6 2:21 a.m.	71.3 3:40 p.m.	71.9

Source: Noise Impact Analysis, 2019

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?

Less Than Significant Impact.

Construction

The construction activities for the proposed project are anticipated to include site preparation and grading of the 6.35-acre project site, building construction of the sales and service building, paving of the onsite driveways and parking areas, and application of architectural coatings. Noise impacts from construction activities associated with the proposed project would be a function of the noise

generated by construction equipment, equipment location, sensitivity of nearby land uses, and the timing and duration of the construction activities. The nearest sensitive receptors to the project site are the multi-family residences located as near as 180 feet to the southwest of the project site.

Table N-3 shows that the highest noise from construction would occur during the site preparation and grading phases when noise levels are anticipated to reach 70 dBA Leq at the nearest sensitive receptors (residences), which is below the City's 8-hour noise threshold of 90 dBA (Municipal Code Chapter 11.80.03). In addition, the project would comply with the allowable construction times pursuant to the City's Municipal Code, the construction-related noise levels would not exceed any standards. Therefore, construction noise impacts would be less than significant.

Table N-3: Construction Noise Levels at the Nearest Sensitive Receptor

Construction Phase	dBA Leq at 180 feet
Site Preparation	72
Grading	72
Building Construction	70
Paving	67
Painting	60
Threshold	**90**
Exceed Thresholds?	**No**

Source: Noise Impact Analysis, 2019

Operation

Development of the proposed project would result in the operation of an auto sales and service Car Pros Kia dealership. Potential noise impacts associated with the operations of the proposed project would be from project-generated vehicular traffic on the nearby roadways and from onsite activities.

Roadway Vehicular Noise

Vehicle noise is a combination of the noise produced by the engine, exhaust and tires. In order for project-generated vehicular traffic to increase the noise level by 3 dB the roadway traffic would have to double and for the noise levels to increase by 1.5 dB, the roadway traffic would have to increase by 50 percent (Noise 2019). Since the proposed project would only result in a maximum of a 2.6 percent increase on Moreno Beach Drive, the project-related roadway noise increases would not be audible. Thus, impacts related to traffic noise from the project would be less than significant.

Onsite Noise Sources

The operation of the proposed automotive service center would occur between 8:00 am to 6:00 pm, Monday through Saturday; and the sales department would also be open from 9:00 a.m. to 9:00 p.m. seven days a week. These operational hours would be within the City's "day" noise standards between the hours of 8:00 a.m. and 10:00 p.m. Operation of the project would generate noise from the service bays, rooftop mechanical equipment, car wash, and parking lot activities. As shown in Table N-4, the operational noise level from each source at the nearest off-site receptors would be lower than the City's noise standards. Therefore, operation of the proposed project would not increase ambient noise levels in excess of standards and impacts related to operational noise would be less than significant.

Table N-4: Operational Noise Levels at the Closest Receptors

Construction Phase	Nearest Residence		Nearest Commercial	
	Distance Receptor to Source (feet)	Noise Level (dBA Leq)	Distance Receptor to Source (feet)	Noise Level (dBA Leq)
Auto Service Bays	40	36	195	30
Parking Lot	30	31	49	28
Rooftop Equipment	50	39	145	32
Car Wash	15	58	120	49
Combined Noise Levels		58		49
City Noise Standards (8:00 a.m. – 10:00 p.m.)		60		65
Exceed City Standards?		**No**		**No**

Source: Noise Impact Analysis, 2019

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

Less Than Significant Impact.

Construction

Construction activity can result in varying degrees of ground vibration, depending on the equipment used on the site. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Vibrations at buildings results that range from no perceptible effects at the low levels to damage at the highest levels. Table N-5 gives estimated vibration levels for particular construction activities.

Table N-5: Vibration Source Levels for Construction Equipment

Equipment		Peak Particle Velocity (PPV) (inches/second)	Approximate Vibration Level (Lv) at 25 feet
Pile driver (impact)	Upper range Typical	1.518 0.644	112
Pile driver (sonic)	Upper range Typical	0.734 0.170	104
Clam shovel drop (slurry wall)		0.202	94
Vibration Roller		0.210	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: Noise Impact Analysis, 2019

The primary source of vibration during construction would be from the operation of a bulldozer, which would create a vibration level of 0.089 inch per second PPV at 25 feet. The vibration level at the nearest offsite receptor (180 feet away) would be 0.006 inch per second PPV. The vibration level at the nearest offsite receptor would be less than the 0.25 inch per second PPV threshold. Thus, impacts would be less than significant.

Operation
The proposed project would consist of operation of the automotive dealership. While groundborne vibration within and surrounding the project site may result from heavy-duty vehicular travel (e.g., refuse trucks, delivery trucks, and automobile transport trucks) on the nearby local roadways, this would not result in significant vibration impacts. As such, vibration associated with operation of the proposed project 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?

No Impact. The nearest airport is March Air Reserve Base, located approximately 5.3 miles southwest of the project site. The project site is located outside of the 60 dBA CNEL noise contours of the March Air Reserve Base. In addition, there are no private airstrips within the project's vicinity. Therefore, proposed project would not expose people residing or working in the project area to excessive noise levels from aircraft. No impact would occur from aircraft noise.

Existing Plans, Programs, or Policies

PPP N-1: Per Municipal Code Chapter 11.80.03 construction activity is limited to the hours of 7:00 a.m. and 8:00 p.m.

Mitigation Measures

No mitigation measures related to noise are required.

Sources

City of Moreno Valley Municipal Code. Accessed: https://qcode.us/codes/morenovalley/

Noise Impact Analysis, Car Pros Kia Dealership Project, City of Moreno Valley, prepared by Vista Environmental, 2019. (Vista 2019) (Appendix I)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
14. 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 roads or other infrastructure)?	☐	☐	☒	☐
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

a) Induce substantial unplanned population growth in an area, either directly or indirectly?

Less Than Significant Impact. The project site is located within the Auto Mall Specific Plan and is designated for commercial uses. The proposed project would develop the project site for automotive dealership uses, which is consistent with the existing land use designations. In addition, the project site is located within a developing area of the City, nearby other automotive uses, and directly accessible from the SR-60. Thus, the development of the project site for the proposed uses has been planned for and would not result in substantial unplanned population growth.

In addition, the proposed project does not include the extension of roads or other infrastructure. The project would be served by the existing adjacent roadway system, and utilities would be provided by the existing infrastructure that is located within the adjacent roadways. Therefore, the proposed project would not extend roads or other infrastructure that could indirectly induce unplanned population growth. Overall, direct and indirect impacts related to unplanned population growth would be less than significant.

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

No Impact. As described above, the project site is vacant and undeveloped land and does not contain any housing or people on the project site. The proposed project would construct and operate an automotive dealership onsite and would not displace any existing housing or people and would not necessitate the construction of housing elsewhere. Thus, impacts would not occur.

Existing Plans, Programs, or Policies

There are no impact reducing Plans, Programs, or Policies related to population and housing that are applicable to the project.

Mitigation Measures

No mitigation measures related to population and housing are required.

Sources

City of Moreno Valley, Specific Plan 209 Amendment No. 5, Moreno Valley Auto Mall Specific Plan. Accessed: http://www.moreno-valley.ca.us/cdd/specificplans/sp209-5_20110915083050.pdf

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
15. PUBLIC SERVICES.				
a) Would the project 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:				
Fire protection?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☒	☐
Parks?	☐	☐	☒	☐
Other public facilities?	☐	☐	☒	☐

a) Result in substantial adverse physical impacts associated with the provision of 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:

Fire protection?
Police protection?
Schools?
Parks?
Other public facilities?

***Fire Protection* – Less Than Significant Impact.** The City of Moreno Valley Fire Department provides fire protection to the project area. The City's Fire Department is the primary response agency to fires, emergency medical service, hazardous materials incidents, traffic accidents, terrorist acts, catastrophic weather events, and technical rescues. Additionally, the City's Office of Emergency Management is located within the Fire Department allowing for a well-coordinated response to both natural and man-made disasters. The Moreno Valley Fire Department is part of the CALFIRE/Riverside County Fire Department's regional, integrated, cooperative fire protection organization, which provides access to other regional fire and emergency equipment and/or services, as needed.

There are two existing Fire Stations within two miles from the project site. Fire Station 58 is located 0.18 miles from the project site at 28040 Eucalyptus Avenue. This fire station is a three-bay facility that can house two engine companies, a truck company, and additional resources as needed. This fire station currently houses one paramedic engine company and a type 3 fire engine (Fire 2019). Fire Station 99 is 1.44 miles from the project site at 13400 Morrison Street. This fire station is a two-bay facility that houses one paramedic engine company (Fire 2019). In addition, a proposed Fire Station is located south of the project site near the intersection of Redlands Boulevard and Alessandro Boulevard that would be within 2 miles of the project site.

The project would develop and operate an automotive dealership in an area already served by the City's Fire Department and within close proximity to two existing fire stations. Due to the small increase in employees and customers that would occur from implementation of the project a limited incremental increase in demand for fire protection and emergency medical services would occur. However, the project would be required to adhere to the California Fire Code (included in the City's Municipal Code Chapters 8.36) and would be reviewed by the Fire Department during the project permitting process to ensure that the project plans meet the fire protection requirements.

The project would be adequately served by the two fire stations that currently serve the project area. Due to the limited increase in employees and customers, and the close location of the existing fire stations, the proposed project would not result in the need for, new or physically altered fire department facilities that are not currently planned. Therefore, impacts related to fire protection services would be less than significant.

***Police Protection* – Less Than Significant Impact.** The City of Moreno Valley receives policing services through a contract for services with the Riverside County Sheriff's Office. The City's police station is located at 22850 Calle San Juan De Los Lagos, which is approximately 5.23 miles from the project site. Because the project site is currently vacant and undeveloped, implementation of the project would result in an onsite population and inventory of automobiles that would create the need for police services. Calls for police service during project construction may include: theft of building materials and construction equipment, malicious mischief, graffiti, and vandalism. Operation of the proposed facility could generate a typical range of police service calls, such as burglaries, thefts, and disturbances. To reduce the potential for these types of crimes, security concerns are addressed in the project design by providing low-intensity security lighting for the purposes of wayfinding, safety, and building structure security.

Although an incremental increase could result from implementation of the project, the need for law enforcement services from the proposed project would be limited and within the area that is currently served. Thus, the need for policing services generated by the project would not require the construction or expansion of police department facilities. Therefore, impacts related to police protection would be less than significant.

***Schools* – Less Than Significant Impact.** The project site is located within the Moreno Valley Unified School District, which operates and maintains 43 schools, including 23 elementary schools (K-5), 6 middle schools (7-8), 5 high schools (9-12), and 9 specialized schools. The site is currently located within the attendance area boundaries of Ridgecrest Elementary School, Mountain View Middle School, and Valley View High School.

The project would develop and operate an automobile dealership that would not generate students. In addition, pursuant to Government Code Section 65995 et seq. (which was passed as Senate Bill

50 in 1998), school districts may collect development fees. According to Government Code Section 65996, the development fees authorized by SB 50 are deemed to be "full and complete school facilities mitigation." The requirement to pay school fees are included as PPP PS-1. Overall, impacts to school facilities from implementation of the proposed project would be less than significant.

***Parks* – Less Than Significant Impact.** Utilizing Map 3.1, Existing Parks and Community Facilities, in the City of Moreno Valley Parks, Recreation and Open Space Comprehensive Plan, the City operates and maintains six parks within the project's vicinity: Rock Ridge Park, approximately 0.72 miles to the west; Morrison Park, approximately 1.23 miles to the southwest; Ridgecrest Park, approximately 1.85 miles to the southeast; Weston Park, approximately 1.86 miles to the southwest; the Moreno Valley Equestrian Park and Nature Center, approximately 1.97 miles to the northeast; and Celebration Park, approximately 1.98 miles to the south.

The project would develop and operate an automotive dealership, which is not anticipated to result in an influx of new residents that would utilize park facilities. Thus, the proposed project would not generate a substantial population that would require construction or expansion of park facilities, and impacts would be less than significant.

***Other Services* – Less Than Significant Impact.** The proposed project may result in an occasional use of libraries and other public facilities by employees. However, the limited number of project employees would not result in a substantial increase in the demand for libraries and other public facilities such that construction of new or expanded facilities would be required. Therefore, the proposed project would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, and impacts would be less than significant.

Existing Plans, Programs, or Policies

PPP PS-1: The project will be required to pay applicable development fees levied by the Moreno Valley Unified School District pursuant to the School Facilities Act (Senate Bill [SB] 50, Stats. 1998, c.407) to offset any effects on school facilities resulting from new development.

Mitigation Measures

No mitigation measures related to public services are required.

Sources

City of Moreno Valley Fire Department Website (Fire 2019). Accessed: http://www.moreno-valley.ca.us/city_hall/departments/fire/index-fire.shtml

City of Moreno Valley Police Department Website. Accessed: http://www.moreno-valley.ca.us/city_hall/departments/police/index-police.shtml

City of Moreno Valley Parks, Recreational, and Open Spaces Comprehensive Master Plan. Accessed: http://www.ci.moreno-valley.ca.us/resident_services/park_rec/pdfs/park-mp0910.pdf

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
16. RECREATION.				
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 might have an adverse physical effect on the environment?	☐	☐	☒	☐

a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that physical deterioration of the facility would be accelerated?

Less Than Significant Impact. As described in response to Impact 15, Public Services, the proposed project would result in a limited number of employees, which could create a minimal increase in demand for recreation facilities. This limited potential increase in the use of existing recreational facilities would not result in substantial physical deterioration. Thus, impacts would be less than significant.

b) Include or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Less Than Significant Impact. The project does not include construction of recreational facilities. As described in the previous response, the proposed project would result in a limited number of employees. These employees would not generate significant use of existing recreation facilities, and construction of new or expansion of existing recreational facilities is not anticipated to be required. Thus, impacts related to recreation would be less than significant.

Existing Plans, Programs, or Policies

There are no impact reducing Plans, Programs, or Policies related to population and housing that are applicable to the project.

Mitigation Measures

No mitigation measures related to recreation are required.

Sources

Moreno Valley Parks, Recreational, and Open Spaces Comprehensive Master Plan. Accessed:

http://www.ci.moreno-valley.ca.us/resident_services/park_rec/pdfs/park-mp0910.pdf

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
17. TRANSPORTATION. Would the project:				
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☐	☒
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d) Result in inadequate emergency access?	☐	☐	☐	☒

The discussion below is based on the Trip Generation Analysis prepared by EPD Solutions, Inc. (included as Appendix J).

a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Less Than Significant Impact.

Construction
Construction activities associated with the project would generate vehicular trips from construction workers traveling to and from project site, delivery of construction supplies and import materials to, and export of debris from, the project site. However, these activities would only occur for a period of 14 months. The increase of trips during construction activities would be limited and are not anticipated to exceed the number of operational trips described below. The short-term vehicle trips from construction of the project would generate less than significant traffic related impacts.

Operation
Table T-1 shows that the proposed project would generate approximately 78 trips during the a.m. peak hour, 96 trips during the p.m. peak hour, and 1,156 daily trips.

Table T-1: Project Trip Generation

Land Use	Units	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Trip Rates								
Automobile Sales	TSF	27.840	1.365	0.505	1.870	0.920	1.381	2.301
Project Trip Generation								
Square Feet	41.511	1156	57	51	78	39	58	96

Notes:
(1) Trip Rates from the Institute of Transportation Engineers, *Trip Generation, 10th Edition,* 2017. Land use Code 840-Automobile Sales. PM peak hour trip rate determined using fitted curve equation
(2) Square footage was calculated based on City of Moreno Valley Municipal Code Chapter 9.15, Definitions, for Floor Area (Gross).

The Moreno Valley traffic guidelines require traffic studies for projects that generate 100 trips or more during either the a.m. or p.m. peak hour. Operation of the project would not generate over 100 a.m. or p.m. peak hour trips. Therefore, the project would not result in a conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, and impacts would be less than significant.

The project area is currently served by the Riverside Transit Authority (RTA). The RTA provides both local and regional services throughout the region with 38 fixed routes, 9 commuter link routes, and Dial-A-Ride services. Existing RTA bus stop for Route 35, located on Moreno Beach Drive approximately 0.25 mile from the project site, is the closest existing route to the project. Operation of the project would not affect the operation of the bus route. Thus, no impacts would occur. In addition, both sidewalks and bicycle lanes are located adjacent to the project site on Moreno Beach Drive and Auto Mall Drive. The proposed project would not alter any of the existing bicycle or sidewalk facilities. Thus, impacts related to bicycle or pedestrian circulation would not occur from implementation of the project.

b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

No Impact. CEQA Guidelines section 15064.3 subdivision (b) discuses the use of vehicle miles traveled (VMT) for the impact analysis. The requirement of this section takes effect in June 2020 or where an agency has adopted thresholds for VMT. The City of Moreno Valley has not adopted any thresholds regarding VMT. Therefore, the project would not be inconsistent with CEQA Guidelines section 15064.3, subdivision (b), and impacts would not occur.

c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Less Than Significant Impact. The project would develop and operate an automotive dealership, and does not include any incompatible uses, such as farm equipment. The project would also not increase any hazards related to a design feature. Access to the parking lot would be provided via two driveways, one on Auto Mall Drive and one on Pettit Street. The driveways and internal drive aisles would be approximately 30 feet wide, and have been designed to meet the City's design standards and would provide adequate turning space for passenger cars, fire trucks, and delivery trucks.

Additionally, the project does not include any visual obstructions that would block sight distance at the driveways or that would prohibit full access in, and out of, the project area. Thus, motorists entering and exiting the project site would be able to do so comfortably, safely, and without undue congestion. As such, project access and circulation would be adequate, and project impacts related to hazardous design features would be less than significant.

d) Result in inadequate emergency access?

No Impact. The proposed project would develop and operate an automotive dealership that would be permitted and approved in compliance with existing safety regulations, such as the California Building Code and Fire Code (as integrated into the City's Municipal Code) to ensure that it would not result in inadequate emergency access.

The proposed construction activities, including equipment and supply staging and storage, would occur within the project site and would not restrict access of emergency vehicles to the project site or adjacent areas. During construction, Moreno Beach Drive and Auto Mall Drive would remain open to ensure adequate emergency access to the project area and vicinity. Thus, impacts related to inadequate emergency access during construction activities would not occur.

As described above, operation of the proposed project would also not result in inadequate emergency access. Direct access to the project site would be provided from Auto Mall Drive and Pettit Street. The driveways and on-site circulation constructed by the project would be evaluated through the City's permitting procedures to meet the City's design standards that provides adequate turning space for passenger cars, fire trucks, and delivery trucks. The project is also required to provide fire suppression facilities (e.g., hydrants and sprinklers). The Moreno Valley Fire Department would review the development plans as part of the permitting procedures to ensure adequate emergency access pursuant to the requirements in Section 503 of the California Fire Code (Title 24, California Code of Regulations, Part 9). As a result, impacts related to inadequate emergency access would not occur.

Existing Plans, Programs, or Policies

There are no impact reducing Plans, Programs, or Policies related to transportation that are applicable to the project.

Mitigation Measure

No mitigation measures related to transportation are required.

Sources

City of Moreno Valley Transportation Engineering Division, *Traffic Impact Analysis Preparation Guide* (2007).

Institute of Transportation Engineers, *Trip Generation, 10th Edition,* 2017 Land Use Code 840 Automobile Sales.

Trip Generation Analysis for Proposed Kia Dealership. Prepared by EPD Solutions, Inc. 2019 (EPD 2019) (Appendix J)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
18. TRIBAL CULTURAL RESOURCES.				
Would the project 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:				
a) 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)?	☐	☐	☐	☒
b) 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 Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?	☐	☒	☐	☐

The discussion below is based on the Phase I Cultural Resources Assessment prepared by Material Culture Consultants (MCC 2019) (included as Appendix C). Preparation of the report included cultural records searches, a search of the Sacred Lands File by the Native American Heritage Commission (NAHC), outreach efforts with Native American tribal representatives, background research, and a pedestrian field survey.

a) 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)?

No Impact. The project site is vacant and undeveloped. It does not contain any historic resources and there are no previously recorded resources within the project site boundaries (MCC 2019). A Sacred Lands File search was requested from the Native American Heritage Commission (NAHC) on February 4, 2019. The Commission responded on February 7, 2019, stating that there are no known sacred lands within one mile of the project site. Therefore, implementation of the proposed project would not cause a substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing as a historical resource, and impacts would not occur.

b) 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 Resource

Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?

Less Than Significant with Mitigation Incorporated.

Assembly Bill 52
Chapter 532, Statutes of 2014 (i.e., Assembly Bill [AB] 52), requires that Lead Agencies evaluate a project's potential to impact "tribal cultural resources." Such resources 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, supported by substantial evidence, whether a resource qualifies as a "tribal cultural resource." Also, per AB 52 (specifically PRC 21080.3.1), Native American consultation is required upon request by a California Native American tribe that has previously requested that the City provide it with notice of such projects. The City of Moreno Valley sent letters in compliance with AB 52 inviting consultation and requesting information related to potential tribal cultural resources in the project area. The City received five responses, with two tribes requesting consultation, Soboba Band of Luiseño Indians and Rincon Band of Luiseño Indians. A third tribe, San Manuel Band of Mission Indians, provided comments but did not request further consultation. The consulting tribes did not provide evidence that tribal cultural resources are present onsite.

Although, no known tribal cultural resources are present on the site and although the project site has been previously disturbed and the potential for encountering buried sites is low, Mitigation Measure CR-1through CR-6 have been included to require monitoring and outline procedures in the event that unknown cultural or pre-cultural tribal resources are uncovered. With implementation of these Mitigation Measures, potential impacts related to tribal cultural resources would be reduced to a less than significant level.

Existing Plans, Programs, or Policies

None.

Mitigation Measures

Mitigation Measures CR-1 through CR-6: Listed previously in Section 5, Cultural Resources.

Sources

Phase I Cultural Resources Assessment. Prepared by Material Culture Consultants (MCC 2019) (Appendix C).

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
19. UTILITIES AND SERVICE SYSTEMS. Would the project:				
a) Require or result in the relocation or construction of new or expanded water or wastewater treatment facilities or expansion of existing facilities, the construction 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?	☐	☐	☒	☐
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒

a) Require or result in the relocation or construction of new or expanded water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Less Than Significant Impact.

Water Infrastructure

The proposed project is within an area anticipated for development and a 6-inch water line currently exist in Auto Mall Drive, which is adjacent to the project site. The proposed project would install a new onsite water line that would connect to the existing line in Auto Mall Drive. Because the site has been planned for operation of commercial uses, the water line has been planned to accommodate development of the project site and would not require expansion to serve the proposed project.

Therefore, although construction of the onsite water lines would be required to support the new development, no extensions or expansions to the water pipelines supplying the project site would be required. The necessary installation of the onsite water supply line is included as part of the

proposed project and would not result in any physical environmental effects beyond those identified in other sections of this IS/MND. Therefore, the proposed project would not result in the construction of new water facilities or expansion of existing facilities that serve the project area, the construction of which could cause significant environmental effects, and impacts would be less than significant.

In addition, the Eastern Municipal Water District (EMWD) provides water supplies to the project area. In addition to treated water that is delivered to EMWD, by the Metropolitan Water District, EMWD operates two microfiltration plants that filter raw imported water to achieve potable water standards. The two treatment plants, the Perris Water Filtration Plant and the Hemet Water Filtration Plant, are located in Perris and Hemet, respectively. These two water treatment plants provide a portion of the water supplied by EMWD (UWMP 2015). The proposed project would not require new or expanded water entitlements. Likewise, the planned capacity of the regional water treatment facilities that supplies the water is adequate, and new or expanded water treatment facilities would not be required as a result of the proposed project. Therefore, impacts would be less than significant.

Wastewater Treatment

The project would install onsite sewer lines that would connect to the existing 10-inch sewer line located in Auto Mall Drive, which is adjacent to the project site. Because the site has been planned for operation of commercial uses, the sewer line has been planned to accommodate development of the project site and would not require expansion to serve the proposed project. The necessary installation of the onsite water supply line is included as part of the proposed project and would not result in any physical environmental effects beyond those identified in other sections of this IS/MND.

Wastewater flows would be conveyed through the existing pipelines to the Moreno Valley Regional Water Reclamation Facility. The treatment facility typically processes 10.6 million gallons per day (mgd) but has a current capacity for 16 mdg and an ultimate capacity of 41 mgd (UWMP 2015). The wastewater generated from the project would be accommodated within this capacity. Thus, expansion of the wastewater treatment plant would not be required and impacts would be less than significant.

Stormwater Drainage

The project site has varying topography and generally drains to the east. The project would maintain the existing natural stormwater flow pattern by having about half of the site drain into the existing 96-inch storm drain, while the other half would drain to the existing headwall at the southeast corner of the site. The project would install two biofiltration systems on the project site that would capture and treat runoff. After treatment, the runoff would flow via underground storm drain pipes to the existing Riverside County Flood Control and Water Conservation District (RCFC&WCD) Line "G" 96-inch storm drain line north of the site along Pettit Street (WQMP 2019).

Due to the appropriate sizing of the onsite drainage features, operation of the proposed project would not substantially increase stormwater runoff, and the project would not require or result in the construction of new off-site storm water drainage facilities or expansion of existing off-site facilities, the construction of which could cause significant environmental effects. The required installation of onsite drainage features is included as part of the proposed project and would not result in any physical environmental effects beyond those identified in other sections of this IS/MND. Overall, impacts related to stormwater drainage facilities would be less than significant.

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

Less Than Significant Impact. Water supplies to the project area are provided by EMWD, which serves 555 square miles of western Riverside County and includes the project area (UWMP 2015). In 2015, EMWD had a water demand of 146,090 AF, and based on land use and growth projections it anticipates a demand of 197,901 AF in 2020, which is a 35 percent increase over 2015 demands (an increase of 51,811 AF) (UWMP 2015). The UWMP details that the District has water supply to meet the projected demands over the next 25 years and beyond (UWMP 2015). The UWMP describes that the District has a projected supply of 197,901 AFY in 2020, and a predicted supply of 268,200 AFY in 2040.

The proposed project would be consistent with existing land use and growth projections that are included in the UWMP projections; and thus, is included in the UWMP projections and EMWD would be able to meet all of the anticipated water supply needs. Therefore, the proposed project would have sufficient water supplies available to serve the project, 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?

No Impact. As described above, wastewater flows would be conveyed to the Moreno Valley Regional Water Reclamation Facility. The treatment facility typically processes 10.6 million gallons per day (mgd) but has a current capacity for 16 mdg and an ultimate capacity of 41 mgd (UWMP 2015). The wastewater generated from the project would be accommodated within this capacity. Thus, the wastewater treatment plant has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments, and impacts would not occur.

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?

Less Than Significant Impact. The closest landfill to the project site is the Badlands Sanitary Landfill, which is located approximately 3 miles east from the project site at 31125 Ironwood Avenue in Moreno Valley. The landfill is permitted to accept 4,800 tons per day of solid waste and is permitted to operate through 2021 (CalRecycle 2019). In January 2019, the landfill disposed of an average of 2,816 tons per day. Thus, having a remaining average capacity of 1,984 tons per day (CalRecycle 2019).

In addition, the El Sobrante Sanitary Landfill, which is located at 10910 Dawson Canyon Road, is approximately 20 miles southwest from the project site. The landfill is permitted to accept 16,054 tons per day of solid waste and is permitted to operate through 2050 (CalRecycle 2019). In January 2019, the landfill disposed of an average of 11,134 tons per day. Thus, having a remaining average capacity of 4,920 tons per day (CalRecycle 2019).

Based on a solid waste generation of 0.9 pounds per 100 square feet per day, identified in the CalRecycle Solid Waste Information System Database, the 41,511 square feet auto sales and service building (including Phase 2 expansion) would generate approximately 374 pounds per day, or 2,242 pounds (1.12 tons) of solid waste per week (based on a six-day work week). When

including the service reception loading area as a solid waste generator of the project, a total of 397 pounds of solid waste per day would be generated.

Based on the current recycling requirements of AB 939, which require diversion of 50 percent of solid waste away from landfills, the proposed project would result in 0.56 tons of solid waste per week, which is within the existing permitted capacity of both the Badlands Sanitary Landfill and the El Sobrante Sanitary Landfill. Therefore, the existing landfills have sufficient permitted capacity to accommodate the project's solid waste disposal need.

Additionally, in 2020, state regulations per AB 341 will become effective, which will require diversion of 75 percent of solid waste from landfills. Thus, it is anticipated that solid waste landfill disposal from operation of the project in 2020 would be reduced to approximately 0.14 tons per week. Overall, the solid waste generated by the proposed project would be within the existing permitted capacity of the landfills, and impacts would be less than significant.

e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

No Impact. The proposed project would comply with all regulations related to solid waste. All solid waste-generating activities within the City are subject to the requirements set forth in AB 939, that requires diversion of a minimum of 50 percent of solid waste. In addition, after 2020 all development would be required to divert 75 percent of solid waste pursuant to state regulations. Implementation of the proposed project would be consistent with all state regulations. All projects in the City undergo development review prior to permit approval, which includes an analysis of project compliance with these programs. Therefore, impacts related to compliance with solid waste regulations would not occur.

Existing Plans, Programs, or Policies

There are no impact reducing Plans, Programs, or Policies related to utilities and service systems that are applicable to the project.

Mitigation Measures

No mitigation measures related to utilities and service systems are required.

Sources

CalRecycle Solid Waste Information System Database. Available: https://www2.calrecycle.ca.gov/SWFacilities/Directory/

CalRecycle Estimated Solid Waste Generation Rates. Available: https://www2.calrecycle.ca.gov/wastecharacterization/general/rates

Eastern Municipal Water District 2015 Urban Water Management Plan (UWMP 2015). Prepared by RMC. June 2016. Avaiable: https://www.emwd.org/home/showdocument?id=1506

Eastern Municipal Water District Moreno Valley Regional Water Reclamation Facility Fact Sheet. Accessed: https://www.emwd.org/sites/main/files/file-attachments/mvrwrffactsheet.pdf

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
20. WILDFIRES. 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?	☐	☐	☒	☐
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?	☐	☐	☒	☐
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?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

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

Less Than Significant Impact. According to the CalFire Fire Hazard Severity Zone Map for Moreno Valley and the Fire Hazards Map in the City's Safety Element, the project site is not within a Very High Fire Hazard Severity Zone; however, it is adjacent to vacant land to the east that is designated as a Very High Fire Hazards Severity Zone that is accessible from Moreno Beach Drive and Pettit Street.

Direct access to the project site would be provided from driveways along Auto Mall Drive and Pettit Street. The project is required to design and construct internal access and provide fire suppression facilities (e.g., hydrants and sprinklers) in conformance with the City Municipal Code and the Fire Department would review the development plans prior to approval to ensure adequate emergency access pursuant to the requirements in Section 503 of the California Fire Code (Title 24, California Code of Regulations, Part 9, included in the City's Municipal Code (Chapter 8.36, Fire Code). As a result, the proposed project would not impair an adopted emergency response plan or emergency evacuation plan, and 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?

Less Than Significant Impact. As described in the previous response, the project site is adjacent to vacant land designated as a Very High Fire Hazard Severity Zone. However, project site and adjacent areas are graded, urbanizing, and do not contain hillsides or other factors that could exacerbate wildfire risks. In addition, the project would develop and operate an automotive dealership. Should a wildfire occur near the project site, the dealership could be closed to avoid exposure of pollutant concentrations from the fire. Thus, wildfire risks 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?

No Impact. As described in the previous responses, the project site is adjacent to vacant land designated under a Very High Fire Hazard Severity Zone that is accessible from Moreno Beach Drive and Pettit Street. The project site has been planned for development and is adjacent on three sides by roadways. The project does not involve any new infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risks or result in other impacts to the environment. Therefore, no impacts would occur.

d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

No Impact. As described in the previous responses, the project site is adjacent to vacant land designated as a Very High Fire Hazard Severity Zone. However, adjacent areas to the project site are graded and urbanizing and do not contain hillsides or other factors that would expose people or structures to flooding or landslides as a result of runoff, post-fire slope instability, or drainage changes. In addition, the project would not generate large slopes and would connect to existing drainage facilities. Thus, the project would not result in risks related to wildfires or risks related to downslope or downstream flooding or landslides after wildfires. Therefore, impacts would not occur.

Existing Plans, Programs, or Policies

There are no impact reducing Plans, Programs, or Policies related to wildfires that are applicable to the project.

Mitigation Measures

No mitigation measures related to wildfires are required.

Sources

CalFIRE, Very High Fire Hazard Severity Zones in LRA as Recommended by CAL FIRE, Moreno Valley. Available:
http://www.fire.ca.gov/fire_prevention/fhsz_maps/FHSZ/riverside/Moreno_Valley.pdf

City of Moreno Valley General Plan, Chapter 6, Safety. July 11, 2006.

21. MANDATORY FINDINGS OF SIGNIFICANCE.	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☒	☐	☐
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 projects, and the effects of probable future projects)?	☐	☐	☒	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

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?

Less Than Significant with Mitigation Incorporated. The Habitat Assessment (Blackhawk 2019) describes that the special-status wildlife and plant species with the potential to occur on the project site are covered by compliance with the MSHCP, which requires payment of fees, included as PPP BIO 1. In addition, because the site supports suitable habitat for burrowing owl the MSHCP requires focused surveys pursuant to the Western Riverside County Regional Conservation Authority (RCA) Burrowing Owl Survey Instructions for the MSHCP area. Hence, Mitigation Measure BIO-1 requires a preconstruction burrowing owl survey to be conducted pursuant to the RCA Survey Instructions prior to start of ground disturbance activities. With implementation of Mitigation Measure BIO-1, impacts related to burrowing owl would be less than significant.

In addition, the Habitat Assessment identified suitable habitat and substrate for migratory birds that are protected under the Migratory Bird Treaty Act and Section 3503.5 of the California Department of Fish and Wildlife (CDFW) code. Therefore, Mitigation Measure BIO-2 is included to require a nesting bird survey if construction activities begin during the nesting season. With implementation of Mitigation Measure BIO-2 impacts related to protected bird species would also be reduced to a less than significant level.

Also as described above, the project site does not contain any historic resources and has been highly disturbed from past grading activities uses. The modification and disturbance of the project site has eradicated any near-surface record of prehistoric, ethnohistoric, or historic-era behavioral activities that may have otherwise been preserved as archaeological sites, deposits or features. However, there still remains the possibility that undiscovered, buried archaeological resources may be encountered during construction. Therefore, Mitigation Measure CR-1 has been included to provide an on-call archaeologist and CR-2 to halt work within 100 feet of uncovering any potential archaeological resources. In addition to Mitigation Measure CR-1 requires that the Soboba Band of Luiseno Indians and San Manuel Band of Mission Indians shall be contacted and consult with the archaeologist if a pre-contact cultural resource is found. Mitigation Measure CR-2 through CR-6 detail procedures for inadvertent discoveries of archeological and/or precultural resources. With implementation of this mitigation measure, potential impacts related to archaeological resources and tribal cultural resources would be less than significant.

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 projects, and the effects of probable future projects)?

Less than Significant Impact. The project would develop an automotive dealership within an partially developed area on a site that is designated for commercial uses. As described above, all of the potential impacts related to implementation of the project would be less than significant or reduced to a less than significant level with implementation of mitigation measures and existing plans, programs, or policies that are imposed by the City and effectively reduce environmental impacts.

The cumulative effect of the proposed project taken into consideration with these other development projects in the area would be limited, because the project would develop the site in consistency with the Auto Mall Specific Plan and municipal code and would not result in substantial effects to any environmental resource topic, as described though out this document. Furthermore, the proposed project would develop an area that has been previously graded and disturbed. Thus, impacts to environmental resources or issue areas would not be cumulatively considerable; and cumulative impacts would be less than significant.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Less than Significant with Mitigation Incorporated. The project proposes the construction and operation of an automotive dealership. The project would not consist of any use or any activities that would result in a substantial negative affect on persons in the vicinity. All resource topics associated with the proposed project have been analyzed in accordance with CEQA and the State CEQA Guidelines and were found to pose no impacts or less-than-significant impacts with implementation of mitigation measures and existing plans, programs, or policies that are required by the City. Consequently, the proposed project would not have environmental effects that would cause substantial adverse effects on human beings directly or indirectly, and impacts would be less than significant.

6 MITIGATION MONITORING AND REPORTING PROGRAM

6.1 INTRODUCTION

The California Environmental Quality Act (CEQA) requires a lead or public agency that approves or carries out a project for which a Mitigated Negative Declaration has been certified which identifies one or more significant adverse environmental effects and where findings with respect to changes or alterations in the project have been made, to adopt a "…reporting or monitoring program for the changes to the project which it has adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment" (CEQA, Public Resources Code Sections 21081, 21081.6).

A Mitigation Monitoring and Reporting Program (MMRP) is required to ensure that adopted mitigation measures are successfully implemented for the Car Pros Kia Dealership (project). The City of Moreno Valley is the Lead Agency for the project and is responsible for implementation of the MMRP. This MMRP identifies the parties that will be responsible for monitoring implementation of the individual mitigation measures.

6.2 MITIGATION MONTORING AND REPORTING PROGRAM

The mitigation monitoring and reporting program has been prepared in compliance with Public Resource Code Section 21081.6. It describes the requirements and procedures to be followed by the City to ensure that all mitigation measures adopted as part of the proposed Project would be carried out as described in the IS/MND. This MMRP for the project will be active through all phases of the project, including design, construction, and operation.

Table 1 identifies project specific mitigation measures required by the City to mitigate or avoid significant adverse impacts associated with the implementation of the project, the timing of implementation, and the responsible party or parties for monitoring compliance. This MMRP also includes a column that will be used by the compliance monitor (individual responsible for monitoring compliance) to document when implementation of the measure is completed.

TABLE 6-1
MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure Number	Measure	Timing	Responsibility for Oversight of Compliance/ Verification	Completion
BIO-1	**Pre-construction Burrowing Owl Survey.** Preconstruction burrowing owl (BUOW) surveys shall be complete a maximum of 30 days prior to the start of construction. A total of 4 focused BUOW preconstruction surveys shall be conducted on separate days, preferably during the BUOW breeding season (March 1 through August 31) (not including the initial habitat assessment and burrow survey). The survey area shall include the project site and the 150-meter survey area surrounding the project site pursuant to the Western Riverside County Regional Conservation Authority Burrowing Owl Survey Instructions for the Plan Area (2006). If burrowing owls are observed during take avoidance surveys or incidentally during construction, the City of Moreno Valley Planning Division shall be notified, and avoidance measures implemented during the breeding season (March 1 through August 31). If burrowing owls are present during the non-breeding season (September 1 through February 28), burrowing owl exclusion measures may be implemented in accordance with the MSHCP.	Prior to ground disturbing activities; Prior to the issuance of a grading permit.	Planning Department	
BIO-2	**Nesting Birds Survey.** To the extent feasible, the project shall conduct vegetation removal outside of the nesting bird season (generally between February 15 and August 31). If vegetation removal is required during the nesting bird season, a nesting bird survey should be conducted for areas within 100-feet of the vegetation removal. Surveys shall be conducted by a qualified biologist(s) within three days of vegetation removal. If active nests are observed, a qualified biologist shall determine appropriate minimum disturbance buffers or other adaptive mitigation techniques (e.g., biological monitoring of active nests during construction-related activities, staggered schedules, etc.) to ensure that impacts to nesting birds are avoided until the nest is no longer active.	Within three days of vegetation removal during nesting bird season (Feb.15 and Aug. 31)	Planning Department	
CR-1	Prior to the issuance of a grading permit, the Developer shall retain a professional archaeologist meeting Secretary of Interior's Professional Qualifications for Archaeology as defined at 36 CFR Part 61, Appendix A	Prior to the issuance of a grading permit.	Planning Department	

TABLE 6-1
MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure Number	Measure	Timing	Responsibility for Oversight of Compliance/ Verification	Completion
	stating that the archaeologist has been retained to provide on-call services in the event archaeological resources are discovered. 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 Consulting Tribe(s), 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 AB 52 (Soboba Band of Luiseno Indians and Rincon Band of Luiseno Indians). Details in the Plan shall include: a. Project grading and development scheduling; b. The Project archeologist and the Consulting Tribes(s) as defined in CR-1 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			

TABLE 6-1
MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure Number	Measure	Timing	Responsibility for Oversight of Compliance/ Verification	Completion
	Project archaeologist and Consulting Tribe(s) shall make themselves available to provide 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.			
CR-2	Prior to the issuance of a grading permit, the Applicant shall secure agreements with the Soboba Band of Luiseno Indians for tribal monitoring. The Applicant 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.	Planning Department	
CR-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	Prior to the issuance of a grading permit; Ongoing during rough grading and trenching.	Planning Department	

TABLE 6-1
MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure Number	Measure	Timing	Responsibility for Oversight of Compliance/ Verification	Completion
	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 CR-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 CR-1. The location for the future reburial area shall be identified on a confidential exhibit on file with the City and concurred to by the Consulting Native American Tribal Governments prior to certification of the environmental document.			
CR-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; Note on plans.	Planning Department	
CR-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	Prior to issuance of grading permit; Note on plans.	Planning Department	

TABLE 6-1
MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure Number	Measure	Timing	Responsibility for Oversight of Compliance/ Verification	Completion
	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 CR-1 before any further work commences in the affected area.			
CR-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 24 hours 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).	Prior to issuance of grading permit; Note on plans.	Planning Department	
GEO-1	**Paleontological Resources.** Prior to the issuance of the first grading permit, the applicant shall provide a letter to the City of Moreno Valley Building and Safety Division, or designee, from a paleontologist selected from the roll of qualified paleontologists maintained by Riverside County, stating that the paleontologist has been retained to provide services for the project. The paleontologist shall develop a Paleontological Resources Impact Mitigation Plan (PRIMP) to mitigate the potential impacts to unknown buried paleontological resources that may exist onsite for the review and approval by the City. The PRIMP shall require that the paleontologist be present at the pre-grading conference to establish procedures for paleontological resource surveillance. The PRIMP shall require paleontological monitoring of excavation that exceeds depths of four feet. The PRIMP shall state that the project paleontologist may re-evaluate the necessity for paleontological monitoring after 50 percent or greater of the excavations deeper than four feet have been completed.	Prior to issuance of grading permit.	Planning Department	

TABLE 6-1
MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure Number	Measure	Timing	Responsibility for Oversight of Compliance/ Verification	Completion
	In the event that paleontological resources are encountered, ground-disturbing activity within 100 feet of the area of the discovery shall cease. The paleontologist shall examine the materials encountered, assess the nature and extent of the find, and recommend a course of action to further investigate and protect or recover and salvage those resources that have been encountered. Criteria for discard of specific fossil specimens will be made explicit. If a qualified paleontologist determines that impacts to a sample containing significant paleontological resources cannot be avoided by project planning, then recovery may be applied. Actions may include recovering a sample of the fossiliferous material prior to construction, monitoring work and halting construction if an important fossil needs to be recovered, and/or cleaning, identifying, and cataloging specimens for curation and research purposes. Recovery, salvage and treatment shall be done at the applicant's expense. All recovered and salvaged resources shall be prepared to the point of identification and permanent preservation by the paleontologist. Resources shall be identified and curated into an established accredited professional repository. The paleontologist shall have a repository agreement in hand prior to initiating recovery of the resource.			

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APPENDIX A: AIR QUALITY AND GREENHOUSE GAS ASSESSMENT REPORT

Air Quality and Greenhouse Gas Assessment Report
Car Pros Kia Dealership Project
City of Moreno Valley, California

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ACRONYMS AND ABBREVIATIONS

µg/m^3	micrograms per cubic meter
µm	micrometer one millionth of a meter)
AADT	annual average daily traffic
AB	assembly bill
AQMP	air quality management plan
ARB	California Air Resources Board
ATCM	ARB Air Toxic Control Measure
CAL	climate action plan
CCAA	California Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CBSA	California Building Standards Code
CEQA	California Environmental Quality Act
CO	carbon monoxide
EMFAC	ARB Mobile Source Emission Factor Model
EPA	Environmental Protection Agency
GHG	greenhouse gas
IPCC	The Intergovernmental Panel on Climate Change
LST	localized significance threshold
$MTCO_2e$	metric tons of CO_2 equivalent
NAAQS	national ambient air quality standards
NO_x	oxides of nitrogen
NO_2	nitrogen dioxide
OEHHA	California Office of Environmental Health Hazards Assessment
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
ROG	reactive organic gases
SCAQMD	South Coast Air Quality Management District
SIP	state implementation plan
SOx	sulfur oxides
SoCAB	South Coast Air Basin
SRA	source-receptor area
TAC	toxic air contaminants
TOG	total organic gases
VOC	volatile organic compounds

SECTION 1: INTRODUCTION

1.1 - Purpose

The purpose of this report is to provide the results of an air quality and greenhouse gas impact assessment that estimates the environmental impacts associated with the construction and operation of the Car Pros Kia Dealership Project (the project) in the City of Moreno Valley, California. This assessment was conducted within the context of the California Environmental Quality Act (CEQA, California Public Resources Code Sections 21000, et seq.). This assessment report was prepared based on the guidance and methodologies recommended by the South Coast Air Quality Management District (SCAQMD) for performing such studies.

The report is subdivided into three main sections. Section 1 provides a review of the purpose, project description, and summary of results. Section 2 provides an assessment of the project's air quality impacts[1] while Section 3 quantifies the project's potential greenhouse gas impacts. This approach was followed to provide a single document that integrates all of the above assessments that generally rely on similar sets of methods and guidance.

1.2 - Project Location and Description

The project proposes to develop a 41,511 SF, two-story building with a 2,562 service reception loading area for a Kia sales and service automobile dealership facility located at the eastern corner of Moreno Beach Drive/Auto Mall Drive in the northeast part of the City of Moreno Valley, California. The building will be on two parcels encompassing 6.19-acre. Exhibit 1 shows the project's regional location while Exhibit 2 provides a conceptual site plan for the project.

The project site is located within a developed and urban area of Moreno Valley as described below:

North: To the north of the site, separated by Pettit Street are two parcels, one vacant and the other used as parking for the existing car dealerships. Both parcels are also within the Auto Mall Specific Plan within Planning Area C.

To the north west is a Moss Bros., a car dealership development including manufactures like Buick, Toyota, Chevrolet. This development is also within the Auto Mall Specific Plan but is located in Planning Area A.

South: To the south and southwest of the site, across from Auto Mall Parkway, is a multi-family development, The Overlook. This development is also within the Auto Mall Specific Plan but within Planning Area D.

West: To the west of the project site, separated by Auto Mall Parkway is a vacant parcel. This parcel is also within The Auto Mall Specific Plan, Planning Area B and permitted uses are compatible to the

[1] The air quality assessment focused on what are referred to as "criteria air pollutants", that is, those air pollutants for which the State of California and the federal government have defined ambient air quality standards.

proposed development such as automotive and other vehicular related, public facilities, office, manufacturing, commercial recreation and commercial uses.

East: Vacant land is located to the east of the site. The zoning is designated as residential agriculture 2 dwelling units / acre, with the northeast zoning designation as industrial business park.

1.3 - Summary of Results

This assessment of the potential air quality and greenhouse gas impacts from the construction and operation of the project support the following conclusions:

Impact AIR-1: The project would not conflict with or obstruct implementation of the applicable air quality plan.
Less than significant impact.

Impact AIR-2: The project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard.
Less than significant impact.

Impact AIR-3: The project would not expose sensitive receptors to substantial pollutant concentrations.
Less than significant impact.

Impact AIR-4: The project would not result in other emissions (such as those leading to odors) that would adversely affect a substantial number of people.
Less than significant impact.

Impact GHG-1: The project would generate direct and indirect greenhouse gas emissions; however, the project's emissions would result in a less than significant impact on the environment.
Less than significant impact.

Impact GHG-2: The project would not conflict with any applicable plan, policy or regulation of an agency adopted to reduce the emissions of greenhouse gases.
Less than significant impact.

Exhibit 1: Regional Location Map

Exhibit 2: Site Plan

SECTION 2: AIR QUALITY ASSESSMENT

This section discusses the various air quality regulatory programs applicable to the project as well as the environmental setting as a necessary foundation for quantifying the project's air quality impacts.

2.1 - Regulatory Setting

2.1.1 - United State Environmental Protection Agency

The United States Environmental Protection Agency (EPA) handles global, international, national, and interstate air pollution issues and policies. The EPA sets national vehicle and stationary source emission standards, oversees approval of all state implementation plans (SIPs), provides research and guidance in air pollution programs, and sets national ambient air quality standards (NAAQS), also known as national standards. There are NAAQS for six common air pollutants, called criteria air pollutants, which were identified resulting from provisions of the Clean Air Act of 1970 (CAA).

The six criteria pollutants are:

- Ozone;
- Particulate matter (PM_{10} and $PM_{2.5}$);
- Nitrogen dioxide (NO_2);
- Carbon monoxide (CO);
- Lead; and
- Sulfur dioxide.

The NAAQS were set to protect public health, including that of sensitive individuals; the standards are periodically updated to reflect the collection of new medical research regarding the health effects of the criteria pollutants.

2.1.2 - California Air Resources Board

California Air Resources Board (ARB) administers the SIP for the State of California and has overall responsibility for statewide air quality maintenance and air pollution prevention. A SIP is a document prepared by each state describing existing air quality conditions and measures to follow as necessary to attain and maintain NAAQS within the state. The SIP incorporates the individual attainment plans for regional air districts. Regional air quality attainment plans prepared by individual regional air districts are sent to the ARB to be approved and incorporated into the California SIP. SIPs include the technical foundation for understanding the air quality (e.g. emission inventories and air quality monitoring), control measures and strategies, and enforcement mechanisms. The ARB also administers California ambient air quality standards (CAAQS) for the ten air pollutants designated in the California Clean Air Act (CCAA).

The ten state air pollutants include the six national criteria pollutants plus:

- Visibility reducing particulates;
- Sulfates;
- Hydrogen sulfide (H_2S)
- Vinyl chloride.

Table 1 summarizes the national and state ambient air quality standards and the effects, properties, and emission sources.

State of California Regulatory Programs

Diesel Risk Reduction Plan

In September 2000, the ARB adopted the Diesel Risk Reduction Plan (Diesel RRP or Plan), which recommends many control measures to reduce the risks associated with diesel particulate matter (DPM) and achieve a goal of 75 percent DPM reduction by 2010 and 85 percent by 2020 (ARB 2000). The Plan involves the implementation of:

- New regulatory standards for on-road, off-road, and stationary diesel-fueled engines and vehicles;
- New retrofit requirements for existing on-road, off-road, and stationary diesel-fueled engines and vehicles were determined to be technically feasible; and
- New Phase 2 diesel fuel regulations to reduce the sulfur content levels of diesel fuel to no more than 15 ppm to provide the quality of diesel fuel needed by the advanced DPM emission controls

The Plan set into motion a series of emission reduction regulations and control measures as discussed below.

Emission Reduction Funding

Carl Moyer Memorial Air Quality Standards Attainment Program. Since 1998, the Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program) has provided funding to encourage the voluntary purchase of cleaner engines, equipment, and emission reduction technologies. The Carl Moyer Program plays a complementary role to California's regulatory program by funding emission reductions that are surplus, i.e., early and/or in excess of what is required by regulation. The Carl Moyer Program accelerates the turnover of old highly polluting engines, speeds the commercialization of advanced emission controls, and reduces air pollution impacts on environmental justice communities. Emission reductions achieved through the Carl Moyer Program are an important component of the California SIP.

.

Table 1: Air Pollutants and Ambient Air Quality Standards

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Ozone	1 Hour	0.09 ppm	—	Irritate respiratory system; reduce lung function; breathing pattern changes; reduction of breathing capacity; inflame and damage cells that line the lungs; make lungs more susceptible to infection; aggravate asthma; aggravate other chronic lung diseases; cause permanent lung damage; some immunological changes; increased mortality risk; vegetation and property damage.	Ozone is a photochemical pollutant as it is not emitted directly into the atmosphere, but is formed by a complex series of chemical reactions between volatile organic compounds (VOC), NO_X, and sunlight. Ozone is a regional pollutant that is generated over a large area and is transported and spread by the wind.	Ozone is a secondary pollutant; thus, it is not emitted directly into the lower level of the atmosphere. The primary sources of ozone precursors (VOC and NO_X) are mobile sources (on-road and off-road vehicle exhaust).
	8 Hour	0.070 ppm	0.070 ppm			
Carbon monoxide (CO)	1 Hour	20 ppm	35 ppm	Ranges depending on exposure: slight headaches; nausea; aggravation of angina pectoris (chest pain) and other aspects of coronary heart disease; decreased exercise tolerance in persons with peripheral vascular disease and lung disease; impairment of central nervous system functions; possible increased risk to fetuses; death.	CO is a colorless, odorless, toxic gas. CO is somewhat soluble in water; therefore, rainfall and fog can suppress CO conditions. CO enters the body through the lungs, dissolves in the blood, replaces oxygen as an attachment to hemoglobin, and reduces available oxygen in the blood.	CO is produced by incomplete combustion of carbon-containing fuels (e.g., gasoline, diesel fuel, and biomass). Sources include motor vehicle exhaust, industrial processes (metals processing and chemical manufacturing), residential wood burning, and natural sources.
	8 Hour	9.0 ppm	9 ppm			
Nitrogen dioxide [b] (NO_2)	1 Hour	0.18 ppm	0.100 ppm	Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; contribution to atmospheric discoloration; increased visits to hospital for respiratory illnesses.	During combustion of fossil fuels, oxygen reacts with nitrogen to produce nitrogen oxides—NO_X (NO, NO_2, NO_3, N_2O, N_2O_3, N_2O_4, and N_2O_5). NO_X is a precursor to ozone, PM_{10}, and $PM_{2.5}$ formation. NO_X can react with compounds to form nitric acid and related small particles and result in PM related health effects.	NO_X is produced in motor vehicle internal combustion engines and fossil fuel-fired electric utility and industrial boilers. Nitrogen dioxide forms quickly from NO_x emissions. NO_2 concentrations near major roads can be 30 to 100 percent higher than those at monitoring stations.
	Annual	0.030 ppm	0.053 ppm			

Table 1 (cont): Air Pollutants and Ambient Air Quality Standards

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Sulfur dioxide[c] (SO_2)	1 Hour	0.25 ppm	0.075 ppm	Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma. Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient sulfur dioxide levels. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.	Sulfur dioxide is a colorless, pungent gas. At levels greater than 0.5 ppm, the gas has a strong odor, similar to rotten eggs. Sulfur oxides (SO_x) include sulfur dioxide and sulfur trioxide. Sulfuric acid is formed from sulfur dioxide, which can lead to acid deposition and can harm natural resources and materials. Although sulfur dioxide concentrations have been reduced to levels well below state and federal standards, further reductions are desirable because sulfur dioxide is a precursor to sulfate and PM_{10}.	Human caused sources include fossil-fuel combustion, mineral ore processing, and chemical manufacturing. Volcanic emissions are a natural source of sulfur dioxide. The gas can also be produced in the air by dimethylsulfide and hydrogen sulfide. Sulfur dioxide is removed from the air by dissolution in water, chemical reactions, and transfer to soils and ice caps. The sulfur dioxide levels in the State are well below the maximum standards.
	3 Hour	—	0.5 ppm			
	24 Hour	0.04 ppm	0.14 (for certain areas)			
	Annual	—	0.030 ppm (for certain areas)			
Particulate matter (PM_{10})	24 hour	50 µg/m^3	150 µg/m^3	• Short-term exposure (hours/days): irritation of the eyes, nose, throat; coughing; phlegm; chest tightness; shortness of breath; aggravate existing lung disease, causing asthma attacks and acute bronchitis; those with heart disease can suffer heart attacks and arrhythmias. • Long-term exposure: reduced lung function; chronic bronchitis; changes in lung morphology; death.	Suspended particulate matter is a mixture of small particles that consist of dry solid fragments, droplets of water, or solid cores with liquid coatings. The particles vary in shape, size, and composition. PM_{10} refers to particulate matter that is between 2.5 and 10 microns in diameter, (1 micron is one-millionth of a meter). $PM_{2.5}$ refers to particulate matter that is 2.5 microns or less in diameter, about one-thirtieth the size of the average human hair.	Stationary sources include fuel or wood combustion for electrical utilities, residential space heating, and industrial processes; construction and demolition; metals, minerals, and petrochemicals; wood products processing; mills and elevators used in agriculture; erosion from tilled lands; waste disposal, and recycling. Mobile or transportation related sources are from vehicle exhaust and road dust. Secondary particles form from reactions in the atmosphere.
	Mean	20 µg/m^3	—			
Particulate matter ($PM_{2.5}$)	24 Hour	—	35 µg/m^3			
	Annual	12 µg/m^3	12 µg/m^3			
Visibility reducing particles	8 Hour	See note below [d]				

Table 1 (cont): Air Pollutants and Ambient Air Quality Standards

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Sulfates	24 Hour	25 µg/m^3	—	(a) Decrease in ventilatory function; (b) aggravation of asthmatic symptoms; (c) aggravation of cardio-pulmonary disease; (d) vegetation damage; (e) degradation of visibility; (f) property damage.	The sulfate ion is a polyatomic anion with the empirical formula SO_4^{2-}. Sulfates occur in combination with metal and/or hydrogen ions. Many sulfates are soluble in water.	Sulfates are particulates formed through the photochemical oxidation of sulfur dioxide. In California, the main source of sulfur compounds is combustion of gasoline and diesel fuel.
Lead [e]	30-day	1.5 µg/m^3	—	Lead accumulates in bones, soft tissue, and blood and can affect the kidneys, liver, and nervous system. It can cause impairment of blood formation and nerve conduction, behavior disorders, mental retardation, neurological impairment, learning deficiencies, and low IQs.	Lead is a solid heavy metal that can exist in air pollution as an aerosol particle component. Leaded gasoline was used in motor vehicles until around 1970. Lead concentrations have not exceeded state or federal standards at any monitoring station since 1982.	Lead ore crushing, lead-ore smelting, and battery manufacturing are currently the largest sources of lead in the atmosphere in the United States. Other sources include dust from soils contaminated with lead-based paint, solid waste disposal, and crustal physical weathering.
	Quarter	—	1.5 µg/m^3			
	Rolling 3-month average	—	0.15 µg/m^3			
Vinyl chloride[e]	24 Hour	0.01 ppm	—	Short-term exposure to high levels of vinyl chloride in the air causes central nervous system effects, such as dizziness, drowsiness, and headaches. Epidemiological studies of occupationally exposed workers have linked vinyl chloride exposure to development of a rare cancer, liver angiosarcoma, and have suggested a relationship between exposure and lung and brain cancers.	Vinyl chloride, or chloroethene, is a chlorinated hydrocarbon and a colorless gas with a mild, sweet odor. In 1990, ARB identified vinyl chloride as a toxic air contaminant and estimated a cancer unit risk factor.	Most vinyl chloride is used to make polyvinyl chloride plastic and vinyl products, including pipes, wire and cable coatings, and packaging materials. It can be formed when plastics containing these substances are left to decompose in solid waste landfills. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites.

Table 1 (cont): Air Pollutants and Ambient Air Quality Standards

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Hydrogen sulfide	1 Hour	0.03 ppm	—	High levels of hydrogen sulfide can cause immediate respiratory arrest. It can irritate the eyes and respiratory tract and cause headache, nausea, vomiting, and cough. Long exposure can cause pulmonary edema.	Hydrogen sulfide (H_2S) is a flammable, colorless, poisonous gas that smells like rotten eggs.	Manure, storage tanks, ponds, anaerobic lagoons, and land application sites are the primary sources of hydrogen sulfide. Anthropogenic sources include the combustion of sulfur containing fuels (oil and coal).
Volatile organic compounds (VOC) or Reactive Organic Gases (ROG) or	There are no State or federal standards for VOCs because they are not classified as criteria pollutants.			Although health-based standards have not been established for VOCs, health effects can occur from exposures to high concentrations because of interference with oxygen uptake. In general, concentrations of VOCs are suspected to cause eye, nose, and throat irritation; headaches; loss of coordination; nausea; and damage to the liver, the kidneys, and the central nervous system. Many VOCs have been classified as toxic air contaminants.	Reactive organic gases (ROGs), or VOCs, are defined as any compound of carbon—excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate—that participates in atmospheric photochemical reactions. Although there are slight differences in the definition of ROGs and VOCs, the two terms are often used interchangeably.	Indoor sources of VOCs include paints, solvents, aerosol sprays, cleansers, tobacco smoke, etc. Outdoor sources of VOCs are from combustion and fuel evaporation. A reduction in VOC emissions reduces certain chemical reactions that contribute to the formulation of ozone. VOCs are transformed into organic aerosols in the atmosphere, which contribute to higher PM_{10} and lower visibility.

Table 1 (cont): Air Pollutants and Ambient Air Quality Standards

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources

Notes:
ppm = parts per million (concentration) µg/m³ = micrograms per cubic meter Annual = Annual Arithmetic Mean 30-day = 30-day average Quarter = Calendar quarter

[a] Federal standard refers to the primary national ambient air quality standard, or the levels of air quality necessary, with an adequate margin of safety to protect the public health. All standards listed are primary standards except for 3 Hour SO_2, which is a secondary standard. A secondary standard is the level of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[b] To attain the 1-hour nitrogen dioxide national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 parts per billion (0.100 ppm).

[c] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

[d] Visibility reducing particles: In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

[e] The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

Source of Standards: ARB 2016
Source of effects, properties, and sources: SCAQMD 2016, ARB 2016; EPA 2003, 2009, 2010

Regulations for Construction-Related Equipment

Airborne Toxic Control Measure for Diesel Particulate Matter from Portable Engines Rated at 50 horsepower and Greater. The purpose of this measure is to reduce DPM emissions from portable diesel-fueled engines with a horsepower of 50 or greater. Each fleet is required to comply with weighted reduced DPM emission fleet averages by compliance dates listed in 17 California Code of Regulations Section 93116. Portable equipment includes but is not limited to, air compressors, generators, concrete pumps, graders, bulldozers, water pumps, drill rigs, pile drivers, scrapers, abrasive blasters, aggregate screening and crushing plants, concrete batch plants, and welders.

ARB Regulation for In-Use Off-Road Diesel Vehicles (Off-Road Regulation), Title 13, Article 4.8, Chapter 9, Section 2449 in the California Code of Regulations. On July 26, 2007, the ARB adopted a regulation to reduce DPM and NO_X emissions from in-use (existing) off-road heavy-duty diesel vehicles in California. All self-propelled off-road diesel vehicles over 25 horsepower (hp) used in California and most two-engine vehicles (except on-road two-engine sweepers) are subject to this regulation. This includes vehicles rented or leased (rental or leased fleets). Such vehicles are used in construction, mining, and industrial operations. The Off-Road regulation:

- Imposes limits on idling (no more than five consecutive minutes) and requires a written idling policy;
- Requires a disclosure when selling vehicles;
- Requires all vehicles to be reported to ARB (using the Diesel Off-Road Online Reporting System [DOORS]) and labeled;
- Restricts adding older equipment into fleets; and
- Requires fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies (i.e., exhaust retrofits).

Regulations for Heavy-Duty Vehicles/Trucks

ARB Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling. This ATCM adopted section 2485 within Chapter 10, Article 1, Division 3, title 13 in the California Code of Regulations. The measure limits the idling of diesel vehicles (i.e., commercial trucks over 10,000 pounds) to reduce emissions of toxics and criteria pollutants. The driver of any vehicle subject to this section: (1) shall not idle the vehicle's primary diesel engine for greater than five minutes at any location; and (2) shall not idle a diesel-fueled auxiliary power system for more than five minutes to power a heater, air conditioner, or any ancillary equipment on the vehicle if it has a sleeper berth and the truck is located within 100 feet of a restricted area (homes and schools).

ARB Requirements to Reduce Idling Emissions from New and In-Use Trucks. Amendments were made to Title 13 in California Code of Regulations in Sections 1956.8, 2404, 2424, 2425, and 2485. The amendment states: "all new 2008 and subsequent model-year heavy-duty diesel engines shall be

equipped with an engine shutdown system that automatically shuts down the engine after 300 seconds of continuous idling operation once the vehicle is stopped, the transmission is set to 'neutral' or 'park,' and the parking brake is engaged. If the parking brake is not engaged, then the engine shutdown system shall shut down the engine after 900 seconds of continuous idling operation once the vehicle is stopped and the transmission is set to 'neutral' or 'park.'" There are a few conditions where the engine shutdown system can be overridden to prevent engine damage. Any project trucks manufactured after 2008 would be consistent with this rule, which would ultimately reduce air emissions.

Statewide Truck and Bus Regulation (Regulation to Reduce Emissions of DPM, Oxides of Nitrogen and Other Criteria Pollutants, from In-Use Heavy-Duty Diesel-Fueled Vehicles, Title 13, California Code of Regulations, Section 2025). On December 12, 2008, the ARB approved this regulation to reduce emissions from existing on-road diesel trucks and buses operating in California. This regulation applies to all on-road heavy-duty diesel-fueled vehicles with a gross vehicle weight rating greater than 14,000 pounds, agricultural yard trucks with off-road certified engines, and certain diesel fueled shuttle vehicles of any gross vehicle weight rating. Out-of-state trucks and buses that operate in California are also subject. Under the regulation, older, heavier trucks (i.e. those with pre-2000 year engines and a gross vehicle weight rating greater than 26,000 pounds), are required to have installed a DPM filter and must be replaced with a 2010 engine between 2015 and 2020, depending on the model year. By 2015, all heavier pre-1994 trucks must be upgraded to 2010 engines and newer trucks are thereafter required to be replaced over the next eight years. Older, more polluting trucks are required to be replaced first, while trucks that already have relatively clean 2007-2009 engines are not required to be replaced until 2023. Lighter trucks (14,001-26,000 pounds) must adhere to a similar schedule. Furthermore, nearly all trucks that are not required under the Truck and Bus Regulation to be replaced by 2015, are required to be upgraded with a DPM filter by that date.

2.1.3 - SCAQMD

Standard Conditions

During construction and operation, the project must comply with applicable SCAQMD rules and regulations. The following are rules and regulations the project may be required to comply with, either directly or indirectly.

SCAQMD Rule 402 prohibits a person from discharging 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 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.

SCAQMD Rule 403 governs emissions of fugitive dust during construction and operation activities. Compliance with this rule is achieved through the application of standard Best Management Practices, such as the application of water or chemical stabilizers to disturbed soils, covering haul vehicles, restricting vehicle speeds on unpaved roads to 15 miles per hour (mph), sweeping loose dirt from

paved site access roadways, cessation of construction activity when winds exceed 25 mph, and establishing a permanent ground cover on finished sites.

Rule 403 requires the control of fugitive dust with the best available control measures, so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. In addition, SCAQMD Rule 403 requires implementation of dust suppression techniques to prevent fugitive dust from creating a nuisance off-site. Applicable dust suppression techniques from Rule 403 are summarized below. Implementation of these dust suppression techniques can reduce the fugitive dust generation (and thus the PM_{10} component). Compliance with these rules would reduce impacts on nearby sensitive receptors.

Rule 403 measures may include but are not limited to the following:

- Apply nontoxic chemical soil stabilizers according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for 10 days or more).
- Water active sites at least three times daily. (Locations where grading is to occur will be thoroughly watered prior to earthmoving.)
- Cover all trucks hauling dirt, sand, soil, or other loose materials, or maintain at least 0.6 meters (2 feet) of freeboard (vertical space between the top of the load and top of the trailer) in accordance with the requirements of California Vehicle Code section 23114.
- Reduce traffic speeds on all unpaved roads to 15 mph or less.
- Suspension of all grading activities when wind speeds (including instantaneous wind gusts) exceed 25 mph.
- Bumper strips or similar best management practices shall be provided where vehicles enter and exit the construction site onto paved roads, or wash off trucks and any equipment leaving the site each trip.
- Replanting disturbed areas as soon as practical.
- During all construction activities, construction contractors shall sweep on-site and off-site streets if silt is carried to adjacent public thoroughfares, to reduce the amount of particulate matter on public streets. All sweepers shall be compliant with SCAQMD Rule 1186.1, Less Polluting Sweepers.

SCAQMD Rule 481 applies to all spray painting and spray coating operations and equipment. This rule would apply to the application of architectural coatings to the exterior and interior or of the building walls. The rule states that a person shall not use or operate any spray painting or spray coating equipment unless one of the following conditions is met:

(1) The spray coating equipment is operated inside a control enclosure, which is approved by the Executive Officer. Any control enclosure for which an application for permit for new construction, alteration, or change of ownership or location is submitted after the date of adoption of this rule, shall be exhausted only through filters at a design face velocity not less than 100 feet per minute, nor greater than 300 feet per minute, or through a water wash system designed to be equally effective for the purpose of air pollution control.

(2) Coatings are applied with high-volume low-pressure, electrostatic and/or airless spray equipment.

(3) An alternative method of coating application or control is used which, has effectiveness equal to or greater than the equipment specified in the rule.

SCAQMD Rule 1108 governs the sale, use, and manufacturing of asphalt and limits the reactive organic gases (ROG) content in asphalt used in the SoCAB. This rule would regulate the VOC content of asphalt used during construction. Therefore, all asphalt used during construction of the project must comply with SCAQMD Rule 1108.

SCAQMD Rule 1113 governs the sale, use, and manufacturing of architectural coating and limits the VOC content in paints and paint solvents. This rule regulates the VOC content of paints available during construction. Therefore, all paints and solvents used during construction and operation of the project must comply with SCAQMD Rule 1113.

SCAQMD Rule 1143 governs the manufacture, sale, and use of paint thinners and solvents used in thinning of coating materials, cleaning of coating application equipment and other solvent cleaning operations by limiting their VOC content. This rule regulates the VOC content of solvents used during construction and operation.

SCAQMD Rule 1186 limits the presence of fugitive dust on paved and unpaved roads and sets certification protocols and requirements for street sweepers that are under contract to provide sweeping services to any federal, state, county, agency or special district such as water, air, sanitation, transit, or school district.

SCAQMD Rule 1303 governs the permitting of re-located or new major emission sources, requiring Best Available Control Measures and setting significance limits for PM_{10} among other pollutants.

Air Quality Management Plans

The SCAQMD is the agency for air pollution control for the project site. The SCAQMD is responsible for controlling emissions primarily from stationary sources. The SCAQMD maintains air quality monitoring stations throughout the SoCAB and a portion of the Salton Sea Air Basin. The SCAQMD is also responsible for developing, updating, and implementing the Air Quality Management Plan (AQMP) for the region, in coordination with the Southern California Association of Governments (SCAG).

An AQMP is a plan prepared and implemented by an air pollution district for a county or region designated as nonattainment[2] for the federal and/or California ambient air quality standards and serves as the basis for the region's SIP. The regional SIP is then sent to the ARB for approval and incorporation into the state SIP.

2016 AQMP

On March 3, 2017, the SCAQMD adopted the 2016 AQMP, the current Plan for the SCAQMD. The 2016 AQMP address strategies and measures to attain the 2008 federal 8-hour ozone standard by 2032, the 2012 federal annual $PM_{2.5}$ standard by 2021 to 2025, and the 2006 federal 24-hour $PM_{2.5}$ standard by 2019. The 2016 AQMP also examined the regulatory requirements for attaining the 2015 federal 8-hour ozone standard. The 2016 AQMP also updates previous attainment plans for ozone and $PM_{2.5}$ that have not yet been met (SCAQMD 2016). In general, the AQMP is updated every 3 to 4 years. However, the air quality planning process for the AQMP is continuous and each iteration is an update of the previous plan.

To ensure air quality goals will be met while minimizing impacts to the regional economy, the following policy objectives guided the development of the plan:

- Eliminate reliance on "black box" (future technologies) to the maximum extent possible by providing specific pathways to attainment with specific control measures.
- Calculate and take credit for co-benefits from other planning efforts (e.g., GHG reduction targets, energy efficiency, transportation, etc.).
- Develop a strategy with fair-share emission reductions at the federal, state, & local levels such as a new federal engine emission standards and/or additional authority provided to the state or SCAQMD for mobile sources.
- Seek significant funding for incentives to implement early deployment and commercialization of known zero and near-zero technologies.
- Invest in strategies and technologies meeting multiple objectives regarding air quality, climate change, air toxic exposure, energy, and transportation.
- Enhance the socioeconomic analysis and select the most efficient and cost-effective path to achieve multi-pollutant and multi-deadline targets.
- Prioritize non-regulatory, innovative and "win-win" approaches for emission reductions.

The 2016 AQMP also demonstrates attainment of the 2008 Ozone Standard in Coachella Valley by 2026. The Plan also demonstrates compliance with all applicable Federal Clean Air Act requirements pertaining to nonattainment areas pursuant to the EPA-approved Implementation Rules, such as the

[2] The term nonattainment area refers to an air basin where one or more ambient air quality standards are exceeded.

annual average and summer planning emission inventory for criteria and precursor pollutants, attainment demonstrations, reasonably available control measure (RACM) and reasonably available control technology (RACT) analyses, reasonable further progress, PM precursor requirements, vehicle miles traveled (VMT) demonstrations, and transportation conformity budgets for the SoCAB and Coachella Valley.

The proposed control measures in the 2016 AQMP are based on implementing all feasible control measures through the accelerated deployment of available cleaner technologies, best management practices, co-benefits from existing programs, and incentive measures. The 2016 AQMP control measures consist of three main components: (1) the SCAQMD's Stationary and Mobile Source Control Measures; (2) suggested State and Federal Source Control Measures; and (3) Regional Transportation Plan Transportation Control Measures provided by Southern California Association of Governments. These measures rely on not only the traditional command-and-control approach but also public incentive programs, as well as advanced technologies expected to be developed and deployed in the next several years.

SCAQMD CEQA Guidance

The SCAQMD has four major roles under CEQA:

1. Lead Agency: responsible for preparing environmental analyses for its own projects (adoption of rules, regulations, or plans) or permit projects filed with the SCAQMD where the SCAQMD is the lead agency and has primary approval authority over the project.

2. Commenting Agency: the SCAQMD reviews and comments on air quality analyses prepared by other public agencies (such as the project).

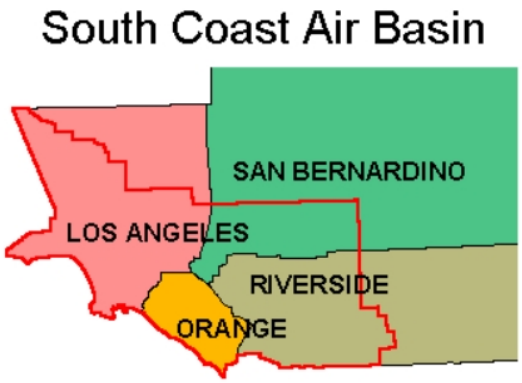
3. Provide guidance and recommendations on the use of significance thresholds for CEQA air quality and greenhouse gas analyses

4. Collect ambient air quality monitoring data and develops emission inventories that serve as baselines for impact assessments

2.2 - Environmental Setting

2.2.1 - Climate, Meteorological, and Terrain Influences

The combination of topography, dominant airflows, atmospheric inversions, location, and season impact regional air quality of the South Coast Air Basin (SoCAB). To the west of the SoCAB is the Pacific Ocean and the Los Padres National Forest. To the north and east of the basin are the San Gabriel, San Bernardino, and San Jacinto mountains, while the southern limit of the SoCAB is the San Diego County line. The SoCAB consists of Orange County, all of Los Angeles County except for the Antelope Valley, and the non-desert portions of western San Bernardino County and Riverside County (see illustration below). The SCAQMD also has jurisdiction over the Riverside County portion of the Salton Sea Air Basin and Mojave Desert Air Basin; however, those basins are not within the SoCAB.



Temperature inversions limit the vertical depth of the atmosphere through which pollution can be mixed. Among the most common temperature inversions in the basin are radiation inversions, which form on clear winter nights when cold air off mountains sink to the valley floor while the air aloft over the valley remains warm. These inversions, in conjunction with calm winds, trap pollutants near the source. Other types of temperature inversions that affect the basin include marine, subsidence, and high-pressure inversions.

Summers often have periods of hazy visibility and occasionally unhealthful air over a large portion of the SoCAB, while air quality impacts in the winter tend to be localized. Higher temperatures and sunshine can contribute to air pollutant formation, particularly ozone. Impacts of ozone are discussed in the impact sections of this analysis. The annual average temperature varies little throughout much of the basin, ranging from the low to middle 60s to the upper 80s (degrees Fahrenheit). The majority of the annual rainfall in the area occurs between December and March.

Dominant airflows provide the driving mechanism for transport and dispersion of air pollution. The mountains surrounding the region form natural horizontal barriers to the dispersion of air contaminants. Air pollution created in the coastal areas and around the Los Angeles area is transported inland until it reaches the mountains where the combination of mountains and inversion layers generally prevent further dispersion. Air stagnation may occur during the early evening and early morning periods of transition between day and nighttime flows. The region also experiences periods of hot, dry winds from the desert, known as the Santa Ana winds. If the Santa Ana winds are strong, they can surpass the sea breeze, which blows from the ocean to the land, and carry the suspended dust and pollutants out to the ocean. If the winds are weak, they are opposed by the sea breeze and cause stagnation, resulting in high pollution events. The primary wind direction near the project site is from the north to the south. The wind rose for the Perris Valley air monitoring station summarizes the wind patterns in the project area as shown in Exhibit 3.

Exhibit 3: Wind Rose for Perris Valley Air Monitoring Station

2.2.2 - Existing Air Quality

Existing levels of ambient air quality, historical trends, and future projections of air quality in the project area are best documented from measurements made near the project site. The SCAQMD maintains an extensive air-monitoring network that measures levels of several air pollutants throughout the SoCAB. The SCAQMD has subdivided the SoCAB into 36 Source-Receptor Areas (SRA) many containing one or more monitoring stations. A SRA is a geographical area identified by the SCAQMD that is a source area in which contaminants are emitted or a receptor area in which the contaminants accumulate and are measured or both.

The project is located within SRA 24, Perris Valley. The SCAQMD measures various air pollutants within SRA 24 including ozone and PM_{10}. To provide more comprehensive summary of existing air quality levels, air monitoring data from the nearby Riverside Rubidoux air monitoring station (SRA 23) were also collected. The Perris Valley monitoring station is located 10.4 miles south of the project while the Riverside Rubidoux monitoring station was located 14.5 miles northwest of the project site. The collected are quality data were used to comprise a "background" for the project site.

Table 2 summarizes the air monitoring data covering the period 2015-2017, the most currently published 3-year monitoring period. The ambient air quality levels measured at this air monitoring station are considered representative of air quality at the project site. The information in Table 2 indicates that the area where the project would be located currently violates the State or federal standards for ozone, PM_{10} and $PM_{2.5}$.

Attainment Status

The United States Environmental Protection Agency (EPA) and the California Air Resources Board (ARB) designate air basins where ambient air quality standards are exceeded as "nonattainment" areas. If standards are met, the area is designated an "attainment" area. If there is inadequate or inconclusive data to make a definitive attainment designation, they are considered "unclassified." National nonattainment areas are further designated marginal, moderate, serious, severe, or extreme as a function of level of deviation from standards. Each standard has a different definition, or 'form' of what constitutes attainment, based on specific air quality statistics. For example, the Federal 8-hour CO standard is not to be exceeded more than once per year; therefore, an area is in attainment of the CO standard if no more than one 8-hour ambient air monitoring values exceeds the threshold per year. In contrast, the Federal annual $PM_{2.5}$ standard is met if the 3-year average of the annual average $PM_{2.5}$ concentration is less than or equal to the standard. Table 3 shows the current attainment designations for the basin. As noted therein, the SoCAB is designated as nonattainment for the state and/or federal ozone, PM_{10}, and $PM_{2.5}$ standards. The Los Angeles County portion of the SoCAB is in nonattainment for lead; however, the project area is in attainment for lead.

Table 2: Project Air Quality Monitoring Summary

Air Pollutant, Averaging Time (Units)(*)	2015	2016	2017
Ozone (Perris Valley)			
Max 1 Hour (ppm)	0.124	0.131	0.120
Days > CAAQS (0.09 ppm)	25	23	33
Max 8 Hour (ppm)	0.102	0.098	0.105
Days > CAAQS (0.07 ppm)	49	55	80
Days > NAAQS (0.07 ppm)	49	55	80
Carbon Monoxide (Riverside Rubidoux)			
Max 1 Hour (ppm)	2.3	1.9	ND
Days > CAAQS (20 ppm)	0	0	ND
Days > NAAQS (35 ppm)	0	0	ND
Max 8 Hour (ppm)	1.6	1.4	ND
Days > CAAQS (9.0 ppm)	0	0	ND
Days > NAAQS (9.0 ppm)	0	0	ND
Nitrogen Dioxide (Riverside Rubidoux)			
Annual Mean (ppm)	0.014	0.014	0.014
Exceeds CAAQS (0.030 ppm) ?	No Exceedance	No Exceedance	No Exceedance
Exceeds NAAQS (0.053 ppm) ?	No Exceedance	No Exceedance	No Exceedance
Max 1 Hour (ppm)	0.057	0.073	0.069
Days > CAAQS (0.18 ppm)	0	0	0
Max 1-hour (98th %) (0.10ppm)	0.052	0.052	0.058
Days> NAAQS (0.10 ppm)	0	0	0
Inhalable Particulate Matter (PM_{10}) (Perris Valley)			
Annual Mean (µg/m^3)	33.1	32.2	32.6
Exceeds CAAQS (20 µg/m^3)?	Exceeds Std	Exceeds Std	Exceeds Std
Max 24 Hour (µg/m^3)	188	76	75.4
Days > CAAQS (50 µg/m^3)	4	5	11
Days > NAAQS (150 µg/m^3)	1	0	0
Fine Particulate Matter ($PM_{2.5}$) (Riverside Rubidoux)			
Annual Mean (µg/m^3)	15.3	12.6	14.5
Exceeds CAAQS (12 µg/m^3)?	Exceeds Std	Exceeds Standard	Exceeds Standard
Exceeds NAAQS (15 µg/m^3)?	Exceeds Std	No Exceedance	No Exceedance
Max 24 Hour (µg/m^3)	54.7	51.5	50.3
Days > NAAQS (35 µg/m^3)	9	5	7

Table 2 (cont): Project Air Monitoring Summary

Abbreviations:
> = exceed ppm = parts per million µg/m³ = micrograms per cubic meter
max = maximum std = ambient air quality standard ID = Insufficient Data ND=No data
CAAQS = California Ambient Air Quality Standard NAAQS = National Ambient Air Quality Standard
Source: SCAQMD Historical Data by Year, accessed on December 23, 2018.

Table 3: South Coast Air Basin Attainment Status

Pollutant	State Status	National Status
Ozone	Nonattainment	Nonattainment—Extreme
Carbon monoxide	Attainment	Unclassified/Attainment
Nitrogen dioxide	Attainment	Unclassified/Attainment
Sulfur dioxide	Attainment	Attainment
PM_{10}	Nonattainment	Attainment
$PM_{2.5}$	Nonattainment	Nonattainment
Lead	Attainment	Nonattainment (Los Angeles County Only)
Sulfates	Attainment	No national standard
Visibility Reducing Particles	Unclassified	No national standard
Hydrogen Sulfide	Unclassified	No national standard
Source of State Designation: ARB 2017a		

Odors

Odors can cause a variety of responses. The impact of an odor results from interacting factors, such as frequency (how often), intensity (strength), duration (in time), offensiveness (unpleasantness), location, and sensory perception.

Odor is typically a warning system that prevents animals and humans from consuming spoiled food or toxic materials. Odor-related symptoms reported in a number of studies include nervousness, headache, sleeplessness, fatigue, dizziness, nausea, loss of appetite, stomach ache, sinus congestion, eye irritation, nose irritation, runny nose, sore throat, cough, and asthma exacerbation.

The SCAQMD's role is to protect the public's health from air pollution by overseeing and enforcing regulations. The SCAQMD's resolution activity for odor compliance is mandated under California Health & Safety Code Section 41700, and falls under SCAQMD Rule 402. This rule on Public Nuisance Regulation 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 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. The provisions of this rule shall not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals."

Asbestos

Asbestos is listed as a toxic air contaminant (TAC) by the ARB and as a Hazardous Air Pollutant (HAP) by the EPA. Asbestos occurs naturally in surface deposits of several types of rock formations. Asbestos most commonly occurs in ultramafic rock that has undergone partial or complete alteration to serpentine rock (serpentinite) and often contains chrysotile asbestos. In addition, another form of asbestos, tremolite, can be found associated with ultramafic rock, particularly near faults. Crushing or breaking these rocks, through construction or other means, can release asbestos form fibers into the air. Asbestos emissions can result from the sale or use of asbestos-containing materials (ACM), road surfacing with such materials, grading activities, and surface mining. The risk of disease is dependent upon the intensity and duration of exposure. When inhaled, asbestos fibers may remain in the lungs and with time may be linked to such diseases as asbestosis, lung cancer, and mesothelioma. There are no known likely areas of naturally occurring asbestos in the project area (USGS 2011).

2.3 - Significance Thresholds

2.3.1 - CEQA Guidelines

The CEQA Guidelines define a significant effect on the environment as "a substantial, or potentially substantial, adverse change in the environment." To determine if a project would have a significant impact on air quality, the type, level, and impact of emissions generated by the project must be evaluated.

The following air quality significance thresholds are contained in Appendix G of the CEQA Guidelines. A significant impact would occur if the project would:

a) Conflict with or obstruct implementation of the applicable air quality plan;

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable national or state ambient air quality standard;

c) Expose sensitive receptors to substantial pollutant concentrations; or

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

2.3.2 - SCAQMD Significance Thresholds

While the final determination of whether a project is significant is within the purview of the Lead Agency pursuant to Section 15064(b) of the CEQA Guidelines, SCAQMD recommends that its quantitative air pollution thresholds be used to determine the significance of project emissions. If the Lead Agency finds that the project has the potential to exceed these air pollution thresholds, the project should be considered to have significant air quality impacts.

To address the CEQA significance requirements, the guidelines and emissions thresholds established by the SCAQMD in its CEQA Air Quality Handbook (SCAQMD 1993) and subsequent additions to the Handbook were used in this analysis. For purposes of this assessment, the SCAQMD has identified two main types of air quality significance thresholds that are applicable to this project: regional emission thresholds and localized significance thresholds, each of which is described below.

Regional Thresholds

The regional thresholds are designed to assess a project's individual and cumulative contribution to the overall emissions burden of the SoCAB. The SCAQMD has developed regional significance thresholds for regulated air pollutants as summarized in Table 4. Any project in the SoCAB with daily construction or operational emissions that exceed any of the indicated thresholds should be considered as having an individual and cumulatively significant air quality impact.

Table 4: SCAQMD Regional Daily Emission Thresholds

Pollutant	Construction	Operations
Oxides of Nitrogen (NOx)	100 lbs/day	55 lbs/day
Volatile Organic Compounds (VOC)	75 lbs/day	55 lbs/day
Particulate Matter (PM_{10})	150 lbs/day	150 lbs/day
Particulate Matter ($PM_{2.5}$)	55 lbs/day	55 lbs/day
Oxides of Sulfur (SO_x)	150 lbs/day	150 lbs/day
Carbon Monoxide (CO)	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
Source: SCAQMD 1993		

As noted in the discussions of criteria pollutants shown in Table 1, ozone is a photochemical pollutant that is not emitted directly into the atmosphere, but is formed by a complex series of chemical reactions between the ozone precursor emissions of volatile organic compounds VOC, NO_X, and sunlight. Ozone is a regional pollutant that is generated over a large area and is transported over time and dispersed by the wind. Scientifically, the health effects from ozone are correlated with increases in the ambient levels of ozone in the air a person breathes. However, it takes a large amount of additional precursor emissions to cause a detectable change in ambient ozone levels over an entire region. The SCAQMD has indicated that it "does not currently know of a way to accurately quantify ozone-related health impacts caused by NOx or VOC emissions from relatively small projects" (SCAQMD 2015). The emission levels from this project are small enough such that their regional impact on ambient ozone levels would not be detectable in the regional air dispersion models that are currently used to determine ozone levels across the SoCAB. As an alternative to directly estimating the impacts of a project's emissions on ambient ozone levels, the SCAQMD has adopted regional significance thresholds using VOC and NOx emissions as proxies for ozone limiting the emissions of VOC and NO_x to 55 pounds per day or 10 tons per year. Essentially, the SCAQMD takes the position that a source that emits 55 pounds per day (or 10 tons per year) of VOC or NO_x would contribute a

cumulatively significantly impact to ozone formation and their consequential health impacts. Conversely, a project that emits less than 55 pounds per day (or 10 tons per year) of VOC or NO_x would not result in a cumulatively significant impact on ambient ozone levels and their consequential health impacts.

Localized Significance Thresholds

Whereas the regional estimation of emissions quantifies the project's cumulative emission burden throughout the region or air basin, the estimation of the project's local emissions focuses on the emissions that the project generates in the immediate or local area surrounding the project and their potential health impacts. Project-related air emissions may have the potential to exceed the health-based State and Federal air quality standards in the project vicinity, even though these pollutant emissions may not be significant enough to create a regional impact to the SoCAB.

The SCAQMD published its Final Localized Significance Threshold (LST) Methodology in June 2003, revised July 2008 and in 2009 as the Final Methodology to Calculate Particulate Matter PM_{10} and $PM_{2.5}$ Significance Thresholds (SCAQMD 2009). The SCAQMD recommends that all air quality analyses include a localized assessment of both construction and operational impacts on the air quality at nearby sensitive receptors. LSTs represent the maximum emissions from a project site that are not expected to result in an exceedance of NAAQS or CAAQS. LSTs are based on the ambient concentrations of NOx, CO, PM_{10}, and $PM_{2.5}$ pollutants within the source-receptor area (SRA) where a project is located, size of the project area, and the distance to the nearest sensitive receptor. The project site is located in SRA 24 (Perris Valley). The LST assessment only applies to emissions generated from onsite construction and/or operational activities.

Construction

Construction activities vary substantially from day to day depending on the specific construction activity and weather conditions. The SCAQMD's localized significance methodology requires the quantification of only on-site emissions. To facilitate the estimation of the local construction emission impacts, the SCAQMD has published mass emission rate lookup tables that can be applied to determine the appropriate LST. The mass emission look up tables provide levels of emissions below which the most stringent ambient air quality standard would not be exceeded. The SCAQMD mass rate emission tables were applied to determine the assessment of project's localized construction emissions. To apply the SCAQMD mass rate emission significance lookup tables, it is necessary to have three principal items of information: the geographical area where the project is located (SRA), the distance to nearest sensitive receptor, and the maximum area that would be disturbed in a single day during construction activities.

The SCAQMD has published a "Fact Sheet for Applying CalEEMod to Localized Significance Thresholds" (SCAQMD 2011). The California Emissions Estimator Model (CalEEMod) model calculates construction emissions based on the number of equipment hours and the maximum daily disturbance activity possible for each piece of equipment for several land use projects and their development intensity. The maximum disturbed area during construction serves as a factor in determining the value of the localized significance thresholds for construction. Table 5 shows the maximum daily disturbed acreage during site preparation and grading activities, the activities with the highest daily emissions, based on the types and

numbers of construction equipment used. As shown in Table 5, the maximum daily disturbed area is 3.5 acres. Therefore, the maximum disturbed area of 3.5 acres was used to estimate the project's localized construction emissions.

Table 5: Equipment Specific Site Preparation and Grading Disturbed Area Rates

Activity	Equipment Type	Equipment Quantity	Acres Graded per 8-hour Day	Operating Hours per Day	Acres Graded per Day
Site Preparation	Crawler Tractor	4	0.5	8	2
	Rubber Tired Dozer	3	0.5	8	1.5
				Total .....3.5 acres	
Grading	Crawler Tractor	2	0.5	8	1
	Excavator	1	0	8	0
	Grader	1	0.5	8	0.5
	Rubber Tired Dozer	1	0.5	8	0.5
				Total .....2 acres	
Source: SCAQMD 2011					

The specification of LSTs is also dependent on the distance to the nearest sensitive receptor. Those individuals who are sensitive to air pollution include children, the elderly, and persons with preexisting respiratory or cardiovascular illness. The SCAQMD considers a sensitive receptor to be a location that houses or attracts children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants and where an individual can remain for 24 hours. Examples of sensitive receptors include hospitals, residences, convalescent facilities, and schools. The nearest sensitive receptors are existing residences located approximately 40 meters to the south of the project across Moreno Beach Drive/Auto Mall Parkway. The LST emission tables provide emissions for receptor distances of 25 meters and 50 meters. The LSTs for 40 meters were linearly interpolated between the values for 25 meters and 50 meters. Further, the LST emission tables provide emissions for disturbed areas of 2 acres and 5 acres. The LSTs for a disturbed area of 3.5 acres were linearly interpolated between the values for 2 acres and 5 acres. Table 6 provides the construction localized significance thresholds in SRA 24 where the project is located.

Table 6: Construction Localized Significance Thresholds

NOx (lbs/day)	CO (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
238	1,530	18.0	7.2
LSTs for SRA 24, project area of 3.5 acres and a receptor distance of 40 meters			

The project's onsite construction emissions generated by the CalEEMod model were compared to the thresholds identified in Table 6 to determine the localized significance of the project's construction emissions.

Operations

The project involves the operation of a car dealership with its attendant sales, service, and car wash activities. As noted previously, the LST assessment only considers emissions that are generated from onsite emission sources. The CalEEMod model does not separate a project's operational emissions into emissions generated onsite and emissions generated offsite. The largest source of operational emissions results from the emissions from principally customer motor vehicles that would travel to and from the project each day. However, nearly all of the project's mobile source emissions are generated offsite along local roadways and freeways and not from onsite travel. To develop an estimate of the onsite mobile source emissions, it was assumed that the average onsite vehicle trip length was 200 feet, the average distance from the project's entrance on Auto Mall Parkway to the service area and customer parking areas. Other sources of onsite operational emissions involve various area sources (e.g., architectural coating consumer products, and landscaping) and energy sources (principally natural gas consumption).

As noted earlier, the SCAQMD has defined LSTs for project areas up to 5 acres in size. The proposed project is 6.19 acres. To provide a conservative estimate of the operational LSTs for this project, the LSTs were based on a 5 acre project since if LSTs were available to a 6 acre project, such LSTs would be larger than the LSTs for a 5 acre project since the LSTs increase with project size. Therefore, the use of the LSTs for a 5-acre project provides a conservative estimate of the project's operational LSTs. Table 7 provides the operational LSTs for this project.

Table 7: Operational Localized Significance Thresholds

NOx (lbs/day)	CO (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
289	1,937	7.6	3.0
LSTs for SRA 24, project area of 5 acres and a receptor distance of 40 meters			

2.4 - Project Air Quality Analysis Methodology and Assumptions

2.4.1 - Criteria Pollutant Emissions Model Selection – Regional Assessment

There are thousands of different air pollutants, defined as any gas or particle found in concentrations in excess of what is of natural origin. While some are relatively benign, others may be found in concentrations high enough to cause health or environmental impacts. Almost any gas or particle in high enough concentrations will cause some type of health response.

Criteria pollutants are those pollutants for which the EPA and ARB have set ambient air quality standards such as those shown in Table 1 above. The focus of the analysis of criteria pollutants includes the following criteria pollutants:

- Carbon Monoxide (CO)
- Oxides of Nitrogen (NO_x)
- Particulates (PM_{10} and $PM_{2.5}$)

In addition, the SCAQMD has established a regional significance threshold for VOC because of its participation as a precursor in the formation of ozone. While there are other criteria pollutants such as sulfur dioxide and lead, the ambient levels of these other criteria pollutants are much lower than their ambient air quality standards. Therefore, these other criteria pollutants were not evaluated in this assessment.

The regional assessment of criteria pollutant emissions examined the amount of emissions from the construction and operation of a project that could add to the overall emission burden and impact the overall air quality of the SoCAB where the project is located.

Air pollutant emissions are estimated by using an emission factor and a level of activity.

Emissions = Emission Factor x Activity Level

Emission factors represent the emission rate of a pollutant over a given time or activity; for example, grams of NO_X per vehicle mile traveled or grams of NO_X per horsepower hour of equipment operation. The ARB has published emission factors for on-road mobile vehicles/trucks in the ARB Emission Factor (EMFAC) mobile source emissions model and emission factors for off-road equipment and vehicles in the ARB OFFROAD emissions model. Activity levels are a measure of how active a piece of equipment is and can be represented as the amount of material processed, elapsed time that a piece of equipment is in operation, horsepower of a piece of equipment used, or vehicle miles traveled (VMT) per day.

An air emissions model (or calculator) combines the emission factors and the levels of activity and outputs the emissions for the various pieces of equipment. The SCAQMD in cooperation with other air districts throughout the State developed the California Emissions Estimator Model (CalEEMod Version 2016.3.2). The CalEEMod model is designed as a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and greenhouse gas emissions associated with construction and operation from a variety of land uses.

Emission factors are often updated as new information becomes available and there is a normal lag time between the development of new emission factors and the integration of the new emissions factors into the appropriate models. The current version of the CalEEMod model uses the emission factors from the OFFROAD2011 (offroad equipment) and EMFAC2014 emission factors (mobile sources). An update to the CalEEMod model that incorporates the most current versions of the OFFROAD (Version 2017) and EMFAC (Version 2017) emission models is presently under development by the California Air Pollution Control Officers Association (CAPCOA) but was not available for inclusion into this assessment. .

Construction

Regional construction emissions result from on-site and off-site activities. On-site emissions principally consist of exhaust emissions from the activity levels of heavy-duty construction equipment, motor vehicle operation, and fugitive dust (mainly PM_{10}) from disturbed soil. Additionally, paving operations and application of architectural coatings release VOC emissions. Off-site emissions are caused by motor vehicle exhaust from delivery vehicles, worker traffic, and road dust (PM_{10} and $PM_{2.5}$).

Construction-related emissions are expected from the following project construction activities:

- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coating

Construction is expected to commence in January 2020 and will last through early 2021. The duration of the construction activity was estimated based on discussions with the client and an opening year of 2021. Table 8 shows the conceptual construction schedule for the project and as such represents a "worst case" analysis scenario. Note that the actual construction/operational schedule is conceptual in nature and may be affected by time involved in securing regulatory approvals and market demand. Assuming a later construction/operational schedule would likely result in lower emissions than generated by the conceptual schedule owing to the fact that equipment emissions (construction and mobile sources) are expected to decline from their 2020 levels in future years. The use of the 2020 schedule would, therefore, provide a conservative estimate of project construction emissions[3]. Table 9 provides the construction equipment inventory developed by the CalEEMod model for the project. The activity for construction equipment is based on the horsepower and load factors of the equipment. In general, the horsepower is the power of an engine—the greater the horsepower, the greater the power. The load factor is the average power of a given piece of equipment while in operation compared with its maximum rated horsepower. A load factor of 1.0 indicates that a piece of equipment continually operates at its maximum operating capacity. This analysis uses the CalEEMod model's default load factors for off-road equipment.

Construction emissions associated with off-site utility and infrastructure improvements may occur; however at this time, the extent of these activities are unknown and are not expected to exceed the emissions identified for the project-related construction activities. As such, no impacts beyond what has already been identified in this report are expected to occur.

[3] As shown in the CalEEMod User's Guide, Table 3.4 "OFFROAD Equipment Emission Factors", as the analysis year increases, the emission factors for the same equipment decrease due to the natural turn-over of older equipment being replaced by newer, less polluting equipment and new regulatory requirements

Table 8: Conceptual Construction Schedule

Phase	Start Date	End Date	Duration (working days)
Site Preparation	01/02/2020	01/15/2020	10
Grading	01/16/2020	02/26/2020	30
Building Construction	02/27/2020	01/13/2021	230
Paving	01/14/2021	02/10/2021	20
Architectural Coating	02/11/2021	03/10/2021	20
Source: see Appendix A.			

Table 9: Construction Equipment

Activity	Equipment	Number	Hours per Day	Horsepower	Load Factor
Site Preparation	Rubber Tired Dozers	3	8	247	0.40
	Crawler Tractor	4	8	212	0.43
Grading	Crawler Tractors	3	8	212	0.43
	Excavators	1	8	158	0.38
	Graders	1	8	187	0.41
	Rubber Tired Dozers	1	8	257	0.40
Building Construction	Cranes	1	7	231	0.29
	Forklifts	3	8	89	0.20
	Generator Sets	1	8	84	0.74
	Tractor/Loader/Backhoes	3	7	97	0.37
	Welders	1	8	46	0.45
Paving	Pavers	2	8	130	0.42
	Rollers	2	8	80	0.38
	Paving Equipment	2	8	132	0.36
Architectural Coating	Air Compressors	1	6	78	0.48
Source: Construction equipment inventory derived from the CalEEMod model; see Appendix A					

Equipment Tiers and Emission Factors

Equipment tiers refer to a generation of emission standards established by the EPA and ARB that apply to diesel engines in off-road equipment. The "tier" of an engine depends on the model year and horsepower rating; generally, the newer a piece of equipment is, the greater the tier it is likely to have. Excluding engines greater than 750 horsepower, Tier 1 engines were manufactured generally between 1996 and 2003. Tier 2 engines were manufactured between 2001 and 2007. Tier 3 engines were manufactured between 2006 and 2011. Tier 4 engines are the newest and some incorporate hybrid electric technology; they were manufactured after 2007.

The CalEEMod model contains an inventory population of construction equipment that incorporates estimates of the number of equipment, their age, their horsepower, and equipment tier from which rates of emissions are developed. The CalEEMod model default tier mix was used in this analysis for the estimation of emissions from on-site construction equipment for the unmitigated scenario.

The CalEEMod model's off-road emission factors are based on the equipment populations from the OFFROAD2011 model. Emission factors for the construction year 2020 were used to estimate the project's construction emissions.

Demolition, Site Preparation and Grading

No demolition will be required during construction as the project site is currently vacant. Site preparation will involve the removal of existing debris and vegetation. The project will not require the import/export of soil as the site is expected to be balanced during grading. The CalEEMod model was used to calculate the emissions associated with the site preparation and grading activities.

Building Construction

The construction of the project will involve the building of 24,661 square feet of automobile sales and service facilities. The estimation of the project capacity also includes an addition of 15,098 square feet of sales, service, and car wash facilities.

Paving

The project will provide for approximately 5.2 acres of parking area for display, service, employee and customer sales vehicle parking.

Architectural Coatings (Painting)

Paints release VOC emissions during application and drying associated with the stripping of the parking spaces and external and indoor painting of the sales and storage areas.

Construction Offsite Vehicle Trips

CalEEMod has three categories of on-road trips: worker trips, hauling trips, and vendor trips. Hauling trips would include soil hauling. Vendor trips are materials delivery, including paving material delivery. The following data and assumptions were used for on-road trips.

Worker Trips: Worker trips are accounted for, based on 1.25 trips per piece of equipment (the CalEEMod default). The CalEEMod default worker trip length of 14.7 miles was used for employee trips.

Hauling Trips: No hauling trips are anticipated during construction as there are no demolition or grading soil import/export requirements or site preparation that requires the use of haul trucks.

Vendor Trips: Building construction would require delivery of materials. The CalEEMod model defaults for vendor trips were utilized including a trip distance of 6.9 miles.

The estimated numbers of offsite construction vehicle trips is provided in Table 10. Note that the total number of off-site construction trips would not necessarily occur on the same day, since construction activities would vary each day.

Fugitive Dust

During site preparation and grading activities, the movement of dirt on the project site can generate fugitive dust. The CalEEMod model estimates dust from dozers moving dirt around, dust from graders or bulldozers leveling the land, and loading or unloading dirt into haul trucks. The CalEEMod model calculates the emissions for each construction activity differently based on the number of acres traversed by the construction equipment and the type and number of construction equipment used in the activity.

Table 10: Construction Off-site Trips

Activity	Construction Trips per Day		Total Trips
	Worker	Vendor	Haul
Site Preparation	18	0	0
Grading	15	0	0
Building Construction	109	44	0
Paving	15	0	0
Architectural Coatings	22	0	0
Source: CalEEMod; see Appendix A			

SCAQMD Rule 403 requires fugitive dust generating activities follow best available control measures to reduce emissions of fugitive dust. The purpose of Rule 403 is to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (man-made) fugitive dust sources. Rule 403 requires implementation of control measures to prevent, reduce, or mitigate fugitive dust emissions and includes a performance standard that prohibits visible emissions from crossing any property line. These measures are accounted for in the CalEEMod model as "mitigation" because the model categorizes the measures as "mitigation," even though they are technically not mitigation but are requirements necessary to meet Rule 403. Table 11 displays the best available control measures and the associated measure in the CalEEMod model.

Table 11: Best Available Control Measures for Fugitive Dust

Best Available Control Measure[1]	Associated Measure in CalEEMod[2]
Clearing and Grubbing	
02-1 Maintain stability of soil through pre-watering of site prior to clearing and grubbing. 02-2 Stabilize soil during clearing and grubbing activities. 02-3 Stabilize soil immediately after clearing and grubbing activities.	Water exposed surfaces three times per day Soil stabilizers for unpaved roads
Earth Moving Activities	
08-1 Pre-apply water to depth of proposed cuts 08-2 Re-apply water as necessary to maintain soils in a damp condition and to ensure that visible emissions do not exceed 100 feet in any direction 08-3 Stabilize soils once earth-moving activities are complete	Pre-water to 12%
Import/Export of Bulk Materials	
09-1 Stabilize material while loading to reduce fugitive dust emissions. 09-2 Maintain at least six inches of freeboard on haul vehicles.	Water exposed surfaces three times per day
09-3 Stabilize material while transporting to reduce fugitive dust emissions. 09-4 Stabilize material while unloading to reduce fugitive dust emissions. 09-5 Comply with Vehicle Code Section 23114.	Water exposed surfaces three times per day
Landscaping	
10-1Stabilize soils, materials, slopes Guidance: Apply water to materials to stabilize; maintain materials in a crusted condition; maintain effective cover over materials; stabilize sloping surfaces using soil until vegetation or ground cover can effectively stabilize the slopes; hydroseed prior to rain season.	Replace ground cover in disturbed areas when unused for more than 10 days
Staging Areas	
13-1 Stabilize staging areas during use by limiting vehicle speeds to 15 miles per hour.	Reduce speed on unpaved roads to 15 miles per hour.
Traffic Areas for Construction Activities	
15-1 Stabilize all off-road traffic and parking areas. 15-2 Stabilize all haul routes. 15-3 Direct construction traffic over established haul routes. Guidance: Apply gravel/paving to all haul routes as soon as possible to all future roadway areas; barriers can be used to ensure vehicles are only used on established parking areas/haul routes.	Water exposed surfaces three times per day
Sources: 1 SCAQMD Rule 403. 2 CalEEMod output in Appendix A.	

Operations

Regional operational emissions occur once the project commences operations. Operational emissions would be expected from the following primary sources:

- Area Sources
- Energy Sources
- Mobile Sources

Area Sources

Area sources would include the following:

- **Architectural Coatings**: over time the buildings that are a part of this project would be periodically painted with emissions resulting from the evaporation of solvents contained in paints, varnishes, primers, and other surface coatings. The emissions associated with architectural coatings were derived from the CalEEMod model.

- **Consumer Products:** Consumer products include, but are not limited to detergents, cleaning compounds, polishes, personal care products, and lawn and garden products. Many of these products contain organic compounds which when released in the atmosphere can react to form ozone and other photochemically reactive pollutants. The emissions associated with use of consumer products were calculated based on defaults provided within the CalEEMod model.

- **Landscape Maintenance Equipment**: Landscape maintenance equipment would generate emissions from fuel combustion and evaporation of unburned fuel. Equipment in this category would include lawnmowers, shedders/grinders, blowers, trimmers, chain saws, and hedge trimmers used to maintain the landscaping of the Project. The emissions associated with landscape maintenance equipment were calculated based on assumptions provided in the CalEEMod model.

Energy Sources

- **Combustion Emissions Associated with Natural Gas and Electricity:** the consumption of natural gas would result in the largest source of onsite energy emissions of VOC, NOx, PM_{10}, and $PM_{2.5}$. The CalEEMod default parameters were used to estimate the project's onsite energy emissions.

Mobile Sources

- **Vehicles:** Project operational vehicular emissions are dependent on the daily number of vehicles that travel to and from the project (the project's trip generation rate), the length of the vehicle trips, the mix of vehicles (cars vs other vehicle types), and trip purpose. The project's trip generation was prepared using trip rates from the Institute of Transportation Engineers (ITE) Trip Generation, 10th Edition (ITE 2017) for land use class 840 (Automobile

Sales – New)[4]. Based on this land use and the inclusion of the proposed operation of a 24,661 square foot facility with a 15,896 square foot future expansion planned, the project is expected to generate 1,129 weekday daily trips, 2,119 Saturday daily trips, and 881 Sunday daily trips. The vehicle trip purpose and fleet mix used to estimate the project's mobile emissions were derived from the default information contained in the CalEEMod model.

2.4.2 - Criteria Pollutant Emissions Model Assumptions – Local Assessment

The basic assumptions used in estimating the project's local construction and operational emissions are the same as those used in estimating the project's regional emissions with one exception. In keeping with the guidance from the SCAQMD on localized assessments, only those emissions generated while on the project site are included in the localized assessment. This would include onsite construction equipment, architectural coating, and motor vehicle travel while onsite.

2.5 - Air Quality Impact Analysis

This section calculates the expected regional and local emissions from construction and operation of the project and compares the resulting air quality impacts to established significance thresholds within the context of the CEQA Appendix G Checklist.

2.5.1 - Consistency with the Air Quality Management Plan

Impact AIR-1:	**The project would not conflict with or obstruct implementation of the applicable air quality plan.**

Impact Analysis

According to the 1993 SCAQMD Handbook, there are two key indicators of consistency with the AQMP:

1. **Indicator:** Whether the project will not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP.

Construction Impacts

As shown in the discussion of Impact AIR-2 and AIR-3 below, the project's construction emissions would not exceed any of the applicable SCAQMD regional or local construction significance thresholds. Therefore, the project's construction emissions would have a less than significant project-level and cumulative impact and would, therefore, not conflict with the AQMP according to this indicator.

Operational Impacts

As shown in the discussion of Impact AIR-2 and AIR-3, the project's operational emissions would not exceed any of the SCAQMD regional or localized significance thresholds. Therefore, the project's

[4] Land use 840: a new automobile sales dealership typically located along a major arterial street characterized by abundant commercial development. The sales and leasing of new cars is the primary business at these facilities.; however, automobile services, parts sales, and used cars may also be available.

operational emissions would have a less than significant project-level and cumulative impact and would not, therefore, conflict with the AQMP according to this indicator.

2. **Indicator:** Whether the project would exceed the assumptions in the AQMP or increments based on the years of project buildout.

The development of emission burdens used in AQMPs to demonstrate compliance with ambient air quality standards is based, in part, on land use patterns contained within local general plans. Therefore, it is reasonable to conclude that if a project is consistent with the applicable general plan land use designation, and if the general plan was adopted prior to the applicable AQMP, then the growth of vehicle miles traveled (VMT) and/or population generated by said project would be consistent with the growth in VMT and population assumed within the AQMP. Development consistent with the growth projections in the City of Moreno Valley General Plan would, therefore, be consistent with the AQMP.

The project is located within the City of Moreno Valley's Specific Plan 209 (The Moreno Valley Auto Mall Specific Plan) (City of Moreno Valley 2009) with a land use designation of General Commercial (C) within Planning Area C. The Specific Plan was adopted to provide for the development of automobile sales uses, auto related uses and commercial uses. The proposed use is permitted with the approval of a plot plan under the use classification of Automobile, Motorcycle, Truck, Golf Cart, Recreational Vehicle and Boat Sales and Incidental Minor Repairs and Accessory Installations.

The project's intended land use is consistent with these designations and these designations were made in the General Plan/Specific Plan prior to the adoption of the SCAQMD Air Quality Management Plan in 2017. As a consequence, since the project is consistent with the land use designations contained in the City of Moreno Valley General and Specific Plans, the project is also consistent with the SCAQMD AQMP. Therefore, the project satisfies this indicator.

Summary

In summary, the project would comply with all applicable rules and regulations. The project would not result in an exceedance of the SCAQMD regional or local air significance thresholds during construction or operation and is consistent with the land use designations contained within the City of Moreno Valley's General Plan and Specific Plan. The project would, therefore, not conflict with or obstruct implementation of the applicable air quality plan resulting in a less than significant impact.

Level of Significance Before Mitigation

Less than significant impact

Mitigation Measures

Mitigation not required

Level of Significance After Mitigation

Less than significant impact.

2.5.2 - Cumulative Impacts

Impact AIR-2:	**The project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard.**

Impact Analysis

The following indicator was used to evaluate this impact

1. **Indicator**: whether the project's regional construction and operational emissions exceed the SCAQMD's regional emission significance thresholds

The SCAQMD recommends that a project's potential contribution to cumulative impacts should be assessed using the same significance criteria as those for project-level impacts. This means that if a project exceeds the SCAQMD recommended daily regional emission thresholds, then the project-specific impacts would also result in a cumulatively considerable increase in emissions for those pollutants for which the SoCAB is in nonattainment. Therefore, the SCAQMD daily regional emission thresholds are utilized in this cumulative discussion. Regional emissions include those generated from all on-site and off-site activities. SCAQMD's regional significance thresholds for project construction and operation were provided earlier in Table 4 above.

The nonattainment regional pollutants of concern for the SoCAB are ozone, PM_{10}, and $PM_{2.5}$. Therefore, if the project exceeds the regional thresholds for $PM_{2.5}$ or PM_{10}, then it contributes to a cumulatively considerable impact for those pollutants. As noted earlier, ozone is not emitted directly into the air but is a regional pollutant formed by photochemical reactions in the atmosphere. The SCAQMD does not have a recommended ozone threshold, but it does have thresholds of significance for ozone precursors VOC and NO_X. Therefore, if the project exceeds the regional threshold for NO_X or VOC, then it follows that the project would contribute to a cumulatively considerable impact for ozone. Finally, if the project exceeds the NO_X threshold or CO, it could contribute cumulatively to NO_2 and CO concentrations.

Cumulative Impact Analysis—Construction Regional Emissions

Table 12 summarizes construction-related regional emissions (without mitigation). The information shown in Table 12 indicates that the project's regional construction emissions would not exceed the SCAQMD regional construction significance thresholds for any pollutant. Therefore, the regional short-term construction emissions are considered to have a less than significant project-level and cumulative regional impact.

Table 12: Regional Construction Air Pollutant Emissions by Activity—Without Mitigation

Activity	Emissions (pounds per day)					
	VOC	NO_X	CO	SO_X	PM_{10}[(1)]	$PM_{2.5}$[(1)]
Site Preparation	5.7	63.9	23.1	0.1	9.7	6.4
Grading	3.6	42.4	17.3	0.0	4.3	2.8
Building Construction (2020)	2.8	24.1	22.0	0.0	2.6	1.5
Building Construction (2021)	2.5	21.8	21.4	0.0	2.5	1.3
Paving	2.0	12.9	15.3	0.0	0.9	0.6
Architectural Coatings	21.9	1.6	2.6	0.0	0.3	0.2
Maximum Daily Emissions	21.9	63.9	23.1	0.1	9.7	6.4
Significance Threshold	75	100	550	150	150	55
Significant Impact?	No	No	No	No	No	No

Notes:
[(1)] Assumes compliance with SCAQMD Rule 403 for fugitive dust
NO_X = nitrogen oxides CO = carbon monoxide PM_{10} and $PM_{2.5}$ = particulate matter
VOC = volatile organic compounds SOx = sulfur oxides
Source of emissions: CalEEMod (see Appendix A)
Source of thresholds: SCAQMD 1993

Cumulative Impact Analysis—Operational Regional Emissions

Table 13 and Table 14 provide the maximum daily regional operational emissions from emission sources generated both on-site and off-site as derived from the CalEEMod model for summer and winter seasons, respectively. As shown therein, the project would not exceed the SCAQMD's regional thresholds for any pollutant during operation of the project and would, therefore, result in a less than significant regional project-level and cumulative impact and satisfy this indicator.

Summary

In summary, the project's regional construction and operational emissions would not exceed the SCAQMD's regional emission significance thresholds and would, therefore, not result in either a project-level or cumulative air quality impact.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

None required.

Level of Significance After Mitigation

Less than significant impact.

Table 13: Operational Regional Pollutants (Summer Season)

Operational Year	Emissions (pounds per day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Mobile	3.6	23.8	25.1	0.1	6.5	1.8
Area	1.1	0.0	0.0	0.0	0.0	0.0
Energy	0.0	0.4	0.3	0.0	0.0	0.0
Total	4.7	24.2	27.0	0.1	6.5	1.8
SCAQMD Significance Threshold	55	55	550	150	150	55
Significant Impact?	No	No	No	No	No	No

Notes:
VOC = volatile organic compounds NO_X = nitrogen oxides CO = carbon monoxide
SO_X = sulfur oxides PM_{10} and $PM_{2.5}$ = particulate matter
Source of emissions: CalEEMod 2016 (see Appendix A).
Source of thresholds: SCAQMD 1993

Table 14: Operational Regional Pollutants (Winter Season)

Operational Source	Emissions (pounds per day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Mobile	3.0	23.4	24.9	0.1	6.5	1.8
Area	1.1	0.0	0.0	0.0	0.0	0.0
Energy	0.0	0.4	0.3	0.0	0.0	0.0
Total	4.1	23.8	23.7	0.1	6.5	1.
SCAQMD Significance Threshold	55	55	550	150	150	55
Significant Impact?	No	No	No	No	No	No

Notes:
VOC = volatile organic compounds NO_X = nitrogen oxides CO = carbon monoxide
SO_X = sulfur oxides PM_{10} and $PM_{2.5}$ = particulate matter
Source of emissions: CalEEMod (see Appendix A).
Source of thresholds: SCAQMD 1993

2.5.3 - Sensitive Receptors

Impact AIR-3:	**The project would not expose sensitive receptors to substantial pollutant concentrations.**

Impact Analysis

The following indicator was used to evaluate this impact

1. **Indicator**: whether the project's local construction and operational emissions exceed the SCAQMD's local emission significance thresholds

Those individuals who are sensitive to air pollution include children, the elderly, and persons with preexisting respiratory or cardiovascular illness. For purposes of CEQA, the SCAQMD considers a sensitive receptor to be a location where a sensitive individual could remain for 24 hours, such as residences, hospitals, or convalescent facilities (SCAQMD 2009). Commercial and industrial facilities are not included in the definition because employees do not typically remain on-site for 24 hours. However, when assessing the impact of pollutants with 1-hour or 8-hour standards (such as NO_2 and CO), commercial and/or industrial facilities would be considered sensitive receptors for those purposes. The closest sensitive receptor is located at an existing residence 40 meters south of the project site across Moreno Beach Drive/Auto Mall Parkway.

The following criterion was used to assess the significance of this impact:

the localized construction and operational impact analysis. The analysis makes use of methodology included in the SCAQMD *Final Localized Significance Threshold Methodology* (SCAQMD 2009). The SCAQMD has established that impacts to air quality are significant if there is a potential to contribute or cause localized exceedances of the federal and/or state ambient air quality standards (NAAQS/CAAQS). Collectively, these are referred to as localized significance thresholds (LSTs). The SCAQMD states that lead agencies can use the LSTs as another indicator of significance in its air quality impact analyses.

The project is located in SRA 24 (Perris Valley) and the LSTs appropriate to SRA 24 were selected. LSTs apply to CO, NO_2, particulate matter ≤ 10 microns (PM_{10}) in diameter, and particulate matter ≤ 2.5 microns ($PM_{2.5}$) in diameter.

Localized Construction Analysis

According to the SCAQMD LST methodology, if, during construction, the total acreage disturbed in a day is less than or equal to 5 acres per day, then the SCAQMD's screening look-up tables can be utilized to determine if a project has the potential to result in a significant impact. The look-up tables establish a maximum daily emissions threshold in pounds per day that can be compared with the CalEEMod model outputs.

SCAQMD's LST methodology clearly 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.

As previously noted in Table 6 above, the maximum daily disturbed project area for use in determining the applicability of the SCAQMD's LST look-up tables was 3.5 acres per day. Table 15 presents a comparison of the construction emission significance thresholds with the estimated maximum daily on-site construction emissions for a 3.5-acre disturbed construction area. The emissions are estimated at the nearest sensitive receptor, which is located at an existing residence approximately 40 meters south of the project site across Moreno Beach Drive/Auto Mall Parkway. Note that all projects are required to implement the dust mitigation measures found within SCAQMD Rule 403 in order to minimize the amount of fugitive dust generation during construction activities. While these measures are applied in CalEEMod under the mitigation section, compliance with Rule 403 is a mandatory requirement for projects within the SCAQMD. As noted from Table 15, after implementing measures from Rule 403, the project's construction emissions would not exceed SCAQMD construction LST thresholds and, thus, would result in a less than local significant impact.

Table 15: Comparison of Construction LSTs and Project On-site Construction Emissions—Without Mitigation

Activity	On-site Emissions (pounds per day)			
	NO_X	CO	PM_{10}[(2)]	$PM_{2.5}$[(2)]
Site Preparation	63.8	22.4	9.5	6.3
Grading	42.4	16.7	4.1	2.8
Building Construction (2020)	19.2	16.8	1.1	1.1
Building Construction (2021)	17.4	16.6	1.0	0.9
Paving	12.9	14.7	0.7	0,6
Architectural Coatings	1.5	1.8	0.1	0.1
Maximum Daily Emissions[(1)]	63.8	22.4	9.5	6.3
Localized Significance Threshold[(1)]	238	1,530	18.0	7.2
Exceed Threshold?	No	No	No	No

Notes:
NO_X = nitrogen oxides CO = carbon monoxide PM_{10} and $PM_{2.5}$ = particulate matter
(1) The localized significance thresholds were interpolated between 2- and 5-acre LSTs for the actual maximum daily acres to be disturbed (i.e., 4.0 acres of the project site) in Source-Receptor Area 23 and a distance of 25 meters.
(2) Assumes compliance with SCAQMD Rule 403—Fugitive Dust for PM_{10} and $PM_{2.5}$
Source of emissions: see Appendix A.
Source of thresholds: SCAQMD 2009

Localized Operational Analysis

Table 16 and Table 17 provide estimates of the project's local onsite operational emissions for the summer and winter seasons, respectively.

Table 16: Comparison of Operational LSTs and Project On-site Operational Emissions (Summer Season)

Operational Activity	Emissions (pounds per day)			
	NO_x	CO	PM_{10}	$PM_{2.5}$
Mobile	0.1	1.2	0.0	0.0
Area	0.0	0.0	0.0	0.0
Energy	0.4	0.3	0.0	0.0
Total	0.5	1.5	0.0	0.0
SCAQMD Significance Threshold(1)	289	1,937	7.6	3.0
Significant Impact?	No	No	No	No

Notes:
NO_X = nitrogen oxides CO = carbon monoxide PM_{10} and $PM_{2.5}$ = particulate matter
(1) The localized significance thresholds for a 5-acre project in Source-Receptor Area 24 and a distance of 40 meters.
Source of emissions: see Appendix A.
Source of thresholds: SCAQMD 2009

Table 17: Comparison of Operational LSTs and Project On-site Operational Emissions (Winter Season)

Operational Activity	Emissions (pounds per day)			
	NO_x	CO	PM_{10}	$PM_{2.5}$
Mobile	0.1	1.2	0.0	0.0
Area	0.0	0.0	0.0	0.0
Energy	0.4	0.3	0.0	0.0
Total	0.5	1.5	0.0	0.0
SCAQMD Significance Threshold(1)	289	1,937	7.6	3.0
Significant Impact?	No	No	No	No

Notes:
NO_X = nitrogen oxides CO = carbon monoxide PM_{10} and $PM_{2.5}$ = particulate matter
(1) The localized significance thresholds for a 5-acre project in Source-Receptor Area 24 and a distance of 40 meters.
Source of emissions: see Appendix A.
Source of thresholds: SCAQMD 2009

Summary

The construction and operation of the project would not exceed any SCAQMD local significance thresholds. Therefore, the project would met this indicator and would not expose sensitive receptors to substantial pollutant concentrations.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation is required.

Level of Significance After Mitigation

Less than significant impact.

2.5.4 - Other Emissions

Impact AIR-4:	**The project would not result in other emissions (such as those leading to odors) that would adversely affect a substantial number of people.**

Impact Analysis

Background Information

Odors can cause a variety of responses. The impact of an odor results from interacting factors such as frequency (how often), intensity (strength), duration (in time), offensiveness (unpleasantness), location, and sensory perception.

Odor is typically a warning system that prevents animals and humans from consuming spoiled food or toxic materials. Odor-related symptoms reported in a number of studies include nervousness, headache, sleeplessness, fatigue, dizziness, nausea, loss of appetite, stomach ache, sinus congestion, eye irritation, nose irritation, runny nose, sore throat, cough, and asthma exacerbation (SCAQMD 2007b).

The SCAQMD's role is to protect the public's health from air pollution by overseeing and enforcing regulations. The SCAQMD's resolution activity for odor compliance is mandated under California Health & Safety Code Section 41700, and falls under SCAQMD Rule 402. This rule on Public Nuisance Regulation 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 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. The provisions of this rule shall not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals."

The SCAQMD indicates that the number of overall complaints has declined over the last 5 years. Over the last 4 years, odor complaints make up 50 to 55 percent of the total nuisance complaints. Over the

past decade, odors from paint and coating operations have decreased from 27 to 7 percent and odors from refuse collection stations have increased from 9 to 34 percent (SCAQMD 2007).

Project Analysis

The SCAQMD recommends that odor impacts be addressed in a qualitative manner. Such an analysis shall determine whether the project would result in excessive nuisance odors, as defined under the California Code of Regulations and Section 41700 of the California Health and Safety Code, and thus would constitute a public nuisance related to air quality.

Land uses typically considered associated with odors include wastewater treatment facilities, waste-disposal facilities, or agricultural operations. The project does not contain land uses typically associated with emitting objectionable odors. The project would involve the use of diesel construction equipment and diesel trucks during construction that could present a temporary odor impact. However, this impact would last only during the construction time-period and would be readily dispersed by the prevailing meteorological conditions. As such, the diesel emissions are not anticipated to be noticeable to the nearby public. Therefore, the project would not generate a significant odor impact during construction or operation.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation is required.

Level of Significance After Mitigation

Less than significant impact.

SECTION 3: GREENHOUSE GAS ASSESSMENT

This section analyzes the potential impacts on climate change from emission of regulated various greenhouses (GHG).

3.1 - Greenhouse Gases and Climate Change

Gases that trap heat in the atmosphere are referred to as greenhouse gases. The effect is analogous to the way a greenhouse retains heat. Common greenhouse gases include water vapor, carbon dioxide (CO_2), methane, nitrous oxide, chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, ozone, and aerosols. Natural processes and human activities emit greenhouse gases. The presence of greenhouse gases in the atmosphere affects the earth's temperature. It is believed that emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations.

Climate change is driven by forcings and feedbacks. Radiative forcing is the difference between the incoming energy and outgoing energy in the climate system. Positive forcing tends to warm the surface while negative forcing tends to cool it. Radiative forcing values are typically expressed in watts per square meter. A feedback is a climate process that can strengthen or weaken a forcing. For example, when ice or snow melts, it reveals darker land underneath which absorbs more radiation and causes more warming. The global warming potential is the potential of a gas or aerosol to trap heat in the atmosphere. The global warming potential of a gas is essentially a measurement of the radiative forcing of a greenhouse gas compared with the reference gas, CO_2.

Individual greenhouse gas compounds have varying global warming potential and atmospheric lifetimes. CO_2, the reference gas for global warming potential, has a global warming potential of one. The global warming potential of a greenhouse gas is a measure of how much a given mass of a greenhouse gas is estimated to contribute to global warming. To describe how much global warming a given type and amount of greenhouse gas may cause, the carbon dioxide equivalent is used. The calculation of the carbon dioxide equivalent is a consistent methodology for comparing greenhouse gas emissions since it normalizes various greenhouse gas emissions to a consistent reference gas, CO_2. For example, methane's warming potential of 21 indicates that methane has 21 times greater warming affect than CO_2 on a molecule per molecule basis. A carbon dioxide equivalent is the mass emissions of an individual greenhouse gas multiplied by its global warming potential. Greenhouse gases defined by Assembly Bill (AB) 32 (see the Climate Change Regulatory Environment section for a description) include CO_2, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. They are described in Table 18. A seventh GHG, nitrogen trifluoride (NF_3), was added to Health and Safety Code section 38505(g)(7) as a GHG of concern.

Table 18: Description of Greenhouse Gases

Greenhouse Gas	Description and Physical Properties	Sources
Nitrous oxide (N_20)	Nitrous oxide (laughing gas) is a colorless greenhouse gas. It has a lifetime of 114 years. Its global warming potential is 310.	Microbial processes in soil and water, fuel combustion, and industrial processes.
Methane (CH_4)	Methane is a flammable gas and is the main component of natural gas. It has a lifetime of 12 years. Its global warming potential is 21.	Methane is extracted from geological deposits (natural gas fields). Other sources are landfills, fermentation of manure, and decay of organic matter.
Carbon dioxide (CO_2)	Carbon dioxide is an odorless, colorless, natural greenhouse gas. Carbon dioxide's global warming potential is 1. The concentration in 2005 was 379 parts per million (ppm), which is an increase of about 1.4 ppm per year since 1960.	Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources are from burning coal, oil, natural gas, and wood.
Chlorofluorocarbons (CFCs)	These are gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. They are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the earth's surface). Global warming potentials range from 3,800 to 8,100.	Chlorofluorocarbons were synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone. The Montreal Protocol on Substances that Deplete the Ozone Layer prohibited their production in 1987.
Hydrofluorocarbons (HFCs)	Hydrofluorocarbons are a group of greenhouse gases containing carbon, chlorine, and at least one hydrogen atom. Global warming potentials range from 140 to 11,700.	Hydrofluorocarbons are synthetic manmade chemicals used as a substitute for chlorofluorocarbons in applications such as automobile air conditioners and refrigerants.
Perfluorocarbons (PFCs)	Perfluorocarbons have stable molecular structures and only break down by ultraviolet rays about 60 kilometers above Earth's surface. Because of this, they have long lifetimes, between 10,000 and 50,000 years. Global warming potentials range from 6,500 to 9,200.	Two main sources of perfluorocarbons are primary aluminum production and semiconductor manufacturing.
Sulfur hexafluoride (SF_6)	Sulfur hexafluoride is an inorganic, odorless, colorless, and nontoxic, nonflammable gas. It has a lifetime of 3,200 years. It has a high global warming potential, 23,900.	This gas is manmade and used for insulation in electric power transmission equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas.
Nitrogen trifluoride (NF_3)	Nitrogen trifluoride (NF_3) was added to Health and Safety Code section 38505(g)(7) as a GHG of concern. It has a high global warming potential of 17,200.	This gas is used in electronics manufacture for semiconductors and liquid crystal displays.
Sources: Compiled from a variety of sources, primarily Intergovernmental Panel on Climate Change 2007a and 2007b.		

Several other gases and black carbon are considered GHGs but are not currently defined by the Intergovernmental Panel on Climate Change (IPCC) as such. A description of these items and the reasons they are not part of the GHG analysis is provided below.

The State has begun the process of addressing pollutants referred to as short-lived climate pollutants. The short-lived climate pollutants include three main components: black carbon, fluorinated gases, and methane. Fluorinated gases and methane are described in Table 18 and are already included in the California GHG inventory. Black carbon has not been included in past GHG inventories; however, ARB will include it in a future comprehensive strategy (ARB 2015).

Senate Bill 605, approved by the Governor on September 14, 2014, required the ARB to complete a comprehensive strategy to reduce emissions of short-lived climate pollutants by January 1, 2016. The ARB released the Proposed Short-Lived Climate Pollutant Reduction Strategy in April 2016. ARB completed an emission inventory of these pollutants, identified research needs, identified existing and potential new control measures that offer co-benefits, and coordinated with other state agencies and districts to develop measures. Senate Bill 1383 approved the SB 605 plan and implementation of the plan began on January 1, 2018. The bill also set statewide 2030 emission reduction targets for the short-lived climate pollutants (ARB 2018).

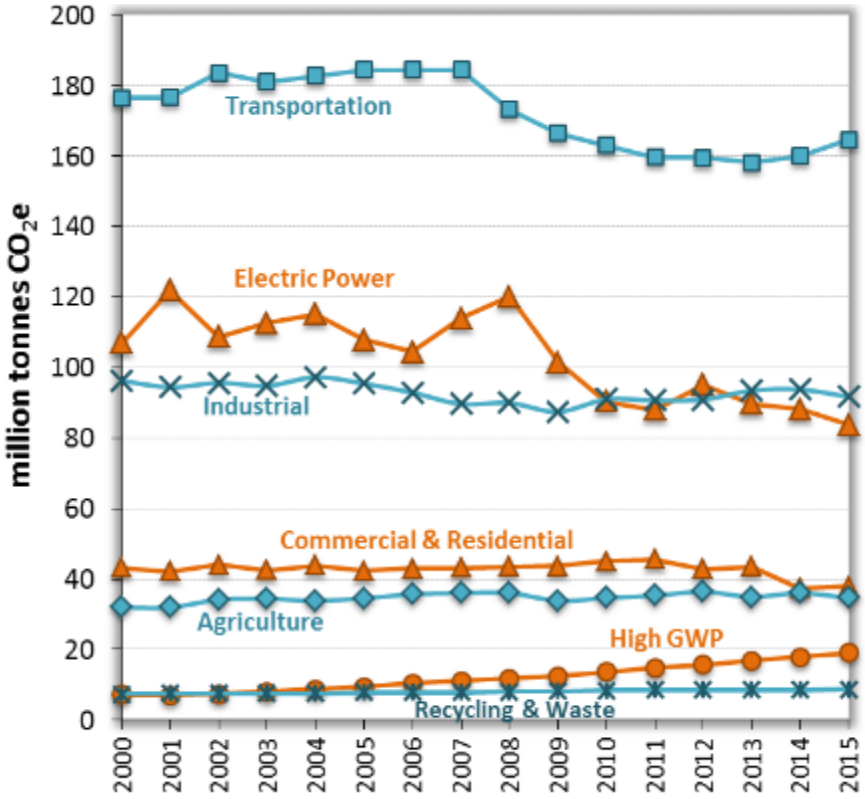
Ozone is another short-lived climate pollutant that will be part of the strategy. Ozone affects evaporation rates, cloud formation, and precipitation levels. Ozone is not directly emitted so its precursor emissions VOC and NO_X on a regional scale and CH_4 on a hemispheric scale will be subject of the strategy.

Black carbon is a component of fine particulate matter. Black carbon is formed by incomplete combustion of fossil fuels, biofuels, and biomass. Sources of black carbon within a jurisdiction may include exhaust from diesel trucks, vehicles, and equipment, as well as smoke from biogenic combustion. Biogenic combustion sources of black carbon include the burning of biofuels used for transportation, the burning of biomass for electricity generation and heating, prescribed burning of agricultural residue, and natural and unnatural wildfires. Black carbon is not a gas but an aerosol—particles or liquid droplets suspended in air. Black carbon only remains in the atmosphere for days to weeks, as opposed to other GHGs that can remain in the atmosphere for years. Black carbon can be deposited on snow, where it absorbs sunlight, reduces sunlight reflectivity, and hastens snowmelt. Direct effects include absorbing incoming and outgoing radiation; indirectly, black carbon can also affect cloud reflectivity, precipitation, and surface dimming (cooling).

3.1.1 - Emission Inventories

An emissions inventory is a database that lists, by source, the amount of air pollutants discharged into the atmosphere of a geographic area during a given time period. Emissions worldwide were approximately 49 billion metric tons of carbon dioxide equivalents (MMT CO_2e) in 2014. China was the largest GHG emitter with approximately 11.6 billion metric tons of CO_2e, and the United States was the second largest GHG emitter with approximately 6.3 billion metric tons of CO_2e in 2014 (CAIT 2017).

Exhibit 4 shows the contributors of GHG emissions in California between years 2000 and 2015 by economic sector. The main contributor was transportation. The second highest sector was electric power, which includes sources from in-state power generation and emissions from imported electricity. ARB reported that California's GHG emissions inventory was 440.4 MMT CO_2e in 2015 (ARB 2017b).



Source ARB 2017b

Exhibit 4: Greenhouse Gas Emission Trends by Sector in California

3.1.2 - Consequences of Climate Change in California

In California, climate change may result in consequences such as the following (from CCCC 2006 and Moser et al. 2009).

- **A reduction in the quality and supply of water from the Sierra snowpack.** If heat-trapping emissions continue unabated, more precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. This can lead to challenges in securing adequate water supplies. It can also lead to a potential reduction in hydropower.
- **Increased risk of large wildfires.** If rain increases as temperatures rise, wildfires in the grasslands and chaparral ecosystems of southern California are estimated to increase by approximately 30 percent toward the end of the 21st century because more winter rain will

stimulate the growth of more plant "fuel" available to burn in the fall. In contrast, a hotter, drier climate could promote up to 90 percent more northern California fires by the end of the century by drying out and increasing the flammability of forest vegetation.

- **Reductions in the quality and quantity of certain agricultural products.** The crops and products likely to be adversely affected include wine grapes, fruit, nuts, and milk.
- **Exacerbation of air quality problems.** If temperatures rise to the medium warming range, there could be 75 to 85 percent more days with weather conducive to ozone formation in Los Angeles and the San Joaquin Valley, relative to today's conditions. This is more than twice the increase expected if rising temperatures remain in the lower warming range. This increase in air quality problems could result in an increase in asthma and other health-related problems.
- **A rise in sea levels resulting in the displacement of coastal businesses and residences.** During the past century, sea levels along California's coast have risen about seven inches. If emissions continue unabated and temperatures rise into the higher anticipated warming range, sea level is expected to rise an additional 22 to 35 inches by the end of the century. Elevations of this magnitude would inundate coastal areas with salt water, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats.
- **An increase temperature and extreme weather events.** Climate change is expected to lead to increases in the frequency, intensity, and duration of extreme heat events and heat waves in California. More heat waves can exacerbate chronic disease or heat-related illness.
- **A decrease in the health and productivity of California's forests.** Climate change can cause an increase in wildfires, an enhanced insect population, and establishment of non-native species.

3.1.3 - Human Health Effects of GHG Emissions

GHG emissions from development projects would not result in concentrations that would directly impact public health. However, the cumulative effects of GHG emissions on climate change have the potential to cause adverse effects to human health.

The U.S. Global Change Research Program, in its report, Global Climate Change Impacts in the U.S. (USGCRP 2010), has analyzed the degree to which impacts on human health are expected to impact the United States.

Potential effects of climate change on public health include:

- **Direct Temperature Effects**: Climate change may directly affect human health through increases in average temperatures, which are predicted to increase the incidence of heat waves and hot extremes.
- **Extreme Events**: Climate change may affect the frequency and severity of extreme weather events, such as hurricanes and extreme heat and floods, which can be destructive to human health and well-being.

- **Climate–Sensitive Diseases:** Climate change may increase the risk of some infectious diseases, particularly those diseases that appear in warm areas and are spread by mosquitoes and other insects, such as malaria, dengue fever, yellow fever, and encephalitis.
- **Air Quality:** Respiratory disorders may be exacerbated by warming-induced increases in the frequency of smog (ground-level ozone) events and particulate air pollution

Although there could be health effects resulting from changes in the climate and the consequences that can occur, inhalation of GHGs at levels currently in the atmosphere would not result in adverse health effects, with the exception of ozone and aerosols (particulate matter). The potential health effects of ozone and particulate matter are discussed in criteria pollutant analyses. At very high indoor concentrations (not at levels existing outside), carbon dioxide, methane, sulfur hexafluoride, and some chlorofluorocarbons can cause suffocation as the gases can displace oxygen (CDC 2010 and OSHA 2003).

3.2 - Regulatory Framework

The regulatory framework for climate change and GHG is comprised of numerous international, federal, state, and local regulations and plans.

3.2.1 - International

At the international level, the following international principal regulatory actions include:

- **Intergovernmental Panel on Climate Change (IPCC)** – In 1988, the United Nations established the IPCC to evaluate the impacts of global warming and to develop strategies that nations could implement to curtail global climate change. In 1992, the United States joined other countries around the world in signing the United Nations' Framework Convention on Climate Change (UNFCCC) agreement with the goal of controlling greenhouse gas emissions. As a result, the Climate Change Action Plan was developed to address the reduction of GHGs in the United States. The Plan currently consists of more than 50 voluntary programs for member nations to adopt

- **Kyoto Protocol** - The Kyoto protocol is a treaty made under the United Nations Framework Convention on Climate Change (UNFCCC) and was the first international agreement to regulate GHG emissions.

- **Paris Climate Change Agreement** - Parties to the United Nations Framework Convention on Climate Change (UNFCCC) reached a landmark agreement on December 12, 2015 in Paris, charting a fundamentally new course in the two-decade-old global climate effort. Culminating a 4-year negotiating round, the new treaty ends the strict differentiation between developed and developing countries that characterized earlier efforts, replacing it with a common framework that commits all countries to put forward their best efforts and to strengthen them in the years ahead. This includes, for the first time, requirements that all parties report regularly on their emissions and implementation efforts, and undergo international review. On June 1,

2017, President Trump announced the decision for the United States to withdraw from the Paris Climate Accord (Wikipedia 2017). California remains committed to combating climate change through programs aimed to reduce GHGs.

3.2.2 - Federal Regulations

Prior to the last decade, there were no concrete federal regulations of GHGs or major planning for climate change adaptation. Since then, federal activity has increased. The following are actions regarding the federal government, GHGs, and fuel efficiency.

- **Clean Air Act** - on December 7, 2009, the U.S. Environmental Protection Agency (EPA) issued an Endangerment Finding under Section 202(a) of the Clean Air Act, opening the door to federal regulation of GHGs. The Endangerment Finding notes that GHGs threaten public health and welfare and are subject to regulation under the Clean Air Act. To date, the EPA has not promulgated regulations on GHG emissions, but it has already begun to develop them.

3.2.3 - California Regulations

The State of California has established numerous legislative actions, executive orders, and energy standards to address the climate change/GHG issue including the following:

- **AB32** - California Global Warming Solutions Act of 2006 was specifically enacted to address GHG emissions. AB 32 requires that GHGs emitted in California be reduced to 1990 levels by the year 2020. "Greenhouse gases" as defined under AB 32 include carbon dioxide, methane, NOX, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Since AB 32 was enacted, a seventh chemical, nitrogen trifluoride, has also been added to the list of GHGs. The ARB is the state agency charged with monitoring and regulating sources of GHGs. The ARB's Climate Change Scoping Plan (Scoping Plan) contains measures designed to reduce the State's emissions to 1990 levels by the year 2020 to comply with AB 32 (ARB 2008). The Scoping Plan identifies recommended measures for multiple GHG emission sectors and the associated emission reductions needed to achieve the year 2020 emissions target—each sector has a different emission reduction target. Most of the measures target the transportation and electricity sectors.

- **Cap and Trade Program** - The Cap-and-Trade Program is a key element of the Scoping Plan. It sets a statewide limit on sources responsible for 85 percent of California's GHG emissions, and establishes a price signal needed to drive long-term investment in cleaner fuels and more efficient use of energy. The program is designed to provide covered entities the flexibility to seek out and implement the lowest cost options to reduce emissions. The program conducted its first auction in November 2012.

- **SB 375** - Senate Bill (SB) 375 was signed into law on September 30, 2008. According to SB 375, the transportation sector is the largest contributor of GHG emissions, which emits over 40 percent of the total GHG emissions in California. SB 375 states, "Without improved land use

and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 does the following: (1) requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing GHG emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies.

- **AB 1493 Pavley Regulations and Fuel Efficiency Standards** - California AB 1493, enacted on July 22, 2002, required the ARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Implementation of the regulation was delayed by lawsuits filed by automakers and by the EPA's denial of an implementation waiver. The EPA subsequently granted the requested waiver in 2009, which was upheld by the by the U.S. District Court for the District of Columbia in 2011.

- **SB 1368** - Emission Performance Standards. In 2006, the State Legislature adopted SB 1368, which was subsequently signed into law by the Governor. SB 1368 directs the California Public Utilities Commission to adopt a performance standard for GHG emissions for the future power purchases of California utilities.

- **SB 1078** - Renewable Electricity Standards. On September 12, 2002, Governor Gray Davis signed SB 1078, requiring California to generate 20 percent of its electricity from renewable energy by 2017. SB 107 changed the due date to 2010 instead of 2017. On November 17, 2008, Governor Arnold Schwarzenegger signed Executive Order S-14-08, which established a Renewable Portfolio Standard target for California requiring that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020.

- **SB 350** - Clean Energy and Pollution Reduction Act of 2015. The legislature recently approved and the Governor signed SB 350 which reaffirms California's commitment to reducing its GHG emissions and addressing climate change. Key provisions include an increase in the renewables portfolio standard (RPS), higher energy efficiency requirements for buildings, initial strategies towards a regional electricity grid, and improved infrastructure for electric vehicle charging stations.

- **SBX 7-7** - The Water Conservation Act of 2009. The legislation directs urban retail water suppliers to set individual 2020 per capita water use targets and begin implementing conservation measures to achieve those goals.

- **SB 32** - California Global Warming Solutions of 2006 - The Governor signed SB 32 in September of 2016, giving ARB the statutory responsibility to include the 2030 target previously contained in Executive Order B-30-15 in the 2017 Scoping Plan Update.

- **Executive Order S-3-05** - Former California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S 3-05, the following reduction targets for GHG emissions:

- By 2010, reduce greenhouse gas emissions to 2000 levels.
- By 2020, reduce greenhouse gas emissions to 1990 levels.
- By 2050, reduce greenhouse gas emissions to 80 percent below 1990 levels.

- **Executive Order B-30-15** - On April 29, 2015, Governor Edmund G. Brown Jr. issued an executive order to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The Governor's executive order aligns California's GHG reduction targets with those of leading international governments ahead of the United Nations Climate Change Conference in Paris late 2015.

- **Executive Order S-01-07** - Low Carbon Fuel Standard. The Governor signed Executive Order S 01-07 on January 18, 2007. The order mandates that a statewide goal shall be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020.

- **Executive Order S-13-08** - Executive Order S-13-08 states that "climate change in California during the next century is expected to shift precipitation patterns, accelerate sea level rise and increase temperatures, thereby posing a serious threat to California's economy, to the health and welfare of its population and to its natural resources.

- **Title 20 Appliance Efficiency Regulations** - California Code of Regulations, Title 20: Division 2, Chapter 4, Article 4, Sections 1601-1608: Appliance Efficiency Regulations regulates the sale of appliances in California.

- **Title 24 Energy Efficiency Standards** - California Code of Regulations Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The 2016 Building Energy Efficiency Standards went into effect on January 1, 2017(CEC 2015a). The 2019 Building Energy Efficiency Standards update will go into effect in January 1, 2020. Included in the 2019 update is the requirement for all new residential units to install rooftop solar effective in 2020

- **Title 24 California Green Building Standards Code** (California Code of Regulations Title 24, Part 11 code - is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings that went in effect January 1, 2011. The code is updated on a regular basis, with the most recent adopted update consisting of the 2019 California Green Building Code Standards that becomes effective January 1, 2020. The new standards focus on four areas: residential photovoltaic systems, thermal envelope standards, residential and nonresidential ventilation requirements, and nonresidential lighting requirements.

3.2.4 - Local – City of Moreno Valley

The City of Moreno Valley adopted an Energy Efficiency and Climate Action Strategy document in 2012 (City of Moreno Valley 2012). The Energy Efficiency and Climate Action Strategy is a policy document which identifies ways that the City can reduce energy and water consumption and GHG emissions as an organization (its employees and the operation of its facilities) and outlines the actions that the City can encourage and community members can employ to reduce their own energy and water consumption and GHG emissions. GHG reduction policies included in this document involve: reducing land use based trips by encouraging transit priority projects; employment based trip reductions by requiring a transportation demand management (TDM) program for new development; residential and commercial energy efficiency requirements; facilitating residential renewable energy and energy efficient development; facilitating renewable energy deployment; heat island planning; water use reduction, water efficiency training, and education; and waste diversion program. The project involves the construction and operation of an automobile dealership that would fall under the scope of these policies.

3.2.5 - Significance Thresholds

To assess the significance of a proposed project's environmental impacts, it is necessary to identify quantitative or qualitative thresholds that, if exceeded, would constitute a finding of significance. While estimated project-related GHG emissions can be calculated using the CalEEMod model, because of the small quantity of project GHG emissions in proportion to worldwide sources of GHG, the direct impacts of the project-related emissions on GHG and global warming cannot be determined on the basis of available science. There is no evidence at this time that would indicate that the emissions from a project the size of the proposed project would directly or indirectly affect the global climate. Project-related contributions to GHG and climate change, if any, only have potential significance on a cumulative basis. Therefore, the analysis below focuses on the project's potential to contribute to GHG in a cumulatively considerable manner.

CEQA Guidelines define a significant effect on the environment as "a substantial, or potentially substantial, adverse change in the environment." To determine if a project would have a significant impact on greenhouse gases, the type, level, and impact of emissions generated by the project must be evaluated.

The following greenhouse gas significance thresholds are contained in Appendix G of the CEQA Guidelines, which were amendments adopted into the Guidelines on March 18, 2010, pursuant to SB 97. A significant impact would occur if the project would:

(a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or

(b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

Neither the CEQA Statute nor the CEQA Guidelines prescribe specific methodologies and significance criteria for determining the significance of GHG emissions impacts. The CEQA Guidelines emphasize

the lead agency's discretion to determine the appropriate thresholds consistent with the manner in which other impact categories are handled in CEQA. CEQA case law has upheld local agencies' discretion to determine the significance of GHG emissions impacts.

Section 15064.4(b) of the CEQA Guideline amendments for greenhouse gas emissions states that a lead agency may take into account the following three considerations in assessing the significance of impacts from greenhouse gas emissions.

- **Consideration #1:** The extent to which the project may increase or reduce greenhouse gas emissions as compared with the existing environmental setting.
- **Consideration #2:** Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
- **Consideration #3:** The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

The City of Moreno has not adopted a specific numerical significance threshold for GHGs. However, the City has discretion to select an appropriate significance criterion used by other agencies based on substantial evidence. To provide guidance to lead agencies on determining significance for GHG emissions in their CEQA documents, SCAQMD convened a GHG CEQA Significance Threshold Working Group (Working Group). Based on the last Working Group meeting (Meeting No. 15) held in September 2010, SCAQMD proposed a tiered approach for evaluating GHG emissions for development projects where the SCAQMD is not the lead agency. This concept is equivalent to the existing consistency determination requirements in CEQA Guidelines Sections 15064(h)(3), 15125(d), or 15152(a). The SCAQMD has continued to consider adoption of significance thresholds for residential and general development projects. The most recent proposal issued in September 2010 (SCAQMD 2010) uses the following tiered approach to evaluate potential GHG impacts from various uses:

- Tier 1 consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA.
- Tier 2 consists of determining whether the project is consistent with a greenhouse gas reduction plan. If a project is consistent with a qualifying local greenhouse gas reduction plan, it does not have significant greenhouse gas emissions.
- Tier 3 consists of screening values, which the lead agency can choose, but must be consistent with all projects within its jurisdiction. A project's construction emissions are averaged over 30 years and are added to the project's operational emissions. If a project's emissions are below one of the following screening thresholds, then the project is less than significant:

- Option 1: All land use types: 3,000 MT CO_2e per year
- Option 2: Based on land use type: residential: 3,500 MT CO_2e per year; commercial: 1,400 MT CO_2e per year; or mixed use: 3,000 MT CO_2e per year

- Tier 4 has the following options:
  - Option 1: Reduce BAU emissions by a certain percentage; this percentage is currently undefined.
  - Option 2: Early implementation of applicable AB 32 Scoping Plan measures
  - Option 3, 2020 target for service populations (SP), which includes residents and employees: 4.8 MT CO_2e/SP/year for projects and 6.6 MT CO_2e/SP/year for plans;
  - Option 4, 2035 target: 3.0 MT CO_2e/SP/year for projects and 4.1 MT CO_2e/SP/year for plans
- Tier 5 involves mitigation offsets to achieve target significance threshold.

The SCAQMD's draft threshold uses the Executive Order S-3-05 year 2050 goal as the basis for the Tier 3 screening level. Achieving the Executive Order's objective would contribute to worldwide efforts to cap CO_2 concentrations at 450 ppm, thus stabilizing global climate and serves as the basis for deriving the screening level. Specifically, the Tier 3 screening level for all land use type projects at 3,000 $MTCO_2e$ was selected as the significance threshold for this project.

The second CEQA Checklist question (criterion b) will be evaluated by determining if the proposed project is consistent with the AB32 Scoping Plan, which guides the City's Energy Efficiency and Climate Action Strategy for reducing GHG emissions.

3.2.6 - Methodology for Estimating GHG Emissions

Calculations of CO_2, CH_4, and N_2O emissions are provided to identify the magnitude of potential project effects. The analysis focuses on CO_2, CH_4, and N_2O, since these comprise 98.9% of all GHG emissions by volume (IPCC, 2007) and are the GHG emissions that the project would emit in the greatest quantities. Fluorinated gases, such as HFCs, PFCs, and SF_6 were not used in the analysis, as they are primarily associated with industrial processes and the project does not include an industrial component. Emissions of all GHGs are converted into their equivalent weight in CO_2 (CO_2e). While minimal amounts of other main GHGs (such as chlorofluorocarbons [CFCs] would be emitted, they would not substantially add to the calculated CO_2e amounts. Calculations are based on the California Air Pollution Control Officers Association (CAPCOA) CEQA & Climate Change white paper (January 2008) and included in the use of the California Climate Action Registry (CCAR) General Reporting Protocol (January 2009). GHG emissions associated with the proposed project were calculated using the California Emissions Estimator Model (CalEEMod) version 2016.3.2

3.3 - Greenhouse Gas Impact Analysis

3.3.1 - Generation of Greenhouse Gases

Impact GHG-1: **The project would generate direct and indirect greenhouse gas emissions; however, these emissions would result in a less than significant impact on the environment.**

Impact Analysis

A project that demonstrates consistency with the adopted GHG threshold of 3,000 $MTCO_2e$ would fulfill the requirements of the City's GHG emission reduction plan. As such, projects that would not exceed the 3,000 MT CO_2e per year screening threshold would not have the potential to result in a significant impact on the environment. Conversely, projects that exceed the 3,000 MT CO_2e per year screening threshold would have the potential to result in a significant impact on the environment and would require application of mitigation measures.

The CalEEMod land use emission model was used to estimate the project's construction and operational GHG emissions. The various assumptions used in the model were described previously in Section 2.0

Construction

Construction of the proposed project would generate temporary GHG emissions primarily due to the operation of the construction equipment and truck trips. CalEEMod estimates construction emissions based on parameters such as the duration of construction activity, area of disturbance, and anticipated equipment used during construction. The project would emit greenhouse gases from upstream emission sources and direct sources (combustion of fuels from worker vehicles and construction equipment). Table 19 shows the GHG emissions from project construction. As per SCAQMD guidance, the emission results are amortized over a 30-year period and added to the operational emissions to determine project's total GHG impacts.

Table 19: Construction Greenhouse Gas Emissions

Activity	Annual MT CO_2e
Construction	575
Amortized over 30 years[(1)]	**19**

Notes:
(1) Greenhouse gas emissions are amortized over the 30-year life of a project.
MT CO_2e = metric tons of carbon dioxide equivalents = pounds per day x days x 0.0005.
Source: CalEEMod (see Appendix A).

Operation

Operational or long-term emissions occur over the life of the project. CalEEMod estimates operational emissions of CO_2, N_2O, and CH_4. Operational emissions, calculated in CalEEMod, are related to area sources, waste generation, water usage, energy usage, and mobile sources. Emissions associated with area sources, including consumer products, landscape maintenance, and architectural coatings utilize standard emission rates from CARB, USEPA, and district supplied emission factor values (CalEEMod Model User Guide 2017). Waste generation emissions are based on the Intergovernmental Panel on Climate Change methods for quantifying GHG emissions from solid waste using the degradable organic content of waste (CalEEMod Model User Guide 2016). Waste disposal rates by land use and overall composition of municipal solid waste in California was primarily based on data provided by the California Department of Resources Recycling and Recovery (CalRecycle). Water and wastewater usage are based on the default electricity intensity from the CEC's 2006 Refining Estimates of Water-Related Energy Use in California, using the average values for Northern and Southern California. Emissions from energy use include emission from electricity and natural gas use, energy required to convey water to the project, energy involved in the handing of solid waste, and from mobile source emissions. The emissions factors for natural gas combustion are based on EPA's AP-42 (Compilation of Air Pollutant Emissions Factors) and the California Climate Action Registry. Electricity emissions were calculated by multiplying the energy use times the carbon intensity of the utility district per kilowatt hour (CalEEMod User Guide 2017). The default electricity consumption values in CalEEMod include the California Energy Commission (CEC) sponsored California Commercial End Use Survey (CEUS) and Residential Appliance Saturation Survey (RASS) studies. Mobile emissions come from vehicle trips to and from the project site which were estimated using the vehicle trip characteristics discussed earlier in Section 2.4.1

Table 20 shows the operational emissions for the project. As provided therein, the construction and operation of the project would result in an increase in GHG emissions of 1,267 $MTCO_2e$ per year which would not exceed the significance threshold of 3,000 MT CO_2e per year adopted for this assessment.

Table 20: Project Greenhouse Gas Emissions

Source	Annual MT CO_2e
Operation	
Area	0
Energy	241
Mobile	993
Waste	76
Water	29
Total	**1,319**
Construction (amortized over 30 years)	**19**
Total	**1,338**
Threshold	**3,000**

Table 20 (cont): Project Greenhouse Gas Emissions

Exceed Threshold?	**No**
MT CO_2e = metric tons of carbon dioxide equivalents. Source of emissions: CalEEMod (see Appendix A).	

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation required.

Level of Significance After Mitigation

Less than significant impact.

3.3.2 - Greenhouse Gas Reduction Plans

Impact GHG-2: **The project would not conflict with any applicable plan, policy or regulation of an agency adopted to reduce the emissions of greenhouse gases.**

Impact Analysis

The project is subject to State of California, regional, and local policies and regulations adopted for the purpose of reducing greenhouse gas emissions. The ARB Scoping Plan and its implementing regulations provides the overall framework for greenhouse gas regulation in California. The City of Moreno Valley Energy Efficiency and Climate Action Strategy provides policies and measure commitments, which the City has committed to achieving with reference to the Scoping Plan AB32. As demonstrated by the analysis below, the project would not conflict with the provisions of AB 32 and, therefore, would not obstruct implementation of the components of the City's Energy Efficiency and Climate Action Strategy that are applicable to the project.

The project would include the construction and operation of an automobile dealership that would include contemporary, energy-efficient/energy-conserving design features and operational procedures. in accordance with the most recent California Building Standards Code (CBSC). The CBSC includes the California Energy Code, or Title 24, Part 6 of the California Code of Regulations, also titled The Energy Efficiency Standards for Residential and Nonresidential Buildings. The California Energy Code was established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated approximately every three years to improve energy efficiency by allowing incorporating new energy efficiency technologies and methods. The project would be required to comply with all applicable provisions of the CBSC. As such, the Project's energy demands would be minimized through design features and operational programs that, in aggregate, would ensure that project energy efficiencies would comply with the relevant CBSC energy efficiency requirements, thereby minimizing GHG emissions produced during from energy consumption.

The ARB identified measures in its Scoping Plan that would reduce statewide GHG emissions and achieve the emissions reductions goals of AB 32. Thus, projects that are consistent with the ARB Scoping Plan would not conflict with AB 32's mandate to reduce state GHG emissions. The ARB has identified 39 recommended actions in its Scoping Plan. Of the 39 measures identified, those that would be applicable to the project consist primarily of actions related to transportation, electricity and natural gas use, and green building design. A summary of the project's consistency with the ARB Scoping Plan's recommended actions is discussed below.

- Transportation: Actions T-1, T-2, T-3, and T-4 are related to legislative and public awareness activities required of the State of California, regional planning activities and metropolitan planning organizations, which are not within the purview of the project. Actions T-5 and T-6 address operations at ports; because the project is not located within a port, these actions are not applicable to the project. Action T-7 requires existing trucks/trailers to be retrofitted with the best available technology and/or ARB-approved technology. The project itself would not conflict with this action; however, fleet operators that would move automobile vehicles to and from the dealership would have the responsibility for demonstrating consistency with this action. Action T-8 requires the creation of a regulatory and/or incentive program to encourage the use of hybrid vehicles and is outside the purview of the project. Action T-9 addresses a high-speed rail system and is not applicable to the project. Accordingly, the project would not conflict with or preclude implementation of the CARB Scoping Plan transportation actions.

- Electricity and Natural Gas & Green Buildings: Actions E-1, CR-1, and GB-1 target regulatory and building practices to increase energy efficiency. The project would comply with the relevant Title 24 Energy Efficiency standards and would not conflict with these Scoping Plan actions. Actions E-2 and E-3 concern electric utilities and are not applicable to development proposals like the project. Action E-4 is related to public awareness and incentive programs to promote the use of photovoltaic solar electricity systems. The Project's building will be designed to support photovoltaic cells, should they be installed in the future, and the Project would not conflict with Action E-4. Action CR-2 is related to public awareness and incentive programs required of the State of California to promote solar water heaters; this action is not applicable to the project. Based on the foregoing, the project would not conflict with or preclude implementation of the CARB Scoping Plan electricity and natural gas or green building actions.

- Water Use: Only Actions W-1 and W-3 are applicable to development proposals like the project; however, because the project would not exceed the audit threshold for these actions (25,000 MT CO_2e from onsite combustion and related activities), the project is considered consistent with Actions W-1 and W-3 and no specific action or activity is required of the project. Based on the foregoing, the project would not conflict with or preclude implementation of the ARB Scoping Plan water use actions.

- Agriculture: The project does not include agricultural uses and the project site does not contain agricultural uses under existing conditions. Therefore, Agriculture Action A-1 is not applicable to the project and the project would not conflict with or preclude implementation of the ARB Scoping Plan agriculture actions.

- Industrial Use: All but one of the ARB Scoping Plan industrial actions are related to oil and gas extraction, refining, and/or transmission and are not applicable to the project. The Project would not exceed the audit threshold for the one applicable action (in excess of 0.5 million MT CO_2e/year for auditing), Action I-1, and; therefore, is not considered a large emitter of GHGs. Accordingly, the project would not conflict with Action I-1. Based on the foregoing, the project would not conflict with or preclude implementation of the ARB Scoping Plan industrial use actions.

As demonstrated by the foregoing analysis, the project would not conflict with or preclude implementation of the CARB Scoping Plan. Further, as noted in the discussion of Impact GHG-1, the project's construction and operational emissions would not exceed the project's GHG significance threshold of 3,000 $MTCO_2e$ per year. As a consequence, the project would not conflict with any applicable plan, policy, or regulation adopted to reduce GHG emissions.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation required.

Level of Significance After Mitigation

Less than significant impact.

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Appendix A:
CalEEMod Model Output

APPENDIX B: BIOLOGICAL TECHNICAL REPORT

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CAR PROS KIA DEALERSHIP PROJECT

(APNs 488-390-015-4 & 488-390-016-5)

WESTERN RIVERSIDE MSHCP HABITAT ASSESSMENT REPORT

CITY OF MORENO VALLEY, RIVERSIDE COUNTY, CALIFORNIA

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EXECUTIVE SUMMARY

Blackhawk Environmental (Blackhawk) conducted a literature review, field reconnaissance survey, and biological assessment of the proposed Car Pros Kia Dealership Project site (Project) to assess existing site conditions, as well as assess the potential for sensitive species or habitats to occur within the Project site. The Project is an approximately 6.35-acre site proposed in the City of Moreno Valley, Riverside County, California. The Project site is located on Assessor's Parcel Numbers (APN) 488-390-015-4 & 488-390-016-5. The Project is located within the boundaries of the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) in the Moreno Valley Auto Mall Specific Plan (SP-209). The Project site is not located within any Criteria Cell and is located outside of Plan Conservation Areas. The Project site contains Disturbed Coastal Sage Scrub – Brittlebush Series, Disturbed Areas, Developed Areas and Residential/Urban/Exotic vegetation communities and land cover types. The Project is located within an area necessitating surveys for burrowing owl (*Athene cunicularia*).

A literature review conducted for the Project site identified documented occurrences from within five miles of the Project site for 30 special-status wildlife species, 8 special-status plant species and 1 special-status habitat type. A field reconnaissance survey was conducted on February 7, 2019. During the survey, each of these species were evaluated for their potentials for occurrence (PFO) within and/or adjacent to the Project site. As part of the habitat assessment, suitable habitat for burrowing owl (*Athene cunicularia*) was also evaluated. Of the 30 special-status wildlife species documented to occur within the Project vicinity, 1 was found present, 15 were found to have a low to moderate potential for occurrence based on proximity of historic records and quality habitat on site, and 14 were determined to be absent due to lack of suitable habitats on the Project site. Two additional MSHCP-covered species were present on the Project site but had not been previously documented within the Project area or vicinity (Cooper's Hawk [*Accipiter cooperii*] and northern harrier [*Circus hudsonius*]). Species identified in the literature review include American badger (*Taxidea* taxus) (absent), Bell's sage sparrow (*Artemisiospiza belli belli*) (low PFO), burrowing owl (moderate PFO), California glossy snake (*Arizona elegans occidentalis*) (low PFO), California horned lark (*Eremophila alpestris actia*) (present), coast horned lizard (*Phrynosoma blainvillii*) (low PFO), coast patch-nosed snake (*Salvadora hexalepis*) (low PFO), coastal California gnatcatcher (*Polioptila californica californica*) (absent), coastal whiptail (*Aspidoscelis tigris stejnegeri*) (moderate PFO), Ferruginous hawk (*Buteo regalis*) (low PFO, foraging only), least Bell's vireo (*Vireo bellii pusillus*) (absent), loggerhead shrike (*Lanius ludovicianus*) (low PFO, foraging only), Los Angeles pocket mouse (*Perognathus longimembris brevinasus*) (low PFO), northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*) (low PFO), orange-throated whiptail (*Aspidoscelis hyperythra*) (low PFO), red-diamond rattlesnake (*Crotalus ruber ruber*) (low PFO), San Bernardino kangaroo rat (*Dipodomys merriami parvus)* (absent), San Diego black-tailed jackrabbit (*Lepus californicus bennettii*) (moderate PFO), southern California legless lizard (*Anniella stebbinsi*) (absent), southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*) (low PFO), Stephen's kangaroo rat (*Dipodomys stephens*i) (absent), tricolored blackbird (*Agelaius tricolor*) (absent), western mastiff bat (*Eumops perotis californicus*) (moderate PFO, foraging only), western pond turtle (*Actinemys marmorata*) (absent), western spadefoot (*Spea hammondii*) (absent), western yellow bat (*Lasiurus xanthinus*) (moderate PFO), western yellow-billed cuckoo (*Coccyzus americanus*) (absent), white-faced ibis (*Eudocimus albus*) (absent), yellow warbler (*Setophaga petechia*) (absent), and yellow-breasted chat (*Icteria virens*) (absent); **25 of these species are covered under the Plan, but the remaining seven species (American badger, California glossy snake, coast patch-nosed snake, southern California legless lizard, western mastiff bat, western pond turtle, western yellow bat) do not require additional surveys and would be mitigated through the payment of MSHCP development fees**.

Of the 8 special-status plant species evaluated, only Parry's spineflower (*Chorizanthe parryi* var. *parryi*) was determined to have a low potential for occurrence. The remaining seven special-status plant species were determined to be absent from the Project site, including: Coulter's goldfields (*Lasthenia glabrata ssp. coulteri*), Nevin's barberry (*Berberis nevinii*), Plummer's mariposa-lily (*Calochortus plummerae*), San Bernardino aster (*Symphyotrichum defoliatum*), San Jacinto Valley crownscale (*Atriplex coronata var. notatior*), smooth tarplant (*Centromadia pungens ssp. laevis*) and Wright's trichocoronis (*Trichocoronis wrightii var. wrightii*). **Five of these species are covered under the Plan. The remaining species (Nevin's barberry, San Bernardino aster and Wright's trichocoronis) do not require additional surveys and would be mitigated through the payment of MSHCP development fees.**

The Project site and surrounding areas support suitable nesting substrates for various general migratory bird and raptor species common to the region. Take authorization for migratory bird and raptor species is not provided by the Plan. The Plan functionally covers the remaining special-status species identified with potentials to occur, as well as impacts to their habitats. No other special-status resources or habitats are present or are expected to occur. **Mitigation for potential Project-related impacts to the species identified to occur or with the potentials to occur during the literature review and assessment can be achieved through payment of a mitigation fee to the appropriate MSHCP authority. No significant adverse impacts to special-status biological resources of the region are anticipated with implementation of Project mitigation contained herein.**

The Project supports suitable habitat for burrowing owl and is located within a designated area requiring surveys for burrowing owl. For MSHCP consistency, additional surveys will be required pursuant to *Step II, Part B: Focused Burrowing Owl Surveys* of the Burrowing Owl Survey Instructions for the Western Riverside Multiple Species Habitat Conservation Plan Area (2006).

No potentially jurisdictional waterways or drainage features were found on the Project site.

1.0 INTRODUCTION

Blackhawk was contracted under EPD Solutions to conduct environmental surveys and provide a Habitat Assessment Report (HAR) for the Car Pros Kia Dealership Project, located on approximately 6.35 acres of previously mass graded, undeveloped land in the City of Moreno Valley, Riverside County, California.

The purpose of this survey effort and HAR is to identify and document sensitive biological resources potentially occurring within the Project site and surrounding areas. The Project site is located in the Moreno Valley Auto Mall Specific Plan (SP-209); however, the Project is not located within a MSHCP Cell Group or MSHCP Criteria Cell(s). The survey effort focused on documentation of existing site conditions, such as soils, topography, vegetation communities, riverine/riparian habitats, vernal pools and potentially jurisdictional aquatic resources as required for review under the MSHCP. Specifically, the assessment was conducted to determine if habitat was present for species identified in the Conservation Summary Report Generator, including burrowing owl. The assessment did not include a formal jurisdictional or wetland delineation or aquatic resources mapping effort.

1.1 Project Description

The Car Pros Kia Dealership Project proponent proposes to construct a 41,511 SF, two-story building for a Kia sales and service facility on two parcels totaling 6.35 acres in Moreno Valley. The Project site is identified as Assessor Parcel Numbers 488-390-015-4 & 488-390-016-5 and is zoned General Commercial (C) in Planning Area C within the Moreno Valley Auto Mall Specific Plan.

The Project site is located at the northeast corner of the City of Moreno Valley, and generally bound by Pettit Street to the north, Auto Mall Drive to the west, Moreno Beach Drive to the south, and a concrete wall dividing other undeveloped land zoned for residential agriculture to the east.

2.0 REGULATORY SETTING

The proposed Project is subject to a host of state and federal regulations associated with a number of regulatory programs. These programs often overlap and were developed to protect natural resources, including: state- and federally listed plants and animals; aquatic resources including rivers and creeks, ephemeral streambeds, wetlands, and areas of riparian habitat; other special-status species that are not listed as threatened or endangered by the state or federal governments; and other special-status vegetation communities.

2.1 State and/or Federally Listed Plant and Wildlife Species

2.1.1 State of California Endangered Species Act

California's Endangered Species Act (CESA) defines an endangered species as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease." The State defines a threatened species as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an Endangered species in the foreseeable future in the absence of the special protection and management efforts required by this chapter. Any animal determined by the commission as rare on or before January 1, 1985 is a threatened species." Candidate species are defined as "a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the commission has formally noticed as being under review by the department for addition to either the list of endangered species or the list of threatened species, or a species for which the commission has published a notice of proposed regulation to add the species to either list." Candidate species may be afforded temporary protection as though they were already listed as threatened or endangered at the discretion of the Fish and Game Commission. Unlike the Federal Endangered Species Act (FESA), CESA does not list invertebrate species.

Article 3, Sections 2080 through 2085, of the CESA addresses the taking of threatened, endangered, or candidate species by stating "No person shall import into this state, export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the commission determines to be an endangered species or a threatened species, or attempt any of those acts, except as otherwise provided." Under the CESA, "take" is defined as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Exceptions authorized by the state to allow "take" require permits or memoranda of understanding and can be authorized for endangered species, threatened species, or candidate species for scientific, educational, or management purposes and for take incidental to otherwise lawful activities. Sections 1901 and 1913 of the California Fish and Game Code provide that notification is required prior to disturbance.

2.1.2 Federal Endangered Species Act

The FESA of 1973 defines an endangered species as "any species that is in danger of extinction throughout all or a significant portion of its range." A threatened species is defined as "any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." Under provisions of Section 9(a)(1)(B) of the FESA it is unlawful to "take" any listed species. "Take" is defined in Section 3(18) of FESA: "...harass, harm, pursue, hunt, shoot,

wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Further, the United States Fish and Wildlife Service (USFWS), through regulation, has interpreted the terms "harm" and "harass" to include certain types of habitat modification that result in injury to, or death of species as forms of "take." These interpretations, however, are generally considered and applied on a case-by-case basis and often vary from species to species. In a case where a property owner seeks permission from a Federal agency for an action that could affect a federally listed plant and animal species, the property owner and agency are required to consult with USFWS. Section 9(a)(2)(b) of the FESA addresses the protections afforded to listed plants.

2.1.3 State and Federal Take Authorizations for Listed Species

Federal or state authorizations of impacts to or incidental take of a listed species by a private individual or other private entity would be granted in one of the following ways:

- Section 7 of the FESA stipulates that any federal action that may affect a species listed as threatened or endangered requires a formal consultation with USFWS to ensure that the action is not likely to jeopardize the continued existence of the listed species or result in destruction or adverse modification of designated critical habitat. 16 U.S.C. 1536(a)(2).

- In 1982, the FESA was amended to give private landowners the ability to develop Habitat Conservation Plans (HCP) pursuant to Section 10(a) of the FESA. Upon development of an HCP, the USFWS can issue incidental take permits for listed species where the HCP specifies at minimum, the following: (1) the level of impact that will result from the taking, (2) steps that will minimize and mitigate the impacts, (3) funding necessary to implement the plan, (4) alternative actions to the taking considered by the applicant and the reasons why such alternatives were not chosen, and (5) such other measures that the Secretary of the Interior may require as being necessary or appropriate for the plan.

- Sections 2090-2097 of the California Endangered Species Act (CESA) require that the state lead agency consult with CDFW on projects with potential impacts on state-listed species. These provisions also require CDFW to coordinate consultations with USFWS for actions involving federally listed as well as state- listed species. In certain circumstances, Section 2080.1 of the California Fish and Game Code allows CDFW to adopt the federal incidental take statement or the 10(a) permit as its own based on its findings that the federal permit adequately protects the species under state law.

2.2 California Environmental Quality Act

Shortly after the United States federal government passed the National Environmental Policy Act (NEPA), the California Environmental Quality Act (CEQA) was passed in 1970 to institute a statewide policy of environmental protection. CEQA does not directly regulate land uses, but instead requires state and local agencies within California to follow a protocol of analysis and public disclosure of environmental impacts of proposed projects and adopt all feasible measures to mitigate those impacts. CEQA makes environmental protection a mandatory part of every California state and local agency's decision making process.

2.2.1 CEQA Thresholds of Significance

Environmental impacts relative to biological resources are assessed using impact significance threshold criteria, which reflect the policy statement contained in CEQA, Section 21001(c) of the California Public Resources Code. Accordingly, the State Legislature has established it to be the policy of the State of California to:

> *"Prevent the elimination of fish or wildlife species due to man's activities, insure that fish and wildlife populations do not drop below self- perpetuating levels, and preserve for future generations representations of all plant and animal communities..."*

Determining whether a project may have a significant effect, or impact, plays a critical role in the CEQA process. According to CEQA, Section 15064.7 (Thresholds of Significance), each public agency is encouraged to develop and adopt (by ordinance, resolution, rule, or regulation) thresholds of significance that the agency uses in the determination of the significance of environmental effects. A threshold of significance is an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant. In the development of thresholds of significance for impacts to biological resources CEQA provides guidance primarily in Section 15065, Mandatory Findings of Significance, and the CEQA Guidelines, Attachment G, Environmental Checklist Form. Section 15065(a) states that a project may have a significant effect where:

> *"The project has 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 wildlife community, substantially reduce the number or restrict the range of an endangered, rare, or threatened species, ..."*

Therefore, for the purpose of this analysis, impacts to biological resources are considered potentially significant (before considering offsetting mitigation measures) if one or more of the following criteria discussed below would result from implementation of the proposed project.

2.2.2 Criteria for Determining Significance Pursuant to CEQA

Attachment G of the 1998 State CEQA guidelines indicate that a project may be deemed to have a significant effect on the environment if the project is likely to:

> *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 Wildlife or U.S. Fish and Wildlife Service.*
>
> *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 Wildlife or U.S. Fish and Wildlife Service.*
>
> *c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.*

d) 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.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

2.2.3 CEQA Guidelines Section 15380

The CEQA requires evaluation of a project's impacts on biological resources and provides guidelines and thresholds for use by lead agencies for evaluating the significance of proposed impacts. Sections 5.1.1 and 5.2.2 below set forth these thresholds and guidelines. Furthermore, pursuant to the CEQA Guidelines Section 15380, CEQA provides protection for non-listed species that could potentially meet the criteria for state listing. For plants, CDFW assigns California Rare Plant Ranks (CRPR) to species categorized as List 1A, 1B, or 2 of the California Native Plant Society (CNPS) *Inventory of Rare and Endangered Plants in California* may meet the criteria for listing and should be considered under CEQA. CDFW also recommends protection of plants, which are regionally important, such as locally rare species, disjunct populations of more common plants, or plants on the CNPS Lists 3 or 4.

2.3 Special Status Species Designations

2.3.1 Federally Designated Special-Status Species

Some years ago, the USFWS instituted changes in the listing status of candidate species. Former C1 (candidate) species are now referred to simply as candidate species and represent the only candidates for listing. All references to federally protected species in this report (whether listed, proposed for listing, or candidate) include the most current published status or candidate category to which each species has been assigned by USFWS. Additionally, the USFWS *Birds of Conservation Concern 2008* report was published to identify the migratory and non-migratory bird species (beyond those already federally listed) that represent the highest conservation priorities for USFWS.

For this report, the following acronyms are used for federal special-status species:

- **FE**: Federally listed as Endangered
- **FT**: Federally listed as Threatened
- **FPE**: Federally proposed for listing as Endangered
- **FPT**: Federally proposed for listing as Threatened
- **FC**: Federal Candidate species (Former Category 1 candidates)
- **BCC**: USFWS Birds of Conservation Concern

2.3.2 State-Designated Special-Status Species

Some mammals and birds are protected by the state as Fully Protected (FP) Mammals or Fully

Protected Birds, as described in the California Fish and Game Code, Sections 4700 and 3511, respectively. California Species of Special Concern (SSC) are species designated as vulnerable to extinction due to declining population levels, limited ranges, and/or continuing threats. This list is primarily a working document for the CDFW's California Natural Diversity Database (CNDDB) project. Informally listed taxa are not protected, but warrant consideration in the preparation of biotic assessments. For some species, the CNDDB is only concerned with specific portions of the life history, such as roosts, rookeries, or nest sites. For this report the following acronyms are used for State special-status species:

- **SE**: State-listed as Endangered
- **ST**: State-listed as Threatened
- **SCE**: State candidate for listing as Endangered
- **SCT**: State candidate for listing as Threatened
- **FP**: State Fully Protected
- **SSC**: Species of Special Concern

2.3.3 California Rare Plant Rank

The CNPS is a private plant conservation organization dedicated to the monitoring and protection of sensitive species in California. The California Native Plant Society's *California Native Plant Society's Inventory of Rare and Endangered Plants of California* separates plants of interest into five categories. CNPS has compiled an inventory comprised of the information focusing on geographic distribution and qualitative characterization of Rare, Threatened, or Endangered vascular plant species of California (Tibor 2001). The list serves as the candidate list for listing as threatened and endangered by CDFW.

2.4 Additional Applicable State and Federal Regulations

Each of the following regulations bears some applicability toward assessing the natural resources of the Project Site and any effects that construction and long-term operations and maintenance activities may have upon such resources. These are included for informational and referential purposes only.

2.4.1 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (PL 95-616; 16 USC §§ 668 et seq.) provides for protection of the bald and golden eagles by prohibiting taking, possession, and commerce in the birds.

2.4.2 Clean Water Act

The Clean Water Act (CWA) regulates the discharge of pollutants to waters of the United States in order to protect water quality and the beneficial uses of these waters. Through a permit application process, CWA Section 404 regulates dredge and fill discharges to waters of the United States.

2.4.3 Fish and Wildlife Conservation Act of 1980

The Fish and Wildlife Conservation Act of 1980 (PL 96-366; 16 USC §§2901 et seq.) provides for conservation, protection, restoration and propagation of certain species, including migratory birds

threatened with extinction.

2.4.4 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (PL 65-186, as amended; 16 USC §§ 703 et seq.) protects most birds, whether or not they migrate. Birds, their nests, eggs, parts, or products may not be killed or possessed. Game birds are listed and protected except where specific seasons, bag limits, and other features govern their hunting. Exceptions are made for some agricultural pests, which require a USFWS permit (yellow-headed, red-winged, bi-colored red-winged, tri-colored red-winged, Rusty and Brewer's blackbirds, cowbirds, all grackles, crows and magpies). Some other birds that injure crops in California may be taken under the authority of the County Agricultural Commissioner (meadowlarks, horned larks, golden-crowned sparrows, white- and other crowned sparrows, goldfinches, house finches, acorn woodpeckers, Lewis' woodpeckers and flickers). Permits may be granted for various non-commercial activities involving migratory birds and some commercial activities involving captive-bred migratory birds.

2.4.5 California Fish & Game Codes 3500 Series

California Fish & Game Codes 3500, 3503, 3503.5, 3505, 3511 and 3513 are State regulations that cover resident and non-resident game birds, protected bird nests, protected raptor nests, egrets, ospreys, Fully Protected bird species, and take considerations for Migratory Bird Treaty Act birds.

- **Code 3500:** "(a) Resident game birds are as follows:
  (1) Doves of the genus Streptopelia, including, but not limited to, spotted doves, ringed turtledoves, and Eurasian collared-doves.
  (2) California quail and varieties thereof.
  (3) Gambel's or desert quail.
  (4) Mountain quail and varieties thereof.
  (5) Sooty or blue grouse and varieties thereof.
  (6) Ruffed grouse.
  (7) Sage hens or sage grouse.
  (8) Hungarian partridges.
  (9) Red-legged partridges including the chukar and other varieties.
  (10) Ring-necked pheasants and varieties thereof.
  (11) Wild turkeys of the order Galliformes.
  (b) Migratory game birds are as follows:
  (1) Ducks and geese.
  (2) Coots and gallinules.
  (3) Jacksnipe.
  (4) Western mourning doves.
  (5) White-winged doves.
  (6) Band-tailed pigeons.
  (c) References in this code to "game birds" means both resident game birds and migratory game birds."

- **Code 3503:** "It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto."

- **Code 3503.5:** "It is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto."

- **Code 3505:** "It is unlawful to take, sell, or purchase any aigrette or egret, osprey, bird of paradise, goura, numidi, or any part of such a bird."

- **Code 3511:** "(a) (1) Except as provided in Section 2081.7 or 2835, fully protected birds or parts thereof may not be taken or possessed at any time. No provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected bird, and no permits or licenses heretofore issued shall have any force or effect for that purpose. However, the department may authorize the taking of those species for necessary scientific research, including efforts to recover fully protected, threatened, or endangered species, and may authorize the live capture and relocation of those species pursuant to a permit for the protection of livestock. Prior to authorizing the take of any of those species, the department shall make an effort to notify all affected and interested parties to solicit information and comments on the proposed authorization. The notification shall be published in the California Regulatory Notice Register and be made available to each person who has notified the department, in writing, of his or her interest in fully protected species and who has provided an e-mail address, if available, or postal address to the department. Affected and interested parties shall have 30 days after notification is published in the California Regulatory Notice Register to provide any relevant information and comments on the proposed authorization.
  (2) As used in this subdivision, "scientific research" does not include any actions taken as part of specified mitigation for a project, as defined in Section 21065 of the Public Resources Code.
  (3) Legally imported fully protected birds or parts thereof may be possessed under a permit issued by the department.
  (b) The following are fully protected birds:
  (1) American peregrine falcon (Falco peregrinus anatum).
  (2) Brown pelican.
  (3) California black rail (Laterallus jamaicensis coturniculus).
  (4) California clapper rail (Rallus longirostris obsoletus).
  (5) California condor (Gymnogyps californianus).
  (6) California least tern (Sterna albifrons browni).
  (7) Golden eagle.
  (8) Greater sandhill crane (Grus canadensis tabida).
  (9) Light-footed clapper rail (Rallus longirostris levipes).
  (10) Southern bald eagle (Haliaeetus leucocephalus leucocephalus).
  (11) Trumpeter swan (Cygnus buccinator).
  (12) White-tailed kite (Elanus leucurus).
  (13) Yuma clapper rail (Rallus longirostris yumanensis)."

- **Code 3513: "**It is unlawful to take or possess any migratory nongame bird as designated in the Migratory Bird Treaty Act or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Treaty Act."

2.4.6 Native Plant Protection Act

The Native Plant Protection Act (NPPA) was enacted in 1977 and allows the California Fish and Game Commission to designate plants as rare or endangered. There are 64 species, subspecies, and varieties of plants that are protected as rare under the NPPA. The NPPA prohibits take of endangered or rare native plants, but includes some exceptions for agricultural and nursery operations, emergencies, and/or with proper notification to the CDFW for vegetation removal from canals, roads, and other sites, changes in land use, and in certain other situations.

2.4.7 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (California Water Code §§13000 et seq.) is the State's primary water law. It gives the State Water Resources Control Board (SWRCB) and the nine regional water quality control boards substantial authority to regulate water use of surface and sub-surface waters.

2.5 Local Regulations

2.5.1 Western Riverside Multiple Species Habitat Conservation Plan

The Western Riverside County Multiple Species Habitat Conservation Plan is a comprehensive, multi-jurisdictional Habitat Conservation Plan (HCP) focusing on conservation of species and their associated habitats in Western Riverside County.

The MSHCP will serve as a HCP pursuant to Section 10(a)(1)(B) of the FESA, as well as a NCCP under the NCCP Act of 2001. The MSHCP will be used to allow the participating jurisdictions to authorize "take" of plant and wildlife species identified within the MSHCP area. USFWS and CDFW (Wildlife Agencies) have authority to regulate the take of threatened, endangered, and rare species. Under the MSHCP, the Wildlife Agencies will grant "take authorization" for otherwise lawful actions, such as public and private development that may incidentally take or harm individual species or their habitat outside of the MSHCP Conservation Area, in exchange for the assembly and management of a coordinated MSHCP Area. The MSHCP is designed to provide mitigation compliance under the FESA, CESA, CEQA, and National Environmental Protection Act (NEPA) with payment of a development mitigation fee to the appropriate local jurisdiction and completion of requisite habitat assessments/focused surveys for projects within those jurisdictions.

3.0 METHODS

Methods described below focused on determination of potential for occurrence of special-status plant and wildlife species. Specific consideration was given for species not covered or functionally covered under the MSHCP. Species are considered to be special-status, and are therefore subject to analysis in this section, if they meet one or more of the following criteria:

- Plant and animal species listed as endangered (FE), threatened (FT), or candidates (FPE or FPT) for listing under the Federal Endangered Species Act (FESA);
- Plant and animal species listed as endangered (SE), threatened (ST), or candidates (SPE or SPT) for listing under the California Endangered Species Act (CESA);
- Animals designated as Fully Protected Species (FP), as defined in California Fish and Game Code Sections 3511, 4700, 5050, and 5515;
- Animal species designated as Species of Special Concern (SSC) by the CDFW;
- Bat species designated as High Priority (H) by the Western Bat Working Group;
- Plants that are state-listed as Rare[1]; or
- Plant species ranked by the California Native Plant Society (CNPS) as having a California Rare Plant Rank (CRPR) of 1 or 2.[2]

Sensitive natural communities are communities that have a limited distribution and are often vulnerable to the environmental effects of projects. These communities may or may not contain sensitive species or their habitats. For purposes of this assessment, sensitive natural communities are considered to be any of the following:

- Vegetation communities listed in the CNDDB;
- Communities listed in the Natural Communities List with a rarity rank of S1 (critically imperiled), S2 (imperiled), or S3 (vulnerable).

3.1 Literature Review

As a foundation for MSHCP requirements, the Riverside County Parcel Report for the subject APNs was considered for information regarding sensitive habitat types and potential survey requirements applicable to the Project site. Additional sources of information included the National Wetlands Inventory database (NWI), the US Department of Agriculture (USDA) Web Soil Mapper, Calflora database, US Geological Service (USGS) topographic maps, Google Earth aerial imagery, and a suite of previously prepared environmental documents for the Project site.

Blackhawk Environmental conducted an additional database records search (February 4, 2019) centered on the USGS 7.5-minute Murrieta quadrangle map for APNs 488-390-015-4 & 488-390-016-5; this search also included portions of the *El Casco, Lakeview, Perris, Redlands, Riverside East, San Bernardino South, and Sunnymead* quadrangle maps. The CDFW California Natural Diversity Database (CNDDB) (CDFW 2019), the US Fish & Wildlife Service (USFWS) Species Occurrence Database (USFWS 2019), and the California Native Plant Society's (CNPS) Electronic Inventory (EI) of Rare and Endangered

[1] Plants that were previously state listed as "Rare" have been re-designated as state threatened.

[2] Under the CEQA review process, only CRPR 1 and 2 species are considered, as these are the only CNPS species that meet CEQA's definition of "rare" or "endangered." Impacts to List 3 and 4 species do not meet CEQA's definition of "rare" or "endangered."

Vascular Plants of California (CNPS 2019) were reviewed for the quadrangles containing and surrounding the Project; a 5-mile radius surrounding the Project was reviewed. The CNDDB contains records of reported occurrences of federal- and state-listed species, proposed endangered or threatened species, Federal Birds of Conservation Concern (BCC), California Species of Special Concern (SSC) and otherwise sensitive species or communities that may occur within and/or in the vicinity of a Project.

In addition to the CNDDB search, the USDA Web Soil Survey was used to review soil types documented to occur within the Project site, as soil types often relate to the PFOs for a number of special-status species and habitat types. Also, a synoptic review was conducted of the NWI database, Google Earth imagery and USGS topographic maps for documented or potential water features on and adjacent to the Project site. These databases and literature reviews were used to provide details on special-status species that have potentials to occur within the proposed Project site and/or its surrounding area prior to conducting habitat assessment or focused survey efforts.

Utilizing the background data described above, Blackhawk Environmental biologists Seth Reimers and Katie Quint conducted a field survey of the Project site on February 7, 2019 to assess the 6.35-acre Project site for existing conditions and the capacity to potentially harbor special-status biological resources identified in the literature review (target species). Representative photos of the Project site, habitats and existing site conditions are included in Attachment B.

Following the habitat assessment, potentials for sensitive species to occur were evaluated based on proximity, connectivity, recency and abundance of known occurrences, availability of suitable habitats, historic distributions of the species, and existing site conditions. Potentials for occurrence were generally evaluated based on the following criteria:

- **Present** – The species was observed within the Project area during the survey effort.
- **High** – Historic records indicate that the species has been known to occur within the vicinity of the Project (1 mile), and suitable habitat occurs onsite.
- **Moderate** – Historic records indicate that the species has been known to occur within the vicinity of the Project, but low quality suitable habitat occurs onsite, or; no historic records occur within the Project, but the Project occurs within the historic range of the species, and moderate to high quality habitat occurs.
- **Low** – Historic records indicate that the species has not been known to occupy the immediate vicinity of the Project, and low quality habitat for the species exists onsite.
- **Absent** – The species is restricted to habitats not occurring within the Project or is considered extirpated from the Project area.

3.2 Habitat Assessment

Blackhawk Environmental Biologists Seth Reimers and Katie Quint conducted the habitat assessment on February 7, 2019. Blackhawk Environmental biologists performed a pedestrian survey of the entire 6.35-acre Project area and surrounding 150-meter burrowing owl survey buffer (Survey Area). The survey was conducted between 10:30 A.M. and 13:30 P.M. Survey conditions are included in Table 1 below.

Table 1. Habitat Assessment Conditions

Biologist(s)	Date	Time	Air Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)	Precipitation
Seth Reimers, Katie Quint	2/7/2019	1030-1330	50-55	5-12	0	None

Methods included belt and meandering transect spaced approximately 15 meters apart walked by the two biologists on and adjacent to the Project site. Where appropriate, biologists paused at select vantage points to provide full visual coverage of the Project site and Survey Area. During the field survey, all plant and wildlife species observed or detected were recorded in field notebooks. Binoculars were used as needed to identify wildlife species. Plant species observed were identified to species or subspecies level when feasible according to the nomenclature in The Jepson Manual: Vascular Plants of California Edition 2 (2012). Vegetation communities were described according to dominant plant species and annotated on a high-resolution aerial photograph of the Project site. The habitat assessment included a burrowing owl focused burrow survey but did not include focused or protocol level surveys for any other special-status plant or wildlife species.

3.3 Jurisdictional Water Bodies, Riverine/Riparian Habitats, Vernal Pools and Listed Fairy Shrimp Habitat

Aerial imagery, the NWI database and USGS topographic maps of the Project site were reviewed to identify any known or potential drainage features, riparian/riverine habitat types, water bodies and/or other features that may fall under USACE, RWQCB, and/or CDFW jurisdictions and that may require investigation during the field survey. Per the Plan, riparian/riverine habitats are lands containing habitat dominated by trees, shrubs, persistent emergents, or emergent mosses and lichens which occur close to or which depend upon soil moisture from a nearby fresh water source or areas with fresh water flow during all or a portion of the year. The presence of any potentially jurisdictional features, including associated vegetation/communities, presence of ordinary high watermarks (OHWMs) or streambeds, substrates, hydrological indicators and potential connectivity, were documented during the field survey. The habitat assessment did not include a formal jurisdictional delineation effort.

3.4 Burrowing Owl

The Project is located within an area requiring surveys for burrowing owl. This report is intended to satisfy the habitat assessment guidelines outlined by the MSHCP in *Step 1: Habitat Assessment* as well as *Step 2 Part A: Focused Burrow Surveys* of the Burrowing Owl Survey Instructions (2006).

3.4.1 Burrowing Owl Habitat Assessment

In accordance with survey guidelines contained in the Plan, an initial habitat assessment for burrowing owl was conducted on February 7, 2019 during the overall site assessment. The assessment was performed by systematically searching for potential burrowing owl foraging and nesting habitat within the Project site and within an additional buffer area to cover a total 150-meter buffer (= Survey Area) around proposed Project components according to guidelines included in the Western Riverside County Regional Conservation Authority (RCA) Burrowing Owl Survey Instructions for the Plan Area (2006). Suitable habitat was identified by the presence of low vegetation cover; presence of potential burrows; perch sites; and/or burrowing owl sign such as scat, tracks, pellets, burrow decorations and/or feathers. Suitable nesting and foraging habitat for burrowing owl were mapped onto high-resolution

aerial photographs of the Project site for inclusion in this HAR (Attachment A). Burrow locations suitable for burrowing owl occupancy were logged onto handheld Global Positioning System (GPS) units.

4.0 RESULTS

4.1 Literature Review Results

The literature review resulted in a total of 30 special-status wildlife species, 9 special-status plant species and 1 special-status habitat type known to occur within the Project vicinity. Eight of these species are Federally and/or State-listed as threatened and/or endangered, including:

- **Federally endangered and State endangered:** One wildlife species [least Bell's vireo (*Vireo bellii pusillus*) and one plant species [Nevin's barberry (*Berberis nevinii*)];
- **Federally endangered and State threatened:** One wildlife species [Stephens' kangaroo rat (*Dipodomys stephensii*)];
- **Federally threatened and State endangered:** One wildlife species western yellow-billed cuckoo (*Coccyzus americanus*)];
- **Federally endangered:** One wildlife species [San Bernardino kangaroo rat (*Dipodomys merriami parvus*) and one plant species [San Jacinto Valley crownscale (*Atriplex coronata var. notatio*)];
- **Federally threatened:** One wildlife species [coastal California gnatcatcher (*Polioptila californica californica*);
- **State endangered:** One wildlife species [tricolored blackbird (*Agelaius tricolor*) (candidate)
- **State threatened:** None.

The complete lists of special-status species identified during the literature review are included in Tables 4 and 5.

4.1.1 MSHCP Requirements (criteria cells, fee areas, narrow endemic plants, jurisdictional areas)

The Project site is located on APNs 488-390-015-4 & 488-390-016-5 within the City of Moreno Valley in the Moreno Valley Auto Mall Specific Plan (SP-209). The RCIP report indicates the Project is not located within a Plan Cell Group or Plan Criteria Cell; however, the Project is located within The Reche Canyon/Badlands, Area 4 Development Impact Fee (DIF) Area and is subject to payment of said fees as compliance. The Plan requires that burrowing owl habitat assessments and surveys (if suitable habitat is present) are to be conducted on the Project site, but it does not require additional surveys for criteria areas species, mammals, amphibians, narrow endemic plant species and/or special linkage areas.

4.2 Habitat Assessment Results

The proposed Project is located within 6.35 acres of previously mass graded, vacant land located at the northeast corner of the City of Moreno Valley, and generally bound by Pettit Street to the north, Auto Mall Drive to the west, Moreno Beach Drive to the south, and a concrete wall and open areas to the east. Regional access is provided by State Route 60 (SR-60) to the north. The larger surroundings within generally one mile of the Project site include residential and commercial developments, major and arterial roadways, parking areas, infrastructure, landscaped areas as well as undeveloped areas surrounding Pettit Hill.

Elevations within the Project site range from 1,751ft to 1,756ft above mean sea level (AMSL) with little variation throughout the entire Project area.

4.2.1 Soils

Soils historically found within the Project site are sandy loams with slopes ranging between two and 15 percent, with four distinct soil series present on the Project site. These soil units are included in Table 2 below. More recently the Project site has undergone mass grading and the Project site may contain imported materials since both parcels have been previously graded flat in preparation for development.

Table 2. Soils Occurring Within the Project Site

Map Unit Symbol	Map Unit Name	Acres in Project Site	Percent of Project Site
GkD	Gorgonio loamy sand, channeled, 2 to 15 percent slopes	0.9	14.2%
GyC2	Greenfield sandy loam, 2 to 8 percent slopes, eroded	1.5	23.6%
HcD2	Hanford coarse sandy loam, 8 to 15 percent slopes, eroded	0.15	2.4%
PaC2	Pachappa fine sandy loam, 2 to 8 percent slopes, eroded	3.8	59.8%
Total		6.35	100%

4.2.2 Existing Land Use and Site Conditions

Existing conditions within the Project site include various types and levels of anthropogenic modification, generally lacking natural topographic relief and with the only native vegetation restricted to three linear un-mowed ridges and annual herb growth around the perimeter of and dispersed throughout the mowed areas. Overall, the site shows evidence of previous heavy soil disturbances through both intentional earth moving activities and fire fuel reduction action as well as one significant transient encampment. Review of historic aerials of the Project site indicate that the site has undergone mass grading and periodic vegetation maintenance in the form of site leveling, mowing, and disking since at least as far back as 1996 (Google Earth 2019). Topographically, the site generally drains from south to north. Residential and commercial developments over time have begun to isolate the Project site from other native habitats. A concrete wall physically separates the Project site from open areas to the east whereas paved roadways physically separate the Project site from undeveloped disturbed and native habitats to the West and Southeast, respectively. Developments including residential, transmission powerline, and associated powerline dirt access roads also exist to the South of the Project.

Hydrology within the site consists of sheet flow that would not require management or significant Project design consideration. No observable hydrologic features, such as an OHWM or streambed, were observed at the time of the survey.

4.2.3 Vegetation Communities and Land Use Types

Four distinct vegetation community and/or land use types were observed within the 6.35-acre Project boundary. Land use types are described according to *Volume II, Section C Habitat Accounts – Vegetation Associations of the Plan* and further described according to Sawyer Keeler-Wolf (1995). Vegetation mapping showing the distribution of communities identified within the Project site is shown in Figure 2 (Attachment A). The four vegetation communities/land cover uses present on The Project site and their acreages include:

- 0.18 acres of Disturbed Coastal Sage Scrub – Brittlebush Series
- 5.71 acres of Disturbed Areas
- 0.23 acres of Developed Areas
- 0.23 acres of Residential/Urban/Exotic

Disturbed Coastal Sage Scrub – Brittlebush Series

Disturbed Coastal Sage Scrub – Brittlebush Series is characterized as dominated by Brittlebush (*Encelia farinosa*) in the shrub canopy. Shrubs are approximately 1.2 meters (approximately 4 feet) in height with a continuous or intermittent canopy (CNPS 1997, Sawyer et al. 2009). The herbaceous layer is variable and often times dominated by various grass species. This community can be found on upland slopes that are usually south-facing, intermittently flooded arroyos, and channels and washes that are rarely flooded. This community is found on coarse, well drained, and moderately acidic to slightly saline soils. Stands do well on rocky sites and in shallow soils. This community often establishes after disturbance by fire or flood or after heavy grazing (Sawyer et al. 2009). Disturbed Coastal Sage Scrub – Brittlebush Series is similar in ecology to Coastal Sage Scrub – Brittlebush Series but has less shrub coverage and a higher presence of non-native annual grasses and/or forbaceous species as a result of natural and/or anthropogenic disturbances.

A total of 0.18 acres of Disturbed Coastal Sage Scrub – Brittlebush Series was distributed along un-mowed linear ridges within the Project site; the nature of its disturbance was associated with recent mowing and/or disking of the entire flat portion of the Project site. The understory in this community included a variety of native and non-native forbs. Dominant native species scattered within this community included common fiddleneck (*Amsinckia menziesii*). Non-native species found in moderate to high percentages within this community included: Mediterranean schismus (*Schismus barbatus*), red-stemmed filaree (*Erodium cicutarium*), crown daisy (*Glebionis coronaria*), and short-pod mustard (*Hirschfeldia incana*).

Disturbed Areas

Disturbed areas may result from anthropogenic or natural causes and can take on many forms in context of the surrounding vegetation communities, available seed banks, and disturbance factors. If disturbance variables are removed and disturbed areas are left to natural processes, these areas have the capacity to revegetate in the short term. This contrasts with developed areas that do not have the capacity to revegetate in the short term.

A total of 5.71 acres of Disturbed Areas were found on the Project site in the form of bare ground, off-road vehicle tracks, dirt roads for powerline access, and a large transient encampment trash/debris pile with zero to minimal coverage by primarily ruderal vegetation, vehicular tracks and previously graded areas. Where ground was not bare, dominant and sub-dominant vegetation in the lightly vegetated disturbed areas included common fiddleneck, Shepherd's purse (*Capsella bursa-pastoris)* and cheeseweed (*Malva parviflora*) with occasional native forbs including lupine sp. and redmaids (*Calandrinia menziesii*).

Developed Areas

Developed areas can include paved roads, buildings, landscaped areas, park space, parking lots, structures, planted ornamental vegetation, and other human-constructed land uses that have replaced formerly occurring natural communities. If disturbance variables are removed and developed areas are left to natural processes, these areas do not have the capacity to revegetate in the short term.

A total of 0.23 acres of Developed Areas were found on the Project site. Developed areas on the Project site consisted of several power poles as well as sidewalks around landscaped areas.

Residential/Urban/Exotic

Per the MSHCP, residential/urban/exotic land uses are often included with Developed areas but are separated in this Report due to the nesting habitat value it offers a variety of bird species. Ornamental landscaping is composed of exotic trees, shrubs, grasses and/or flowering plants, often in association with buildings, streets and other structures. Ornamental landscaping may or may not be irrigated.

A total of 0.23 acres of Residential/Urban/Exotic areas were found on the Project site and are further characterized as Ornamental Landscaping consisting of several Mexican fan palm trees (*Washingtonia robusta*), common crape myrtle (*Lagerstroemia indica*), hedged rosemary (*Rosmarinus officinalis*) and planted ground covers along the northern boundary next to Pettit Street, along the western boundary along Auto Mall Drive, and along the southern boundary along Moreno Beach Rd.

4.2.3 Jurisdictional Waters and Riverine/Riparian Habitats

USACE, RWQCB and CDFW regulate discharge into and impacts to wetland and non-wetland water bodies meeting certain criteria. The MSHCP regulates impacts to riverine/riparian communities and vernal pools, as well as species associated with these habitat types, as outlined in section 6.1.2 of the MSHCP. The MSHCP specifically describes riverine/riparian habitats as "lands which contain habitat dominated by trees, shrubs, persistent emergents, or emergent mosses and lichens, which occur close to or which depend upon soil moisture from a nearby fresh water source; or areas with fresh water flow

during all or a portion of the year." There were no drainages, wetlands, vernal pools, or other jurisdictional features present within the Project boundary.

4.2.4 Sensitive and Observed Wildlife Species

The literature review resulted in a list of 30 special-status wildlife species with the potential to occur within the Project vicinity. These species and their potentials for occurrence are further described in Table 3. Two additional MSHCP-covered species that had not previously been documented within the Project area or vicinity were observed during the survey and have been included in the table for a total of 32 special-status wildlife species.

Wildlife species observed or detected on the Project site and in the general vicinity included Anna's hummingbird (*Calypte anna*), house finch (*Haemorhous mexicanus*), American kestrel (*Falco sparverius*), red-tailed hawk (*Buteo jamaicensis*), Cooper's hawk (*Accipiter cooperii*), northern harrier (*Circus cyaneus*), horned lark (*Eremophila alpestris actia*), yellow-rumped warbler (*Setophaga coronata*), white-crowned sparrow (*Zonotrichia leucophrys*), black phoebe (*Sayornis nigricans*), northern flicker (*Colaptes auratus*), Say's phoebe (*Sayornis saya*), killdeer (*Charadrius vociferus*), western meadow lark (*Sturnella neglecta*), mourning dove (*Zenaida macroura*), California towhee (*Melozone crissalis*), rock wren (*Salpinctes obsoletus*), Cassin's kingbird (*Tyrannus vociferans*), savannah sparrow (*Passerculus sandwichensis*), common raven (*Corvus corax*), western fence lizard (*Sceloporus occidentalis*), California ground squirrel (*Otospermophilus beecheyi*), desert cottontail (*Sylvilagus audobonii*) and painted lady (*Vanessa cardui*).

Table 3. Sensitive Wildlife Species Potentially Occurring Within the Project Site

Species Name	Status	Habitat Requirements	Potential for Occurrence
BIRDS			
Bell's sage sparrow *Artemisiospiza belli belli*	Federal: **BCC** State: None Local: **MSHCP-covered**	Bell's sparrows breed in coastal sagebrush, chaparral, and other open, scrubby habitats. In chaparral, they tend toward younger, less dense stands that are growing back from recent fires. Bell's sage sparrows typically put their nests within shrubs, but also in bunchgrasses, and occasionally on the ground under shrubs, including California sagebrush, brittlebush, white sage, black sage, California buckwheat, bush mallow, chamise, cholla, willow, and others.	**Low.** This species has been documented one time, approximately 3 miles from the Project site. Although uncommonly occurring in past documentation, suitable young coastal sage/open scrub habitats exist within the Project site.
Burrowing owl *Athene cunicularia*	Federal: **BCC** State: **SSC** Local: **MSHCP-covered***	Shortgrass prairies, grasslands, lowland scrub, agricultural lands (particularly rangelands), coastal dunes, desert floors and some artificial, open areas as a year-long resident. Occupies abandoned ground squirrel burrows as well as artificial structures such as culverts and underpasses.	**Moderate.** This species has been historically documented to occur in the Project vicinity, and suitable burrows and moderate quality habitat occurs on the Project site. Although this species, or its sign, was not observed during the focused burrow survey conducted during the habitat assessment, suitable habitat and burrows remain, and this species is known to occur in numerous areas within five miles of the Project site. Therefore, burrowing owl has a moderate potential to occur on and/or adjacent to the Project site.

Species Name	Status	Habitat Requirements	Potential for Occurrence
California horned lark *Eremophila alpestris actia*	Federal: None State: WL Local: **MSHCP-covered**	A common, widespread bird of the open country, the Horned Lark prefers short, sparsely vegetated prairies, deserts, and agricultural lands.	**Present.** This species was observed foraging throughout the Project site during the survey but has not been recorded within the vicinity of the Project site. Suitable nesting habitat exists within the Project site.
Coastal California gnatcatcher *Polioptila californica californica*	Federal: **FT** State: **SSC** Local: **MSHCP-covered***	This resident southern California species is strongly associated with coastal sage scrub communities but will also utilize other habitats where coastal sage scrub species forms some component. It prefers a gap rate of about 25% between mature shrubs from three to five feet tall.	**Absent.** Suitable habitat for this species is present on the Project site; however, due to its very small size and being disconnected from other larger areas of suitable habitat this species is presumed absent.
Cooper's hawk *Accipiter cooperii*	Federal: None State: WL Local: **MSHCP-covered**	Typically a forest and woodland bird species, but can be found in parks, quiet neighborhoods, over fields, at backyard feeders, and even busy, tree-lined streets.	**Present.** This species was observed flying within 150 meters of the Project site during the survey. Suitable nesting habitat does not exist within the Project site; however, it does provide suitable foraging habitat for this species. It is presumed **absent** for nesting purposes.
Ferruginous hawk *Buteo regalis*	Federal: **BCC** State: WL Local: **MSHCP-covered**	Winters in open grasslands, fields, open desert scrub and savannah habitats. Forages on a variety of mammals.	**Low.** Marginally suitable open and disturbed habitat occurs on the Project site that offers limited foraging potential. This species is not known to nest in the region and is therefore considered to be absent for nesting purposes.

Species Name	Status	Habitat Requirements	Potential for Occurrence
Least Bell's vireo *Vireo bellii pusillus*	Federal: **FE** State: **SE** Local: **MSHCP-Covered***	Occupies riverine riparian habitats that typically feature dense cover within 1-2 meters of the ground and a dense, stratified canopy. It inhabits low, dense riparian growth along water or along dry parts of intermittent streams. Primarily associated with willows and mule fat.	**Absent.** Suitable habitat for this species does not occur on the Project site; however, a small patch of suitable habitat does occur approximately 100 feet northeast of the Project boundary.
Loggerhead shrike Lanius ludovicianus	Federal: **BCC** State: **SSC** Local: **MSHCP-covered**	Inhabits open country with short vegetation and well-spaced shrubs or low trees, particularly those with spines or thorns. Frequents agricultural fields, pastures, old orchards, riparian areas, desert scrublands, savannas, prairies, golf courses and cemeteries.	**Low.** This species has been documented within 5 miles of the Project site and suitable foraging habitat exists on and surrounding the Project site. No suitable nesting habitat exists on site. This species is to be considered absent for nesting purposes and has very low potential of occurring as a transient or while foraging.
Northern harrier *Circus cyaneus*	Federal: None State: **SSC** Local: **MSHCP-covered**	Inhabits marshlands, wet meadows, dense grasslands, open riparian scrub and open riparian woodland habitats. May forage occasionally over other nearby habitat types. Hunts for a variety of prey items, consuming mostly small mammals.	**Present.** This species was observed during the survey. Suitable nesting habitat for this species does not occur on the Project site, though foraging opportunities do exist. It is presumed **absent** for nesting purposes.
Southern California rufous-crowned sparrow *Aimophila ruficeps canescens*	Federal: None State: WL Local: **MSHCP-covered**	Prefers dry, open hillsides covered with grasses, rocks, and scattered shrubs, including coastal sagebrush, open chaparral, scrub oaks, pinyon pine, and other woody plants. Dense woody growth is unsuitable.	**Low.** Although this species has been recorded numerous times within the vicinity of the Project site, only limited suitable open scrub habitat is found on the Project site.

Species Name	Status	Habitat Requirements	Potential for Occurrence
Tricolored blackbird Agelaius tricolor	Federal: **BCC** State: **SCE** Local: **MSHCP-covered**	Nests in colonies and prefers freshwater marshes dominated by cattails or bulrushes and occasionally in willows, blackberries, thistles and nettles. Breeding habitat now includes diverse upland and agricultural areas. Small breeding colonies in southern California occur at lakes, reservoirs, and parks surrounded by urban development. Adults from such colonies may forage in nearby undeveloped uplands.	**Absent.** Suitable nesting habitat for this species does not occur on or adjacent to the Project site, and this species has not been documented nesting in the Project vicinity since 1995. Wintering, migrating and/or dispersing individuals may utilize the Project site in a limited capacity for opportunistic foraging.

Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	Federal: **FT** State: **SE** Local: **MSHCP-covered**	Restricted to dense, wide riparian woodlands with well-developed understories and a perennial water source for breeding. It occurs in densely foliaged, deciduous trees and shrubs, especially willows.	**Absent.** This species has only been documented one time within 5 miles of the Project site. No suitable habitat exists on the Project site or in the immediate surrounding areas.
White-faced ibis *Plegadis chihi*	Federal: None State: None Local: **MSHCP-covered**	Prefers marsh habitat but can frequently be observed foraging in flooded agricultural fields.	**Absent.** No suitable habitat for this species exists on the Project site.
Yellow warbler *Setophaga petechia brewsteri* (formerly *Dendroica petechia brewsteri*)	Federal: **BCC** State: **SSC** Local: **MSHCP-covered**	Breeds in shrubby thickets and woods, particularly along watercourses and in wetlands.	**Absent.** Suitable habitat for this species does not occur on the Project site; however, a small patch of suitable habitat does occur approximately 100 feet northeast of the Project boundary.
Yellow-breasted chat *Icteria virens*	Federal: None State: **SSC** Local: **MSHCP-covered**	This migratory species utilizes riparian woodlands, riparian scrub and tall, dense vegetation adjacent to riparian and wetland systems for nesting and foraging purposes.	**Absent.** This species has only been documented once within 5 miles of the Project site, which does not provide suitable habitat. The Project site does not support nesting or foraging for this species and is therefore presumed absent.
REPTILES & AMPHIBIANS			
California glossy snake *Arizona elegans occidentalis*	Federal: None State: **SSC** Local: None	This nocturnal species inhabits a variety of grassland, sage scrub, dry wash and chaparral habitats from sea level to over 7,000 feet in elevation. Tends to prefer sandy, loose soils. It remains in its burrow by day.	**Low.** Marginally suitable habitat exists throughout most of the Project site; however, this species has only had one documented occurrence at 4.75 miles in 1998.
Coast horned lizard *Phrynosoma blainvillii* (formerly *Phrynosoma coronatum blainvillei*)	Federal: None State: **SSC** Local: **MSHCP-covered**	Occurs widely in sage scrub, woodlands, grasslands, and chaparral communities within microhabitats of loose granitic soils and open areas for sunning and foraging. This species is commonly associated with the presence of native harvester ants.	**Low.** This species has been documented to occur within the Project vicinity, and the Project site provides low quality habitat with appropriate soils and food sources. However, the frequent anthropogenic influences reduce this species' potential for occurring on the Project site to low.

Coast patch-nosed snake *Salvadora hexalepis virgultea*	Federal: None State: SSC Local: None	Inhabits semi-arid brushy areas and chaparral in canyons, rocky hillsides, and plains.	**Low.** This species has been documented several times within the Project vicinity, and the Project site provides low quality habitat, though it is of an island effect.
Coastal whiptail *Aspidoscelis tigris stejnegeri* (formerly *Cnemidophorus tigris multiscutatus*)	Federal: None State: **SSC** Local: **MSHCP-covered**	Prefers open scrub, chaparral, and woodland habitats with open areas for basking and native ants as a prey base.	**Moderate.** This species has been documented several times within the Project vicinity, and the Project site provides suitable habitat.
Orange-throated whiptail *Aspidoscelis hyperythra*	Federal: None State: WL Local: **MSHCP-covered**	Semi-arid brushy areas typically with loose soil and rocks, including washes, streamsides, rocky hillsides, and coastal chaparral.	**Low.** This species has been documented near the Project site. The limited areas of Encelia scrub onsite are suitable for this species, therefore, this species has a low potential for occurring on the Project site.
Red-diamond rattlesnake *Crotalus ruber ruber*	Federal: None State: **SSC** Local: **MSHCP-covered**	Occurs widely in mature to dense sage scrub, desert scrub, and chaparral communities with appropriate sources of shelter such as boulder outcroppings.	**Low.** This species has been documented within the Project vicinity; however, only small patches of low-quality habitat exists on the Project site.
Southern California legless lizard *Anniella stebbinsi*	Federal: None State: **SSC** Local: **MSHCP-covered**	Occurs in moist, loose soils with some plant cover in coastal sand dunes, suburban gardens, chaparral, pine-oak woodlands, stream terraces with sycamores, cottonwoods, or oaks, oak woodlands, Joshua/juniper woodland, mixed conifer forest, desert scrub, sandy washes, and alluvial fans.	**Absent.** This species has been documented several times within the Project vicinity; however, the Project site does not provide suitable habitat for this species.
Western pond turtle *Emys marmorata*	Federal: None State: **SSC** Local: **MSHCP-covered**	Inhabits waterside habitats and lakes, ponds, freshwater streams, creeks and water bodies with perennial fresh water.	**Absent.** Suitable aquatic habitats do not exist on the Project site. Therefore, this species is presumed absent.

Western spadefoot *Spea hammondii*	Federal: None State: **SSC** Local: **MSHCP-covered**	Breeds in vernal pools and other ponded, seasonal water bodies. May occur in grasslands, open sage scrub, open chaparral, oak woodlands and other habitat types near seasonal water bodies.	**Absent.** There are no suitable breeding pools on the Project site, and though soils, burrows and other shelter opportunities may be suitable for aestivation purposes of dispersed individuals, the isolated nature of the Project site to occupied areas renders the Project site unsuitable for this species.
MAMMALS			
American badger *Taxidea taxus*	Federal: None State: **SSC** Local: None	Found where rodent prey is ample in flat terrain to moderate slopes in a variety of open habitats including grasslands, alluvial fans, scrubs, fallow agricultural lands, and deserts.	**Absent.** This species has been documented once within the vicinity of the Project site in 1908. Although the Project site is open and flat, there is widespread development surrounding the Project site and not enough prey base within the Project site to support the presence of this predatory species.
Los Angeles pocket mouse *Perognathus longimembris brevinasus*	Federal: None State: **SSC** Local: **MSHCP-covered**	This species is associated with sparsely vegetated lower elevation grasslands, alluvial sage scrub and coastal sage scrub, where it tends to occur in patches with fine sandy soils, such as dry washes and aeolian deposits.	**Low.** This species has been documented several times more than 3 miles from the Project site. Marginally suitable habitat exists in small areas of the Project site, and an isolated population may remain within the landscape surrounding the Project site.
Northwestern San Diego pocket mouse *Chaetodipus fallax fallax*	Federal: None State: **SSC** Local: **MSHCP-covered**	Resident of sandy herbaceous areas, usually in association with rocks or coarse gravel in southwestern California. Range includes portions of Riverside and San Bernardino Counties. Elevational range is from sea level to 1800 meters. Habitats include coastal scrub, chamise-redshank chaparral, mixed chaparral, sagebrush, desert wash, desert scrub, desert succulent shrub, pinyon-juniper and annual grassland.	**Low.** This species has been documented numerous times within the vicinity of the Project site, and suitable sandy and/or gravelly soils exist onsite. Marginally suitable coastal sage scrub exists on the Project site.

San Bernardino kangaroo rat *Dipodomys merriami parvus*	Federal: **FE** State: **SSC** Local: **MSHCP-covered**	Found in alluvial scrub/coastal sage scrub habitats on gravelly and sandy soils adjoining river and stream terraces and on alluvial fans. Rarely occurs in dense vegetation or rocky washes.	**Absent.** This species has been documented twice within 2.5 miles of the Project site between 1913 and 1957. One more recent occurrence has been documented within 5 miles of the Project site, however suitable habitat does not exist on the Project site.
San Diego black-tailed jackrabbit *Lepus californicus bennettii*	Federal: None State: **SSC** Local: **MSHCP-covered**	Found in a variety of relatively open habitats with mixtures of shrubs, grasses and forbs, including sage scrub, grasslands, chaparral, open oak woodlands, and others. Requires shrubs or small trees for shelter, nesting and thermal respite, and open areas for foraging. Prefers mosaics of grassland and shrubland.	**Moderate.** Suitable habitat exists throughout the Project site, and several CNDDB occurrences are found between approximately 2.5 and 4 miles of the Project site.
Stephen's kangaroo rat *Dipodomys stephensi*	Federal: **FE** State: **ST** Local: **MSHCP-covered***	Occurs primarily in low-growing annual and perennial grassland habitats but may occur in coastal scrub or sagebrush with sparse canopy cover and low herbaceous growth, or in disturbed areas. Preferred perennials are buckwheat and chamise; preferred annuals are brome grass and filarees.	**Absent.** This species has been documented at least 20 times within five miles of the Project site. Small portions of the site provide marginally suitable annual grasses with relatively sparse canopy cover and include brome grasses. However, there was a lack of diagnostic kangaroo rat burrows, very limited suitable habitat, and lack of connectivity to other occupied and suitable habitat. This species is presumed absent from the Project site.

Western mastiff bat *Eumops perotis californicus*	Federal: None State: **SSC** Local: None	Occurs in many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub, and urban. Crevices in cliff faces, high buildings, trees, and tunnels are required for roosting. When roosting in rock crevices, it needs vertical faces to drop off to take flight. Reproduction: Nursery roosts described as tight rock crevices at least 35 inches deep and two inches wide, or crevices in buildings. Suitable habitat consists of extensive open areas with abundant roost locations provided by crevices in rock outcrops and buildings. Is known to forage over 25 miles away from its roost site.	**Absent** (diurnal and maternity roosting). Suitable roosts do not exist within the Project site. **Moderate** potential for foraging over the Project site.
Western yellow bat *Lasiurus xanthinus*	Federal: None State: **SSC** Local: None	Roosts are commonly in palm trees, and occasionally in cottonwood trees or yuccas, often near surface water in open grassy areas or scrub habitat. Forages over water and among trees in coastal, foothill, and desert riparian areas, and in suburban neighborhoods.	**Moderate** (diurnal and maternity roosting). Suitable roosts exist in ornamental Mexican fan palms along the perimeter of the Project site. There is also moderate potential for foraging over the project site.

* Denotes species for which additional surveys are required if suitable habitat occurs on site

Of the 30 wildlife species documented to occur within the Project vicinity, 1 was found present, 15 were found to have a low to moderate potential for occurrence based on proximity of historic records and quality habitat on site, and 14 were determined to be absent due to lack of suitable habitats on the Project site. Two additional MSHCP-covered species were present on the Project site but had not been previously documented within the Project vicinity.

The habitat assessment was completed, in part, to fulfill guidelines outlined in *Step 1: Habitat Assessment* as well as *Step 2 Part A: Focused Burrow Surveys* of the Burrowing Owl Survey Instructions for the Plan Area (2006). Burrowing owl habitat within the Project site includes nearly all Disturbed Areas. While the Project site is composed of bare ground and open, disturbed vegetation suitable for burrowing owl foraging, nesting opportunities are limited to those areas supporting potential host

burrows. Developed Areas surrounding the Project site were excluded due to a lack of suitable burrows or burrow surrogates. Remaining areas within the eastern and southern portions of the Survey Area, exhibited open and bare or sparsely vegetated soils with observed California ground squirrel burrows suitable for burrowing owl occupancy. Within the Project site, no potential burrow surrogates occurred, and no burrowing owls and/or burrowing owl sign were observed during the habitat assessment within the Project site or the Survey Area. However, due to the presence of suitable burrowing owl habitat onsite and the presence of numerous burrowing owl-suitable burrows within the Project site and the Survey Area, a pre-construction burrowing owl survey will be required within 30 days of breaking ground for the Project.

4.2.5 Special Status and Observed Plant Species

Based on CNDDB/CNPSEI-documented occurrences within five miles of the Project site, the literature review resulted in a list of 7 special-status plant species evaluated for their potentials to occur on the Project site. One additional special-status plant species not meeting the CRPR rating of 2 or higher was assessed due to it being an MSHCP-covered species and nearby records (Plummer's mariposa lily [*Calochortus plummerae*]). These species and their potentials for occurrence are further described in Table 4 below.

Plant species detected during the survey included nonnative red-stem filaree, short-pod mustard, London rocket (*Sisymbrium irio*), red brome (*Bromus madritensis* ssp. *rubens*), wild oat (*Avena barbata*), Russian thistle (*Salsola tragus*), turf grass, common crape myrtle, horehound (*Marrubium vulgare*), Mediterranean schismus, cheeseweed mallow (*Malva parviflora*), Mexican fan palm and rosemary. Native plant species detected included brittlebush (*Encelia farinosa*), common fiddleneck (*Amsinckia menziesii*), redmaids, and arroyo lupine (*Lupinus succulentus*).

Table 4. Special-Status Plant Species Potentially Occurring Within the Project Site

Species Name	Status	Habitat Requirements	Potential for Occurrence
PLANTS			
Coulter's goldfields *Lasthenia glabrata* ssp. *coulteri*	Federal: None State: None CRPR: **1B.1** Local: **MSHCP-covered**	Annual herb that occurs in alkali scrub, alkali playas, vernal pools and alkali grasslands. Most Riverside County populations are associated with the Willows soil series. Blooms February – June. Elevation: 1-1,220 m.	**Absent.** This species has been documented 3 times between four and five miles from the Project site. Habitat and soils within the Project site are not suitable for this species. Therefore, this species is presumed absent.

Species Name	Status	Habitat Requirements	Potential for Occurrence
Nevin's barberry *Berberis nevinii*	Federal: **FE** State: **SE** CRPR: **1B.1** Local: **MSHCP-covered**	Perennial, evergreen, holly-leafed, multi-trunked shrub found in chaparral, foothill woodland, washes and coastal sage scrub habitats. Prefers sandy to gravelly soils. Blooms: Apr-May Elevation: <650 m	**Absent.** Suitable habitat for this species is not found on the Project site. Furthermore, as a perennial succulent species it would have been observed if present therefore it is determined to be absent.
Parry's spineflower *Chorizanthe parryi var. parryi*	Federal: None State: None CRPR: **1B.1** Local: **MSHCP-covered**	Low-growing, annual herb that occurs in sandy soils or rocky openings of chaparral, coastal scrub, cismontane woodland and valley and foothill grassland communities. Blooms May - June. Elevation: 90-800 m.	**Low**. This species has been documented to occur within 3.5 miles of the Project in 1950, and the Project site provides low quality habitat, though it is of an island effect. Therefore, this species has a low potential for occurrence.
Plummer's mariposa lily *Calochortus plummerae*	Federal: None State: None CRPR: **4.2** Local: **MSHCP-covered**	A perennial herb (bulb) that is endemic to California. Found in chaparral, foothill woodlands, yellow pine forests, coastal sage scrub and valley grasslands. Blooms May – July. Elevation: <1700 m.	**Absent.** Only one CNDDB occurrence within 5 miles is known and it dates back to 1932. Suitable habitat is restricted to very small island patches that are surrounded by heavily disturbed habitat that is unsuitable. Therefore, this species is presumed absent.

Species Name	Status	Habitat Requirements	Potential for Occurrence
San Bernardino aster *Symphyotrichum defoliatum*	Federal: None State: None CRPR: **1B.2** Local: None	Perennial rhizomatous herb occurring in association with streams, springs, and ditches within meadows, grasslands and disturbed places. Blooms July – November. Elevation: 2-2,040 m.	**Absent.** This species has been documented within the Project vicinity, and low quality suitable habitat is present on the Project site. However, the closest CNDDB record occurs 4.34 miles away and is from1951. Therefore, this species is presumed absent.
San Jacinto valley crownscale *Atriplex coronata*	Federal: **FE** State: None CRPR: **1B.1** Local: **MSHCP-covered**	Annual herb that is endemic to California. Found in wetlands, playas and vernal pools within alkali sink, freshwater wetland and wetland-riparian habitats. Blooms April – August. Elevation: 400-500 m.	**Absent.** No suitable habitat for this species is found on the Project site.
Smooth tarplant *Centromadia pungens ssp. laevis*	Federal: None State: None CRPR: **1B.1** Local: **MSHCP-covered**	Annual herb that occurs in alkali soils within alkali scrub, alkali playas, riparian woodland, watercourses, and alkaline grasslands. Blooms Apr. – Nov. Elevation: 0-640 m.	**Absent.** This species has been documented 3 times from within five miles of the Project vicinity, but soils within the Project site are not expected to support this species. Therefore, this species is presumed absent.

Species Name	Status	Habitat Requirements	Potential for Occurrence
Wright's trichocoronis *Trichocoronis wrightii var. wrightii*	Federal: None State: None CRPR: **1B.2** Local: **MSHCP-covered**	Found in alkaline soils in meadows and seeps, marshes and swamps, riparian forest and vernal pools.	**Absent.** This species is known to have occurred once in 1951 and was documented 4.43 miles away. Suitable alkaline soil types are not present on the Project site; therefore, this species is presumed absent.

4.2.6 Special Status and Observed Habitat Types

Based on CNDDB/CNPSEI-documented occurrences within five miles of the Project site, the literature review resulted in one special-status habitat type evaluated for its potential to occur on the Project site. This habitat type and its potential for occurrence is further described in Table 5 below. Habitats detected during the survey included Disturbed, Developed, Residential/Urban/Exotic, and Disturbed Coastal Sage Scrub-Brittlebush Series.

Table 5. Special-Status Habitats Potentially Occurring Within the Project Site

Species Name	Status	Habitat Requirements	Potential for Occurrence
Habitats			
Southern Sycamore Alder	Federal: None State: None Local: **MSHCP-covered**	Occurs along seasonally-flooded banks and is dominated by sycamore and alder trees that are able to withstand longer periods of flooding. Other species present may include cottonwoods and willows.	**Absent.** This habitat type was not observed on the Project site during the field survey.

The one special-status habitat type documented to occur within the Project vicinity was found to be absent on the Project site.

4.3 Migratory Birds

The Project site and the surrounding areas collectively contain shrubs and trees, boulder outcroppings, as well as grasses and other ground cover that provide ample suitable habitat for a wide variety of nesting birds. Nearly all native nesting birds are protected by the Migratory Bird Treaty Act (MBTA) and CDFW Codes 3500 through 3516. Commonly observed bird species during the habitat assessment with the potential to nest within the Project site and its adjacent habitats include Anna's hummingbird,

house finch, mourning dove and others. Habitat for raptor species detected during the survey [i.e., red-tailed hawk, Cooper's hawk, etc.] occurs in large trees in the adjacent riparian feature northeast of the Project boundary. The open nature of portions of the Project site also provides suitable habitat for ground nesting birds such as California horned lark, lark sparrow and killdeer.

4.4 Wildlife Movement Corridors

Tracks, sign, burrows and/or direct visual observation of various small mammal species, such as desert cottontail and California ground squirrel were observed throughout the Project site. No concentrations of wildlife tracks or sign were observed, and no established corridors or connectivity to larger conservation areas of the region were observed. The isolated nature of the Project site surrounded by development essentially precludes corridor potential.

5.0 WESTERN RIVERSIDE MSHCP CONSITENCY ANALYSIS

The Project is not located within a MSHCP Criteria Cell or Cell Group. The MSHCP establishes habitat assessments for certain plant and animal species. The Project is located within an area of the MSHCP only requiring habitat assessments for burrowing owl. The Project does not support riparian/riverine habitats. Narrow endemic plant species are not expected to occur within the Project site.

5.1 Urban Wildlands Interface

According to the Plan, the Urban/Wildlands Interface Guidelines are intended to address indirect effects associated with locating development in proximity to Plan Conservation Areas. The Project site is not adjacent to a Plan Conservancy Area and thus does not pose a risk of causing indirect effects to any Plan Conservancy Areas. Therefore, no further analysis is required under section 6.1.4 of the MSHCP.

5.2 Sensitive Wildlife Species

5.2.1 Burrowing Owl

The Project site is located within a MSHCP burrowing owl survey area. A habitat assessment during a site visit conducted on February 7, 2019, identified suitable foraging and nesting habitat for burrowing owl within the Project site and the burrowing owl Survey Area. Despite the absence of burrowing owls that resulted from habitat assessment survey, the presence of suitable burrows in suitable habitat, in conjunction with numerous burrowing owl records within five miles of the Project site, gives burrowing owl a moderate potential to occur on the Project site and/or its Survey Area. Due to the presence of suitable habitat, focused surveys for burrowing owl are required per section 6.3.2 of the Plan and are tentatively scheduled to occur during 2019.

5.2.2 Stephens' Kangaroo Rat

According to MSHCP Ordinance 663.10, the Project site is within a Stephens' Kangaroo Rat HCP Fee Assessment Area. Though a total of 10 CNDDB occurrences were found within five miles of the Project site, no definitive Stephens' kangaroo rat burrows, tracks, runways and/or sign were observed on the Project site. Even with determinations of Stephens' kangaroo rat absence, the Project is still subject to current fee requirements as stipulated in the implementation agreement.

5.3 Special-Status and Narrow Endemic Plant Species

The Project site is not located within a Narrow Endemic Plants Survey Area under section 6.1.3 of the Plan. The Project site is not located within a Criteria Area Species Survey for special-status plant species. No additional non-covered special-status or narrow endemic plant species with the potential to occur on site were identified during the literature review and/or site assessment.

5.4 Jurisdictional Waters

The habitat assessment did not include a formal jurisdictional and wetland delineation of the Project site. No additional information is required to determine if specific areas of the Project site meet the three-parameter criteria of a wetland and fall under the jurisdiction of the USACE, RWQCB and/or CDFW. Additional jurisdictional waterway permitting will not be required.

5.4.1 Riverine/riparian habitats

Riverine/riparian habitat does not occur within the Project site, and no habitats expected to support riverine/riparian-associated species were observed on the Project site.

5.4.2 Riverine/riparian species

Riverine/riparian habitat does not occur within the Project site, and no habitats expected to support riverine/riparian-associated species were observed on the Project site.

5.5 Vernal Pool and Fairy Shrimp

No vernal pools or habitats that could potentially support fairy shrimp species were observed on the Project site. No areas of ponding were observed within the Project site. Signs of ponding, such as cracking of the soil or distinct changes in vegetation, would have been evident during the field survey. Additionally, the topography altered by engineered grading of the soils within the Project site are not conducive to ponding or vernal pools. In addition, the sandy loam soils that characterize the Project site as a whole do not support vernal pools or ponding. Therefore, no vernal pools were observed, and they are not known to occur within the Project site. As such, fairy shrimp are also assumed absent.

6.0 POTENTIAL IMPACTS

This section of the report includes a discussion of the potential direct and indirect impacts to onsite plant and wildlife resources that may result upon the construction and implementation of the Project. Direct impacts include those involving the loss, alteration, and/or disturbance of plant communities, and consequently, the flora and fauna of the affected area. Direct impacts also include the destruction of individual plants and/or wildlife. Direct impacts may adversely affect regional populations of certain species, or result in isolated populations, reducing genetic diversity and range-wide population stability; conversely, direct impacts may also have intended or unintended positive effects in some cases.

Indirect impacts include a variety of effects related to areas or habitats that are not directly removed by project development, such as loss of foraging habitat, increased ambient noise, artificial light, introduced predators (e.g., domestic cats, dogs and other non-native animals), competition with exotic plants and animals, increased human presence and associated disturbances (e.g., trash, green waste, physical intrusion). Indirect impacts may include long and/or short term daily activities associated with project build-out, such as increased traffic, permanent barriers or fences, buildings, exotic seed-bearing ornamental plantings, irrigated landscapes and human presence, among others. These types of impacts are known as edge effects and over time, may result in some encroachment on native plants by exotic plants, altered behavioral wildlife patterns, reduced wildlife diversity, and decreased wildlife abundance in habitats adjacent to a given project site. However, as is the case with direct impacts, indirect impacts may also have intended or unintended positive effects for certain species.

The potential for significant adverse effects, either directly or indirectly through habitat modification or conversion, on any special-status vegetation community, plant species or wildlife species, or that could occur as a result of the development of this Project is discussed within this section.

6.1 Habitat

The Project would include permanent impacts associated with the complete clearing, grading and construction of the overall 6.35-acre Project site. The currently undeveloped site is comprised of Disturbed Coastal Sage Scrub – Brittlebush Series, Disturbed Areas, Developed Areas and Residential/Urban/Exotic vegetation communities and land use types that would be completely and permanently converted to a fully developed commercial development.

As shown in Table 6, Project implementation will permanently impact a total of 6.35 acres of native and non-native vegetation communities.

Table 6. Summary of Impacts to Vegetation Communities/Land Use Types

Vegetation Community/ Land Use Type	Impact Area (Acres)
Residential/Urban/Exotic	*0.23*
Disturbed Areas	*5.71*
Developed Areas	*0.23*
Subtotals: Non-Native Vegetation Communities	**6.71**
Disturbed Coastal Sage Scrub – Brittlebush Series	*0.18*
Subtotals: Native Vegetation Communities	**0.18**
TOTAL	**6.35**

6.2 MSHCP-Covered Species

Of the 32 special-status wildlife species, eight special-status plant species and one special-status habitat evaluated or observed during the habitat assessment survey effort, all are functionally covered under the Plan and/or do not require additional focused surveys. No additional special-status species not included for coverage under the Plan were observed or are expected to occur within the Project site.

The Project site also occurs within a designated fee area for Stephens' kangaroo rat (SKR). Therefore, mitigation for potential direct and/or indirect impacts to these species can be mitigated through a payment of fees to the City of Moreno Valley which is required by Municipal Code Section 3.48:

The following mitigation measure (MM) is recommended to reduce potential impacts to below significant levels for Plan-covered special-status species and/or those with some potential to occur on the Project site but that do not require additional focused surveys:

Payment of MSHCP and SKR Habitat Fees

MM-BIO 1: Prior to issuance of a grading or building permit, the Project applicant will be required to pay relevant City of Moreno Valley mitigation fees to the City.

6.3 Species Requiring Additional Surveys and/or Habitat Assessments

6.3.1 Burrowing Owl

The habitat assessment identified suitable habitat and burrow sites for burrowing owl both within and adjacent to the Project site through a focused effort to detect potential burrows, burrow surrogates, and owl sign. Potential permanent direct impacts to burrowing owl as a result of the Project include habitat loss, nesting habitat removal, roosting site loss, and/or loss of individuals. Indirect impacts to burrowing owl may include loss of foraging habitat, increased human disturbance, increased predator abundance, artificial lighting, dust and noise. Direct and indirect impacts to burrowing owl within the Plan area, with the exception of loss of individuals, are functionally mitigated through the Plan, and payment of appropriate fees to the RCA. The following mitigation measures are recommended to reduce potential impacts to burrowing owl below significant levels:

Burrowing Owl Surveys

- **MM-BIO 2:** The MSHCP query specified that BUOW surveys are required on the subject parcels. A total of four (4) focused BUOW surveys shall be conducted on separate days, preferably during the BUOW breeding season (March 1 through August 31), for a total of four (4) survey days (not including the initial habitat assessment and burrow survey). According to Riverside County and California Department of Fish and Wildlife (CDFW) protocol survey guidelines for BUOW, the surveys may not be conducted during rain, high winds (>20mph), dense fog, or temperatures over 90 degrees Fahrenheit.

- **MM-BIO 3:** Within 30 days of construction, conduct take avoidance surveys within the Project site and the 150-meter Survey Area surrounding the Project site for burrowing owl presence/absence, per guidelines specified in the Western Riverside County Regional Conservation Authority Burrowing Owl Survey Instructions for the Plan Area (2006).

- **MM-BIO 4:** If burrowing owls are observed to occupy the Project site and/or adjacent areas during take avoidance surveys or incidentally during construction, the City of Moreno Valley Planning Division will be notified, and avoidance measures may be implemented during the breeding season (March 1 through August 31). If burrowing owls are present during the non-breeding season (September 1 through February 28), burrowing owl exclusion measures may be implemented in accordance with the Plan.

If these surveys are positive, additional actions/mitigation may be required pursuant to the Plan. Pursuant to the Plan, if fewer than three pairs occur onsite, take of active nests must be avoided. Outside the breeding season, the owls would need to be relocated prior to Project impacts. In the unlikely event that three or more burrowing owl pairs occur onsite, the Plan requires that at least 90 percent of the area with long-term conservation value and burrowing owl pairs will be conserved. The area to be conserved would be determined in coordination with the County of Riverside through the HANS process.

6.3.2 Migratory Birds

The assessment identified suitable habitat and substrate for migratory birds protected under the MBTA and CDFW Codes 3503 and 3503.5. Permanent impacts to migratory birds as a result of the Project may include habitat loss, nesting habitat removal, roosting site loss and/or loss of individuals. Indirect impacts may include fugitive dust, excess noise, increased artificial lighting, and the attraction of predators to the Project site. The following mitigation measure is recommended to reduce potential impacts to migratory bird species below significant levels:

- **MM-BIO 5:** To the extent feasible, conduct vegetation removal outside of the nesting bird season (generally between February 15 and August 31). If vegetation removal is required during the nesting bird season, conduct take avoidance surveys for nesting birds within 100-feet of areas proposed for vegetation removal. Surveys should be conducted by a qualified biologist(s) within three days of vegetation removal. If active nests are observed, a qualified biologist will determine appropriate minimum disturbance buffers or other adaptive mitigation techniques (e.g., biological monitoring of active nests during construction-related

activities, staggered schedules, etc.) to ensure that impacts to nesting birds are avoided until the nest is no longer active.

6.3.3 Riparian/Riverine Habitat and/or Potentially Jurisdictional Areas

The assessment identified no Riparian/Riverine habitats and/or potentially jurisdictional waters within the Project site, therefore qualifying the Project as exempt for USACE, RWQCB and/or CDFW permits for jurisdictional waters. Furthermore, since no Riparian or Riverine habitat occurs onsite, the preparation of a Determination of Biologically Equivalent or Superior Preservation (DBESP) is not required.

7.0 CONCLUSIONS

The Project site is within the Moreno Valley Auto Mall Specific Plan within the MSHCP, but not within any Criteria Cell.

The Project site provides suitable burrowing owl nesting and foraging habitat and also provides suitable nesting habitat for other avian species. No impacts to nesting birds are anticipated for Project activities that would occur outside the nesting season. However, if Project activities are to commence during the nesting season, the implementation of pre-construction nesting bird surveys and appropriate avoidance and minimization measures for active nests are anticipated to offset any direct and/or indirect impacts.

The Project site does not contain riparian/riverine habitat or potentially jurisdictional features.

By adhering to the recommendations provided in this Report (and resulting additional actions, if required), payment of the MSHCP mitigation fees and fulfillment of the stipulations set forth by the County of Riverside HANS process, this Project is fully consistent with the Plan and would fulfill requirements for biological resources pursuant to CEQA, FESA, and CESA.

8.0 SURVEYOR CERTIFICATION

All data, statements, analyses, findings and attachments within this report are accurate and truthful in terms of describing the existing conditions and the Project as proposed to Blackhawk Environmental. By adhering to the mitigation measures proposed within this habitat assessment report and payment of appropriate fees to the Western Riverside County Regional Conservation Authority, compensatory mitigation related to the complete Project will be met to CEQA significance thresholds.

Seth Reimers
Senior Biologist – President

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APPENDIX C: PHASE I CULTURAL RESOURCES ASSESSMENT

March 2019

MATERIAL CULTURE
CONSULTING

Submitted to:

Norah Jaffan, Assistant Project Manager
E|P|D Solutions, Inc.
Irvine, California

Prepared on Behalf of:

Car Pros Kia

CULTURAL RESOURCES ASSESSMENT

Moreno Valley Kia Dealership

City of Moreno Valley, Riverside County, California

Material Culture Consulting™

MATERIAL CULTURE
CONSULTING

PHASE 1 CULTURAL RESOURCES ASSESSMENT: CAR PROS KIA PROJECT, THE CITY OF MORENO VALLEY, RIVERSIDE COUNTY, CALIFORNIA

Prepared for:
Car Pros Automotive Group

EPD Solutions, Inc.
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March 2019
(Revised June 2019)

MCC Project Number: 20190304
Type of Study: Cultural resources assessment
Cultural Resources within Area of Potential Impact: None
USGS 7.5-minute Quadrangle: Sunnymead, Section 2 of Township 3 S, Range 3 W
APN(s): 488-390-015 and 488-390-016
Survey Area: Approx. 6.3 acres
Date of Fieldwork: March 1, 2019
Key Words: Archaeology, CEQA, Phase I Survey, Negative Cultural Result, Riverside County

MANAGEMENT SUMMARY

Car Pros Automotive Group proposes the construction of a new automotive commercial complex, called Kia Moreno Valley (Project). The proposed Project consists of two parcels totaling approximately 6.3 acres (APN 488-390-015 and 488-390-016), located at the intersection of Auto Mall Drive and Moreno Beach Drive in the City of Moreno Valley, Riverside County, California. The proposed Project consists of construction of a sales and service facility building which will include a service reception, a parts receiving location and multiple vehicle display areas. Material Culture Consulting, Inc. (MCC) was retained by E|P|D Solutions, Inc. to conduct a Phase I cultural resource investigation of the Project Area. These assessments were conducted in accordance with the California Environmental Quality Act (CEQA), and included cultural records searches, a search of the Sacred Lands File (SLF) by the Native American Heritage Commission (NAHC), outreach efforts with 15 Native American tribal representatives, background research, and a pedestrian field survey.

Sonia Sifuentes, M.Sc., RPA, MCC Archaeologist, conducted a search of the California Historical Resource Information System (CHRIS) on February 8, 2019 at the Eastern Information Center (EIC), located on the campus of University of California, Riverside. The cultural resources search identified 35 cultural resources investigations which have been previously conducted within a 1-mile radius buffer around the Project Area, with a total of six of these studies either intersecting or adjacent to the Project Area. A total of 55 previously recorded cultural resources lie within a 1-mile buffer of the Project Area. Of these 55 cultural resources, five resources are located within ¼-mile of the Project Area, all of which are prehistoric bedrock milling features, and 21 resources are located within 1/2-mile of the Project Area, which are also mostly bedrock milling features. A review of historical aerial photographs and maps indicate that minimal disturbance occurred prior to 1970s. By the mid-1990s, development around the Project Area and disturbances within the Project Area increased. The SLF search conducted by the NAHC did not identify the presence of Sacred Lands or Tribal Cultural Resources. The NAHC provided contact information for 15 Native American tribal representatives for outreach efforts. MCC sent letters on February 8, 2019 to all 23 contacts, requesting any information related to cultural resources or heritage sites within or adjacent to the Project Area. Additional attempts by email or phone call were made on February 25 and March 15, 2019. As a result of this outreach effort, MCC received responses and recommendations from several Native American groups, however no specific information was shared regarding presence of Tribal Cultural Resources within the Project Area. The pedestrian survey of the Project Area was conducted on March 1, 2019 by Julia Carvajal, MCC Archaeologist. During the course of fieldwork, survey conditions were good and ground visibility varied from very poor (less than 10 percent) to excellent (approximately 100%) throughout the 6.3-acre Project Area due to combination of graded areas and portions with dense overgrowth of brittle bush, grasses and other weeds. A homeless encampment was located in the Southeast corner and this area was not surveyed at this time. No cultural resources were identified during the survey.

Based on the above findings, the probability of encountering cultural resources within the Project Area is considered low in previously graded areas to moderate where ground visibility was lacking. MCC recommends no further mitigation measures are needed for the duration of the Project. While we do not recommend additional mitigation prior to Project implementation, we do recommend setting a plan in place to expediently address inadvertent discoveries and human remains, should these be encountered during construction activities.

A copy of this report will be permanently filed with the EIC at University of California Riverside, Riverside. All notes, photographs, correspondence and other materials related to this Project are located at Material Culture Consulting, Inc located in Pomona, California.

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INTRODUCTION

Car Pros Automotive Group proposes the construction of a new automotive commercial complex, called Kia Moreno Valley (Project). The proposed Project consists of two parcels totaling approximately 6.3 acres (APN 488-390-015 and 488-390-016), located at the intersection of Auto Mall Drive and Moreno Beach Drive in the City of Moreno Valley, Riverside County, California. The proposed Project consists of construction of a sales and service facility building which will include a service reception, a parts receiving location and multiple vehicle display areas. Material Culture Consulting, Inc. (MCC) was retained by E|P|D Solutions, Inc. to conduct a Phase I cultural investigation of the Project in accordance with the California Environmental Quality Act (CEQA). This assessment was conducted pursuant to all applicable State of California regulations regarding cultural resources, as well as guidelines established by the City of Moreno Valley and the County of Riverside. According to these regulations and guidelines, if development of a Project has the potential to result in significant impacts to cultural resources, a plan must be developed to mitigate those impacts to a level which is less than a significant. This assessment documents the potential for encountering cultural resources during development of this Project and provides recommendations on how to mitigate impacts to those resources. The lead agency for this Project is the City of Moreno Valley.

PROJECT LOCATION AND DESCRIPTION

The Project is located in the City of Moreno Valley, located within northwestern Riverside County (Figure 1). The Project consists of two vacant parcels totaling approximately 6.3 acres (APNs 488-390-015 and 488-390-016), located at the intersection of Auto Mall Drive and Moreno Beach Drive in the City of Moreno Valley, Riverside County, California (Figures 2 and 3). The Project Area is situated northeast of the Moreno Peak and south of the Moreno Valley highway (State Route 60). Specifically, the Project Area is bounded by Auto Mall Drive to west/northwest, Moreno Beach Drive to the south, Pettit Street to the north, and a vacant lot east. Specifically, the proposed Project is located within Section 2, Township 3 South, Range 3 West on the Sunnymead USGS 7.5-minute quadrangle (San Bernardino Base Meridian) (Figure 2). The proposed Project is a Kia vehicle sales and service facility with a car wash.

PROJECT PERSONNEL

Tria Belcourt, M.A., RPA, President of Material Culture Consulting Inc., served as the Project Manager and Principal Archaeologist for the study. Ms. Belcourt coordinated the records searches and performed editorial review of this report. Belcourt is a Registered Professional Archaeologist (RPA) with a M.A. in Anthropology from the University of Florida, a B.A. in Anthropology from the University of California at Los Angeles with over twelve years of experience in California archaeology (See Appendix A). Sonia Sifuentes, M.Sc, RPA, conducted the cultural resource records search and provided co-authorship of this report. Julia Carvajal, B.S., conducted the pedestrian survey, provided co-authorship and technical peer review for this report, and created the maps for the report.

ENVIRONMENTAL SETTING

The Project Area is located within the City of Moreno Valley city limits in northwestern Riverside County, approximately 0.43 mile south of California State Route 60. Bounded by the Box Springs Mountain to the north, the Badlands to the east, and Lake Perris Recreation Area and associated mountains to the south, the Project Area is located within a relatively flat valley floor that is surrounded by hills and mountains. Elevations are approximately 533 meters (m) (1748 ft) above mean sea level (AMSL) throughout the Project Area. The region is located within the Peninsular Ranges, a northwest-southeast oriented complex of blocks separated by similarly trending faults (Norris and Webb 1978). Most geological formations found within this area are comprised the

Southern California Batholith, a great mass of basement igneous rocks. Vegetation observed within the Project Area include invasive grasses and weeds and brittle bush observed along the southern portion. Non-native landscaping is present within the surround region, with a residential and commercial development located to the South-southwest and Northwest of the Project Area. The climate in the region is characterized as Mediterranean, with hot, dry summers and temperate, wet winters.

The Project Area lies within the geomorphic province known as the Peninsular Ranges Province, sitting near the eastern margin of the Perris Block (Kenney 1999). The Perris Block is a structurally stable, internally cohesive mass of crustal rocks bounded on the east by the San Jacinto fault zone, bounded on the west by the Elsinore and Chino fault zones, and on the north by the Cucamonga fault zone (Norris and Webb, 1976; Morton and Matti, 1989), and on the south by a series of sedimentary basins (Morton and Matti 1989). The Project Area is mapped within surficial Quaternary alluvial fan deposits to the east and within the southwestern-most portion of the Project Area is early Pleistocene alluvial fan deposits with exposures of Cretaceous tonalite south of the Project's southern boundary (Morton and Matti 2001).

Figure 1. Car Pros Kia Project Vicinity (1:250,000)

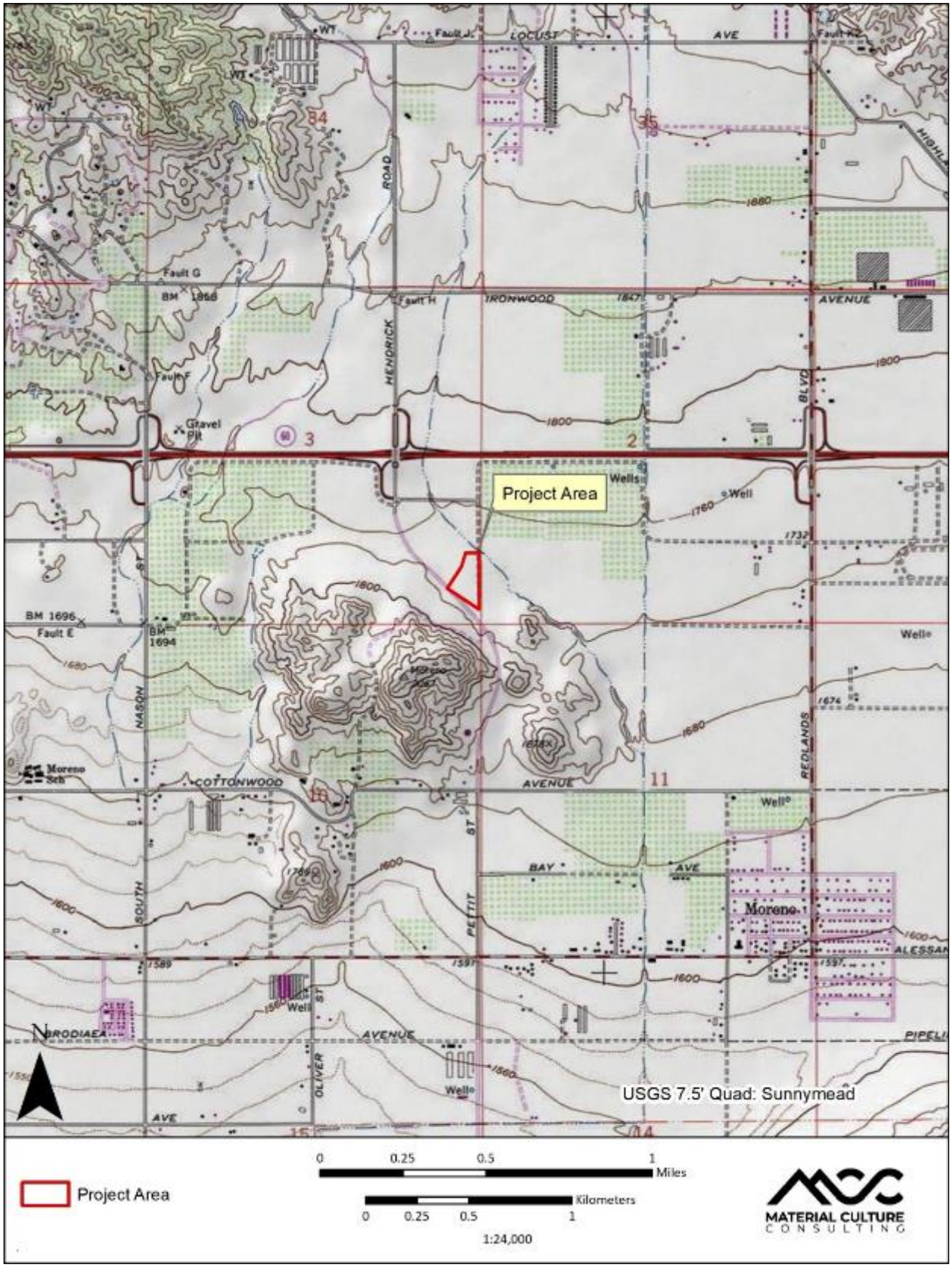

Figure 2. Car Pros Kia Project Location (as depicted on Sunnymead USGS 7.5-minute Quadrangle, 1:24,000)

Figure 3. Car Pros Kia Project Area (as depicted on aerial photograph, 1:2,000)

PREHISTORIC CONTEXT

There is no specific model of early human occupation offered within the Moreno Valley region. The earliest sites known in the area are attributed to the San Dieguito culture, which consists of a hunting culture with a flaked stone tool industry (Warren 1967). The material culture related to this time included scrapers, hammer stones, large flaked cores, drills, and choppers, which were used to process food and raw materials. These types of early sites are more likely to be found along ancient lake terraces. Most evidence of this early occupation is located further south-southwest and currently there is no evidence of human occupation within the Moreno Valley region prior to about 2,300 years ago (P&D Consultants 2006).

Around 8,000 years ago, subsistence patterns changed, resulting in a material complex consisting of an abundance of milling stones (for grinding food items) with a decrease in the number of flaked stone tools. The material culture from this time period includes large, bifacially worked dart points and grinding stones, handstones and metates. Archaeologists initially designated this period as the "Millingstone Horizon" (Wallace 1955). Later, the Millingstone Horizon was redefined as a cultural tradition named the Encinitas Tradition (Warren 1967) with various regional expressions including Topanga and La Jolla. Use of this classification system by archaeologists has varied as some adopted a generalized Encinitas Tradition without regional variations, while others continued to use Millingstone Horizon, and still others used Middle Holocene (the geologic time period) to indicate this observed pattern (Sutton and Gardner 2010:1-2). Recently, this generalized terminology was criticized by Sutton and Gardner (2010) as suppressing the identification of cultural, spatial, and temporal variation, as well as the movement of peoples throughout space and time. It is these factors that are believed to be critical to an understanding of prehistoric cultural adaptation and change in this portion of southern California (Sutton and Gardner 2010:1-2).

The Encinitas Tradition characteristics include abundant metates and manos, crudely-made core and flake tools, bone tools, shell ornaments, and very few projectile points, indicating a subsistence pattern focused on hunting and gathering a variety of floral resources. Faunal remains vary by location but include marine mammals, fish, and shellfish, as well as terrestrial animals, reptiles, and birds (Sutton and Gardner 2010:7). The Encinitas Tradition has been redefined to have four patterns (Sutton and Gardner 2010: 8-25). These include the Topanga Pattern in coastal Los Angeles and Orange counties, the La Jolla Pattern in coastal San Diego County, and the Sayles or Pauma cultures in inland San Diego County extending into western Riverside County, where the Project is located. At approximately 3,500 years ago, Pauma groups in the general Project vicinity adopted new cultural traits which transformed the archaeological site characteristics - including mortar and pestle technology. This indicated the development of food storage, largely acorns, which could be processed and saved for the leaner, cooler months of the year.

At approximately 1,500 years before present, bow and arrow technology started to emerge in the archaeological record, which also indicates new settlement patterns and subsistence systems. The local population retained the subsistence methods of the past, but incorporated new materials into their day to day existence, as evidenced by the archaeological record. The Palomar Tradition is attributed to this time, and is comprised of larger two patterns: the Peninsular Pattern in the inland areas of the northern Peninsular Ranges (e.g., San Jacinto and Santa Rosa mountains) and the northern Coachella Valley (Sutton 2010), and the San Luis Rey pattern of the western Riverside region. Archaeological sites from this time period are characterized by soapstone bowls, arrowhead projectile points, pottery vessels, rock paintings, and evidence of cremation sites. The shift in material culture assemblages is largely attributed to the emergence of Shoshonean (Takic-speaking) people who entered California from the east. Recent investigations at the Eastside Reservoir Project refines the chronology for the past 1500 years into four stages: Saratoga Springs (1500-750 BP), Late Prehistoric (750-410 BP), Protohistoric (410-180 BP), and Historic (post-180 BP). This research shows a large number of semi-residential sites during the

Medieval Climatic Anomaly at the end of the Saratoga Springs period which ended by the Late Prehistoric period (Applied Earthworks 2001). The increased use of the area suggests that the area may have had a more favorable environment than in surrounding regions.

ETHNOGRAPHIC CONTEXT

The Project Area has historically been situated between two Native American territories: the Luiseño people and the Cahuilla people. Migration of Shoshone peoples from the Great Basin into the desert and coastal Southern California regions occurred approximately 1000 to 600 years B.P. Both the Cahuilla and Luiseño ethnographic groups derived from this migration.

Cahuilla

The Cahuilla territory was bounded by the San Bernardino Mountains to the north, the Orocopia Mountains to the east, the Santa Ana River/the San Jacinto Plain and the eastern portion of Palomar Mountains to the west, and Borrego Springs and the Chocolate Mountains to the south (Bean 1978). The Project Area falls within the western region of the tribe's traditional territory, denoted by the San Gorgonio Pass. The Cahuilla existed within the most geographically diverse region, having exploited more than 500 native and non-native plants (Bean and Saubel 1972). The Cahuilla spoke a language that belongs to the Cupan group of the Takic subfamily of the Uto-Aztecan language family, a language family that includes the Shoshonean groups of the Great Basin (Bean and Shipek 1978).

The prehistoric Cahuilla occupation is characterized by structures within permanent villages that ranged from small brush shelters to dome-shaped or rectangular dwellings. Villages were situated near water sources, in the canyons near springs, or on alluvial fans at man-made walk-in wells (Bean 1972). There appears to be slight difference in subsistence tools between the Desert, Pass, or Mountain Cahuilla groups. The Desert Cahuilla used deep, wooden mortars with a long pestle whereas San Gorgonio Pass Cahuilla utilized shallower mortars with basketry rims (Kroeber 1908: 40, 43). Cahuilla granaries were usually raised on pole platforms two to four feet high, which resembled birds' nests, and were used to store mesquite (Kroeber 1908: 42).

In comparison with other Southern California tribes, the Cahuilla appear to have had a lower population density and a less rigid social structure. The Cahuilla are patrilineal, with closely related patrilineages that share an assumed common ancestor which is important socially and ceremonially (Hudlow 2007). The office of lineage leader, also known as a *nét*, directed subsistence activities, settled conflicts, represented the clan regionally and was responsible for correct performances of ceremonies, with the official role of the chief passed from father to eldest son (Bean 1978; Hudlow 2007).

Initial contact with European explorers with the Cahuilla most likely occurred during the expedition of Juan Bautista de Anza in 1777 (Napton and Greathouse 1982). The presence of the San Gabriel Mission in the early 1800s led to more contact via baptisms (Napton and Greathouse 1982). It also led to the Native Americans moving away from traditional habitation sites to separate themselves from the influence of the Mission (Brumgardt 1977). The Cahuilla traditions may have been relatively stable until mission secularization in 1834, due to the policy of the Catholic Mission fathers, or padres, to maintain imported European traditional style settlement and economic patterns (Bean and Shipek 1978). After 1877, when the United States government established Indian reservations in the region and religious missionaries began conversion of the Native American populations in the region, traditional cultural practices were prohibited. Presently, the Cahuilla reside in nine separate reservations in Southern California, located in Imperial, Riverside and San Diego counties (Bean 1978).

Luiseño

The Spanish name Luiseño was used to identify Native Americans who were associated with the Mission San Luis Rey, with the Luiseño most likely had no known native term for their own nationality (Bean and Shipek 1978). Extensive research has been accumulated that gives detailed accounts of the Luiseño (DuBois 1908, Sparkman 1908, Kroeber 1976, White 1963, and Bean and Shipek 1978). At the time of these ethnographies, the Luiseño maintained a sophisticated political organization structure, and their lands extended from western San Jacinto to the Pacific Ocean along several major waterways, including Temecula, Santa Margarita, and San Luis Rey Rivers (Bean and Shipek 1978). Neighboring tribes included the Cahuilla to the east, the Serrano to the north, and the Gabrielino to the west. Each of these groups are part of the same Uto-Aztecan linguistic group and are Takic-speakers. The boundaries for territories fluctuate as new information evolves in ethnographic research, so there is a likelihood that there was quite a bit of overlap between groups over time as well.

The Luiseño organized themselves according to family groups or lineages, rather than forming exogamous moieties. Each lineage occupied land that they held in common, and they lived socially and politically separately from others (Bean and Shipek 1978). They typically resided in villages near reliable water sources and maintained special purpose camps close to the main villages. In the springtime, families would replenish food supplies by gathering local fruit, seeds, bulbs and roots. In the fall, families would move into the upland areas to gather acorns, prickly pear, toyon berries, and yucca. The Luiseño territory contained several species of oak that produced edible acorns. Acorns were stored and processed as needed by breaking the shell, grinding the meat into a powder, and leaching the tannic acid from the nut by using water. A porridge was made from the leached nuts and cooked with water using hot stones in baskets. The Luiseño used a wide variety of tools, including manos and metates, bone and shellfish hooks, stone and shell ornaments, bone awls, wooden throwing sticks, hammer stones, handstones, pestles, mortars, and drills, which are evident in late Prehistoric archaeological sites. Presently, there are six federally recognized Luiseño tribes with associated reservations within Southern California.

HISTORIC CONTEXT

In 1769, Spanish settlers began to enter and colonize Alta California. Once the first European exploration of California occurred, the region underwent immense change. As early as 1827, Anglo-Americans were migrating into Southern California. In the decades to come, California would be taken by the United States with the close of the Mexican-American War and subsequent events such as the Civil War and California Gold Rush would continue to shape the history of California.

Spanish Period (1769 to 1821) to Mexican Period (1821 to 1848)

The Spanish period began in 1769 with Captain Gaspar de Portolá's land expedition and ended in 1821 with Mexican Independence. During the Spanish Period, the influence of San Luis Rey Mission (1798) was apparent throughout the surrounding regions, with much of the area used for cattle grazing. At its peak, the Mission controlled multiple ranches and claimed control over what is now western Riverside County and northern San Diego County. However, after control of the area shifted to Mexico, secularization began throughout the area and the missions and their associated ranches began to decline. The Mexican government proceeded to push settlements of Mexican populations from the south by deeding large grants to individuals who promised to employ settlers. Small villages were established on some ranchos, while small towns appeared in areas between ranchos. However, the area that is now known as Moreno Valley remained largely uninhabited.

American Period (1848 to present)

The Gold Rush of 1849 would see tremendous influx of Americans and Europeans flooding into Southern California. The passing of the Homestead Act of 1862 increased the influx of settlers within the region. Eventually, Riverside County was settled by homesteaders and farmers, and quickly became a diversified agricultural area with citrus, grain, grapes, poultry, and swine being the leading commodities. This influx of settlers led to population pressures and increased conflicts with the local indigenous groups. The passage of the Act for the Governance and Protection of Indians in 1850 further degraded the position of the Luiseño and Cahuilla. By 1877, The Cahuilla were moved to reservations in a checkerboard pattern throughout the Palm Springs and Coachella Valleys in Riverside County (Napton and Greathouse 1982) which broke up reservation land into discontinuous patchwork pieces, restricting access by the tribe to sacred lands and traditional gathering places. The Moreno Valley area remained unclaimed public land until 1870, when a large tract of over 13,400 acres were purchased from the U.S. government in a single transaction (Tang and Hogan 2013).

Historical Context of the Project Region

Development of the City or Moreno Valley began during the late 19th century. In 1883, Frank E. Brown ventured from Redlands into the Moreno Valley region and secured a large acreage that were platted into ten-acre tracts (Ellis 1912). This attracted settlers and farmers into the region and the Town of Moreno was established in Brown's honor in 1890 (Ellis 1912; P&D Consultants 2006). However, due to water conflicts and litigations that ultimate went in favor of the City of Redlands, a period of drought forced the failure of most farmers in the area and lead to an exodus from the Town of Moreno to other closer locations like Riverside, dubbing the area and town "The Valley/Town on Wheels" (Ellis 1912; Ghori 2014; City of Moreno Valley 2018).

In 1918, the construction of a military training airfield in the area brought in new community growth. Located 3.21 miles southwest of the Project Area, it was originally called the Alessandro Aviation Field, with its official name changed to March Air Field in honor of an Army pilot who had died during a training crash (Ghori 2014). First encompassing 640 acres of land, March Air Field grew to encompass more than 7,000 acres, with the base supporting 85,000 troops at its height of activity (City of Moreno Valley 2018). In 1996, March was realigned as an Air Reserves Base and is still currently active.

From the late 1950s to the late 1980s, the Riverside International Raceway operated within Moreno Valley. Established by Rudy Cleye, it was considered a dangerous track and circuit changes occurred in 1969 (Racing Circuits 2018). It hosted many prominent races, including NASCAR championships (Ghori 2014). By 1989, the land the track was on was sold to create housing and a shopping mall, located 4.5 miles northwest of the Project Area (Racing Circuits 2018). By 1984, the communities of Edgemont, Sunnymead, and Moreno voted to incorporate after prior failed efforts, and the City of Moreno Valley was established (City of Moreno 2018).

RESEARCH DESIGN

The objectives of an archaeological assessment are to locate, interpret, and evaluate the indications of past human activities within the study area. The indicators of such activities are represented by cultural resources, and can consist of many different types of materials – stone tools, historic neighborhoods, historic-era can scatters, village sites, food waste, tool manufacturing waste, trails, stone alignments, petroglyphs, hearths, or human skeletal remains. All of these types of resources are known to exist within the general Project region. The scope of this study is to identify and evaluate the significance of observable cultural resources, should they exist within the Project area.

LEGAL COMPLIANCE BASIS

This Project is subject to both state and local regulations, including CEQA and the City of Moreno Valley General Plan. CEQA declares that it is state policy to "take all action necessary to provide the people of this state with... historic environmental qualities." It further states that public or private Projects financed or approved by the state are subject to environmental review by the state. All such Projects, unless entitled to an exemption, may proceed only after this requirement has been satisfied. CEQA requires detailed studies that analyze the environmental effects of a proposed Project. In the event that a Project is determined to have a potential significant environmental effect, the act requires that alternative plans and mitigation measures be considered. CEQA includes historic and archaeological resources as integral features of the environment. The level of consideration may vary with the importance of the resource.

The *Moreno Valley General Plan*'s Objective 7.6 is to "identify and preserve Moreno Valley's unique historical and archaeological resources for future generations" (City of Moreno Valley 2006). Five policies aim to promote this objective, including Policy 7.6.2, "implement appropriate mitigation measures to conserve cultural resources that are uncovered during excavation and construction activities" (City of Moreno Valley 2006).

RESEARCH THEMES WITHIN THE PROJECT AREA

Riverside County has a rich prehistoric and historic cultural heritage. However, based on previous research, minimal cultural resources are known to exist within the Project Area and nearby region. Of the known resources, prehistoric sites appear to occur along intermittent drainages, and are often associated with boulder outcrops. Food processing sites, consisting of bedrock grinding and milling features, and ground stone implement fragments are found within the region. The closest known sites of this type are located along the foothills and canyons to the south, indicating that some areas may have been used more frequently or for longer periods. Petroglyph sites are known to exist in the general region but have not been encountered in the vicinity of the Project area.

Future archaeological research within the general Project area has the potential to address research questions regarding settlement patterns, site structure, subsistence strategies, trade and distribution networks and tool technologies. Questions for the Project have been selected to contribute to the context and understanding of the prehistory and history of California. Based on the literature review, research questions fall into several prehistoric and historic domains. The prehistoric research domains are Chronology and Cultural Affiliation, Subsistence and Site Function, and Toolstone Procurement and Use. Historic research domains focus primarily on the topics of Community Development. Defining research questions also helps focus the documentation of resources during survey so that artifacts, features and other remains that can contribute to an understanding of regional history and prehistory are carefully noted.

CHRONOLOGY AND CULTURAL AFFILIATION

At prehistoric sites throughout Western Riverside County, chronometric data generally derive from time-sensitive artifacts (e.g., projectile points, beads, and ceramics), physically dateable artifacts (e.g., obsidian), and organic remains (dateable through chronometric assay). Time-sensitive and dateable artifacts can occur in surface and subsurface contexts, the former sometimes being less reliable than the latter in terms of dating archaeological components. Dateable organic remains (e.g., bone, shell, fiber, loose charcoal) can be acquired from midden deposits or, in the best examples, from buried features like hearths. In any case, sites that have dateable items or remains can be placed at least tentatively within an existing temporal framework, be it local or regional, and used to compare and contrast temporal adaptive patterns in human behavior. For the most part, sites that can be dated have greater overall data potential than undated sites because they can be placed in time and can help refine our understanding of long-and short-term changes in prehistoric human adaptation.

Given the importance of chronological data to all archaeological interpretation, it will be critical to document the presence of any time-sensitive artifacts within the Project area. Sites that can contribute valuable chronological data may be recommended eligible for listing on CRHR under Criterion (4), research potential.

SUBSISTENCE-SETTLEMENT PATTERNS

Subsistence is one of the most basic of human needs having a direct effect on human behavior. Prehistoric subsistence procurement activities consist of any number of variables including: site location in relation to land form, water supply, and raw materials; site size; site function; and duration of occupation. Material culture, such as lithic and ground stone tools, ceramics, and faunal and botanical remains, provide data representative of subsistence-related activities and strategies.

The Project Area is within a larger settlement area used by the Cahuilla, Luiseño and several other overlapping cultures, which are known in the area near Moreno Valley. Information on the nature and intensity of prehistoric use of the Project area, including the types of sites present, their density, and environmental context, will contribute to a more complete picture of settlement and subsistence patterns in this part of California. Combined with chronological information (above), this information can also assist in determining adaptive changes over time. Sites that can offer valuable data concerning prehistoric subsistence-settlement patterns may be recommended eligible for listing on CRHR under Criterion (4), research potential.

TOOL-STONE PROCUREMENT AND USE

Basic patterns in lithic materials use can be useful for reconstructing the approximate geographic extent of past settlement and trade systems. Sites that can offer valuable information concerning patterns of prehistoric toolstone procurement and use may be recommended eligible for listing on CRHR under Criterion (4), research potential, particularly if they are accompanied by chronological data that can be used to place stone-working behaviors in time.

HISTORIC RESEARCH DOMAINS

Historic archaeological sites can offer important data concerning any number of historic themes, and may be recommended eligible for listing on CRHR under Criterion (4), research potential. They might also be eligible under Criterion (1) if they can be linked to certain historical events that were important in California's past, Criterion (2) if they are found associated with persons important in history, or under Criterion (3) if they contain structural features that are distinctive of a particular historic period or demonstrate an exceptional aesthetic quality. For the

purposes of this Project, we plan to focus historic period research on the theme of community development and built environments. The historic research domains will specifically address the historic-era built environment within the City of Moreno Valley, as it is felt that this topic is important to our understanding of the history in Western Riverside County.

SIGNIFICANCE EVALUATIONS

The criteria for listing resources on the California Register of Historic Resources (CRHR) were expressly developed to be in accordance with previously established criteria developed for listing on the National Register of Historic Places, and require similar protection to what National Historic Preservation Act Section 106 mandates for historic properties. According to Public Resources Code (PRC) Section 5024.1(c) (1-4), a resource is considered historically significant if it meets at least one of the following criteria:

1. Associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States;
2. Associated with the lives of persons important to local, California or national history;
3. Embodies the distinctive characteristics of a type, period, region or method of construction or represents the work of a master or possesses high artistic values; or
4. Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California or the nation.

In addition to having significance, resources must have integrity for the period of significance. The period of significance is the date or span of time within which significant events transpired, or significant individuals made their important contributions. Integrity is the authenticity of a historical resource's physical identity as evidenced by the survival of characteristics or historic fabric that existed during the resource's period of significance. Alterations to a resource or changes in its use over time may have historical, cultural, or architectural significance. Simply, resources must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. A resource that has lost its historic character or appearance may still have sufficient integrity for the California Register, if, under Criterion 4, it maintains the potential to yield significant scientific or historical information or specific data. Note that California Historical Landmarks with numbers 770 or higher are automatically included in the CRHR.

Sites with the potential to yield artifacts and other data that can address research questions may be evaluated as eligible for CRHR listing per Criterion (4). Some prehistoric sites may be evaluated as CRHR-eligible under Criterion (1) if they relate to culturally significant events or (mythological) persons (Criterion 2), or represent high artistic forms (e.g., rock art), per Criterion (3).

Under CEQA, if an archaeological site is not a significant "historical resource" but meets the definition of a "unique archaeological resource" as defined in PRC Section 21083.2, then it should be treated in accordance with the provisions of that section. A unique archaeological resource is defined in PRC Section 21083.2(g) as follows:
An archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Resources that neither meet any of these criteria for listing on the NRHP or CRHR nor qualify as a "unique archaeological resource" under CEQA PRC Section 21083.2 are viewed as not significant. Under CEQA, "A non-unique archaeological resource need be given no further consideration, other than the simple recording of its existence by the lead agency if it so elects" [PRC Section 21083.2(h)].

Impacts to historical resources that alter the characteristics that qualify the historical resource for listing on the CRHR are considered to be a significant effect (under CEQA). The impacts to a historical resource are considered significant, if the Project activities physically destroy or damage all or part of a resource, change the character of the use of the resource or physical feature within the setting of the resource which contribute to its significance, or introduce visual, atmospheric, or audible elements that diminish the integrity of significant features of the resource. If it can be demonstrated that a Project will cause damage to a unique archaeological resource, the lead agency may require reasonable efforts to 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 they cannot be left undisturbed, mitigation measures are required (Section 21083.2 (a), (b), and (c)).

METHODS

CALIFORNIA HISTORIC RESOURCES INVENTORY SYSTEM AND CULTURAL BACKGROUND RESEARCH

On February 8, 2019, Sonia Sifuentes, M.Sc., MCC Senior Archaeologist, conducted a search of the California Historical Resource Information System (CHRIS) at the Eastern Information Center (EIC), located at the University of California, Riverside, Riverside County. The search covered any previously recorded cultural resources and investigations within a 1-mile radius of the Project Area within Riverside County. The CHRIS search also 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 Inventory of Historic Resources.

NATIVE AMERICAN OUTREACH AND BACKGROUND RESEARCH

A Sacred Lands File search was requested by MCC from the Native American Heritage Commission (NAHC) on February 4, 2019. The Commission responded on February 7, 2019, stating that there are no known sacred lands within a 1-mile radius of the Project Area. The NAHC requested that 15 Native American tribes or individuals be contacted for further information regarding the Project Area and vicinity. MCC subsequently sent letters on February 8, 2019 to the 15 Native American contacts, requesting any information related to cultural resources or heritage sites within or adjacent to the Project Area. Additional attempts at contact by emails were made on February 25 and March 15, 2019.

CULTURAL RESOURCES SURVEY METHODS

The survey stage is important in a Project's environmental assessment phase to verify the exact location of each identified cultural or paleontological resource, the condition or integrity of the resource, and the proximity of the resource to areas of cultural resources sensitivity. Julia Carvajal, MCC Archaeologist, conducted the survey of the proposed Project Area on March 1, 2019. The survey consisted of walking in parallel transects spaced at approximately 10-meter intervals over the Project parcel, while closely inspecting the ground surface. All undeveloped ground surface areas within the ground disturbance portion of the Project Area were 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. Representative photographs were taken of the entire Project Area.

RESULTS

CALIFORNIA HISTORIC RESOURCES INVENTORY SYSTEM AND CULTURAL BACKGROUND RESEARCH

The CHRIS records search identified a total of 35 cultural resources investigation that have been previously conducted within a 1-mile radius buffer around the Project Area (see Table 1). A total of three of these investigations are located adjacent to the Project Area and a total of three investigations have intersected portions of the Project Area. The records search identified a total of 55 previously recorded cultural resources within a 1-mile buffer (see Table 2). While there are no previously recorded resources located within the Project Area boundaries, five resources are located within ¼-mile of the Project Area and 21 resources are located within 1/2-mile of the Project Area. A total 16 sites are historic, including three refuse scatters, five associated with water, two burials removed by the coroner, two single family properties, two foundations/structure pads, one farm/ranch, and one wall/fence. A total of 38 sites are prehistoric, including 35 bedrock milling features, one of which had a granite bifacial mano recovered during monitoring activities (P-33-003067), one rock shelter and two isolate resources. A review of historical aerial photographs and maps available indicated that prior to the 1970s, the Project Area was undisturbed from modern human activity. There are some minor plowing activities observed during the late 1970s. By the mid-1990s, development around the Project Area increased and it appears additional grading/plowing activities occurred (see Table 3 and Figures 4-5). Maps depicting the extent of prior surveys and locations of cultural resources are found in Confidential Appendix B.

Table 1. Previous Conducted Cultural Resources Studies within 1-mile Buffer of Project Area

CHRIS Report Number	Authors	Year	Title of Study	Affiliation	Distance from Project Area
RI-00414	T. Holcomb	1978	Environmental Impact Evaluation: Archaeological Assessment of Two Portions of Land in Moreno Valley, Riverside County, California	Archaeological Research Unit, U.C. Riverside	Within ½ mile
RI-00912	J.A. Salpas	1984	Environmental Impact Evaluation: Archaeological Assessment of General Plan Amendment 218 Sunnymead, California	Consulting Archaeologist	Within ¼ mile
RI-00913	C.E. Drover	1980	An Archaeological Assessment of RS 49/8 75 Acres of Land in Moreno Valley, Riverside County	Archaeological Consultant	Within ¼ mile
RI-01632	D.M. Van Horn	1983	Archaeological Survey Report: TT 12681 in Sunnymead, Riverside County, California	Archaeological Associates, LTD	Within 1 mile
RI-01822	C.E. Drover	1984	EIR: An Archaeological Assessment of the Pettit Hill Specific Plan	Author(s)	Within ¼ mile
RI-01850	Scientific Resource Surveys, Inc	1984	Cultural Resource Survey Report for Tract 19861, Near Moreno, Riverside County, California	Author(s)	Intersects Project Area
RI-01851	Scientific Resource Surveys, Inc	1984	Cultural Resource Survey Report for Tract 19861, Near Moreno, Riverside County, California	Author(s)	Intersects Project Area
RI-01852	M.E. Macko	1988	Draft Report of An Archaeological Records Check and Literature Review for the Stoneridge Center Specific Plan No. 211, City of Moreno Valley, Riverside County, California	The Keith Companies	Within ½ mile
RI-01853	C.E. Drover	1990	Environmental Impact Evaluation: The Stoneridge Project Riverside County, California	Author(s)	Within ½ mile

Table 1. Previous Conducted Resources Studies within 1-mile Buffer of Project Area

CHRIS Report Number	Authors	Year	Title of Study	Affiliation	Distance from Project Area
RI-02171	D.F. McCarthy	1987	Cultural Resources Inventory For the City of Moreno Valley, Riverside County, California	Archaeological Research Unit, U.C. Riverside	Intersects Project Area
RI-02172	C.E. Drover	1990	Environmental Impact Evaluation: Highway 60 Corridor Study, Moreno Valley, Riverside County, California	Consulting Archaeologist	Adjacent
RI-04353	C. Duke	1999	Letter Report: Cultural Resource Assessment for the AT&T Wireless Services Facility Number C497.1, County of Riverside, California	LSA Associates, Inc	Within 1 mile
RI-04607	C.R. Demack	2002	Phase I Archaeological Assessment of 72-Acre Parcel in the City of Moreno Valley, Riverside County, California	Archaeological Resource Management Corp	Within ¼ mile
RI-04717	K.A. O'Connell	2002	Letter Report: Results of Archaeological Survey Conducted at Proposed "Moreno Beach" Verizon Wireless Tower Site, Riverside County, California	URS, Santa Ana	Within 1 mile
RI-05141	N.Harris and D. Gallegos	2005	Cultural Resources Survey Report for Nason Basin, Riverside County Flood Control and Water Conservation District, Riverside County, California	Gallegos & Associates	Within 1 mile
RI-05473	J. Keller	2005	A Phase I Cultural Resources Assessment of APN 477-120-004, -005, +/- 31.0 Acres of Land in Moreno Valley, Riverside County, CA	Author(s)	Within 1 mile
RI-05474	J. Keller	2005	A Phase I Cultural Resources Assessment of Tentative Tract Map 33901, +/- 17.95 Acres of Land in Moreno Valley, Riverside County, California	Author(s)	Within 1 mile
RI-06751	V. Austerman	2006	Archaeological Monitoring Program: Stoneridge Ranch, City of Moreno Valley, Riverside County, California	LSA Associates, Inc	Within 1 mile
RI-06753	J.A. McKenna	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	McKenna et al.	Within 1 mile
RI-06754	M. Robbins-Wade	2006	Cultural Resources Inventory, Lowe's Moreno Valley Project, Moreno Valley, Riverside County, California	Affins	Within 1 mile
RI-06886	Tetra Tech, Inc	2006	An Archaeological Survey of Approximately 20 Acres (AP 477-180-012 and -013) for the Tentative Tract 34397 Moreno Valley Project Located Southeast of Cottonwood Avenue and Nason Street, Moreno Valley, Riverside County, California 92555	N/A	Within 1 mile
RI-07035	J.A. Keller	2005	A Phase II Historical Resources Investigation of Structures Located Within Tentative Tract map 33901	Cultural Resources Consultant	Within 1 mile
RI-07644	F.W. Lange	2007	Cultural Resources Assessment: Eucalyptus Industrial Park, City of Moreno Valley, Riverside County, California	LSA Associates, Inc	Adjacent

Table 1. Previous Conducted Resources Studies within 1-mile Buffer of Project Area

CHRIS Report Number	Authors	Year	Title of Study	Affiliation	Distance from Project Area
RI-08153	W. Bonner and M. Aislin-Kay	2008	Letter Report: Cultural Resource Records Search and Site Visit Results for T-Mobile Candidate	Michael Brandman Associates	Within 1 mile
RI-08241	J.E. McKenna	2008	A Phase I Cultural Resources Investigations of the Proposed Westridge Commerce Center at Redlands Blvd. and the Moreno Valley, Riverside County, California	McKenna, et al.	Within ½ mile
RI-08242	J.E. McKenna	2008	A Phase I Cultural Resources Survey of Two Alternative Moreno Valley Unified School District Sites, City of Moreno Valley, Riverside County, California	McKenna, et al.	Within 1 mile
RI-08357	Jacquemain, T.; Ballester, D.; and Shaker, L.H.	2009	Identification and Evaluation of Historic Properties: Moreno MDP Line K Project, City of Moreno Valley, Riverside County, California	CRM Tech	Within 1 mile
RI-08368	J.E. McKenna	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	McKenna, et al.	Within 1 mile
RI-08674	R.E. Parr	2011	Cultural Resource Assessment for the Replacement of Deteriorated Power Pole #4601073E	Cal Heritage	Within 1 mile
RI-08689	S.A. Williams	2010	Cultural Resources Records Search and Site Visit results for T-Mobile USA Candidate IE25690-C (Cottonwood Park), 28590 Cottonwood Avenue, Moreno Valley, California	Michael Brandman Associates	Within 1 mile
RI-08802	Tang, B.T.; Hogan, M.; Encarnacion, D.; and Ballester, D.	2012	Phase I Archaeological Assessment: Moreno Valley Drainage Plan Revision	CRM Tech	Adjacent to within 1 mile
RI-09385	M.M. DeCarlo and D.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	ASM Affiliates	Within 1 mile
RI-10257	F.W. Lange	2011	Cultural Resources Assessment Eucalyptus Industrial Park City of Moreno Valley Riverside County, California	LSA Associates, Inc	Adjacent
RI-10485	W. Blumel	2018	Cultural Resources Monitoring Report Cottonwood Interim Basin	ECORP Consulting, Inc	Within 1 mile
RI-10497	W. Blumel and A. Myers	2017	Cultural Resources Investigation of the One-Acre Cottonwood Basin Project in the City of Moreno Valley	ECORP Consulting, Inc	Within 1 mile

Table 2. Previous Recorded Resources within 1-mile Buffer of Project Area

Primary Number	Trinomial	Age	Attributes	NRHP/CRHR	Distance from Project Area
P-33-002863	CA-RIV-002863	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-002864	CA-RIV-002864	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-002865	CA-RIV-002865	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ¼ mile
P-33-002866	CA-RIV-002866	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-003067	CA-RIV-003067	Prehistoric	AP04 (Bedrock milling feature); AP16 (Isolate-mano)	Unknown	Within ½ mile
P-33-003088	CA-RIV-003088	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-003089	CA-RIV-003089	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-003232	CA-RIV-003232	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ¼ mile
P-33-003233	CA-RIV-003233	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-003234	CA-RIV-003234	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-003248	CA-RIV-003248/H	Historic	AH05 (Wells/cisterns)	Unknown	Within 1 mile
P-33-003959	CA-RIV-003959	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-003960	CA-RIV-003960	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-003961	CA-RIV-003961	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-003962	CA-RIV-003962	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-003963	CA-RIV-003963	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-003964	CA-RIV-003964	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-003965	CA-RIV-003965	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-003966	CA-RIV-003966	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-004286	CA-RIV-004286	Historic	AH12 (Graves/cemetery)	Unknown	Within ½ mile
P-33-007281		Historic	HP02 (Single family property); HP44 (Adobe building/structure)	Unknown	Within 1 mile
P-33-011215	CA-RIV-008087	Historic	HP33 (Farm/ranch)	Unknown	Within 1 mile
P-33-013710	P-33-013710	Historic	AH12 (Graves/cemetery)	Unknown	Within ½ mile
P-33-014952	P-33-014952	Historic	AH06 (Water Conveyance System	Recommended ineligible for CRHR	Within ½ mile

Table 3. Previous Recorded Resources within 1-mile Buffer of Project Area

Primary Number	Trinomial	Age	Attributes	NRHP/CRHR	Distance from Project Area
P-33-015016	P-33-015016	Prehistoric	AP16 (Isolate-mano)	Unknown	Within 1 mile
P-33-015017	P-33-015017	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-015018	CA-RIV-007982	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-015019	CA-RIV-007983	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-015020	CA-RIV-007984	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-015021	CA-RIV-007985	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-015022	CA-RIV-007986	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-015023	CA-RIV-007987	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-015024	CA-RIV-007988	Historic	AH04 (Refuse scatter)	Unknown	Within 1 mile
P-33-015026	CA-RIV-007990	Historic	AH06 (Water Conveyance System	Unknown	Within 1 mile
P-33-015027	CA-RIV-007991	Historic	AH06 (Water Conveyance System	Unknown	Within 1 mile
P-33-015028	CA-RIV-007992	Historic	AH04 (Refuse scatter)	Unknown	Within 1 mile
P-33-015029	CA-RIV-007993	Historic	HP22 (Lake/river/reservoir)	Unknown	Within 1 mile
P-33-015030	CA-RIV-007994	Historic	AH06 (Water Conveyance System	Unknown	Within 1 mile
P-33-015031	CA-RIV-007995	Historic	AH04 (Refuse scatter)	Unknown	Within ½ mile
P-33-015032	CA-RIV-007996	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-015147	CA-RIV-008056	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ¼ mile
P-33-015148		Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-015149		Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-015150		Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within 1 mile
P-33-015320	CA-RIV-008088	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-015796		Historic	AH02 (Foundations/structure pads)	Unknown	Within 1 mile

Table 4. Previous Recorded Resources within 1-mile Buffer of Project Area

Primary Number	Trinomial	Age	Attributes	NRHP/CRHR	Distance from Project Area
P-33-015934		Historic	HP02 (Single family property); HP30 (Trees/vegetation); HP33 (Farm/ranch)	Unknown	Within 1 mile
P-33-017851		Prehistoric	AP16 (Isolate-mano)	Unknown	Within 1 mile
P-33-028080	CA-RIV-012677	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-028081	CA-RIV-012678	Historic	AH11 (Walls/fence)	Unknown	Within ½ mile
P-33-028082	CA-RIV-012679	Prehistoric	AP14 (Rock shelter/cave)	Unknown	Within ½ mile
P-33-028083	CA-RIV-012680	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ½ mile
P-33-028084	CA-RIV-012681	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ¼ mile
P-33-028085	CA-RIV-012682	Prehistoric	AP04 (Bedrock milling feature)	Unknown	Within ¼ mile
P-33-028163	CA-RIV-012706	Prehistoric, Historic	AH04 (Refuse scatter); AP16 (Isolate-tool)	Unknown	Within ¼ mile

Table 5. Additional Sources Consulted for the Project

Source	Results
National Register of Historic Places (1979-2002 & supplements)	Negative
Historical United States Geological Survey topographic maps (USGS 2012)	Negative- agricultural field and vacant lot since the construction of a school and the Moreno Valley Unified School District Administration Office
Historical United States Department of Agriculture aerial photos	Negative- agricultural field and vacant lot since the construction of a school and the Moreno Valley Unified School District Administration Office
California Register of Historical Resources (1992-2010)	Negative
California Inventory of Historic Resources (1976-2010)	Negative
California Historical Landmarks (1995 & supplements to 2010)	Negative
California Points of Historical Interest (1992 to 2010)	Negative
Local Historical Register Listings	Negative
Bureau of Land Management General Land Office Records (BLM GO 2008)	Negative

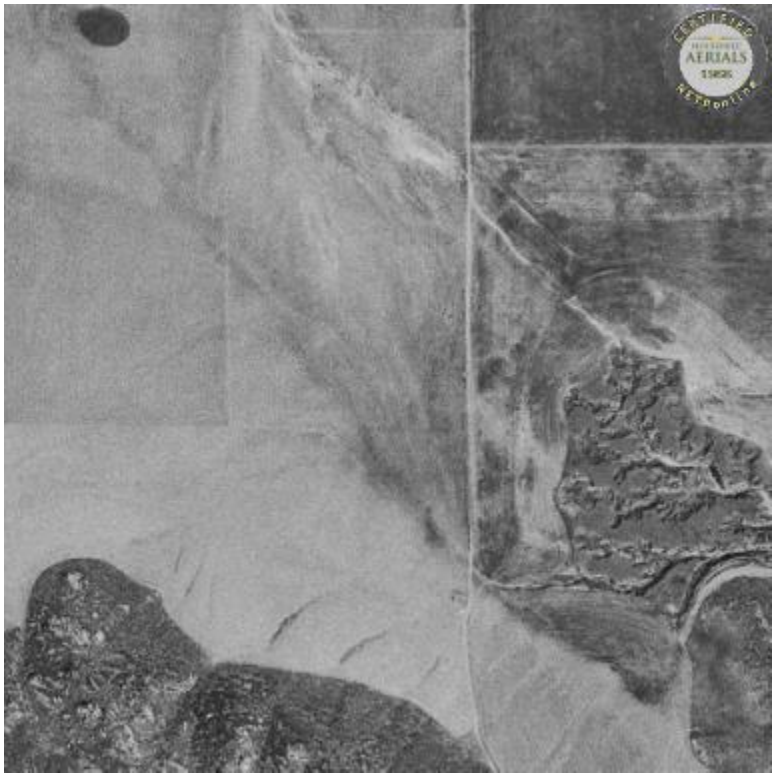

Figure 4. Project Area prior to development (depicted on 1966 aerial photograph)

Figure 5. Project Area with surrounding residential development (depicted on 2012 aerial photograph)

NATIVE AMERICAN OUTREACH AND BACKGROUND RESEARCH

On February 13, 2019, MCC received an email with a letter attachment from Lucy Padilla, Archaeological Technician for the Agua Caliente Band of Cahuilla Indians. The letter indicates that the Project Area is not located within the boundaries of the ACBCI Reservation, but within the Tribe's Traditional Use Area. ACBCI deferred to both Soboba and Morongo Band of Mission Indians and stated that the letter concluded their consultation efforts.

On February 21, 2019, MCC received a letter from Judy Strapp, Director of Cultural Affairs for the Cabazon Band of Mission Indians via USPS. According to the letter, the Project is located outside the Tribe's current reservation boundaries and the Tribe has no specific archival information on the site indicating that it may be a sacred/religious site or other site of Native American traditional cultural value.

On February 25, 2019, Bobby Ray Esparza of the Cahuilla Band of Indians sent a response via email. Mr. Esparza informed us that the project is within a Cahuilla Traditional Use Area and requests tribal monitors be present at all stages going forward.

On Feb 28, 2019, MCC received a letter from Victoria Martin, Tribal Secretary for the Augustine Band of Cahuilla Mission Indians. At this time, the Tribe is unaware of specific cultural resources that may be affected by the proposed Project. They encouraged contact with other Native American Tribes/individuals within the immediate vicinity of the Project site that may have specific information concerning cultural resources; to contract with a monitor who is qualified in Native American resources to be present onsite full-time during pre-construction and construction of the Project and to be notified immediately of any cultural resources discoveries during the development of the Project.

On February 28, 2019, MCC received an email from Travis Armstrong, Tribal Historic Preservation Officer for the Morongo Band of Mission Indians. The Tribe stated in this email that they have no information to provide to MCC

but will offer additional information during the AB 53 consultation process. Tribe also request to be notified in advance of field survey date. MCC notified the Tribe via email prior to the survey, however we did not receive a response to this email prior to survey.

No other additional groups or individuals have responded with information about the Project Area as of March 19, 2019. All written NAHC and Native American correspondence materials and our communication log are provided as Appendix C.

CULTURAL RESOURCES SURVEY RESULTS

At the time of survey, conditions were good and ground visibility varied from very poor (less than 10%) to excellent (approximately 100%) throughout the 6.3-acre Project Area. Recently graded areas were devoid of vegetation and visibility was excellent, however, within the southern part of the Project Area, dense overgrowth of brittle bush, grasses and other weeds obstructed ground visibility. In addition, a homeless encampment was located in the Southeast corner and this area was not surveyed due to safety concerns. The Project Area was relatively flat, except for a mounded push pile of concrete rubble, pavement, naturally occurring rock and soil. The mounded pile was located in the southern portion of the Project Area. Soil throughout the Project Area is comprised of a sandy loam with some inclusions. Modern refuse was observed throughout the Project Area. No cultural resources were observed during the survey. Representative photos of the area are found below (Figures 6-9).

Figure 6. Project Overview showing area of excellent visibility from Northeast corner (View South)

Figure 7. Project Overview showing poor visibility from Southwest corner (View North)

Figure 8. Hilled area in Southern extent of Project Area (View West)

CONCLUSIONS AND RECOMMENDATIONS

The Phase I cultural resource assessment of the Project Area included a CHRIS records search, NAHC outreach, background research, and a field pedestrian survey. The records search results indicated no previously recorded resources within the Project Area, however, 55 resources are located within 1-mile of the Project Area, including a multitude of prehistoric sites within a ½-mile radius of the Project Area. The intensive modification and disturbance associated with construction of nearby residential buildings, structures, and roadways, and grading and surface modification of the Project Area, has eradicated any near-surface record of prehistoric, ethnohistoric, or historic-era behavioral activities that may have otherwise been preserved as archaeological sites, deposits or features. While not visible at the surface, archaeological features and resources may have subsurface components that could be revealed during construction of the proposed Project. Based on the results of the cultural resources search and survey, the proposed Project Area is considered to have a moderate to low sensitivity for presence of prehistoric or historical archaeological deposits or features. At this point, MCC recommends that ***No Mitigation is Needed***. While we do not recommend additional mitigation, MCC highly recommends setting a plan in place to expediently address inadvertent discoveries and human remains (as described below), should these be encountered during construction.

In the event that cultural resources are inadvertently discovered during ground-disturbing activities, work must be halted within 100 feet of the find until it can be evaluated by a qualified archaeologist. Construction activities could continue in other areas. If the discovery proves to be significant, additional work, such as data recovery excavation or fossil recovery, may be warranted and would be discussed in consultation with the appropriate regulatory agency(ies).

Procedures of conduct following the discovery of human remains on non-federal lands have been mandated by California Health and Safety Code §7050.5, PRC §5097.98 and the California Code of Regulations (CCR) §15064.5(e). According to the provisions in CEQA, should human remains be encountered, all work in the immediate vicinity of the burial must cease, and any necessary steps to insure the integrity of the immediate area must be taken. The Riverside County Coroner will be immediately notified. The Coroner must then determine whether the remains are Native American. If the Coroner determines the remains are Native American, the Coroner has 24 hours to notify the NAHC, who will, in turn, notify the person they identify as the most likely descendent (MLD) of any human remains. Further actions will be determined, in part, by the desires of the MLD. The MLD has 48 hours to make recommendations regarding the disposition of the remains following notification from the NAHC of the discovery. If the MLD does not make recommendations within 48 hours, the owner shall, with appropriate dignity, reinter the remains in an area of the property secure from further disturbance. Alternatively, if the owner does not accept the MLD's recommendations, the owner or the descendent may request mediation by the NAHC.

CERTIFICATION: I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Date: June 11, 2019

Signed: 

Printed Name: **Tria Belcourt, M.A., RPA, Qualified Riverside County Archaeologist**
Principal Investigator and Owner, Material Culture Consulting

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2013 *Historical/Archaeological Resources Survey Report Assessor's Parcel No. 486-280-043 City of Moreno Valley, Riverside County, California.* Prepared for Winchester Associates, Inc.

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1967 "Cultural Tradition and Ecological Adaptation on the Southern California Coast". In Archaic Prehistory in the Western United States, edited by C. Irwin-Williams, pp. 1-14. Eastern New Mexico University Contributions in Anthropology 1(3).

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Appendix A:
Qualifications

Tria Belcourt, M.A., RPA
President and Principal Investigator

MATERIAL CULTURE CONSULTING

Tria Belcourt oversees and is responsible for the entire work process at Material Culture Consulting. She is responsible for planning, supervising, and overseeing field projects, including responsibility for the professional quality of evaluations and recommendations. Tria has primary accountability for the technical completeness and competence of work conducted by her staff. She is responsible for development of work plans and/or research designs, for performance of crew chiefs, for selection standards and limitations on work assignments of crew members, for analysis and interpretation of field data, for integration of fieldwork results into comparative regional perspectives, and for preparation of reports. Tria's advanced academic training and more than twelve years of professional archaeological experience has included rigorous training and application of anthropological and archaeological theory and methods, and in recording, collecting, handling, analyzing, evaluating, and reporting cultural property data, relative to the type and scope of work proposed.

Tria has been an archaeological project manager and principal investigator for over six years, leading and managing several complex compliance projects throughout the State of California and in Southern Nevada, which have involved each step of cultural resource compliance and management. Prior to this, she spent six years as a field technician and crew chief on projects throughout California and the Southeastern United States. Her experience includes conducting background research, field survey, resource testing and formal NRHP/CRHR evaluation, data recovery plan development and implementation. She has prepared hundreds of technical reports for all of the above to state and federal standards, including following BLM standards for GIS spatial data management and technical reporting – ranging from simple clearance forms, to letter reports, to extensive data recovery reports. She was the lead preparer of the Fort Irwin Integrated Cultural Resource Management Plan (2009-2013) and has also prepared several cultural resource management plans for state regulated projects. She has overseen and conducted archaeological monitoring and management of unanticipated discovery of resources, including Native American human remains on federal lands (and repatriation of the remains), and reported the results and outcomes of cultural resource monitoring efforts in lengthy technical reports. Finally, Tria regularly provides third party and QA/QC review of cultural resource technical documents, due to her keen understanding of state and federal regulations and laws governing the management of cultural resources throughout the state of California.

Education

2014 Graduate Certificate in Environmental Management of Military Lands, Colorado State University
2010 Professional Certification in CEQA/NEPA, ICF International Corporation
2009 M.A. in Anthropology, University of Florida Gainesville, Florida
Professional Certification in GIS
2006 B.A. in Anthropology, Magna Cum Laude, University of California, Los Angeles, California

Affiliations/Certifications/Training

- Archaeological Institute of America (AIA)
- Society for Historical Archaeology (SHA)
- Society for California Archaeology (SCA)

Utility Sector Experience

Pacific Gas and Electric Company (PG&E), NERC Alert Program – Archaeological Principal Investigator; throughout California; 2015 – Present. Belcourt provides oversight of all task orders and project management of on-call task orders involving cultural resource desktop reviews, records searches and field reviews for the PG&E NERC Alert program: tracking and reporting efforts, maintaining project schedule, and timely submittal of data to prime contractor (ARCADIS).

Southern California Edison (SCE), On-Call and Emergency Projects – Archaeological Principal Investigator and Project Manager; throughout California, 2013 – Present. Belcourt provides oversight of all task orders and project management of on-call task orders involving cultural resource desktop reviews, records searches and field reviews for deteriorated poles, system upgrades, initial studies to support capital projects, and monitoring support to replace facilities due to natural disasters. This high-volume program includes preparing and submitting budgets, managing support staff and overseeing work, tracking and reporting efforts, maintaining project schedules, and preparing technical reports and GIS datasets for submittal to prime contractor (SWCA).

Southern California Edison (SCE), Small Capital Projects – Archaeological Principal Investigator and Project Manager; throughout California, 2014 – Present. Belcourt provides oversight of all task orders and project management of task orders involving cultural resources for this contract with ICF. This includes preparing and submitting budgets, managing support staff and overseeing work, tracking and reporting efforts, maintaining project schedule, and preparing technical reports and GIS datasets for submittal to prime contractor.

Southern California Edison (SCE), Coolwater Lugo Transmission Project –– Environmental Project Manager; San Bernardino County, California; 2014 – 2015. Belcourt provided oversight of all project management on CWLTP: tracking and reporting efforts of subconsultants (Pacific Legacy, Paleo Solutions and Urbana Preservation and Planning), maintaining project schedule and timely submittal of project deliverables to agency reviewers. Served as communication facilitator between SCE and BLM/CPUC agency reviewers. Provided final review of the Cultural Resources Technical Report (which included over 1,000 cultural resources) and the Historic Built Environment Report - prior to draft submittal to BLM.

SCE, Eldorado Ivanpah Transmission Project – In-house Consultant for Archaeology; San Bernardino County, California and Clark County, Nevada; 2010-2012. Belcourt provided complex regulatory oversight and project management regarding cultural and paleontological resource management. She developed cultural resource specific compliance training to inform and guide construction activities and major capital project teams. She also developed and implemented internal cultural resource management programs based on the mitigation measures in the FEIR/EIS. Tria coordinated with BLM archaeologists on discovery and management of previously unknown cultural resources discovered during construction, and managed the treatment of these resources and reporting. She provided environmental analyses, technical reports, and clearance documentation for over 20 project modifications during construction without delay to project. Developed the cultural resources geodatabase for EITP and coordinated regularly with the project GIS team.

Silver State South Substation, In-house Consultant for Archaeology; Southern California Edison, Clark County, NV; 2010-2012. Provided regulatory oversight and project management regarding cultural and paleontological resource management during project licensing and scoping. Identified potential impacts to cultural and paleontological resources, developing appropriate mitigation measures in preparation for and projecting alternative conclusions.

Tehachapi Renewable Transmission Project, Multiple Roles; Southern California Edison, Segments 1-3 and Segments 6-11, Kern, Los Angeles and Orange County, CA; 2009 - Present. Tria provided service to this project over seven years in multiple roles – archaeological field monitor, project coordinator, in-house consultant at SCE, and principal investigator. She provided regulatory oversight and project management regarding cultural and paleontological resource management for all segments of TRTP. Developed and implemented internal cultural resource management programs based on the mitigation measures in the Final Environmental Impact Report/Environmental Impact Statement (FEIR/EIS) for TRTP, and for the existing Special Use Permits and Record of Decision for TRTP, issued by the Angeles National Forest (ANF). Oversaw preparation of the Historic Properties Treatment Plans, fieldwork and technical report preparation for two large-scale Phase III Data Recovery excavations on Angeles National Forest. Coordinated with ANF archaeologists on discovery and management of previously unknown cultural resources identified during construction. Provided cultural resources analyses and clearance documentation, including technical reports, for over 100 project modifications during construction without delay to project. Finally, Tria was responsible for maintaining the geospatial data for the project within the SCE cultural resources geodatabase TRTP and coordinated with the project GIS team.

Desert Tortoise Habitat Conservation Plan Area, Principal Investigator; Cadiz Inc., San Bernardino County, CA; 2013. Oversaw records search to identify the extent of previous cultural resources surveys and all previously recorded prehistoric and historic resources within the 7,500-acre Desert Tortoise Habitat Conservation Plan (HCP) area (Project Area) located on lands administered by the BLM Needles Field Office in unincorporated San Bernardino County, California.

Water Sector

OC-44 Pipeline Rehabilitation/Replacement, Mesa Water District, Newport Beach, Orange County, CA; 2014. Conducted a Phase I Cultural Resources Assessment to determine the potential for adverse effects to historic properties during rehabilitation and replacement of the pipeline beneath San Diego Creek, between Jamboree Road and MacArthur Blvd. Records search, Sacred Lands search, NAHC consultation, intensive-level pedestrian survey and GIS mapping of the APE with negative results. Archaeology Project Manager and Principal Investigator and author of technical report.

Ames/Reche Groundwater Storage and Recovery Program, Winters Road Flow Control and Recharge Facility, Mojave Water Agency, Landers, San Bernardino County, CA; 2013. Oversaw intensive cultural and paleontological pedestrian survey of a limited portion of the larger project along Winters Road between Warren Vista Avenue and Pipes Wash, as required by mitigation measures listed in the CEQA Initial Study (IS) and Mitigated Negative Declaration for the Project (MND) (Bighorn Desert View Water Agency 2010). Archaeology and Paleontology Project Manager and Principal Investigator, and author of technical report.

Street and Storm Drain Improvements, Jackson Avenue Bridge at Warm Springs Creek, City of Murrieta, Riverside County, CA; 2014. Oversaw cultural and paleontological monitoring efforts and production of monthly monitoring reports during construction of a new bridge traversing Warm Springs Creek, pursuant to the mitigation measures listed in the Mitigated Negative Declaration and associated Mitigation Monitoring Plan for the Project. Archaeology Project Manager and Principal Investigator and author of technical report.

Housing and Private Development Sector

Bloomington Affordable Housing Project, Bloomington, San Bernardino County, CA; 2013. Oversaw cultural survey and literature review for the project, pursuant to requirements of federal and state guidelines for archaeology and historic preservation. The Bloomington Affordable Housing Project received federal funding by the United States Department of Housing and Urban Development (HUD). Archaeology Project Manager and Principal Investigator and author of technical report.

Arbor Green Apartments, Affirmed Housing Group, Carson, Los Angeles County, CA; 2013. Oversaw all monitoring efforts, and data recovery of discovered resources for an HUD affordable housing development project. Archaeology Project Manager and Principal Investigator and author of monitoring and data recovery reports.

Transportation Sector

Los Angeles County Metropolitan Transportation Authority (Metro), Los Angeles County, California; 2014 - Present. Provided archaeological and paleontological services for multiple task orders involving preparation of Mitigation Plans, Evaluation Reports, Mitigation Reports, and construction monitoring for infrastructure improvements. Projects include: Regional Connector (60336473), Crenshaw (60327167), and Division 13 (60323604). Worked as a subconsultant with AECOM. Principal Investigator and Project Manager.

Federal Sector

Bodie Hills Cultural Resources Surveys, Desert Restoration Projects, Bureau of Land Management, Bishop Field Office, Mono County, CA; FY13-14 and FY14-15. Class III Cultural Resources Inventory survey of over 6,000 acres of BLM land identified for vegetation management. Work includes records search, intensive pedestrian survey, archaeological resource inventory and NRHP site evaluations, and a technical report. The survey areas were located between the Town of Bridgeport and Lee Vining. Archaeology Principal Investigator.

Desert Tortoise Habitat Conservation Plan Area, Cadiz Inc., San Bernardino County, CA; 2013. Oversaw records search to identify the extent of previous cultural resources surveys and all previously recorded prehistoric and historic resources within the 7,500-acre Desert Tortoise Habitat Conservation Plan (HCP) area (Project Area) located in unincorporated San Bernardino County, California. Principal Investigator and contributing author of technical report.

Fort Irwin, U.S. Army National Training Center/GSA Region 9, San Bernardino County, CA; 2012-2013. Class III Cultural Resources Inventory Survey of 14,332 acres (58 sq. km) and National Register Evaluation of Archaeology Sites east of Goldstone in four survey blocks. The project involved preparation of literature overview, research design and field evaluation guidelines; intensive field survey, site recording and site evaluations to NHPA Section 106 standards. Archaeology Project Manager and Principal Investigator, contributing author of technical and progress reports.

Fort Irwin, U.S. Army National Training Center, San Bernardino County, CA; 2009-2010.
Directed all cultural resource assessments under NEPA and Section 106 of NHPA, including technical reporting of field work (pedestrian surveys, artifact collection and site mapping), formal NRHP evaluation of 50+ archaeological sites, preparation of SHPO consultation letters, and Native American consultation letters. Bureau of Land Management (BLM) Barstow Field Office Coordination and Consultation; led joint SHPO consultation and management efforts for Fort Irwin/NTC for several sites that crossed Fort Irwin and BLM lands and developed and maintained strong working relationship between Fort Irwin/NTC Resource Management Group and BLM Barstow Field Office Resource Management Group. Authored installation guidance documents, including the 2010 Integrated Cultural Resource Management Plan (ICRMP), and the Ft. Irwin/NTC GIS Standard Mapping Procedures. Principal Investigator for Cultural Resources Division, Directorate of Public Works, NTC/Fort Irwin.

Selected Publications

Belcourt, T.

2014- 2016 *Southern California Edison – TRTP Segments 6 and 11C - Cultural Resources Monitoring Report*, Prepared Monthly (October 2014-March 2016) for Angeles National Forest (ANF) and SCE. On file at ANF and SCE Irwindale.

2013 *Cultural and Paleontoloical Resource Assessment for the Ames/Reche Groundwater Storage and Recovery Program, Winters Road Flow Control and Recharge Facility, Mojave Water Agency, Landers, San Bernardino County, California.* Prepared by Cogstone Resource Management, Inc. On file at Mojave Water Agency.

2014 *Cultural and Paleontological Monitoring Compliance Report for Street and Storm Drain Improvements, Jackson Avenue Bridge at Warm Springs Creek, City of Murrieta, Riverside County.* Prepared by Cogstone Resource Management, Inc. On file at City of Murrietta Planning Department.

2014 *Cultural and Paleontological Resource Assessment for the OC-44 Pipeline Rehabilitation and Replacement Project, Mesa Water District, Newport Beach, Orange County, California.* Prepared by Cogstone Resource Management, Inc. On file at Mesa Water District.

2015 *Archaeological Monitoring and Survey Report, Southern California Edison Dead Tree Removal*
near Pine Flat, Tulare County, California. Submitted to SCE and on file at SCE Irwindale.

2015 *Class III Cultural Resources Survey of the Pacific Gas & Electric Company (PG&E) Kerckhoff #1-Kerckhoff #2 115kV and Kerckhoff-Clovis-Sanger 115kV Projects, located on Lands Administered by the Bureau of Land Management (BLM), Bakersfield Field Office, within Fresno County, California*. Prepared on behalf of PG&E and submitted to BLM Bakersfield Office. On file at PG&E, Fresno.

2015 *Class III Cultural Resources Survey of the SCE Shoshone Emergency Response Location, on Lands Administered by the Bureau of Land Management (BLM), Barstow Field Office, within Inyo County, California*. Prepared on behalf of SCE and submitted to BLM Barstow Field Office. On file at SCE Irwindale.

2015 *Cultural Resources Assessment of Effect for Southern California Edison TD835602: Deteriorated Pole Replacement, Sequoia National Park, Three Rivers Area, Tulare County, California.* Prepared on behalf of SCE for Sequoia National Park. On file at SCE Irwindale.

2015 *Cultural Resources Impact Assessment for Southern California Edison TD1037389: Line Extension – Soda Springs 12 kV, Tulare County, California.* Prepared for SCE. On file at SCE Irwindale.

2015 *Cultural Resources Inventory for Southern California Edison's Replacement of Nine Deteriorated Power Structures (TD993840, TD994158, and TD1029116), near Kramer Junction, on Lands Administered by the Bureau of Land Management Barstow Field Office,*

San Bernardino County, California. Prepared on behalf of SCE and submitted to BLM Barstow Field Office. On file at SCE Irwindale.

2015 *Cultural Resources Monitoring for Southern California Edison IO328390: Replace Pole and Upgrade Overhead Switch – Dinkey Creek 4kV (TD721303). Sierra National Forest, High Sierra District, Fresno County, California.* Prepared on behalf of SCE for Sierra National Forest. On file at SCE Irwindale.

2015 *Cultural Resources Survey in Support of a Request for Final Engineering Concurrence for Tehachapi Renewable Transmission Project Segment 8 T/L West (Phase IV) – Erosion Repair Associated with Structure M43-T3, unincorporated Los Angeles County, California*. Submitted to SCE and CPUC. On file at SCE Irwindale.

2015 *Cultural Resources Survey in Support of a Temporary Work Change Request for Wire Setup Sites, Distribution Pole Work Area, and Access Road near Structure M57-T2 for Segment 8, Tehachapi Renewable Transmission Project, unincorporated Los Angeles County, California*. Submitted to SCE and CPUC. On file at SCE Irwindale.

2015 *Results of Faunal Analysis for the Los Angeles Metropolitan Transportation Authority (Metro) Division 13 Bus Maintenance and Operation Facility Construction Project, City of Los Angeles, Los Angeles County, California.* Submitted to Metro. On file at Resource Sciences and Planning, LLC, Monrovia.

2016 *Archaeological Monitoring Compliance Report, Pacific Gas & Electric Company NERC Alert Program, Helms-Gregg 230kV Grading Project, Sierra National Forest, Fresno County, California.* Prepared on behalf of PG&E and submitted to Sierra National Forest. On file at PG&E, Fresno.

2016 *Archaeological Resource Assessment, SCE Infrastructure Replacement- Pickle Meadows 12kV, Toiyabe National Forest, Bridgeport, Inyo County, California.* Prepared on behalf of SCE and submitted to Toiyabe National Forest. On file at SCE, Irwindale.

2016 *Cultural Resources Assessment: 84 Lumber Company Project, City of Lancaster, Los Angeles County, California*. Prepared on behalf of 84 Lumber Company for City of Lancaster. On file at Material Culture Consulting, Claremont.

2016 *Cultural Resources Assessment of Effect for Southern California Edison TD1029531: Deteriorated Pole Replacement on Lands Administered by Bureau of Land Management, Ridgecrest Field Office, near Mojave, Kern County, California.* Prepared on behalf of SCE. On file at SCE Irwindale.

2016 *Cultural and Paleontological Resources Records Searches and Field Survey, Tandis Homes Residential Development, City of Menifee, Riverside County, California*. Prepared for City of Menifee. On file at Material Culture Consulting Claremont.

2016 *Class III Cultural Resources Survey of the Southern California Edison Company Replacement of Thirteen Deteriorated Poles Near Lockhart and Flamingo Heights, on Lands Administered by the Bureau of Land Management, Barstow Field Office, within San Bernardino County, California.* Prepared on behalf of SCE and submitted to BLM Barstow Field Office. On file at SCE Irwindale.

2016 *Phase I Cultural and Paleontological Assessment: Tandis Homes 21 Lot Residential Development Project City of Menifee, Riverside County, California.* Prepared on behalf of Ridgemoor Investments, LLC for City of Menifee Planning Department. On file at Material Culture Consulting, Claremont.

Belcourt, T. and S. Gust

2014 *Class III Cultural Resource Investigations for Bodie Hills Desert Restoration Projects, Bureau of Land Management, Bishop Field Office, Mono County, CA - FY13-14.* Prepared by Cogstone Resource Management, Inc. for BLM Bishop Field Office. On file at BLM Bishop Field Office.

2015 *Class III Cultural Resource Investigations for Bodie Hills Desert Restoration Projects, Bureau of Land Management, Bishop Field Office, Mono County, CA - FY14-15.* Prepared by

Cogstone Resource Management, Inc. for BLM Bishop Field Office. On file at BLM Bishop Field Office.

Belcourt, T., T. Jackson, M.Kay and R. Moritz
2016 *Class III Cultural Resources Inventory for the Southern California Edison Company Kelly Cutover Project (FWA 680-16-07), Volume I – Archaeological Resources, San Bernardino County, California*. Submitted to BLM Barstow Field Office, On file at Resource Sciences and Planning, LLC, Monrovia.

Belcourt, T. and M. Kay
2016 *Southern California Edison Company Replacement of Three Deteriorated Poles Near Fort Irwin, on Lands Administered by the Bureau of Land Management, Barstow Field Office, San Bernardino County, California.* Prepared on behalf of SCE and submitted to BLM Barstow. On file at Resource Sciences and Planning, LLC Monrovia.

Belcourt, T., M. Kay, and R. Moritz
2016 *Cultural Resources Assesment of the State of California Department of General Services and Department of State Hospitals, Metropolitan Hospital, Norwalk, Los Angeles County, CA.* Prepared for DGS/DSH. On file at Resource Sciences and Planning, LLC, Monrovia.

Belcourt, T. and J. Kelly
2016 *Cultural and Paleontological Resources Assessment: Village 605 Environmental Impact Report Addendum, City of Los Alamitos, Orange County, California.* Prepared for City of Los Alamitos on behalf of Katella Property Owner, LLC by Material Culture Consulting, on file at Material Culture Consulting, Claremont.

Belcourt, T., K. Scott and S. Gust
2013 *Paleontological and Archaeological Assessment of the Bloomington Affordable Housing Project, San Bernardino County, California*. Prepared by Cogstone Resource Management, Inc., On file at Cogstone Resource Management, Inc., Orange.

Belcourt, T., M. Valasik, and S. Gust
2013 *Class III Cultural Resource Investigation for the Cadiz Solar Array Desert Tortoise Habitat Conservation Plan Area, on Lands Managed by BLM Needles Field Office, San Bernardino County, CA.* Prepared by Cogstone Resource Management on behalf of Cadiz, Inc.

Daly, P. and T. Belcourt
2016 *Class III Cultural Resources Inventory for the Southern California Edison Company Kelly Cutover Project (FWA 680-16-07), Volume II – Historic Built Environment Resources, San Bernardino County, California*. Submitted to BLM Barstow Field Office, On file at Resource Sciences and Planning, LLC, Monrovia.

Technical Report QA/QC and Third-Party Review (representative selection)

Lamb, Meghan
2016 *Archaeological Resources Monitoring Report: Lot 19 Tustin Legacy (Tustin Air Base) Project, City of Tustin, Orange County, California.* Prepared by Paleo Solutions, Inc., and submitted to City of Tustin, California. On file at Paleo Solutions, Monrovia.

Kelly, J. and G. Aron
2015 *Final Paleontological Monitoring Report: Tehachapi Renewable Transmission Project, Segment 6, Los Angeles County, California*. Prepared for SCE by Paleo Solutions, Inc., and submitted to ANF and CPUC. On file at SCE Irwindale.

Kelly, J. and G. Aron
2015 *Final Paleontological Monitoring Report: Tehachapi Renewable Transmission Project, Segment 7, Los Angeles County, California*. Prepared for SCE by Paleo Solutions, Inc., and submitted to ANF and CPUC. On file at SCE Irwindale.

Kelly, J. and G. Aron
2015 *Final Paleontological Monitoring Report: Tehachapi Renewable Transmission Project, Segment 8, Los Angeles County, California*. Prepared for SCE by Paleo Solutions, Inc., and submitted to ANF and CPUC. On file at SCE Irwindale.

Kelly, J. and G. Aron
2015 *Final Paleontological Monitoring Report: Tehachapi Renewable Transmission Project, Segment 11, Los Angeles County, California*. Prepared for SCE by Paleo Solutions, Inc., and submitted to ANF and CPUC. On file at SCE Irwindale.

Tinsley-Becker, W.
2015 *Cultural Resources Inventory for the SCE Coolwater-Lugo Transmission Project, San Bernardino County, California, Volume 1: Historic-Era Built Environment Survey Report.* Submitted to BLM Barstow Field Office, On file at Resource Sciences and Planning, LLC, Monrovia.

Pacific Legacy, Inc.
2015 *Cultural Resources Inventory for the SCE Coolwater-Lugo Transmission Project, San Bernardino County, California, Volume 2: Archaeological Resources.* Submitted to BLM Barstow Field Office, On file at Pacific Legacy, Inc., Berkeley.

Webster, B.
2016 *Archaeological Monitoring Report: OCTA San Juan Capistrano Rail Side Passing Project, City of San Juan Capistrano, Orange County, California*. Prepared for Earth Mechanics, Inc. by Paleo Solutions, Inc. On file at Paleo Solutions, Monrovia.

Webster, B. and M. Kay
2016 *Archaeological Survey Report for the Southern California Edison Company Replacement of Five Deteriorated Power Poles on an Unnamed Circuit (TD 979272), Topanga State Park, Los Angeles County, California.* Prepared by Paleo Solutions, Inc., on behalf of SCE.
2015 *Archaeological Survey Report for the Southern California Edison Company Replacement of One Deteriorated Power Pole on an Unnamed Circuit (TD 1020522), Topanga State Park, Los Angeles County, California.* Prepared by Paleo Solutions, Inc., on behalf of SCE.
2015 *Archaeological Survey Report for the Southern California Edison Company Replacement of Two Deteriorated Power Poles on the Vicasa 16kv Circuit (TD 1039350), Topanga State Park, Los Angeles County, California.* Prepared by Paleo Solutions, Inc., on behalf of SCE.

Sonia R. Sifuentes, M.Sc., RPA
Senior Archaeologist

MATERIAL CULTURE CONSULTING

Ms. Sifuentes exceeds the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* and has over ten years of experience in conducting archaeological investigations and monitoring in Southern California and Nevada, particularly within the Mojave Desert and southwestern extent of the Great Basin. She has experience with monitoring, salvage, fieldwork, NAHC correspondence and Tribal outreach, record searches and report writing. She is currently listed on MCC's Statewide (CA and NV) BLM CRUPs. She is also identified as a Field Director on several ARPA permits for ongoing work on federal lands such as National Parks and National Forests. Duties include, but are not limited to, recordation and evaluation of historic and prehistoric resources, GIS and GPS-based mapping, excavations, lab work, and reporting. She has successfully managed several large- scale and multi-year archaeological projects, including Phase I surveys, Phase II test excavations, background research, and California Register of Historical Resources/National Register of Historic Places evaluation of historic and prehistoric resources.

Education

2016 S.c Archaeology of the North, Distinction, University of Aberdeen, Aberdeen, UK

2006 ۸. in Anthropology with minors Gender Studies, News Media and Society, University of ıuthern California, Los Angeles, CA

Work History

2017-present: Senior Archaeologist, Material Culture Consulting, Inc
2016-2017: Field Director, PaleoWest Archaeology
2010-2015: Archaeologist, CH2M HILL
2009-2010: Cultural Resource Specialist, SWCA
2008-2009: Cultural and Paleontological Resources Monitor, Cogstone Resource Management, Inc
2008: Archaeological technician, Alpine Archaeological Consultants, Inc
2008: Archaeological technician, University of Iowa Office of the State Archaeology (OSA)

Affiliations/Certifications/Training

Register of Professional Archaeologists (No. 49570530)
Society for California Archaeology (SCA)

Utility Sector Experience

Southern California Edison (SCE) CWA L007 TLRR/ G.O. 131-D Projects – Angeles National Forest, Hungry Valley State Vehicular Recreation Area, Los Padres National Forest, and Private Lands within Los Angeles County, California. Cultural Inventory Survey Assessment (December 2017 – April 2018). The cultural resources scope of work was designed to support the overall environmental analysis of the CWA L007 TLRR / G.O. 131-D Project – Angeles National Forest, Los Padres National Forest, Hungry Valley State Vehicular Recreation Area, and on Private Lands (Project). The survey areas for the Project was along the Pardee-Pastoria and Bailey-Pardee 220 kV circuits, and consisted of 321 poles and 71 work areas, totaling approximately 562 acres. Ms. Sifuentes duties included supervision of two 2-person survey crews throughout the Project's API, compiling any updates for all previously recorded resources within Project's API, application of Collector App to obtain GIS data, and completion of daily paperwork for submittal to prime contractor (SWCA). Additionally, Ms. Sifuentes provided co-authorship of report related to this Project.

SCE Zack Substation Rebuild-Large Capital Projects CWA L002, near Bishop, Mono County, California. On-Call Environmental Services (July 2017 – December 2017). The goal of this project was to increase the capacity of the existing Zack 55/12 kV Substation by replacing, rebuilding, and relocating existing facility components and infrastructure with new equipment inside the substation property and along adjacent Control–Silver Peak "C" 55 kV Subtransmission, Chalifant 12 kV Distribution, and Sagehen 12 kV Distribution circuits. Ms. Sifuentes' duties included monitoring of ground disturbing activities associated with the Project for cultural and paleontological resources, maintaining monitors' field paperwork, coordinating with Native American monitors, construction crews and SCE Project Managers, and daily submittal of construction monitoring reports to prime contractor (SWCA).

SCE Infrastructure Replacement Project, Mebane 12kV Circuit, Sequoia National Forest, Kern County, California. Cultural Resources Study (June 2018 – July 2018). Ms. Sifuentes performed the cultural field survey and co-authored the project letter report.

SCE Infrastructure Replacement Project, Earth 12kV/Nipton 33kV Circuits, Mountain Pass, BLM Needles, San Bernardino County, California. Cultural Resources Study (July 2018-present). Ms. Sifuentes conducted CHRIS records search, performed the cultural field survey, and co-authored the project report.

SCE Infrastructure Replacement Project, Nipton 33kV Circuit, Mountain Pass, BLM Needles, San Bernardino County, California. Cultural Resources Study (July 2018-present). Ms. Sifuentes conducted CHRIS records search, performed the cultural field survey, and co-authored the project report. Cultural resources were identified within the Project boundaries and mitigation measures are currently being development to address impact to these resources.

SCE Infrastructure Replacement Project, Chavez 12kV Circuit, Baker, BLM Needles, San Bernardino County, California. Cultural Resources Study (June 2018-present). Ms. Sifuentes conducted CHRIS records search, performed the cultural field survey, and co-authored the project report. Cultural resources were identified within the Project boundaries and mitigation measures are currently being development to address impact to these resources.

SCE Deteriorated Pole Replace Program, Inyo National Forest, California. Cultural Resources Studies and Monitoring Services (April 2018 – June 2018). Ms. Sifuentes provided monitoring support to multiple deteriorated pole locations within Inyo National Forest. Ms. Sifuentes conducted shovel pit testing for previously recorded resource FS05045200389 located within APE.

SCE Transmission Line Rating and Remediation Project (TLRR) - Kern River 66kV Subtransmission, Kern and Los Angeles Counties, California. Cultural Resource Inventory Assessment (April 2017- present). Ms. Sifuentes supervised a 4-person crew conducting 73-mile linear cultural resource inventory survey of SCE's Kern River 66kV transmission line. Duties include supervision and mobilization of crew during survey work, management of all California DPR-523 forms and GIS data generated during this project, submittal of daily progress reports, and coordinating with prime contractor (Arcadis). Ms. Sifuentes also co-authored survey report.

SCE TLRR G.O. 131-D Evaluation Cottonwood-Savage 115kV Project, Unincorporated San Bernardino County, California. Cultural Resources Study (April 2018-May 2018). Ms. Sifuentes performed portions of the cultural field survey and co-authored the project report.

SCE TLRR G.O. 131-D Evaluation Banning-Zanja 115kV (TD1231024) Project, City of Banning, Riverside County, California. Cultural Resources Study (September 2017). Ms. Sifuentes conducted the CHRIS records search, performed the cultural field survey near Yucaipa and Cherry Valley, CA and co-authored the project report.

SCE TLRR G.O. 131-D Evaluation Banning-Zanja 115kV (TD1275731) Project Yucaipa and Cherry Valley, San Bernardino and Riverside Counties, California. Cultural Resources Study (September 2017). Ms. Sifuentes conducted the CHRIS records search, performed the cultural field survey near Yucaipa and Cherry Valley, CA and co-authored the project report.

SCE TLRR G.O. 131-D Evaluation Project on the Crafton-Mentone-Zanja 115kV Project, Redlands, Mentone, and Yucaipa, San Bernardino County, California. Cultural and Paleontological Resources Studies (July 2017- August 2017). Ms. Sifuentes conducted the paleontological search, performed the cultural field survey, and co-authored the individual cultural and paleontological reports.

SCE Emergency Repairs to Underground Conduit, Chemehuevi Airport, Chemehuevi Indian Reservation, San Bernardino County, California. Cultural Resources Monitoring Services (December 2017). Ms. Sifuentes provided cultural resources monitoring services. During monitoring operations, one isolated prehistoric resource and one small prehistoric resource were observed and documented on California Department of Parks and Recreation (DPR) 523 series forms.

Bechtel Russell City Energy Center, Hayward, Alameda County, California. Cultural Resource Monitoring Services (2011-2012). Ms. Sifuentes' duties including monitoring ground disturbance, coordinating with construction crews, and submittal of construction monitoring reports.

Nextera North Sky River Wind Energy Project and Jawbone Wind Energy Project, Kern County, California. Cultural Resources Inventory (2010). Ms. Sifuentes conducted Phase I survey in Kelso Valley/Tehachapi Mountains, CA.

San Francisco Public Utilities Commission New Irvington Tunnel Project, Pleasanton, California. Cultural Resource Monitoring Services (2010). Ms. Sifuentes' duties including monitoring ground disturbance, coordinating with construction crews, and submittal of construction monitoring reports.

SCE Tehachapi Renewable Transmission Project (TRTP), Segments 1-3A, Kern County, California. Cultural Resource Monitoring Services (2008-2009). Ms. Sifuentes monitored construction throughout Segments 1-3A on TRTP, which extended from Tehachapi at its northern terminus, to Santa Clarita in the southern extent of the project.

TransCanada Pathfinder Project, Colorado and Wyoming. Class I and II Cultural Resources Inventory (September 2008). Ms. Sifuentes conducted Phase I survey along the project route through northwestern Colorado and southwestern Wyoming.

OneOk Piceance Basin Lateral Pipeline Project, Montrose, Colorado. Pre-Construction Archaeological Data Recovery (September 2008- Nov 2008). Ms. Sifuentes participated in Phase III data recovery on in northwestern Colorado.

Rockies Express-East Pipeline Project, Louisiana, Missouri. Archaeological Excavations (July 2008-Aug 2008). Ms. Sifuentes worked on Phase III data recovery for an oil pipeline project.

Housing and Private Development Sector Experience

Rider Commerce Center Project, City of Perris, Riverside County, California. Cultural and Paleontological Assessments (July 2018-present). Ms. Sifuentes conducted CHRIS and paleontological records searches for this project, is facilitating NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the individual cultural and paleontological assessment reports.

Ontario Ranch Commerce Center Project, City of Ontario, San Bernardino County, California. Cultural and Paleontological Assessments (July 2018-present). Ms. Sifuentes conducted paleontological records search for this project, is facilitating NAHC and Native American outreach, and co-authored the combined cultural and paleontological assessment report.

Eagles Nest IV & V Aviation Business Park Project, City of Chino, San Bernardino County, California. Cultural and Paleontological Assessments (July 2018-present). Ms. Sifuentes conducted paleontological records search for this project, is facilitating NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the combined cultural and paleontological assessment report.

Moreno Valley Skilled Nursing Facility Project, City of Moreno Valley, Riverside County, California. Cultural and Paleontological Assessments (May 2018). Ms. Sifuentes' duties included coordination with the Eastern Information Center, overseeing survey progress, conducting NAHC correspondence and Tribal outreach, and co-authored the Phase I reports for both resources.

Mount Vernon Residential Project, City of Riverside, Riverside County, California. Cultural Assessment (September 2017 – October 2017). Ms. Sifuentes conducted CHRIS records search for this project, facilitated NAHC and Native American outreach, performed the cultural field survey, and co-authored the cultural assessment report.

Nittobo America Manufacturing and Office Building Project, City of Murrieta, Riverside County, California. Biological, Cultural, and Paleontological Assessments (January 2018 – July 2018). Ms. Sifuentes conducted the CHRIS and paleontological records searches for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the individual cultural and paleontological assessment reports.

Clinton Keith Mixed Use Development Project, City of Murrieta, Riverside County, California. Cultural and Paleontological Assessments (November 2018-January 2018). Ms. Sifuentes conducted the CHRIS and paleontological records searches for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the individual cultural and paleontological assessment reports.

Cottages at Mission Trail Project, City of Lake Elsinore, Riverside County, California. Cultural and Paleontological Assessments and On-call Cultural Resource Monitoring Services (July 2017-present). Ms. Sifuentes conducted the CHRIS and paleontological records searches for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the individual cultural and paleontological assessment reports. Ms. Sifuentes will be providing on-call cultural resource compliance services in support of the project once construction begins.

South Orange County Community College District Saddleback Stadium Improvement Project, City of Mission Viejo, Orange County, California. On-Call Cultural and Paleontological Resource Monitoring Services (June 2018 – present). Ms. Sifuentes provides cultural and paleontological resource monitoring services, provides laboratory processes help with paleontological resources recovered during ground-disturbing phase of the project, and provides co-authorship for the final cultural and paleontological monitoring reports.

The Retreat Project, Midway City, Orange County, California. On-Call Cultural Resources Monitoring Services (May 2018 – present). Ms. Sifuentes provides cultural resource monitoring services during ground-disturbing phase of the project and provides co-authorship for the final cultural monitoring report.

The Serrano Business Park, Jurupa Valley, Riverside County, California. On-Call Cultural and Paleontological Resource Monitoring Services (May 2018 – present). Ms. Sifuentes provides cultural resource monitoring services during ground-disturbing phase of the project.

Federal Sector Experience

California Department of General Services (DGS), Various Projects throughout California. AB52 Consultation (September 2017 – present). *Ms. Sifuentes has been assisting and coordinating with DGS*
Senior Environmental Planner (Terry Ash) and DGS's list of AB 52 tribes for consultation on the following projects: California Men's Colony Solar Project, California Department of Corrections and Rehabilitation (CDCR) Calipatria State Prison Solar Project, CDCR California State Prison Centinela Solar Project, and
Chino Hills Institute for Women Solar Array Project. Duties include completion of "Notice of Opportunity to Consult" letters, project description write-up and coordination for any meetings with interested parties.

Cultural Resources Inventory Survey of 10,000 Acres on Fort Irwin, San Bernardino County, California. Cultural Resource Inventory Survey (2016 – 2017). Ms. Sifuentes supervised a 5-person crew conducting a 10,000-acre cultural resource survey at Fort Irwin National Training Center, CA. Duties include supervision and mobilization of crew during survey work, management of all California DPR-523 forms and GIS data generated during this project, submittal of daily progress reports, and coordinating and maintaining a positive working relationship with base personnel.

Passport In Time - USDA Forest Service, Los Angeles National Forest, California. Volunteer Archaeology (May 2008). Ms. Sifuentes helped set up and excavated units in the Chilao Flats camp area.

Solar Sector Experience

Ecoplexus California Correctional Institution Solar Project, Tehachapi, Kern County, California. Cultural and Paleontological Assessments (April 2018 – present). Ms. Sifuentes' duties included coordination with South San Joaquin Valley Information Center, overseeing daily progress with survey crew, conducting NAHC and Native American outreach, and co-authoring the combined cultural and paleontological assessment report.

Ecoplexus Ironwood State Prison and Chuckawalla Valley State Prison Solar Project, City of Blythe, Riverside County. Cultural and Paleontological Assessments (June 2018 – present). Ms. Sifuentes conducted CHRIS and paleontological records searches for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, co-authored the combined cultural and paleontological assessment report, and organized site visit between DGS and interested tribal groups.

Ecoplexus California State Prison Centinela Solar Project, City of Imperial, Imperial County, California. Cultural and Paleontological Assessments (August 2017 – April 2018). Ms. Sifuentes conducted CHRIS and paleontological records searches for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the combined cultural and paleontological assessment report.

Ecoplexus Calipatiria State Prison Solar Project, City of Calipatria, Imperial County, California. Cultural and Paleontological Assessments (August 2017 – April 2018). Ms. Sifuentes conducted CHRIS and paleontological records searches for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the combined cultural and paleontological assessment report.

Ecoplexus California Men's Colony Solar Project, San Luis Obispo, San Luis Obispo County, California. Cultural and Paleontological Assessments (August 2017 – January 2018). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, and co-authored the combined cultural and paleontological assessment report.

Ecoplexus RJ Donovan State Prison Solar Project, San Diego, San Diego County, California. Cultural and Paleontological Assessments (March 2018 – April 2018). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, and co-authored the combined cultural and paleontological assessment report.

Ecoplexus Salinas Valley State Prison Solar Project, City of Soledad, Monterey County, California. Cultural and Paleontological Assessments (March 2018 – April 2018). Ms. Sifuentes conducted CHRIS and paleontological records searches for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the combined cultural and paleontological assessment report.

Ecoplexus Correctional Training Facility Soledad Project, City of Soledad, Monterey County, California. Cultural and Paleontological Assessments (March 2018 – April 2018). Ms. Sifuentes conducted CHRIS and paleontological records searches for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the combined cultural and paleontological assessment report.

Ecoplexus Ventura Youth Correctional Facility Solar Project, City of Camarillo, Ventura County, California. Cultural and Paleontological Assessments (May 2017). Ms. Sifuentes performed the cultural and paleontological field survey for this project.

SDG&E Cameron Substation Photovoltaic Project, San Diego, San Diego County, California. Cultural and Paleontological Assessments (September 2017 – present). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, oversaw progress with survey crew, and co-authored the individual cultural and paleontological assessment reports. Cultural resources were identified within the Project boundaries and mitigation measures are currently being development to address impact to these resources.

Forefront Power Beard Solar Project, Dustin Acres, Kern County, California. Cultural and Paleontological Assessments (March 2018- April 2018). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the combined cultural and paleontological assessment report.

Forefront Power Broadman Solar Project, Livermore, Alameda County, California. Cultural and Paleontological Assessments (February 2018- March 2018). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, and co-authored the combined cultural and paleontological assessment report.

Forefront Power Anderson-Coalinga 1-1109 Solar Project, Ora, Fresno County, California. Cultural and Paleontological Assessments (September 2017-October 2017). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, oversaw progress with survey crew, and co-authored the combined cultural and paleontological assessment report.

Forefront Power Anderson-Coalinga 2 Solar Project, City of Coalinga, Fresno County, California. Cultural and Paleontological Assessments (September 2017-October 2017). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, oversaw progress with survey crew, and co-authored the combined cultural and paleontological assessment report.

Forefront Power Anderson-Derrick Solar Project, City of Coalinga, Fresno County, California. Cultural and Paleontological Assessments (September 2017-November 2017). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, oversaw progress with survey crew, and co-authored the combined cultural and paleontological assessment report.

Forefront Power Anderson-Devil's Den Solar Project, Lost Hills, Kern County, California. Cultural and Paleontological Assessments (September 2017-October 2017). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, oversaw progress with survey crew, and co-authored the combined cultural and paleontological assessment report.

Forefront Power Anderson-Dulgarian Solar Project, Lost Hills, Kern County, California. Cultural and Paleontological Assessments (September 2017-October 2017). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, oversaw progress with survey crew, and co-authored the combined cultural and paleontological assessment report.

Forefront Power Anderson-Gates City of Coalinga, Fresno County, California. Cultural and Paleontological Assessments (September 2017-October 2017). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, oversaw progress with survey crew, and co-authored the combined cultural and paleontological assessment report.

Forefront Power Mahal Property Solar Project, City of Selma, Fresno County, California. Cultural and Paleontological Assessments (September 2017-October 2017). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, oversaw progress with survey crew, and co-authored the combined cultural and paleontological assessment report.

Forefront Power Rector Reservoir Solar Facility Project, Napa Valley, Napa County, California. Cultural and Paleontological Assessments (August 2017-September 2017). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, and co-authored the combined cultural and paleontological assessment report.

Forefront Power Nachtigall Solar Project, Wasco, Kern County, California. Cultural and Paleontological Assessments (March 2018-April 2018). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the combined cultural and paleontological assessment report.

Forefront Power Rocha Solar Project, Fuller Acres, Kern County, California. Cultural and Paleontological Assessments (March 2018-April 2018). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the combined cultural and paleontological assessment report.

Forefront Power Shafter Solar Project, City of Shafter, Kern County, California. Cultural and Paleontological Assessments (March 2018-present). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the combined cultural and paleontological assessment report. Cultural resources were identified within the Project boundaries and mitigation measures are currently being development to address impact to these resources.

Forefront Power Anderson Twisselman Solar Project, Lost Hills, Kern County, California. California. Cultural and Paleontological Assessments (March 2018-April 2018). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the combined cultural and paleontological assessment report.

Forefront Power Weedpatch Solar Project, Kern County, California. Cultural and Paleontological Assessments (March 2018-present). Ms. Sifuentes conducted paleontological records search for this project, facilitated NAHC and Native American outreach, performed the cultural and paleontological field survey, and co-authored the combined cultural and paleontological assessment report. Cultural resources were identified within the Project boundaries and mitigation measures are currently being development to address impact to these resources.

Peak Valley Solar Project, Kramer Junction, San Bernardino County, California. Cultural Resources Inventory (April 2017). Ms. Sifuentes' duties include supervision and mobilization of survey crew, management of all California DPR-523 forms and GIS data generated during this project, and submittal of daily progress reports.

Mojave Solar Project, San Bernardino County, California. Cultural Resources Monitoring Services (2013-2015). Ms. Sifuentes assisted the Field Director with mobilization of both cultural monitors and Native American monitors during construction excavations for the Project in Hinkley, CA. Duties included maintaining monitors' field paperwork, coordinating with construction crews, and daily submittal of construction monitoring reports.

Hidden Hills Solar Electric Generating System Power Plant Project, Clark County, Nevada. Cultural Resource Assessment (2013). Ms. Sifuentes conducted Phase I surveys of the nearly 400-acre project area near Pahrump.

Transportation Sector Experience

Sand Creek Byway/U.S. 95 Sandpoint Archaeology Project, Sandpoint, Idaho. Archaeological Artifact & Data Reporting (2009-2010). Ms. Sifuentes' duties included cataloged of historical artifacts found within Phase II excavations within Microsoft Access, researching composition, identification, function and date range for artifacts, proper cleaning and preparation of artifacts and writing brief reports on individual artifacts and classes of artifacts.

Selected Publications

Sifuentes, S. and T. Belcourt
2018 *Phase I Cultural Assessment: Moreno Valley Skilled Nursing Facility Project, City of Moreno Valley, Riverside County, California.* Prepared on behalf of T&C International Health, Inc.

2018 *Cultural Resources Report for SCE TLRR G.O. 131-D Evaluation Project Cottonwood-Savage 115kV Transmission Line: Town of Apple Valley, Census Designated Place (CDP) Lucerne Valley, and Unincorporated San Bernardino County, California.* Prepared on behalf of Southern California Edison.

2018 *Cultural Resources Inventory Report: Southern California Edison Company Transmission Line Rating and Remediation Program Pardee-Pastoria-Warne 220kv Circuit Located On Private Lands And Lands Managed By The United States Department Of Agriculture Angeles National Forest, Los Angeles County, California (ARR #05-01-01301).* Prepared on behalf of Southern California Edison.

2018 *Phase I Cultural Resources Assessment: Nittobo America Manufacturing and Office Building Project, City of Murrieta, Riverside County, California.* Prepared on behalf of Nittobo America, Inc.

2017 *Cultural Resources Inventory: Southern California Edison Company Transmission Line Rating And Remediation Project, Kern River 66kv, Los Angeles And Kern Counties, California.* Prepared on behalf of Southern California Edison.

2017 *Southern California Edison (SCE) Transmission Line Rating and Remediation Project (TLRR) G.O. 131-D Evaluation Program, Banning-Zanja 115kV – TD2131024 and TD127531 Projects, San Bernardino and Riverside Counties, California.* Prepared on behalf of Southern California Edison.

2017 *Cultural Resources Report for TLRR G.O. 131-D Evaluation Project on the Crafton-Mentone-Zanja 115kV Project, Redlands, Mentone, and Yucaipa, San Bernardino County, California*. Prepared on behalf of Southern California Edison.

2017 *Phase I Cultural Resources Assessment: Cottages at Mission Trail Project, City of Lake Elsinore, Riverside County, California.* Prepared on behalf of Civic Partners-Elsinore, LLC.

2017 *Southern California Edison (SCE) Transmission Line Rating and Remediation Project (TLRR) Geotechnical Staking, Kern Inyo, and San Bernardino County, California and Clark County, Nevada, Letter Report for Cultural Resources Survey.* Prepared on behalf of Southern California Edison.

Sifuentes, S., T. Belcourt, and J. Kelly

2018 *Phase I Paleontological Assessment: Moreno Valley Skilled Nursing Facility Project, City of Moreno Valley, Riverside County, California.* Prepared on behalf of T&C International Health, Inc.

2018 *Phase I Cultural and Paleontological Assessment: Beard Solar Project CA-17-0135, near the Community of Dustin Acres, Taft, Kern County, California.* Prepared on behalf of Forefront Power.

2018 *Phase I Cultural and Paleontological Assessment: Broadman Solar Project Ca-17-0158, near the Community Of Ulmar, Livermore, Alameda County, California.* Prepared on behalf of Forefront Power.

2018 *Phase I Cultural and Paleontological Assessment: Rocha Solar Project CA-17-0149, near the Community of Fuller Acres, Bakersfield, Kern County, California.* Prepared on behalf of Forefront Power.

2018 *Phase I Cultural and Paleontological Assessment: Shafter Solar Project CA-17-0096, located in City of Shafter, Kern County, California.* Prepared on behalf of Forefront Power.

2018 *Phase I Paleontological Resources Assessment: Nittobo America Manufacturing and Office Building Project, City of Murrieta, Riverside County, California.* Prepared on behalf of Nittobo America, Inc.

2017 *Cultural and Paleontological Assessment: California Men's Colony Solar Facility Project, San Luis Obispo, San Luis Obispo County, California.* Prepared on behalf of Ecoplexus, Inc

2017 *Cultural and Paleontological Assessment: Anderson-Derrick Solar Project CA-17-0100 near the City of Coalinga, Fresno County, California*. Prepared on behalf of Forefront Power.

2017 *Cultural and Paleontological Assessment: Mahal Property Solar Project CA-17-0018 in the City of Selma, Fresno County, California.* Prepared on behalf of Forefront Power.

2017 *Cultural and Paleontological Assessment: Anderson-Coalinga 1-1109 Solar Project CA-17-0106 in Ora, Unincorporated Fresno County, California.* Prepared on behalf of Forefront Power.

2017 *Cultural and Paleontological Assessment: Anderson-Coalinga 2 Solar Project CA-17-0122 near the City of Coalinga, Fresno County, California.* Prepared on behalf of Forefront Power.

2017 *Cultural and Paleontological Assessment: Anderson-Gates Solar Project CA-17-0102 near the City of Coalinga, Fresno County, California.* Prepared on behalf of Forefront Power.

2017 *Cultural and Paleontological Assessment: Anderson-Devil's Den Solar Project CA-17-0101 near Lost Hills, Kern County, California.* Prepared on behalf of Forefront Power.

2017 *Cultural and Paleontological Assessment: Anderson-Dulgarian Solar Project CA-17-0090 near Lost Hills, Kern County, California.* Prepared on behalf of Forefront Power.

2017 P*hase I Cultural Resources Assessment: Mount Vernon Residential Project, City of Riverside, Riverside County, California.* Prepared on behalf of Forefront Power.

2017 *Cultural and Paleontological Assessment: Rector Reservoir Solar Facility Project, Napa Valley, Napa County, California.* Prepared on behalf of Forefront Power.

2017 *Cultural and Paleontological Assessment: California Department of Corrections and Rehabilitation California State Prison Centinela Solar Project, City of Imperial, Imperial County, California.* Prepared on behalf of Ecoplexus, Inc.

2017 *Cultural and Paleontological Assessment: California Department of Corrections and Rehabilitation Calipatria State Prison Solar Project, City of Calipatria, Imperial County, California.* Prepared on behalf of Ecoplexus, Inc

2017 *Cultural and Paleontological Assessment: Magnolia Tank Farm Project, City of Huntington Beach, Orange County, California.* Prepared on behalf of SLF-HB Magnolia, LLC.

2017 *Paleontological Resources Report for TLRR G.O. 131-D Evaluation Project on the Crafton-Mentone-Zanja 115kV Project, Redlands, Mentone, and Yucaipa, San Bernardino County, California*. Prepared on behalf of Southern California Edison.

2017 *Phase I Paleontological Resources Assessment: Cottages at Mission Trail Project, City of Lake Elsinore, Riverside County, California*. Prepared on behalf of Civic Partners-Elsinore, LLC.

TECHNICAL REPORT QA/QC AND THIRD-PARTY REVIEW

2018 *Phase I Cultural Resources Assessment: Metro at Buckingham Senior Housing Project, City of Los Angeles, Los Angeles County, California.* Prepared on behalf of Meta Housing Corporation.

2018 *Letter Report for Cultural Resources Monitoring for Southern California Edison's Grid Reliability and Maintenance (GRM) Program – Sundown 12kV Distribution Substation Project on Private Lands near Helendale, San Bernardino County, California.* Prepared on behalf of Southern California Edison.

2017 *Anaheim Residential Project, City of Anaheim, Orange County, California, Letter Report for Cultural and Paleontological Resources Records Searches.* Prepared on behalf of SLF-AREP IV South Street, LLC.

CONFERENCE PRESENTATIONS

2016 In the Name of the Father, Son, and Thor? A preliminary examination of early Christian conversion in Norse Greenland. Presentation at the 2016 University of Aberdeen Internal Master Conference in Aberdeen, Scotland

2010 Pressed Clothes or Pressed Glass? A preliminary examination of press-molded glass at a Chinese Laundry. Presentation at the 63rd Northwest Anthropology Conference in Ellensburg, WA.

Appendix B:
(CONFIDENTIAL) CHRIS Maps

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: Moreno Valley Kia

County: Riverside

USGS Quadrangle Name: Sunnymead

Township: 03S **Range:** 03W **Section(s):** 02

Company/Firm/Agency: Material Culture Consulting, Inc.

Street Address: 2701-B N. Towne Ave

City: Pomona **Zip:** 91767

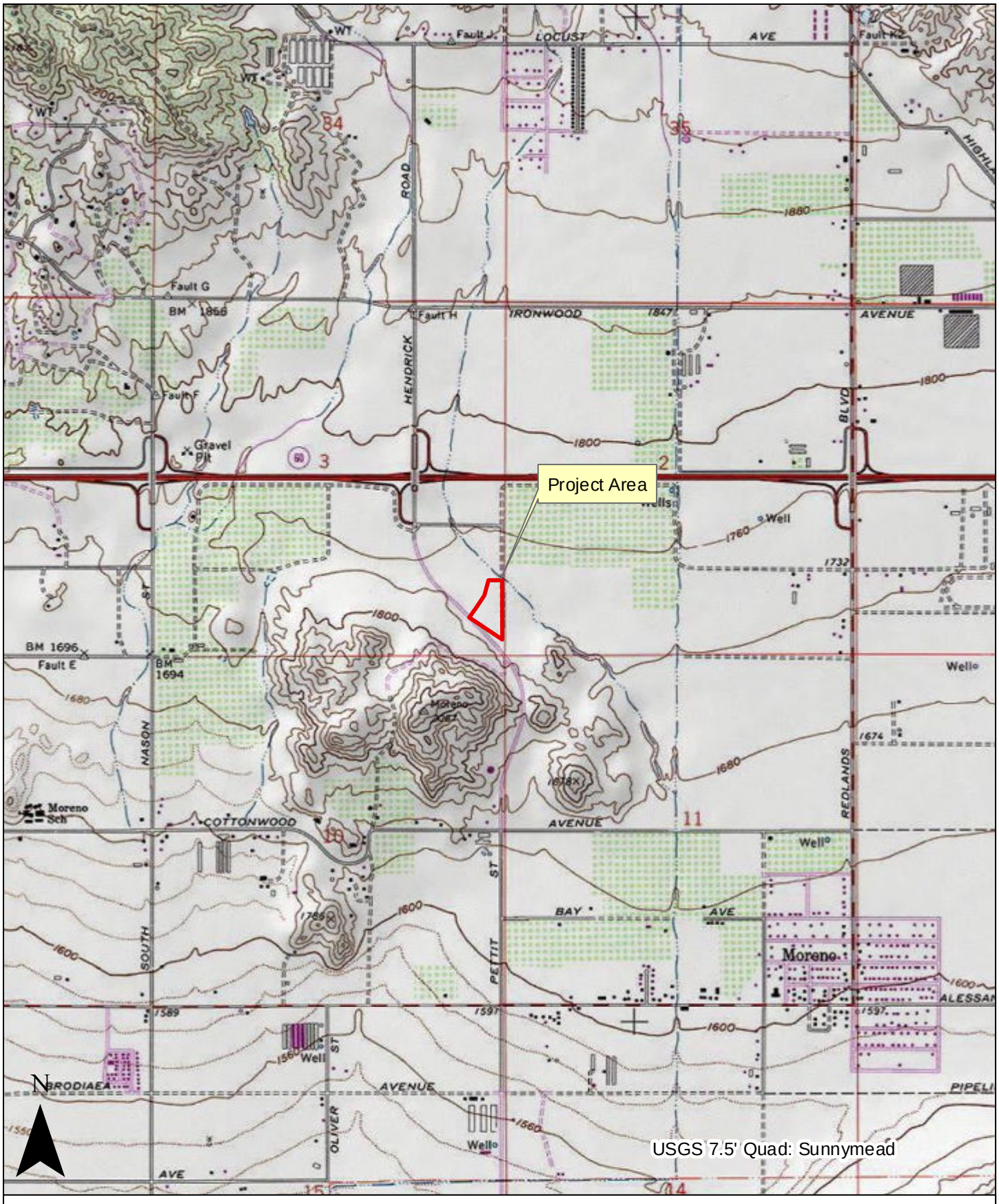
Phone: 626-205-8279

Fax: 626-249-0479

Email: tria@materialcultureconsulting.com

Project Description:

The project proposes the construction of a new commercial use area in Moreno Valley, CA. Please see the attached 24k topo map for a detailed location of the project area.



STATE OF CALIFORNIA **Gavin Newsom, Governor**

NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone: (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov
Twitter: @CA_NAHC

February 7, 2019

Julia Carvajal
Material Culture Consulting

VIA Email to: tria@materialcultureconsulting.com

RE: Moreno Valley Kia Project, Riverside County

Dear Ms. Carvajal:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

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 lists contain current information. If you have any questions or need additional information, please contact me at my email address: steven.quinn@nahc.ca.gov.

Sincerely,

Steven Quinn
Associate Governmental Program Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Riverside County
2/7/2019

Agua Caliente Band of Cahuilla Indians
Patricia Garcia-Plotkin, Director
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264 — Luiseno
Phone: (760) 699 - 6907
Fax: (760) 699-6924
ACBCI-THPO@aguacaliente.net

Agua Caliente Band of Cahuilla Indians
Jeff Grubbe, Chairperson
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264 — Luiseno
Phone: (760) 699 - 6800
Fax: (760) 699-6919

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

Los Coyotes Band of Cahuilla and Cupeño Indians
John Perada, Environmental Director
P. O. Box 189 — Cahuilla
Warner Springs, CA, 92086
Phone: (760) 782 - 0712
Fax: (760) 782-2730

Los Coyotes Band of Cahuilla and Cupeño Indians
Shane Chapparosa, Chairperson
P.O. Box 189 — Cahuilla
Warner Springs, CA, 92086-0189
Phone: (760) 782 - 0711
Fax: (760) 782-0712
Chapparosa@msn.com

Morongo Band of Mission Indians
Denisa Torres, Cultural Resources Manager
12700 Pumarra Rroad — Cahuilla
Banning, CA, 92220 — Serrano
Phone: (951) 849 - 8807
Fax: (951) 922-8146
dtorres@morongo-nsn.gov

Morongo Band of Mission Indians
Robert Martin, Chairperson
12700 Pumarra Rroad — Cahuilla
Banning, CA, 92220 — Serrano
Phone: (951) 849 - 8807
Fax: (951) 922-8146
dtorres@morongo-nsn.gov

Ramona Band of Cahuilla
Joseph Hamilton, Chairperson
P.O. Box 391670 — Cahuilla
Anza, CA, 92539
Phone: (951) 763 - 4105
Fax: (951) 763-4325
admin@ramonatribe.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 Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Moreno Valley Kia Project, Riverside County.

Native American Heritage Commission
Native American Contact List
Riverside County
2/7/2019

Ramona Band of Cahuilla
John Gomez, Environmental Coordinator
P. O. Box 391670 — Cahuilla
Anza, CA, 92539
Phone: (951) 763 - 4105
Fax: (951) 763-4325
jgomez@ramonatribe.com

Santa Rosa Band of Cahuilla Indians
Steven Estrada, Chairperson
P.O. Box 391820 — Cahuilla
Anza, CA, 92539
Phone: (951) 659 - 2700
Fax: (951) 659-2228
mflaxbeard@santarosacahuilla-nsn.gov

Soboba Band of Luiseno Indians
Scott Cozart, Chairperson
P. O. Box 487 — Cahuilla
San Jacinto, CA, 92583 — Luiseno
Phone: (951) 654 - 2765
Fax: (951) 654-4198
jontiveros@soboba-nsn.gov

Soboba Band of Luiseno Indians
Joseph Ontiveros, Cultural Resource Department
P.O. BOX 487 — Cahuilla
San Jacinto, CA, 92581 — Luiseno
Phone: (951) 663 - 5279
Fax: (951) 654-4198
jontiveros@soboba-nsn.gov

Torres-Martinez Desert Cahuilla Indians
Michael Mirelez, Cultural Resource Coordinator
P.O. Box 1160 — Cahuilla
Thermal, CA, 92274
Phone: (760) 399 - 0022
Fax: (760) 397-8146
mmirelez@tmdci.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 Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Moreno Valley Kia Project, Riverside County.

Name/Affiliation	Date and Method of 1st Contact	Date of 1st Follow Up Attempt	Date of 2nd Follow-Up Attempt	Results	MCC Response
Patricia Garcia-Plotkin, Director Agua Caliente Band of Cahuilla Indians	February 9, 2019- letter via USPS	Not Necessary	Not Necessary	On February 13, 2019, email received with letter from Lucy Padilla, Archaeological Technician-The Project Area is not located within the boundaries of the ACBCI Reservation, but within the Tribe's Traditional Use Area. ACBCI defers to both Soboba and Morongo Band of Mission Indians and concludes their consultation efforts.	
Jeff Grubbe, Chairperson Agua Caliente Band of Cahuilla Indians	February 9, 2019- letter via USPS	Not Necessary	Not Necessary	See response above	
Amanda Vance, Chairperson Augustine Band of Cahuilla Mission Indians	February 9, 2019- letter via USPS	February 25, 2019 via email	Not Necessary	Letter received on Feb 28, 2019 from Victoria Martin, Tribal Secretary: At the time, the Tribe is unaware of specific cultural resources that may be affected by the proposed Project. They encourage contact other Native American Tribes/individuals within the immediate vicinity of the Project site that may have specific information concerning cultural resources; to contract with a monitor who is qualified in Native American resources to be present onsite full-time during pre-construction and construction of the Project and to be notified immediately of any cultural resources discoveries during the development of the Project.	
Doug Welmas, Chairperson Cabazon Band of Mission Indians	February 9, 2019- letter via USPS	Not Necessary		On February 21, 2019, letter from Judy Strapp, Director of Cultural Affairs, was received via USPS- The Project is located outside the Tribe's current reservation boundaries and the Tribe has no specific archival information on the site indicating that it may be a sacred/religious site or other site of Native American traditional cultural value.	
Daniel Salgado, Chairperson Cahuilla Band of Indians	February 9, 2019- letter via USPS	February 25, 2019 via email		On February 25, 2019 Bobby Ray Esparza sent a response via email. Mr. Esparza informed us that the project is within a Cahuilla Traditional Use Area and requests tribal monitors be present at all stages going forward.	
John Perada, Environmental Director Los Coyotes Band of Cahuilla and Cupeño Indians	February 9, 2019- letter via USPS	February 25, 2019 via email	March 15, 2019 via email		No response as of March 19, 2019

Shane Chapparosa, Chairperson Los Coyotes Band of Cahuilla and Cupeño Indians	February 9, 2019- letter via USPS	February 25, 2019 via email	March 15, 2019 via email		No response as of March 19, 2019
Denisa Torres, Cultural Resources Manager Morongo Band of Mission Indians	February 9, 2019- letter via USPS	February 25, 2019 via email	Not Necessary	On February 28, 2019, email received from Travis Armstrong, Tribal Historic Preservation Officer: Tribe has no information to provided to MCC but will offer additional information during the AB 53 consultation process. Tribe also request to be notified in advance of field survey date.	
Robert Martin, Chairperson Morongo Band of Mission Indians	February 9, 2019- letter via USPS	February 25, 2019 via email	Not Necessary	See response above	
Joseph Hamilton, Chairperson Ramona Band of Cahuilla	February 9, 2019- letter via USPS	February 25, 2019 via email	March 15, 2019 via email		No response as of March 19, 2019
John Gomez, Environmental Coordinator Ramona Band of Cahuilla	February 9, 2019- letter via USPS	February 25, 2019 via email	March 15, 2019 via email		No response as of March 19, 2019
Steven Estrada, Chairperson Santa Rosa Band of Cahuilla Indians	February 9, 2019- letter via USPS	February 25, 2019 via email	March 15, 2019 via email		No response as of March 19, 2019

Scott Cozart, Chairperson Soboba Band of Luiseño Indians	February 9, 2019- letter via USPS	February 25, 2019 via email	Not Necessary	On March 12, MCC received an email containing a letter from Joseph Ontiveros, Tribal Historic Preservation Officer for Soboba Band of Luiseño Indians. Mr. Ontiveros stated that the Project Area location is considered to be culturally sensitive by the people of Soboba. The location is in proximity to known sites and a shared use area that was used in ongoing trade between the tribes. The Soboba Tribe has multiple areas of potential impact identified within their in-house database search. They request to initiate consultation with the Project proponents and lead agency, for transfer of information to Soboba regarding the progress of the Project to be done as soon as new developments occur, and for Soboba to act as a consulting tribal entity for the Project. They also request that Native American monitor(s) from Soboba's Cultural Resource Department be present during any ground disturbing proceedings, including surveys and archaeological testing and request all proper procedures be taken and request of the Tribe be honored	
Joseph Ontiveros, Cultural Resource Department Soboba Band of Luiseño Indians	February 9, 2019- letter via USPS	February 25, 2019 via email	Not Necessary	See response above	
Michael Mirelez, Cultural Resource Coordinator Torres-Martinez Desert Cahuilla Indians	February 9, 2019- letter via USPS	February 25, 2019 via email	March 15, 2019 via email		No response as of March 19, 2019

February 8, 2019

Example Letter

RE: Proposed Moreno Valley Kia Project, City of Moreno Valley; Sunnymead USGS Quadrangle, Riverside County, California.

Greetings,

This Project proposes the construction of a new commercial use area in the City of Moreno Valley, Riverside County, California (see attached map). Material Culture Consulting, Inc (MCC) is conducting the cultural resources review of the project to support preparation of the environmental documents. As part of our background research, we would like to request your input on potential cultural resources within the project area. This request is not part of any formal local, state, or federal consultation process.

Our firm contacted the Native American Heritage Commission (NAHC) on February 4, 2019 to request review of the Sacred Lands File and for a list of tribes with traditional lands and/or cultural places within the area. The NAHC responded on February 7, 2019 stating that the Sacred Lands File review resulted in negative results, and provided your contact information as part of the list. We understand that negative results do not preclude the existence of cultural resources, and that a tribe may be the only source of information regarding the existence of a tribal cultural resource, which is why we are contacting you.

Project Location and Description

The proposed project is located at the intersection of Auto Mall Drive and Moreno Beach Drive, bounded by Auto Mall Drive to west/northwest, Moreno Beach Drive to the south, Pettit Street to the north, and a vacant lot east (see attached map). The area of potential impact (API) includes one parcel that encompass a total of approximately 6.3 acres and located within Section 2 of Township 3 South and Range 3 West (San Bernardino Base Meridian).

Please respond at your earliest convenience if you wish to share any knowledge of cultural resources within or adjacent to the API. Any information, concerns, or recommendations regarding cultural resources within the API can be shared with me via telephone, email, or via standard mail. Thank you very much for your assistance.

Kindest regards,

Tria Belcourt, M.A., RPA
President and Principal Archaeologist
626-205-8279
tria@materialcultureconsulting.com

AGUA CALIENTE BAND OF CAHUILLA INDIANS
TRIBAL HISTORIC PRESERVATION

03-024-2019-003

February 13, 2019

[VIA EMAIL TO:tria@materialcultureconsulting.com]
Material Culture Consulting
Mrs. Tria Belcourt
342 Cucamonga Avenue
Claremont, CA 91711

Re: Moreno Valley Kia

Dear Mrs. Tria Belcourt,

The Agua Caliente Band of Cahuilla Indians (ACBCI) appreciates your efforts to include the Tribal Historic Preservation Office (THPO) in the Moreno Valley Kia 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:

*At this time ACBCI defers to Soboba. This letter shall conclude our consultation efforts.

*At this time ACBCI defers to the Morongo Band of Mission Indians. This letter shall conclude our consultation efforts.

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
Archaeological Technician
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

February 13, 2019

Tria Belcourt, M.A., RPA
President and Principal Archaeologist
Material Culture Consulting, Inc.
2701-B North Towne Avenue
Pomona, CA 91767

Re.: Proposed MORENO VALLEY KIA PROJECT
City of Moreno Valley, Sunnymead USGS Quadrangle
Riverside County, California

Dear Ms. Belcourt:

Thank you for contacting the Cabazon Band of Mission Indians concerning cultural resource information relative to the above referenced project.

The project is located outside of the Tribe's current reservation boundaries. The Tribe has no specific archival information on the site indicating that it may be a sacred/religious site or other site of Native American traditional cultural value.

We look forward to continued collaboration in the preservation of cultural resources or areas of traditional cultural importance.

Best regards,

Judy Stapp
Director of Cultural Affairs

84-245 INDIO SPRINGS PARKWAY • INDIO, CALIFORNIA 92203-3499 • 760.342.2593 • FAX: 760

AUGUSTINE BAND OF CAHUILLA INDIANS

PO Box 846 84-481 Avenue 54 Coachella CA 92236
Telephone: (760) 398-4722
Fax (760) 369-7161
Tribal Chairperson: Amanda Vance
Tribal Vice-Chairperson: William Vance
Tribal Secretary: Victoria Martin

February 19, 2019

Tria Belcourt
Material Culture Consulting
2701-B North Towne Avenue
Pomona, CA 91767

Re: **Proposed Moreno Valley Kia Project, City of Moreno Valley; Sunnymead USGS Quadrangle, Riverside County, California**

Dear Ms. Belcourt-

Thank you for the opportunity to offer input concerning the development of the above-identified project. We appreciate your sensitivity to the cultural resources that may be impacted by your project, and the importance of these cultural resources to the Native American peoples that have occupied the land surrounding the area of your project for thousands of years. Unfortunately, increased development and lack of sensitivity to cultural resources has resulted in many significant cultural resources being destroyed or substantially altered and impacted. Your invitation to consult on this project is greatly appreciated.

At this time we are unaware of specific cultural resources that may be affected by the proposed project. We encourage you to contact other Native American Tribes and individuals within the immediate vicinity of the project site that may have specific information concerning cultural resources that may be located in the area. We also encourage you to contract with a monitor who is qualified in Native American cultural resources identification and who is able to be present on-site full-time during the pre-construction and construction phase of the project. Please notify us immediately should you discover any cultural resources during the development of this project.

Very truly yours,

Victoria Martin

Tribal Secretary

1.d

Julia Carvajal <julia@materialcultureconsulting.com>

Fwd: Proposed Moreno Valley Kia Project, City of Moreno Valley, Sunnymead USGS Quadrangle, Riverside County, CA

1 message

Tria Belcourt <tria@materialcultureconsulting.com> Mon, Feb 25, 2019 at 5:18 PM
To: Sonia Sifuentes <sonia@materialcultureconsulting.com>, Julia Carvajal <julia@materialcultureconsulting.com>

Tria Belcourt, M.A., RPA
President

Material Culture Consulting, Inc.
2701-B North Towne Avenue
Pomona, California 91767
626.205.8279
www.materialcultureconsulting.com

---------- Forwarded message ---------
From: **Cultural Department** <culturaldirector@cahuilla.net>
Date: Mon, Feb 25, 2019, 5:11 PM
Subject: RE: Proposed Moreno Valley Kia Project, City of Moreno Valley, Sunnymead USGS Quadrangle, Riverside County, CA
To: Tria Belcourt <tria@materialcultureconsulting.com>
Cc: anthonymad2002@gmail.com <anthonymad2002@gmail.com>

Dear Ms. Belcourt,

The Cahuilla Band of Indians received your letter of February 25, 2019 regarding the Moreno Valley Kia Project in Riverside County, CA. The Cahuilla Band does not have knowledge of any cultural resources within or near the project area. However this project is within the Cahuilla Traditional Land Use Area, therefore we believe the possibility of cultural resources being unearthed during construction. We request tribal monitors from Cahuilla be present during all ground disturbing activities including all surveys, soil testing, grubbing, grading and trenching and to be notified of all updates and/or changes with the project moving forward. We appreciate your help in preserving Tribal Cultural Resources in your project.

Respectfully,

BobbyRay Esparza
Cultural Coordinator
Cahuilla Band of Indians
Cell: (760)423-2773
Office: (951)763-5549
Fax:(951)763-2808

1.d

Gmail by Google

Sonia Sifuentes <sonia@materialcultureconsulting.com>

Fwd: Moreno Valley KIA Project

Tria Belcourt <tria@materialcultureconsulting.com> Thu, Feb 28, 2019 at 11:52 AM
To: Sonia Sifuentes <sonia@materialcultureconsulting.com>, Julia Carvajal <julia@materialcultureconsulting.com>

Here is the one for the Kia dealership.

Thank you,

Tria Belcourt, M.A., RPA # 917250
President and Principal Archaeologist

Material Culture Consulting, Inc.
Certified DBE/WBE/SBE

2701-B North Towne Avenue
Pomona CA, 91767
Phone: 626-205-8279
Fax: 626-249-0479

www.materialcultureconsulting.com
tria@materialcultureconsulting.com

---------- Forwarded message ---------
From: **Tribal Historic Preservation Office** <thpo@morongo-nsn.gov>
Date: Thu, Feb 28, 2019 at 11:23 AM
Subject: Moreno Valley KIA Project
To: Tria Belcourt <tria@materialcultureconsulting.com>

Hello,

Regarding the above referenced project, we have no information to provide to Material Cultural Consulting but will additional information during the AB 52 consultation process.

If the “cultural resources review” mentioned in the letter includes a survey, we ask to be notified in advance of the survey date.

Thank you for reaching out to our office.

Sincerely,

Travis Armstrong

Tribal Historic Preservation Officer

Morongo Band of Mission Indians

951-755-5259

Email: thpo@morongo-nsn.gov

March 12, 2019

Attn: Tria Belcourt, President, Principal Archaeologist
Material Culture Consulting, Inc.
2701-B North Towne Avenue
Pomona, CA 91767

RE: Proposed Moreno Valley Kia Project – intersection of Auto Mall Drive and Moreno Beach Drive, bounded by Auto Mall Drive to west/northwest, Moreno Beach Drive to the south, Pettit Street to the north, and a vacant lot east – City of Moreno Valley, Riverside County, CA

The Soboba Band of Luiseño Indians appreciates your observance of Tribal Cultural Resources and their preservation in your project. The information provided to us on said project has been assessed through our Cultural Resource Department, where it was concluded that although it is outside the existing reservation, the project area does fall within the bounds of our Tribal Traditional Use Areas. This project location is in proximity to known sites, is a shared use area that was used in ongoing trade between the tribes and is considered to be culturally sensitive by the people of Soboba.

Soboba Band of Luiseño Indians is requesting the following:

1. To initiate a consultation with the project proponents and lead agency.

2. The transfer of information to the Soboba Band of Luiseno Indians regarding the progress of this project should be done as soon as new developments occur.

3. Soboba Band of Luiseño Indians continues to act as a consulting tribal entity for this project.

4. Working in and around traditional use areas intensifies the possibility of encountering cultural resources during the construction/excavation phase. For this reason, the Soboba Band of Luiseño Indians requests that Native American Monitor(s) from the Soboba Band of Luiseño Indians Cultural Resource Department to be present during any ground disturbing proceedings. Including surveys and archaeological testing.

5. Request that proper procedures be taken, and requests of the tribe be honored (Please see the attachment)

Multiple areas of potential impact were identified during an in-house database search. Specifics to be discussed in consultation with the lead agency.

Sincerely,

Joseph Ontiveros, Tribal Historic Preservation Officer
Soboba Band of Luiseño Indians
P.O. Box 487
San Jacinto, CA 92581
Phone (951) 654-5544 ext. 4137
Cell (951) 663-5279
jontiveros@soboba-nsn.gov

Cultural Items (Artifacts). Ceremonial items and items of cultural patrimony reflect traditional religious beliefs and practices of the Soboba Band. The Developer should agree to return all Native American ceremonial items and items of cultural patrimony that may be found on the project site to the Soboba Band for appropriate treatment. In addition, the Soboba Band requests the return of all other cultural items (artifacts) that are recovered during the course of archaeological investigations. Where appropriate and agreed upon in advance, Developer's archeologist may conduct analyses of certain artifact classes if required by CEQA, Section 106 of NHPA, the mitigation measures or conditions of approval for the Project. This may include but is not limited or restricted to include shell, bone, ceramic, stone or other artifacts.

The Developer should waive any and all claims to ownership of Native American ceremonial and cultural artifacts that may be found on the Project site. Upon completion of authorized and mandatory archeological analysis, the Developer should return said artifacts to the Soboba Band within a reasonable time period agreed to by the Parties and not to exceed (30) days from the initial recovery of the items.

Treatment and Disposition of Remains.

A. The Soboba Band shall be allowed, under California Public Resources Code § 5097.98 (a), to (1) inspect the site of the discovery and (2) make determinations as to how the human remains and grave goods shall be treated and disposed of with appropriate dignity.

B. The Soboba Band, as MLD, shall complete its inspection within twenty-four (24) hours of receiving notification from either the Developer or the NAHC, as required by California Public Resources Code § 5097.98 (a). The Parties agree to discuss in good faith what constitutes "appropriate dignity" as that term is used in the applicable statutes.

C. Reburial of human remains shall be accomplished in compliance with the California Public Resources Code § 5097.98 (a) and (b). The Soboba Band, as the MLD in consultation with the Developer, shall make the final discretionary determination regarding the appropriate disposition and treatment of human remains.

D. All parties are aware that the Soboba Band may wish to rebury the human remains and associated ceremonial and cultural items (artifacts) on or near, the site of their discovery, in an area that shall not be subject to future subsurface disturbances. The Developer should accommodate on-site reburial in a location mutually agreed upon by the Parties.

E. The term "human remains" encompasses more than human bones because the Soboba Band's traditions periodically necessitated the ceremonial burning of human remains. Grave goods are those artifacts associated with any human remains. These items, and other funerary remnants and their ashes are to be treated in the same manner as human bone fragments or bones that remain intact

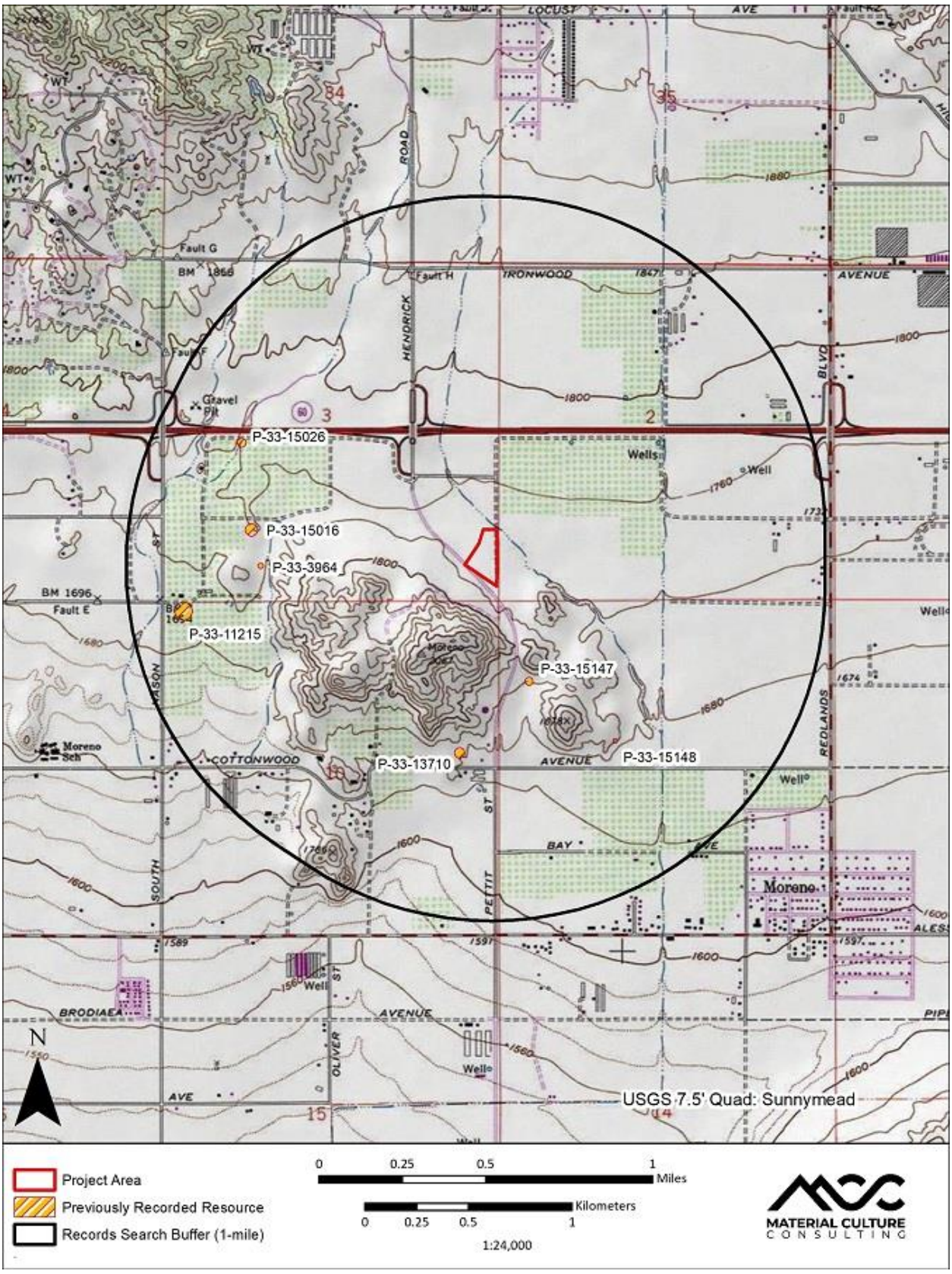
Coordination with County Coroner's Office. The Lead Agencies and the Developer should immediately contact both the Coroner and the Soboba Band in the event that any human remains are discovered during implementation of the Project. If the Coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, the Coroner shall ensure that notification is provided to the NAHC within twenty-four (24) hours of the determination, as required by California Health and Safety Code § 7050.5 (c).

Non-Disclosure of Location Reburials. It is understood by all parties that unless otherwise required by law, the site of any reburial of Native American human remains or cultural artifacts shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act. The Coroner, parties, and Lead Agencies will be asked to withhold public disclosure information related to such reburial, pursuant to the specific exemption set forth in California Government Code § 6254 (r). Ceremonial items and items of cultural patrimony reflect traditional religious beliefs and practices of the Soboba Band. The Developer agrees to return all Native American ceremonial items and items of cultural patrimony that may be found on the project site to the Soboba Band for appropriate treatment. In addition, the Soboba Band requests the return of all other cultural items (artifacts) that are recovered during the course of archaeological investigations. Where appropriate and agreed upon in advance, Developer's archeologist may conduct analyses of certain artifact classes if required by CEQA, Section 106 of NHPA, the mitigation measures or conditions of approval for the Project. This may include but is not limited or restricted to include shell, bone, ceramic, stone or other artifacts.

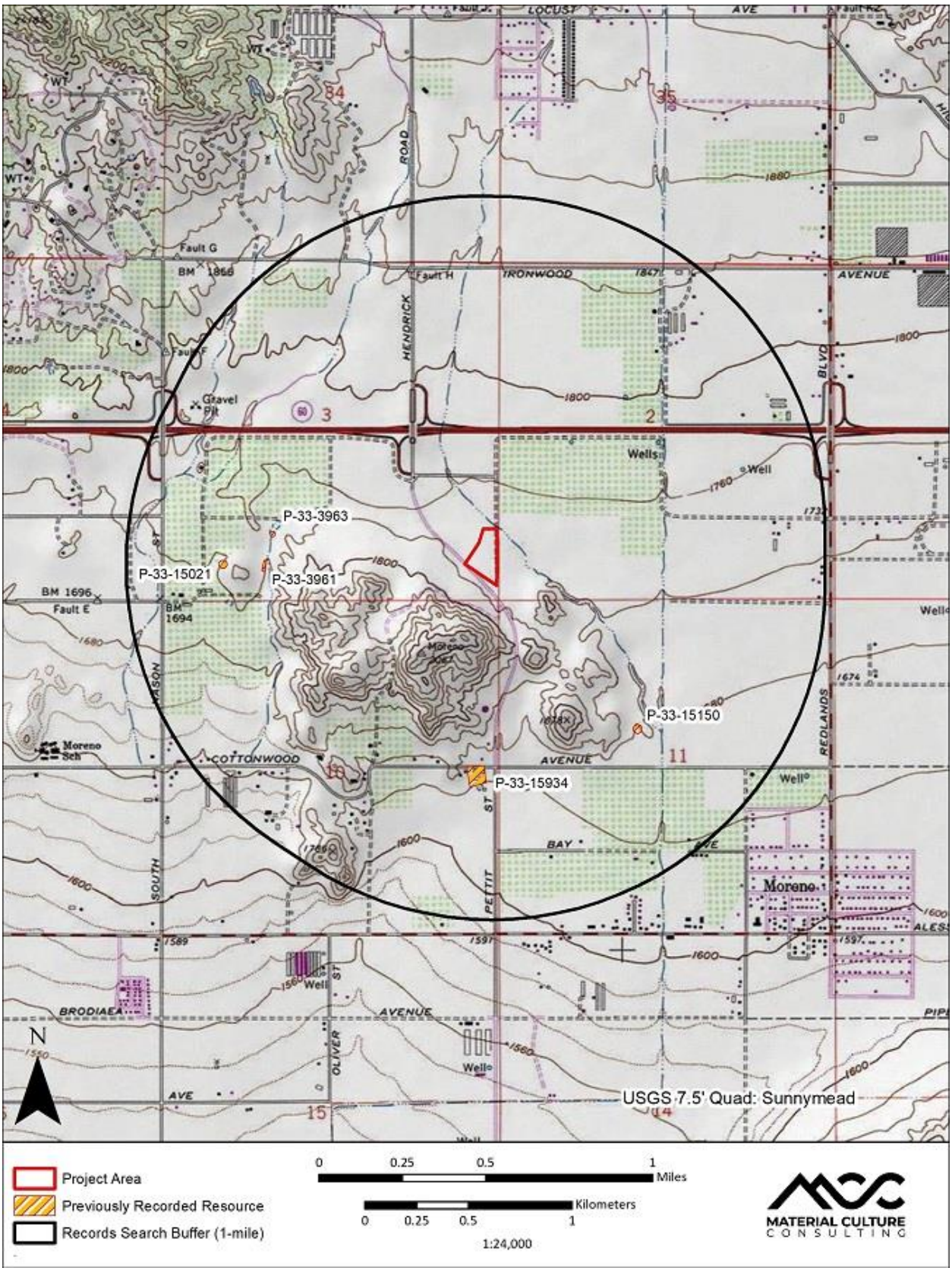
Confidentiality: The entirety of the contents of this letter shall remain confidential between Soboba and Material Culture Consulting, Inc. No part of the contents of this letter may be shared, copied, or utilized in any way with any other individual, entity, municipality, or tribe, whatsoever, without the expressed written permission of the Soboba Band of Luiseño Indians.

Appendix C:
NAHC Outreach and Correspondence

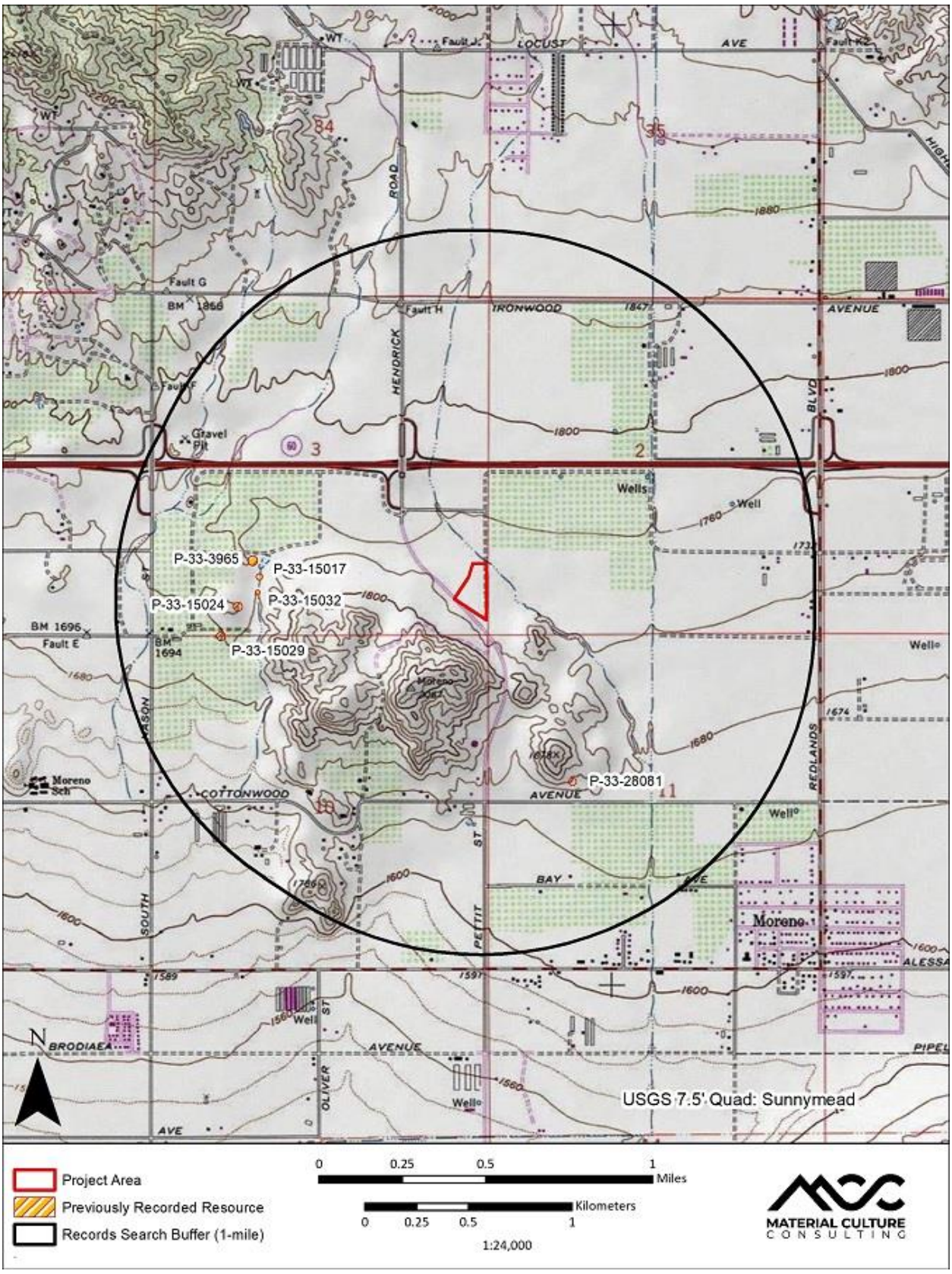
Record Search Results-Resources



Record Search Results-Resources



Record Search Results-Resources



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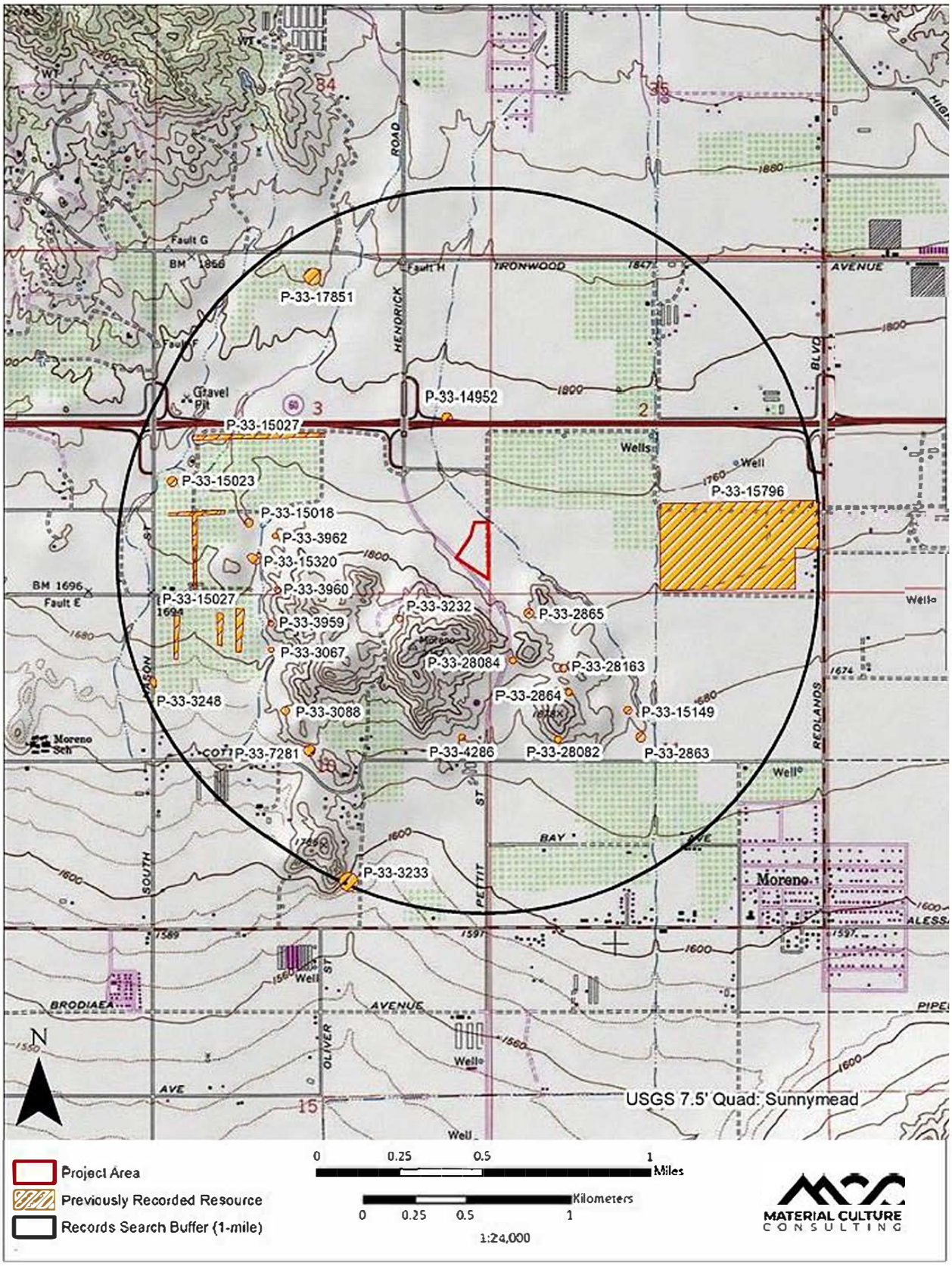
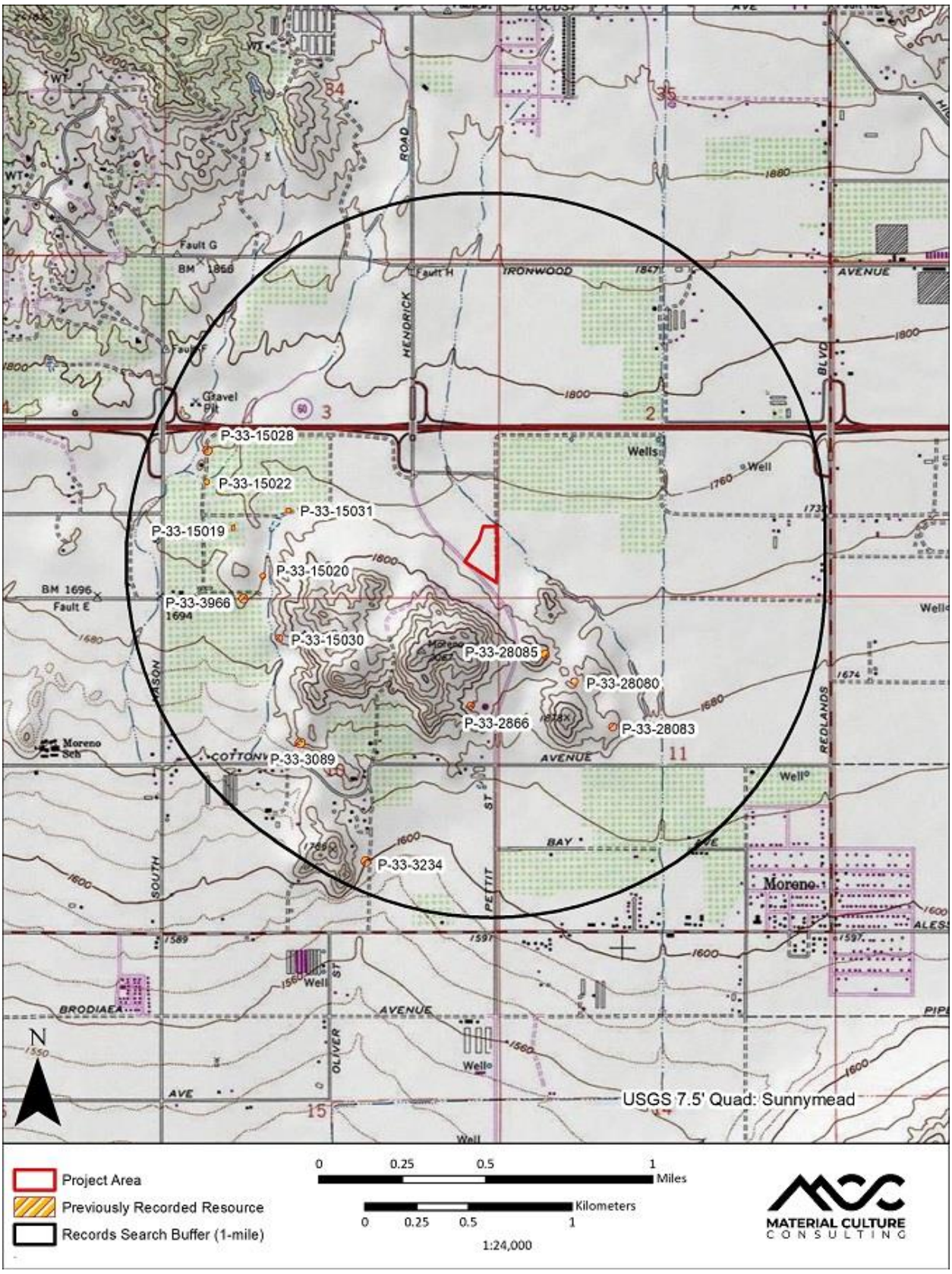
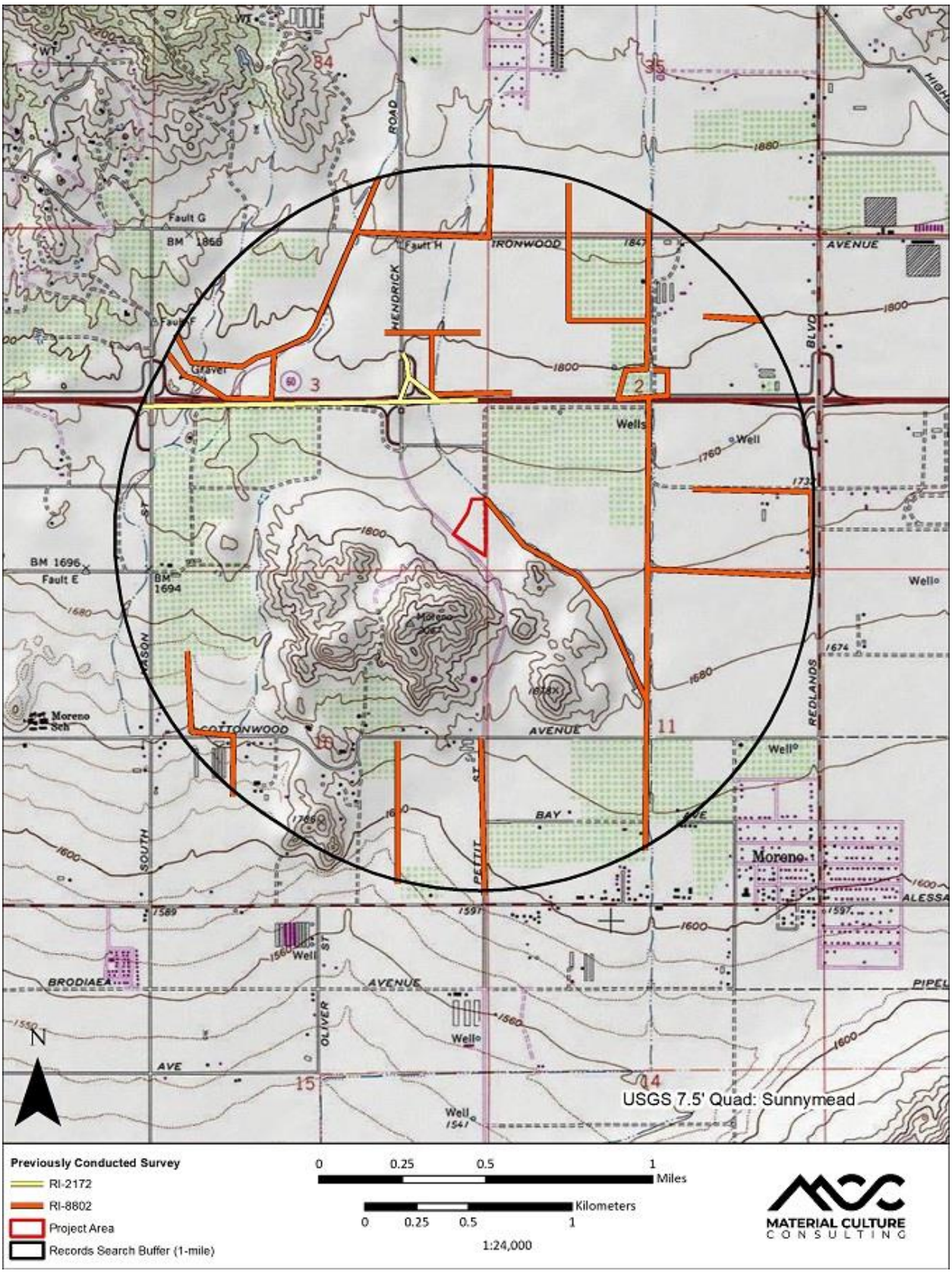


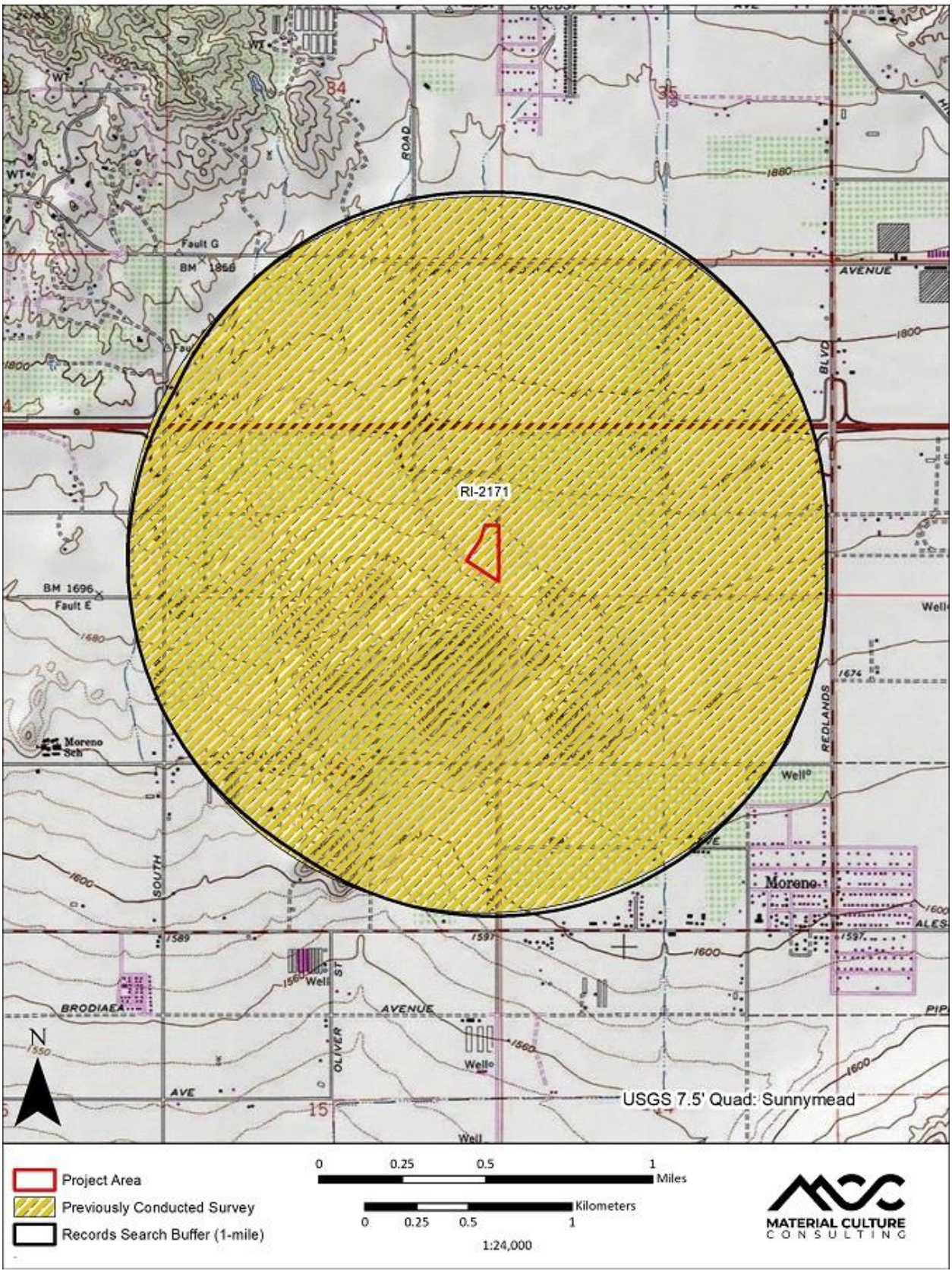
Record Search Results-Resources



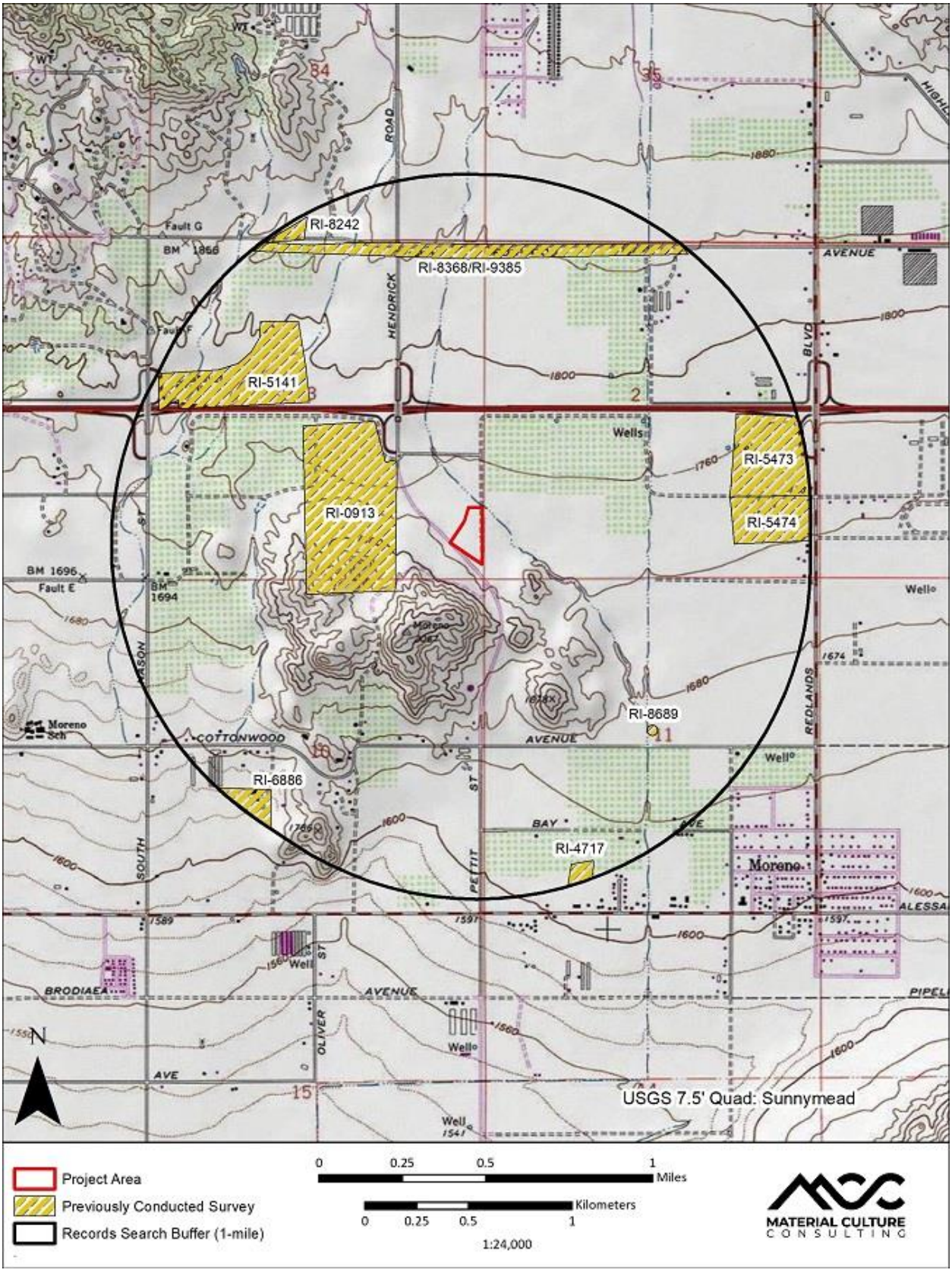
Record Search Results-Reports



Record Search Results-Reports



Record Search Results-Reports



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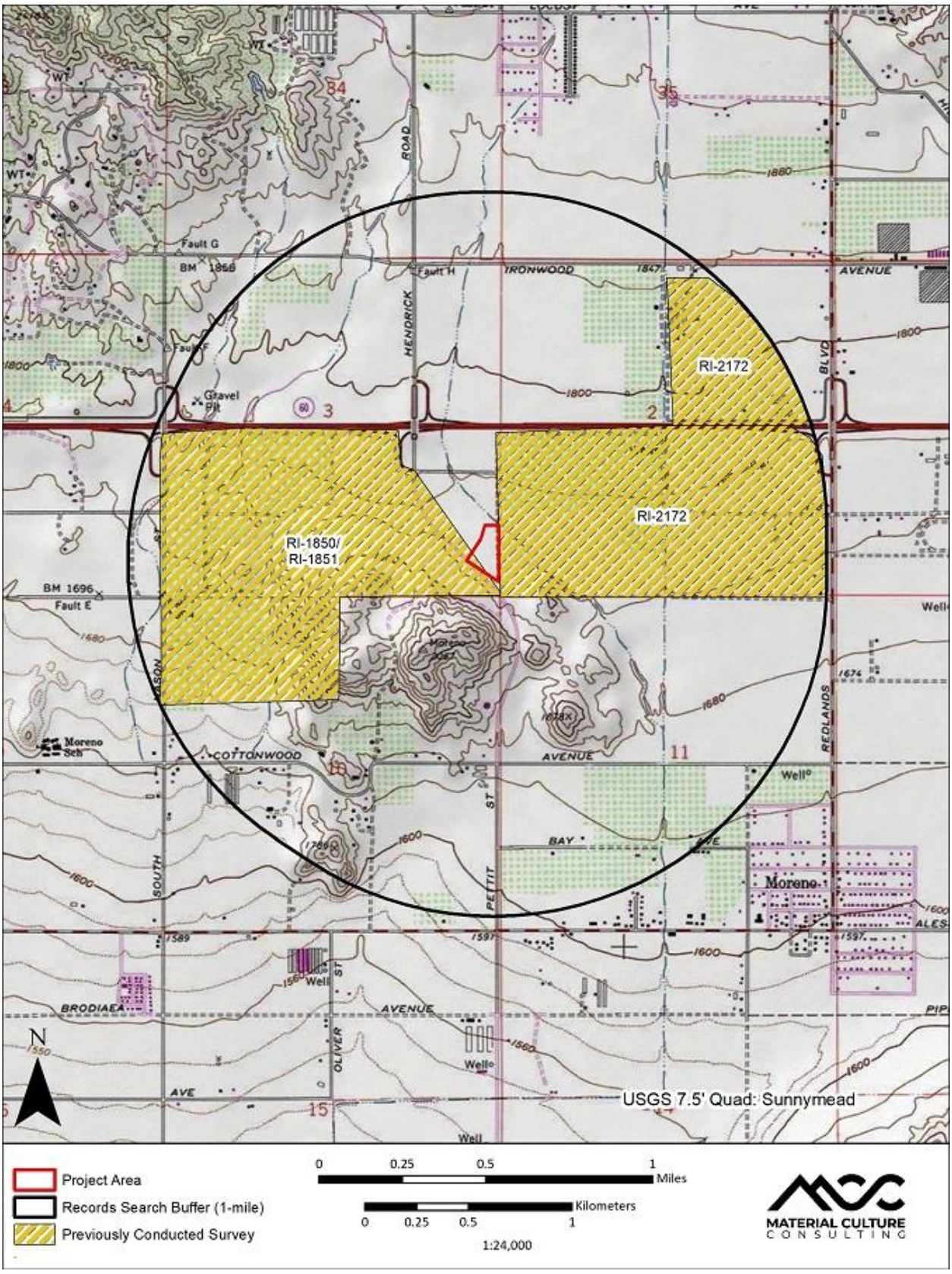

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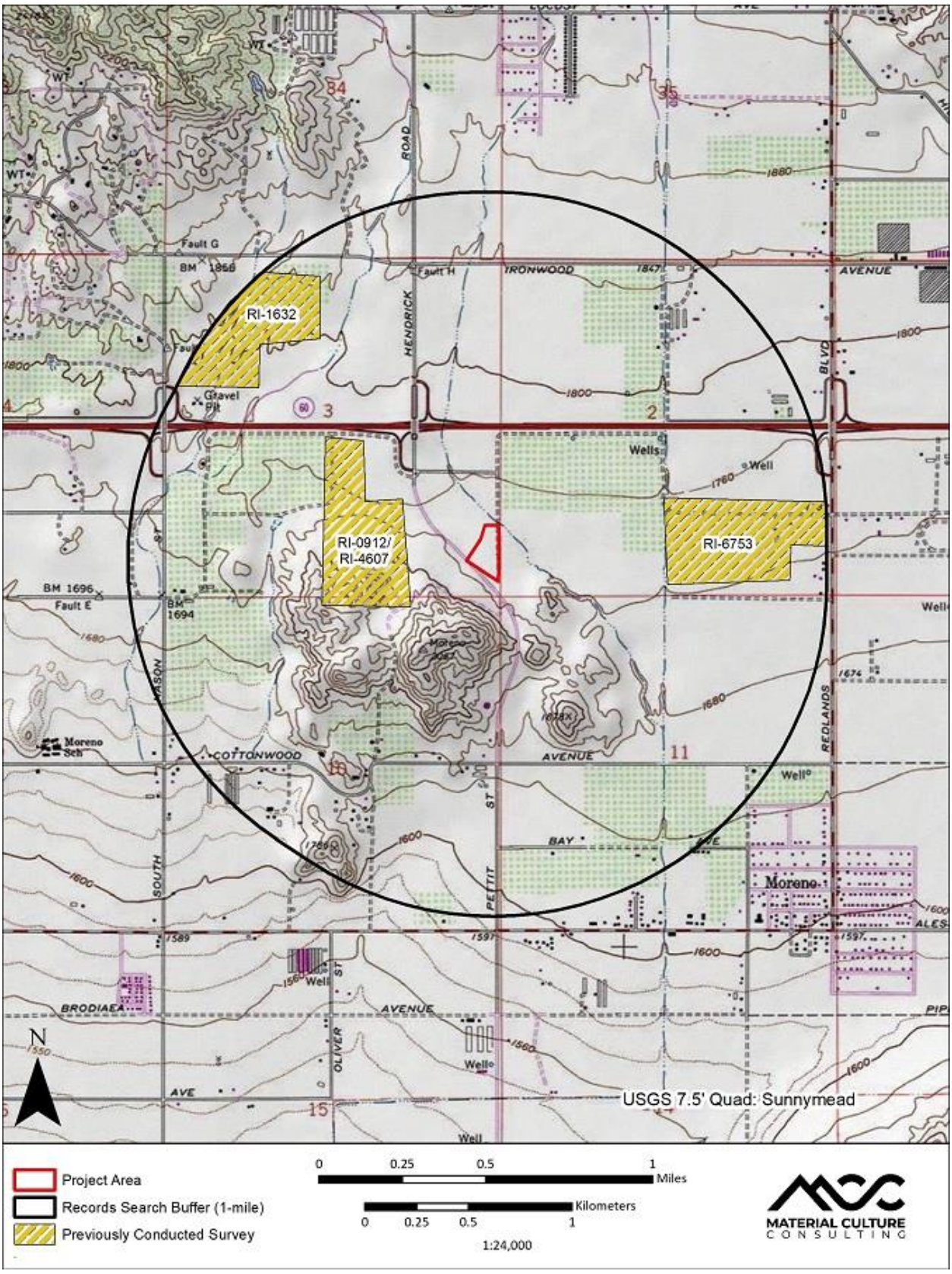

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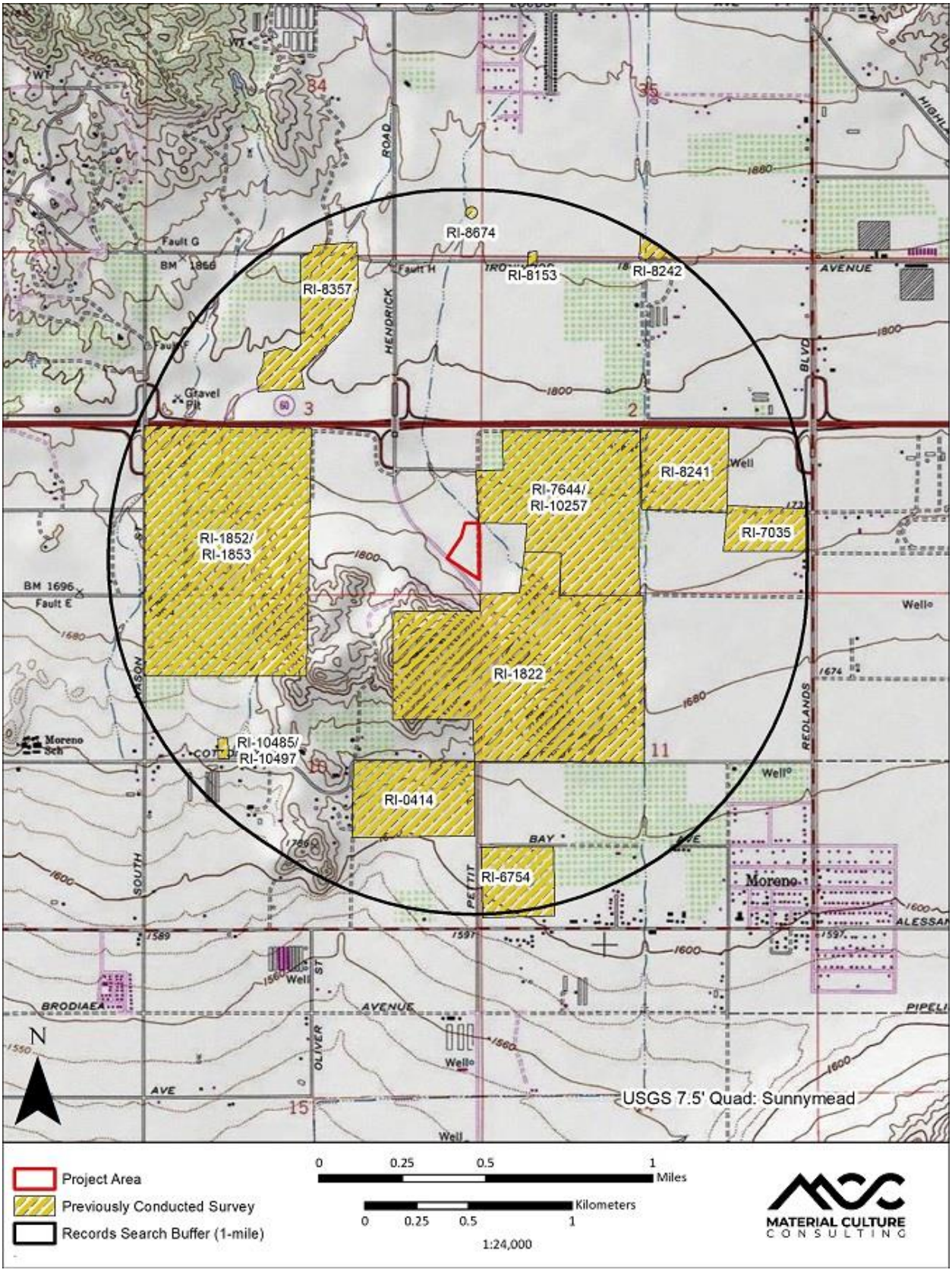

APPENDIX D: GEOTECHNICAL INVESTIGATION AND PERCOLATION TEST RESULTS

GEOTECHNICAL INVESTIGATION AND PERCOLATION TEST RESULTS

KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE AND AUTO MALL WAY
MORENO VALLEY, CALIFORNIA

GEOCON
WEST, INC.

GEOTECHNICAL
ENVIRONMENTAL
MATERIALS

PREPARED FOR

CAR PROS AUTOMOTIVE GROUP
FEDERAL WAY, WASHINGTON

JANUARY 18, 2019
PROJECT NO. T2844-22-01

Project No. T2844-22-01
January 18, 2019

Cars Pros Automotive Group
181 S 333rd Street, Building C, Suite 210
Federal Way, Washington 98002

Attention: Mr. Ken Phillips

Subject: GEOTECHNICAL INVESTIGATION
AND PERCOLATION TEST RESULTS
KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

Dear Mr. Phillips:

In accordance with your authorization of Proposal No. IE-2287, Geocon West Inc. (Geocon) herein submits the results of our geotechnical investigation and percolation test results for the subject site. The accompanying report presents the results of our study and conclusions and recommendations pertaining to the geotechnical aspects of the proposed automotive sales lot. The site is considered suitable for development provided the recommendations of this report are followed.

Should you have questions regarding this report, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

GEOCON WEST, INC.

Paul D. Theriault
CEG 2374

Chet E. Robinson
GE 2890

PDT:CER:LAB:hd

(e-mail) Addressee

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GEOTECHNICAL INVESTIGATION AND PERCOLATION TEST RESULTS

1. PURPOSE AND SCOPE

This report presents the results of our geotechnical investigation and percolation tests for the planned automotive sales development located east of the intersection of Moreno Beach Drive and Auto Mall Drive, in the city of Moreno Valley, California (see *Vicinity Map*, Figure 1). The purpose of the geotechnical investigation is to evaluate the surface and subsurface soil conditions and general site geology, and to identify geotechnical constraints that may affect development of the property. Percolation testing was performed to provide information for site storm water infiltration design. This investigation also included a review of readily available published and unpublished geologic literature (see *List of References*).

The scope of this investigation included performing a site reconnaissance, field exploration, engineering analyses, and preparing this report. We performed our field investigation on December 17 and 18, 2018 by drilling ten small-diameter borings to a maximum depth of 51½ feet below the existing ground surface. Four of the borings were used to perform percolation testing. The *Geologic Map*, Figure 2, presents the approximate locations of the borings. *Appendix A* provides a detailed discussion of the field investigation including logs of the borings and percolation test results. Details of the laboratory tests and a summary of the test results are presented in *Appendix B* and on the boring logs in *Appendix A*.

Recommendations presented herein are based on analyses of data obtained from our site investigation and our understanding of proposed site development. References reviewed to prepare this report are provided in the *List of References*. If project details vary significantly from those described herein, Geocon should be contacted to evaluate the necessity for review and possible revision of this report.

2. SITE AND PROJECT DESCRIPTION

The subject site is located southeast of the intersection of Moreno Beach Drive and Auto Mall Drive in the city of Moreno Valley, California. The site is bounded on the west by Auto Mall Drive, the north by Pettit Street, the south by Moreno Beach Drive, and on the east by a parcel line. The site is currently vacant and appears to be periodically disked for weed abatement. Periodic use of the site as a parking lot was observed during our site exploration. Access to the site is from Pettit Street and Auto Mall Drive. The existing grades range from approximate elevation 1,750 feet above Mean Sea Level (MSL) in the north to 1,755 feet above MSL in the south. A stockpile is located in the southern portion of the site, as shown on Figure 2. The maximum height of the stockpile is approximately 5 feet. The site is at latitude 33.93375 and longitude -117.17466.

Based on the *Site Plan*, prepared by Carlile Coatsworth Architects, Inc., we understand that the proposed construction consists of an approximately 44,000-square-foot sales and service facility, car wash, several vehicle display areas, with associated parking and infrastructure. A grading plan has not been provided for our review; however, based on current site conditions, cuts and fills of less than 10 feet are expected at the site.

Based on the preliminary plans, we understand that the proposed building will be constructed of concrete masonry unit (CMU) walls and concrete, split face block and supported on conventional spread footing foundations with a concrete slab-on-grade floor. We expect column loads will be up to 100 kips and wall loads will be up to 10 kips per linear foot. Preliminary geotechnical recommendations for design of the structure are based on these assumptions and provided herein.

The site descriptions and proposed development are based on a site reconnaissance, review of published geologic literature, our field investigation, a review of the conceptual plans, and discussions with you. If development plans differ from those described herein, Geocon should be contacted for review of the plans and possible revisions to this report.

3. GEOLOGIC SETTING

The site is located within the Perris block of the northern Peninsular Ranges Geomorphic Province (Province), defined as a relatively stable area between the Elsinore and San Jacinto fault zones. In the vicinity of the site, the geomorphology consists of older alluvial fan deposits. The Peninsular Ranges are bounded by the Transverse Ranges (San Gabriel and San Bernardino Mountains) to the north and the Colorado Desert Geomorphic Province to the east. The Peninsular Ranges Geomorphic Province extends westward into the Pacific Ocean and southward to the tip of Baja California. Overall, the Province is characterized by Cretaceous-age granitic rock and a lesser amount of Mesozoic-age metamorphic rock overlain by terrestrial and marine sediments. Faulting within the Province is typically northwest trending and includes the San Andreas, San Jacinto, Elsinore, and Newport-Inglewood faults.

The San Jacinto fault zones is located approximately 1.8 miles to the northeast. Geologic units within the site consist of very old alluvial fan deposits and a stockpile of undocumented fill.

4. SOIL AND GEOLOGIC CONDITIONS

We observed very old alluvial fan deposits with a thin mantle of overlying undocumented fill during our field investigation. The occurrence, distribution and description of the geologic units encountered are shown on the *Geologic Map*, Figure 2 and the boring logs in *Appendix A*. The surficial soils and geologic units are described herein in order of increasing age.

4.1 Undocumented Fill (afu)

Undocumented fill was observed throughout the site in the top 1 to 4 feet of the borings during our geotechnical investigation. The stockpile of undocumented fill in the south-central portion of the site was observed to be approximately 5 feet thick. As observed the undocumented fill consists of loose to medium dense, dry to damp, reddish brown silty sand. A minor amount of clayey sand was also encountered.

4.2 Very Old Alluvial Fan Deposits (Qvof)

Very old alluvium was observed underlying the undocumented fill through the site. As observed, the older alluvium consists predominately of damp to moist, medium dense to very dense silty sand. Lesser amounts of clayey sand, sandy silt, and sandy clay was also encountered.

5. GROUNDWATER

We did not encounter groundwater or seepage during the site investigation. According to the California Department of Water Resources, several wells in the area indicated a depth to groundwater in excess of 190 feet below the existing ground surface. It is not uncommon for seepage conditions to develop where none previously existed. Groundwater and seepage are dependent on seasonal precipitation, irrigation, land use, among other factors, and varies as a result. Proper surface drainage will be important to future performance of the project.

6. GEOLOGIC HAZARDS

6.1 Faulting

The numerous faults in southern California include active, potentially active, and inactive faults. The criteria for these major groups are based on criteria developed by the California Geological Survey (CGS, formerly known as CDMG) for the Alquist-Priolo Earthquake Fault Zone Program (Bryant and Hart, 2007). By definition, an active fault is one that has had surface displacement within Holocene time (about the last 11,000 years). A potentially active fault has demonstrated surface displacement during Quaternary time (approximately the last 1.6 million years) but has had no known Holocene movement. Faults that have not moved in the last 1.6 million years are considered inactive.

The site is not within a currently established State of California Alquist-Priolo Earthquake Fault Zone or a Riverside County Fault Hazard Zone for surface fault rupture hazards. No active or potentially active faults with the potential for surface fault rupture are known to pass directly beneath the site.

According to the *Fault Activity Map of California* (2010), 18 known active faults are located within a search radius of 50 miles from the property. The nearest known active fault is the Claremont fault segment of the San Jacinto fault zone, located approximately 2 miles west of the site, and is the dominant source of potential ground motion. Earthquakes that might occur on these fault zones or other faults within the southern California and northern Baja California area are potential generators of significant ground motion at the site. Table 6.1.1 lists the estimated maximum earthquake magnitude for the most dominant faults in relationship to the site location.

TABLE 6.1.1
KNOWN ACTIVE FAULTS WITHIN 50 MILES OF THE SITE

Fault Name	Maximum Earthquake Magnitude (Mw)	Distance from Site (miles)	Direction from Site
San Jacinto (Claremont)	6.7	2	NE
San Jacinto (Casa Loma)	6.9	2.8	E
San Gorgonio Pass	7.6	8	E
Banning	7.2	10	SE
San Andreas (San Bernardino)	8.2	12	NE
San Jacinto	7.8	13	N
San Jacinto (Glen Helen)	6.7	13	N
Elsinore (Main Street)	6.7	21	W
Chino	6.7	22	W
Elsinore (Glen Ivy North)	6.8	23	WSW
Elsinore (Whittier)	6.9	24	W
Morongo Valley	7.2	28	E
Pinto Mountain	7.3	35	E
San Andreas Fault (South Branch)	8.2	40	SE
Burt Mountain	6.8	41	ENE
San Jacinto (Clark)	6.8	43	N
San Andreas Fault (North Branch)	8.2	47	N
Newport-Inglewood	7.5	50	SW

Historic earthquakes in southern California of magnitude 6.0 and greater, their magnitude, distance, and direction from the site are listed in Table 6.1.2.

TABLE 6.1.2
HISTORIC EARTHQUAKE EVENTS WITH REPECT TO THE SITE

Earthquake (Oldest to Youngest)	Date of Earthquake	Magnitude	Distance to Epicenter (Miles)	Direction to Epicenter
San Jacinto	December 25, 1899	6.7	16	SE
San Jacinto	April 21, 1918	6.8	16	SE
Loma Linda Area	July 22, 1923	6.3	6	NW
Long Beach	March 10, 1933	6.4	50	WSW
Buck Ridge	March 25, 1937	6.0	64	ESE
Imperial Valley	May 18, 1940	6.9	51	E
Desert Hot Springs	December 4, 1948	6.0	45	E
Arroyo Salada	March 19, 1954	6.4	77	E
Borrego Mountain	April 8, 1968	6.5	84	SE
San Fernando	February 9, 1971	6.6	84	WNW
Joshua Tree	April 22, 1992	6.1	54	E
Landers	June 28, 1992	7.3	50	ENE
Big Bear	June 28, 1992	6.4	29	NE
Northridge	January 17, 1994	6.7	88	WNW
Hector Mine	October 16, 1999	7.1	73	NE

6.2 Ground Rupture

Ground surface rupture occurs when movement along a fault is sufficient to cause a gap or rupture where the upper edge of the fault zone intersects the earth surface. The potential for ground rupture is considered to be very low due to the absence of active or potentially active faults at the subject site.

6.3 Liquefaction

Liquefaction typically occurs when a site is located in a zone with seismic activity, onsite soils are cohesionless or silt/clay with low plasticity, groundwater is encountered within 50 feet of the surface, and soil has a relative density less than about 70 percent. If the four previous criteria are met, a seismic event could result in a rapid pore water pressure increase from the earthquake-generated ground accelerations. Due to the lack of a permanent, near-surface groundwater table and the dense to very dense nature of the old alluvial fan deposits, liquefaction potential for the site is negligible and not a design consideration.

6.4 Expansive Soil

The older alluvium generally consists of silty or clayey sands with lesser amounts of sandy silts and sandy clays. Laboratory testing results indicate samples of the near surface soils exhibits a “very low” expansion potential (expansion index [EI] of 20 or less) with test results showing expansion index of 3.

6.5 Hydrocompression

Hydrocompression is the tendency of unsaturated soil structure to collapse upon wetting resulting in the overall settlement of the affected soil and overlying foundations or improvements supported thereon. Potentially compressible soils underlying the site are typically removed and recompacted during remedial site grading. However, if compressible soil is left in-place, a potential for settlement due to hydrocompression of the soil exists.

Soils obtained during our investigation were tested for hydrocompression and exhibited a collapse potential up to 2.2 percent when loaded to the expected post-grading pressures. The test results indicate that the soils are classified as having a "slight" (0.1 to 2.0 percent) to "moderate" (2.1 to 6.0) degree of specimen collapse in accordance with ASTM D5333.

6.6 Seiches and Tsunamis

Seiches are caused by the movement of an inland body of water due to the movement from seismic forces. The site is located approximately 5.1 miles north of Lake Perris. In the unlikely event of a seiche, water is anticipated to be confined to the young alluvial valley channel south of the site.

A tsunami is a series of long-period waves generated in the ocean by a sudden displacement of large volumes of water. Causes of tsunamis include underwater earthquakes, volcanic eruptions, or offshore slope failures. The site is located approximately 36 miles from the Pacific Ocean at an elevation greater than 1,500 feet MSL. Therefore, the risk of tsunamis affecting the site is negligible and not a design consideration.

6.7 Inundation

According to the State of California, Department of Water Resources, *Inundation Map for Perris Dam*, dated April 29, 1975, the site is not within an inundation zone due to dam failure. Therefore, inundation due to dam failure is not a design consideration.

6.8 Landslides

Landslides are not mapped on or near the site. Due to the relatively level topography at the site, the potential for landslides at the property or at a location that could impact the site is negligible and not a design consideration.

6.9 Rock Fall Hazards

Rock falls are not a design consideration due to the lack of natural bedrock slopes above and adjacent to the site.

6.10 Slope Stability

Based on the preliminary site plans and relatively level topography at the site, cut and fill slopes are anticipated to be less than 5 feet in height at inclinations no steeper than 2:1 (h:v). In general, permanent, cut slopes and graded fill slopes constructed with on-site soils inclined no steeper than 2:1 (h:v) with vertical heights of 5 feet or less are anticipated to have adequate factors of safety. Fill keys should be constructed in accordance with the standard grading specifications in *Appendix C*. Grading of fill slopes should be designed in accordance with the requirements of Moreno Valley and the 2016 California Building Code (CBC).

7. SITE INFILTRATION

Percolation testing was performed in accordance with the procedures in *Riverside County Flood Control and Water Conservation District LID BMP, Appendix A.* The percolation test locations are depicted on the *Geologic Map* (see Figures 2 and 3).

A 3-inch diameter perforated PVC pipe in silt filter sock was placed in each percolation test hole and approximately 2 inches of gravel was placed at the bottom of the PVC pipe. The test locations were pre-saturated prior to testing. Percolation testing was begun within 24 hours after the holes were presaturated. Percolation data sheets are presented in *Appendix A* of this report. Calculations to convert the percolation test rate to infiltration test rates are presented in Table 7.0 below. Note that the Handbook requires a factor of safety of 3 be applied to the values below based on the test method used.

TABLE 7.0
INFILTRATION TEST RATES FOR PERCOLATION AREAS

Parameter	P-1	P-2	P-3	P-4
Depth (inches)	91.2	79.0	117.4	120.0
Test Type	Normal	Normal	Normal	Normal
Change in head over time: ΔH (inches)	0.1	1.1	0.1	0.5
Average head: Havg (inches)	41.6	11.9	41.0	24.6
Time Interval (minutes): Δt (minutes)	30	30	30	30
Radius of test hole: r (inches)	4	4	4	4
Tested Infiltration Rate: It (inches/hour)	0.01	0.31	0.01	0.07

8. CONCLUSIONS AND RECOMMENDATIONS

8.1 General

8.1.1 From a geotechnical engineering standpoint, the site is suitable for construction of the proposed auto facility development provided the recommendations presented herein are implemented in design and construction of the project.

8.1.2 Potential geologic hazards at the site include seismic shaking and hydrocompression.

8.1.3 The site is located approximately 2 miles from the nearest active fault. Based on our background research and previous investigation, it is our opinion active, potentially active, or inactive faults do not extend across the site. Risks associated with seismic activity consist of the potential for moderate to strong seismic shaking.

8.1.4 Our field investigation indicates the site is blanketed by undocumented fill over very old alluvium. The undocumented fill and upper portion of the very old alluvium are not considered suitable for the support of compacted fill and settlement-sensitive structures. Remedial grading of the surficial soil will be required as discussed herein. The existing site soils are suitable for re-use as engineered fill provided the recommendations in the *Grading* section of this report are followed.

8.1.5 Soil samples tested for hydrocompression exhibit a collapse potential of up to 2.2 percent for the site. The test results indicate that the degree of specimen collapse would be classified as "moderate" (2.1 to 6.0 percent), in accordance with ASTM D 5333. Remedial grading will assist in reducing the collapse potential of the near-surface soils. However, precautionary measures will be needed to mitigate the potential for hydrocompression of deeper soils. Proper site drainage should be maintained. Landscape planters that saturate the subsurface or storm water infiltration structures should not be used within 20 feet of the proposed building or other on grade improvements. Localized surface settlement should be expected in the vicinity of the storm water infiltration structures or other areas where water is allowed to infiltrate to the subsurface.

8.1.6 Moisture contents in the borings varied and the upper portions were below optimum moisture content. Moisture conditioning of the soils should be expected during construction. Special handling of the soil should be anticipated, particularly if grading occurs during the rainy season.

8.1.7 Although the majority of on-site soils consist of silty and clayey sands, some granular material, having little to no cohesion and subject to caving in unshored excavations, should be expected at the site. It is the responsibility of the contractor to ensure that excavations and trenches are properly shored and maintained in accordance with OSHA rules and regulations to maintain the stability of adjacent existing improvements.

8.1.8 The laboratory tests indicate that the site soils are non-expansive and have a "very low" expansion potential. If medium to highly expansive soils are encountered at the site, they should be exported from the site or selectively graded and placed in the deeper fill areas to allow for the placement of low expansion material at the finish pad grade.

8.1.9 Grading plans were not available for our review, however, cuts and fill of less than 10 feet are anticipated to achieve planned finish grades.

8.1.10 Although not encountered in our exploration, cobbles may be encountered during site grading and may present difficulty for site excavations. The contractor should be prepared to perform site excavations in these conditions.

8.1.11 We did not encounter groundwater during our investigation and do not expect groundwater would impact site improvements. However, wet conditions and seepage could affect proposed construction if grading and improvement operations occur during or shortly after a rain event.

8.1.12 Proper drainage should be maintained in order to preserve the design properties of the fill in the sheet-graded pad and slope areas.

8.1.13 The planned structures can be supported on a shallow foundation system with a slab-on-grade floor system.

8.1.14 Changes in the design, location or elevation of improvements, as outlined in this report, should be reviewed by this office. Once final grading plans become available, they should be reviewed by this office to evaluate the necessity for review and possible revision of this report.

8.1.15 Recommended grading specifications are provided in *Appendix C*.

8.2 Excavation and Soil Characteristics

8.2.1 Excavation of the very old alluvium should be possible with moderate to heavy effort using conventional heavy-duty equipment.

8.2.2 The soil encountered in the field investigation is considered to be "non-expansive" (expansion index [EI] of less than 20) as defined by 2016 California Building Code (CBC) Section 1803.5.3. Table 8.2.2 presents soil classifications based on the expansion index. Based on the laboratory test results, we expect a majority of the soil encountered will possess a "very low" expansion potential (EI between 0 and 20). Medium to highly expansive soils may be encountered at the site and should not be placed within 4 feet of the proposed foundations, flatwork or paving improvements. Additional testing for expansion potential should be performed during grading and once final grades are achieved.

TABLE 8.2.2
EXPANSION CLASSIFICATION BASED ON EXPANSION INDEX

Expansion Index (EI)	ASTM D 4829 Expansion Classification	2016 CBC Expansion Classification
0 – 20	**Very Low**	**Non-Expansive**
21 – 50	Low	Expansive
51 – 90	Medium	
91 – 130	High	
Greater Than 130	Very High	

8.2.3 We performed laboratory tests on samples of the site materials to evaluate the percentage of water-soluble sulfate content. *Appendix B* presents results of the laboratory water-soluble sulfate content tests. The test results indicate the on-site materials at the location tested possess a sulfate content of 0.001 percent (10 parts per million [ppm]) equating to an exposure class of "S0" as defined by 2016 CBC Section 1904.3 and ACI 318. Table 8.2.3 presents a summary of concrete requirements set forth by 2016 CBC Section 1904.3 and ACI 318. The presence of water-soluble sulfates is not a visually discernible characteristic; therefore, other soil samples from the site could yield different concentrations. Additionally, over time landscaping activities (i.e., addition of fertilizers and other soil nutrients) may affect the concentration.

TABLE 8.2.3
REQUIREMENTS FOR CONCRETE EXPOSED TO SULFATE-CONTAINING SOLUTIONS

Exposure Class	Water-Soluble Sulfate (SO_4) Percent by Weight	Cement Type (ASTM C 150)	Maximum Water to Cement Ratio by Weight[1]	Minimum Compressive Strength (psi)
S0	**SO_4<0.10**	**No Type Restriction**	**n/a**	**2,500**
S1	0.10≤SO_4<0.20	II	0.50	4,000
S2	0.20≤SO_4≤2.00	V	0.45	4,500
S3	SO_4>2.00	V+Pozzolan or Slag	0.45	4,500

[1] Maximum water to cement ratio limits do not apply to lightweight concrete

8.2.4 Laboratory testing indicates the site soils have a minimum electrical resistivity of 4,600 ohm-cm, possess 98 ppm chloride, 10 ppm sulfate, and a pH of 8.3. As shown in Table 8.2.4 below, the site would not be classified as "corrosive" to buried improvements, in accordance with the Caltrans Corrosion Guidelines (Caltrans, 2018).

TABLE 8.2.4
CALTRANS CORROSION GUIDELINES

Corrosion Exposure	Resistivity (ohm-cm)	Chloride (ppm)	Sulfate (ppm)	pH
Corrosive	<1,100	500 or greater	1,500 or greater	5.5 or less

8.2.5 Geocon does not practice in the field of corrosion engineering. Therefore, further evaluation by a corrosion engineer may be performed if improvements that could be susceptible to corrosion are planned.

8.3 Seismic Design Criteria

8.3.1 We used the computer program *U.S. Seismic Design Maps*, provided by the California Office of Statewide Health Planning and Development (OSHPD) to evaluate the seismic design criteria. Table 8.3.1 summarizes site-specific design criteria obtained from the 2016 California Building Code (CBC; Based on the 2015 International Building Code [IBC] and ASCE 7-10), Chapter 16 Structural Design, Section 1613 Earthquake Loads. The short spectral response uses a period of 0.2 second. The building structure and improvements as currently proposed should be designed using a Site Class D in accordance with ASCE 7-10 Section 20.3.1. We evaluated the Site Class based on the discussion in Section 1613.3.2 of the 2016 CBC and Table 20.3-1 of ASCE 7-10 using blow count data presented on the boring logs in *Appendix A*. The values presented in Table 8.3.1 are for the risk-targeted maximum considered earthquake (MCE_R).

TABLE 8.3.1
2016 CBC SEISMIC DESIGN PARAMETERS

Parameter	Value	2016 CBC Reference
Site Class	D	Section 1613.3.2
MCE_R Ground Motion Spectral Response Acceleration – Class B (short), S_S	2.146g	Figure 1613.3.1(1)
MCE_R Ground Motion Spectral Response Acceleration – Class B (1 sec), S_1	0.971g	Figure 1613.3.1(2)
Site Coefficient, F_A	1.00	Table 1613.3.3(1)
Site Coefficient, F_V	1.50	Table 1613.3.3(2)
Site Class Modified MCE_R Spectral Response Acceleration (short), S_{MS}	2.146g	Section 1613.3.3 (Eqn 16-37)
Site Class Modified MCE_R Spectral Response Acceleration (1 sec), S_{M1}	1.457g	Section 1613.3.3 (Eqn 16-38)
5% Damped Design Spectral Response Acceleration (short), S_{DS}	1.431g	Section 1613.3.4 (Eqn 16-39)
5% Damped Design Spectral Response Acceleration (1 sec), S_{D1}	0.971g	Section 1613.3.4 (Eqn 16-40)

8.3.2 Table 8.3.2 presents additional seismic design parameters for projects located in Seismic Design Categories of D through F in accordance with ASCE 7-10 for the mapped maximum considered geometric mean (MCE_G).

TABLE 8.3.2
2016 CBC SITE ACCELERATION PARAMETERS

Parameter	Value	ASCE 7-10 Reference
Site Class	D	Section 1613.3.2
Mapped MCE_G Peak Ground Acceleration, PGA	0.83g	Figures 2 through 42-7
Site Coefficient, F_{PGA}	1.00	Table 11.8-1
Site Class Modified MCE_G Peak Ground Acceleration, PGA_M	0.83g	Section 11.8.3 (Eqn 11.8-1)

8.3.3 Conformance to the criteria in Tables 8.3.1 and 8.3.2 for seismic design does not constitute any kind of guarantee or assurance that significant structural damage or ground failure will not occur if a large earthquake occurs. The primary goal of seismic design is to protect life, not to avoid all damage, since such design may be economically prohibitive.

8.4 Temporary Excavations

8.4.1 The recommendations included herein are provided for temporary excavations. It is the responsibility of the contractor to provide a safe excavation during the construction of the proposed project.

8.4.2 Excavations on the order of 5 to 15 feet in vertical height are expected during grading operations and utility installation. The contractor's competent person should evaluate the necessity for lay back of vertical cut areas. Vertical excavations up to 5 feet may be attempted where loose soils or caving sands are not present, and where not surcharged by existing structures or vehicle/construction equipment loads.

8.4.3 Vertical excavations greater than 5 feet will require sloping measures in order to provide a stable excavation. We expect that sufficient space is available to complete the majority of the required earthwork for this project using sloping measures. If necessary, compound excavation, slot-cutting, and or shoring recommendations will be provided in an addendum.

8.4.4 Where sufficient space is available, temporary unsurcharged embankments may be sloped back at a uniform 1.5:1 (h:v) slope gradient or flatter. A uniform slope does not have a vertical portion.

8.4.5 Where sloped embankments are utilized, the top of the slope should be barricaded to prevent vehicles and storage loads at the top of the slope within a horizontal distance equal to the height of the slope. If the temporary construction embankments are to be maintained during the rainy season, berms are suggested along the tops of the slopes where necessary to prevent runoff water from entering the excavation and eroding the slope faces. The contractor's personnel should inspect the soil exposed in the cut slopes during excavation so that modifications of the slopes can be made if variations in the soil conditions occur. Excavations should be stabilized within 30 days of initial excavation.

8.5 Grading

8.5.1 Grading should be performed in accordance with the recommendations provided in this report, the *Recommended Grading Specifications* contained in *Appendix C* and Moreno Valley Standards.

8.5.2 Prior to commencing grading, a pre-construction conference should be held at the site with the owner/developer, city inspector, grading contractor, civil engineer, and geotechnical engineer in attendance. Special soil handling requirements can be discussed at that time.

8.5.3 Site preparation should begin with the removal of deleterious material, debris, buried trash, and vegetation. The depth of removal should be such that material exposed in cut areas or soil to be used as fill is relatively free of organic matter. Material generated during stripping and/or site demolition should be exported from the site.

8.5.4 Undocumented fill and the upper portion of the very old alluvium in the building areas should be removed to expose competent older alluvium. Based on our findings, we expect the existing soils within approximately 5 feet of the existing ground surface will require remedial excavation and proper compaction. Areas of loose, dry, or compressible soils will require additional excavation and processing prior to fill placement. Removals should extend at least 3 feet below the bottom of the planned foundations, and the excavations should be extended laterally a minimum distance of 5 feet beyond the building footprint or for a distance equal to the depth of removal, whichever is greater. Where the lateral over-excavation is not possible, structural setbacks or deepened footings may be required.

8.5.5 Removals in pavement and walkway areas should extend at least 2 feet beneath the pavement or flatwork subgrade elevation.

8.5.6 The actual depth of removal should be evaluated by the engineering geologist during grading operations. Deeper excavations may be required if dry, loose, soft, or porous materials are present at the base of the removals. The bottom of the excavations should be scarified to a depth of at least 1 foot, moisture conditioned as necessary, and properly compacted.

8.5.7 The site should then be brought to final subgrade elevations with fill compacted in layers. In general, soil native to the site is suitable for use as fill if free from vegetation, debris and other deleterious material. Layers of fill should be about 6 to 8 inches in loose thickness and no thicker than will allow for adequate bonding and compaction. Fill, including backfill and scarified ground surfaces, should be compacted to a dry density of at least 90 percent of the laboratory maximum dry density at 0 to 2 percent above optimum moisture content, as determined in accordance with ASTM D 1557. Fill materials placed below optimum moisture content may require additional moisture conditioning prior to placing additional fill. The upper 12 inches of subgrade soil underlying pavement should be compacted to a dry density of at least 95 percent of the laboratory maximum dry density at 0 to 2 percent above optimum moisture content shortly before paving operations.

8.5.8 Import fill soil (if necessary) should consist of granular materials with a “very low” expansion potential (EI of less than 20), free of deleterious material and rock fragments larger than 6 inches and should be compacted as recommended herein. Geocon should be notified of the import soil source and should perform laboratory testing of import soil prior to its arrival at the site to determine its suitability as fill material.

8.5.9 Foundation excavation bottoms must be observed and approved in writing by the Geotechnical Engineer, prior to placing fill, steel, gravel or concrete.

8.6 Utility Trench Backfill

8.6.1 Utility trenches should be properly backfilled in accordance with the requirements of Moreno Valley and the latest edition of the *Standard Specifications for Public Works Construction* (Greenbook). The pipes should be bedded with well graded crushed rock or clean sands (Sand Equivalent greater than 30) to a depth of at least one foot over the pipe. The bedding material must be inspected and approved in writing by the Geotechnical Engineer (a representative of Geocon). The use of well graded crushed rock is only acceptable if used in conjunction with filter fabric to prevent the gravel from having direct contact with soil. The remainder of the trench backfill may be derived from onsite soil or approved import soil, compacted as necessary, until the required compaction is obtained. Backfill of utility trenches should not contain rocks greater than 3 inches in diameter. The use of 2-sack slurry and controlled low strength material (CLSM) are also acceptable as backfill. However, consideration should be given to the possibility of differential settlement where the slurry ends and earthen backfill begins. These transitions should be minimized and additional stabilization should be considered at these transitions.

8.6.2 Trench excavation bottoms must be observed and approved in writing by the Geotechnical Engineer, prior to placing bedding materials, fill, gravel, or concrete.

8.7 Earthwork Grading Factors

8.7.1 Estimates of shrinkage factors are based on empirical judgments comparing the material in its existing or natural state as encountered in the exploratory excavations to a compacted state. Variations in natural soil density and in compacted fill density render shrinkage value estimates very approximate. As an example, the contractor can compact the fill to a dry density of 90 percent or higher of the laboratory maximum dry density. Thus, the contractor has an approximately 10 percent range of control over the fill volume. Based on our experience and the densities measured during our investigation, the shrinkage of undocumented fill and older alluvium soil is expected to be on the order of 0 to 10 percent when compacted to at least 90 percent of the laboratory maximum dry density. This estimate is for preliminary quantity estimates only. Due to the variations in the actual shrinkage/bulking factors, a balance area should be provided to accommodate variations

8.8 Foundation and Concrete Slab-On-Grade Recommendations

8.8.1 The foundation recommendations presented herein are for the proposed buildings subsequent to the recommended grading assuming that the buildings are founded in soils with a low expansion potential. If soils with a medium or high expansion potential are placed within 4 feet of finish grade, then Geocon should be contacted for additional recommendations. The proposed structure can be supported on a shallow foundation system bearing in newly placed compacted fill.

8.8.2 Foundations for the structure should consist of either continuous strip footings and/or isolated spread footings. Continuous footings should be at least 18 inches wide and extend at least 18 inches below lowest adjacent pad grade. Isolated spread footings should have a minimum width of 24 inches and should also extend at least 18 inches below lowest adjacent pad grade. A wall/column footing dimension detail depicting footing embedment is provided on Figure 3.

8.8.3 From a geotechnical engineering standpoint, concrete slabs-on-grade for the structure should be at least 4 inches thick and be reinforced with at least No. 3 steel reinforcing bars placed 24 inches on center in both directions. The concrete slab-on-grade recommendations are based on soil support characteristics only. The project structural engineer should evaluate the structural requirements of the concrete slab for supporting equipment and storage loads. A thicker concrete slab may be required for heavier loading conditions. To reduce the effects of differential settlement on the foundation system, thickened slabs and/or an increase in steel reinforcement can provide a benefit to reduce concrete cracking.

8.8.4 Steel reinforcement for continuous footings should consist of at least two No. 4 steel reinforcing bars placed horizontally in the footings, one near the top and one near the bottom. Steel reinforcement for the spread footings should be designed by the project structural engineer.

8.8.5 The recommendations presented herein are based on soil characteristics only (EI of 20 or less) and are not intended to replace steel reinforcement required for structural considerations.

8.8.6 Foundations may be designed for an allowable soil bearing pressure of 3,500 pounds per square foot (psf) (dead plus live load). The value presented herein is for dead plus live loads and may be increased by one-third when considering transient loads due to wind or seismic forces.

8.8.7 The maximum expected static settlement for the planned structures supported on conventional foundation systems with the above allowable bearing pressure and deriving support in engineered fill is estimated to be 1 inch and to occur below the heaviest loaded structural element. Differential settlement is estimated to be on the order of ½ inch over a horizontal distance of 40 feet. Once the design and foundation loading configuration proceeds to a more finalized plan, the estimated settlements within this report should be reviewed and revised, if necessary

8.8.8 Once the design and foundation loading configuration proceeds to a more finalized plan, the estimated settlements within this report should be reviewed and revised, if necessary.

8.8.9 Slabs-on-grade that may receive moisture-sensitive floor coverings or may be used to store moisture-sensitive materials should be underlain by a vapor retarder placed directly beneath the slab. The vapor retarder and acceptable permeance should be specified by the project architect or developer based on the type of floor covering that will be installed. The vapor retarder design should be consistent with the guidelines presented in Section 9.3 of the American Concrete Institute's (ACI) Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials (ACI 302.2R-06) and should be installed in general conformance with ASTM E1643 (latest edition) and the manufacturer's recommendations. A minimum thickness of 15 mils extruded polyolefin plastic is recommended; vapor retarders which contain recycled content or woven materials are not recommended. The vapor retarder should have a permeance of less than 0.01 perms demonstrated by testing before and after mandatory conditioning. The vapor retarder should be installed in direct contact with the concrete slab with proper perimeter seal. If the California Green Building Code requirements apply to this project, the vapor retarder should be underlain by 4 inches of clean aggregate. It is important that the vapor retarder be puncture resistant since it will be in direct contact with angular gravel. As an alternative to the clean aggregate suggested in the Green Building Code, the concrete slab-on-grade may be underlain by a vapor retarder over 4 inches of clean sand (sand equivalent greater than 30), since the sand will serve as a capillary break and will minimize the potential for punctures and damage to the vapor barrier.

8.8.10 The bedding sand thickness should be evaluated by the project foundation engineer, architect, and/or developer. However, we should be contacted to provide recommendations if the bedding sand is thicker than 4 inches. Placement of 3 inches and 4 inches of sand is common practice in southern California for 5-inch and 4-inch thick slabs, respectively. The foundation engineer should provide appropriate concrete mix design criteria and curing measures that may be utilized to assure proper curing of the slab to reduce the potential for rapid moisture loss and subsequent cracking and/or slab curl.

8.8.11 Special subgrade presaturation is not deemed necessary prior to placing concrete; however, the exposed foundation and slab subgrade soil should be moisturized to maintain a moist condition as would be expected in any such concrete placement.

8.8.12 The recommendations of this report are intended to reduce the potential for cracking of slabs due to expansive soil (if present), differential settlement of existing soil, or soil with varying thicknesses. However, even with the incorporation of the recommendations presented herein, foundations, stucco walls, and slabs-on-grade placed on such conditions may still exhibit some cracking due to soil movement and/or shrinkage. The occurrence of concrete shrinkage cracks is independent of the supporting soil characteristics. Their occurrence may be reduced and/or controlled by limiting the slump of the concrete, proper concrete placement and curing, and by the placement of crack control joints at periodic intervals, in particular, where re-entrant slab corners occur.

8.8.13 Geocon should be consulted to provide additional design parameters as required by the structural engineer.

8.9 Concrete Flatwork

8.9.1 Exterior concrete flatwork not subject to vehicular traffic should be constructed in accordance with the recommendations herein. Slab panels should be a minimum of 4 inches thick and, when in excess of 8 feet square, should be reinforced with No. 3 reinforcing bars spaced 24 inches on center in each direction to reduce the potential for wide cracking. In addition, concrete flatwork should be provided with crack control joints to reduce and/or control shrinkage cracking. Crack control spacing should be determined by the project structural engineer based upon the slab thickness and intended usage. Criteria of the American Concrete Institute (ACI) should be taken into consideration when establishing crack control spacing. Subgrade soil for exterior slabs not subjected to vehicle loads should be compacted in accordance with criteria presented in the grading section prior to concrete placement. Subgrade soil should be properly compacted and the moisture content of subgrade soil should be checked prior to placing concrete.

8.9.2 Even with the incorporation of the recommendations within this report, the exterior concrete flatwork has a likelihood of experiencing some movement due to swelling or settlement; therefore, the steel reinforcement should overlap continuously in flatwork to reduce the potential for vertical offsets within flatwork. Additionally, flatwork should be structurally connected to the curbs, where possible, to reduce the potential for offsets between the curbs and the flatwork.

8.9.3 Where exterior flatwork abuts structures at entrant or exit points, the exterior slab should be dowelled into the structure's foundation stemwall. This recommendation is intended to reduce the potential for differential elevations that could result from differential settlement or minor heave of the flatwork. Dowelling details should be designed by the project structural engineer.

8.9.4 The recommendations presented herein are intended to reduce the potential for cracking as a result of differential movement. However, even with the incorporation of the recommendations presented herein, concrete will still crack. The occurrence of concrete shrinkage cracks is independent of the soil supporting characteristics. Their occurrence may be reduced and/or controlled by limiting the slump of the concrete, the use of crack control joints and proper concrete placement and curing. Crack control joints should be spaced at intervals no greater than 12 feet. Literature provided by the Portland Concrete Association (PCA) and American Concrete Institute (ACI) present recommendations for proper concrete mix, construction, and curing practices, and should be incorporated into project construction.

8.10 Conventional Retaining Walls

8.10.1 The recommendations presented herein are generally applicable to the design of rigid concrete or masonry retaining walls having a maximum height of 10 feet. In the event that walls higher than 10 feet or other types of walls are planned, Geocon should be consulted for additional recommendations.

8.10.2 Retaining walls not restrained at the top and having a level backfill surface should be designed for an active soil pressure equivalent to the pressure exerted by a fluid density of 35 pounds per cubic foot (pcf). Where the backfill will be inclined at no steeper than 2:1 (horizontal to vertical), an active soil pressure of 60 pcf is recommended. These soil pressures assume that the backfill materials within an area bounded by the wall and a 1:1 plane extending upward from the base of the wall possess an EI of 50 or less. For walls where backfill materials do not conform to the criteria herein, Geocon should be consulted for additional recommendations.

8.10.3 Unrestrained walls are those that are allowed to rotate more than 0.001H (where H equals the height of the retaining portion of the wall in feet) at the top of the wall. Where walls are restrained from movement at the top, walls with a level backfill surface should be designed for a soil pressure equivalent to the pressure exerted by a fluid density of 55 pcf.

8.10.4 The structural engineer should determine the seismic design category for the project in accordance with Section 1613 of the CBC. If the project possesses a seismic design category of D, E, or F, proposed retaining walls in excess of 6 feet in height should be designed with seismic lateral pressure (Section 1803.5.12 of the 2016 CBC).

8.10.5 A seismic load of 10 pcf should be used for design of walls that support more than 6 feet of backfill in accordance with Section 1803.5.12 of the 2016 CBC. The seismic load is applied as an equivalent fluid pressure along the height of the wall and the calculated loads result in a maximum load exerted at the base of the wall and zero at the top of the wall. This seismic load should be applied in addition to the active earth pressure. The earth pressure is based on half of two-thirds of PGA_M calculated from ASCE 7-10 Section 11.8.3.

8.10.6 Unrestrained walls will move laterally when backfilled and loading is applied. The amount of lateral deflection is dependent on the wall height, the type of soil used for backfill, and loads acting on the wall. The retaining walls and improvements above the retaining walls should be designed to incorporate an appropriate amount of lateral deflection as determined by the structural engineer.

8.10.7 Retaining walls should be provided with a drainage system adequate to prevent the buildup of hydrostatic forces and waterproofed as required by the project architect. The soil immediately adjacent to the backfilled retaining wall should be composed of free draining material completely wrapped in Mirafi 140N (or equivalent) filter fabric for a lateral distance of 1 foot for the bottom two-thirds of the height of the retaining wall. The upper one-third should be backfilled with less permeable compacted fill to reduce water infiltration. Alternatively, a drainage panel, such as a Miradrain 6000 or equivalent, can be placed along the back of the wall. A typical drain detail for each option is shown on Figure 4. The use of drainage openings through the base of the wall (weep holes) is not recommended where the seepage could be a nuisance or otherwise adversely affect the property adjacent to the base of the wall. The recommendations herein assume a properly compacted backfill (EI of 50 or less) with no hydrostatic forces or imposed surcharge load. If conditions different than those described are expected or if specific drainage details are desired, Geocon should be contacted for additional recommendations.

8.10.8 Wall foundations should be designed in accordance with the above foundation recommendations.

8.11 Lateral Loading

8.11.1 To resist lateral loads, a passive pressure exerted by an equivalent fluid density of 350 pounds per cubic foot (pcf) should be used for the design of footings or shear keys. The allowable passive pressure assumes a horizontal surface extending at least 5 feet, or three times the surface generating the passive pressure, whichever is greater. The upper 12 inches of material in areas not protected by floor slabs or pavement should not be included in design for passive resistance.

8.11.2 If friction is to be used to resist lateral loads, an allowable coefficient of friction between soil and concrete of 0.40 should be used for design. The friction coefficient may be reduced depending on the vapor barrier or waterproofing material used for construction in accordance with the manufacturer's recommendations.

8.11.3 The passive and frictional resistant loads can be combined for design purposes. The lateral passive pressures may be increased by one-third when considering transient loads due to wind or seismic forces.

8.12 Preliminary Pavement Recommendations

8.12.1 We calculated the flexible pavement sections in general conformance with the *Caltrans Method of Flexible Pavement Design* (Highway Design Manual, Section 608.4) and Moreno Valley specifications using a range of Traffic Indices. The project civil engineer and owner should evaluate the final Traffic Index for the pavements and review the pavement designations to determine appropriate locations for pavement thickness. Based on our laboratory testing we have used a preliminary R-value of 30 for the subgrade soils for the purposes of this analysis. The final pavement sections should be based on the R-value of the subgrade soil encountered at final subgrade elevation. Table 8.12.1 presents the preliminary flexible pavement sections.

TABLE 8.12.1
PRELIMINARY FLEXIBLE PAVEMENT SECTION

Location	Assumed Traffic Index	Subgrade R-Value	Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)
Driveways for automobiles and light-duty vehicles	5.5	30	3.0	7.0
Medium truck traffic areas	6.0	30	3.5	8.0
Driveways for heavy truck and fire truck traffic	7.0	30	4.0	10.0
Collector Roadways	8.0	30	5.0	11.0

8.12.2 Prior to placing base materials, the upper 12 inches of the subgrade soil should be scarified, moisture conditioned as necessary, and recompacted to a dry density of at least 95 percent of the laboratory maximum dry density at 0 to 2 percent above optimum moisture content as determined by ASTM D 1557. Similarly, the base material should be compacted to a dry density of at least 95 percent of the laboratory maximum dry density at 0 to 2 percent above optimum moisture content. Asphalt concrete should be compacted to a density of at least 95 percent of the laboratory Hveem density in accordance with ASTM D 2726.

8.12.3 Base materials should conform to Section 26 of the *Standard Specifications for The State of California Department of Transportation (Caltrans)*. The asphalt concrete should conform to Section 203-6 of the *Standard Specifications for Public Works Construction (Greenbook)*.

8.12.4 A rigid Portland cement concrete (PCC) pavement section should be placed in heavy truck areas, driveway aprons, and cross gutters. We calculated the rigid pavement section in general conformance with the procedure recommended by the American Concrete Institute report ACI 330R *Guide for Design and Construction of Concrete Parking Lots* using the parameters presented in Table 8.12.4.

TABLE 8.12.4
RIGID PAVEMENT DESIGN PARAMETERS

Design Parameter	Design Value
Modulus of subgrade reaction, k	150 pci
Modulus of rupture for concrete, M_R	500 psi
Traffic Category, TC	C and D
Average daily truck traffic, ADTT	100 and 700

8.12.5 Based on the criteria presented herein, the PCC pavement sections should have a minimum thickness as presented in Table 8.12.5.

TABLE 8.12.5
RIGID PAVEMENT RECOMMENDATIONS

Location	Portland Cement Concrete (inches)
Automobile Parking Stalls (TC=C)	6.5
Heavy Truck and Fire Lane Areas (TC=D)	7.5

8.12.6 The PCC pavement should be placed over subgrade soil that is compacted to a dry density of at least 95 percent of the laboratory maximum dry density at 0 to 2 percent above optimum moisture content. This pavement section is based on a minimum concrete compressive strength of approximately 3,000 psi (pounds per square inch).

8.12.7 A thickened edge or integral curb should be constructed on the outside of concrete slabs subjected to wheel loads. The thickened edge should be 1.2 times the slab thickness or a minimum thickness of 2 inches, whichever results in a thicker edge, and taper back to the recommended slab thickness 4 feet behind the face of the slab (e.g., 6-inch and 7.5-inch-thick slabs would have an 8- and 9.5-inch-thick edge, respectively). Reinforcing steel will not be necessary within the concrete for geotechnical purposes with the possible exception of dowels at construction joints as discussed herein.

8.12.8 In order to control the location and spread of concrete shrinkage cracks, crack-control joints (weakened plane joints) should be included in the design of the concrete pavement slab in accordance with the referenced ACI report.

8.12.9 The performance of pavements is highly dependent on providing positive surface drainage away from the edge of the pavement. Ponding of water on or adjacent to the pavement surfaces will likely result in pavement distress and subgrade failure. Drainage from landscaped areas should be directed to controlled drainage structures. Landscape areas adjacent to the edge of asphalt pavements are not recommended due to the potential for surface or irrigation water to infiltrate the underlying permeable aggregate base and cause distress. Where such a condition cannot be avoided, consideration should be given to incorporating measures that will significantly reduce the potential for subsurface water migration into the aggregate base. If planter islands are planned, the perimeter curb should extend at least 6 inches below the level of the base materials.

8.13 Temporary Excavations

8.13.1 Excavations on the order of 5 to 15 feet below the existing ground surface are expected for construction of the proposed utility improvements; and we expect that the proposed utilities will be installed with conventional cut-and-cover methods.

8.13.2 The excavations will expose fill and very old alluvial soils which are suitable for vertical excavations up to 5 feet where loose soils or caving sands are not present and where not surcharged by adjacent traffic or structures.

8.13.3 Vertical excavations greater than 5 feet will require sloping measures in order to provide a stable excavation. Where sufficient space is available, temporary unsurcharged embankments should be designed by the contractor's competent person in accordance with OSHA regulations.

8.13.4 Where there is insufficient space for sloped excavations, shoring or trench shields should be used to support excavations. Shoring may also be necessary where sloped excavation could remove vertical or lateral support of existing improvements, including existing utilities and adjacent structures. Recommendations for temporary shoring can be provided in an addendum if needed.

8.13.5 Where sloped embankments are utilized, the top of the slope should be barricaded to prevent vehicles and storage loads at the top of the slope within a horizontal distance equal to the height of the slope. If the temporary construction embankments are to be maintained during the rainy season, berms are suggested along the tops of the slopes where necessary to prevent runoff water from entering the excavation and eroding the slope faces. The contractor's competent person should inspect the soils exposed in the cut slopes during excavation in accordance with OSHA regulations so that modifications of the slopes can be made if variations in the soil conditions occur.

8.14 Site Drainage and Moisture Protection

8.14.1 Adequate site drainage is critical to reduce the potential for differential soil movement, erosion and subsurface seepage. Under no circumstances should water be allowed to pond adjacent to footings. The site should be graded and maintained such that surface drainage is directed away from structures in accordance with 2016 CBC 1804.4 or other applicable standards. In addition, surface drainage should be directed away from the top of slopes into swales or other controlled drainage devices. Roof and pavement drainage should be directed into conduits that carry runoff away from the proposed structure.

8.14.2 Landscape planters that saturate the subsurface should not be used within 20 feet of the proposed structure or other settlement sensitive on grade improvements. Localized surface settlement should be anticipated in areas where water is allowed to infiltrate into the subsurface.

8.14.3 Underground utilities should be leak free. Utility and irrigation lines should be checked periodically for leaks, and detected leaks should be repaired promptly. Detrimental soil movement could occur if water is allowed to infiltrate the soil for prolonged periods of time.

8.14.4 Landscaping planters adjacent to paved areas are not recommended due to the potential for surface or irrigation water to infiltrate the pavement's subgrade and base course. Area drains to collect excess irrigation water and transmit it to drainage structures or impervious above-grade planter boxes can be used. In addition, where landscaping is planned adjacent to the pavement, construction of a cutoff wall along the edge of the pavement that extends at least 6 inches below the bottom of the base material should be considered.

8.14.5 If not properly constructed, there is a potential for distress to improvements and properties located hydrologically down gradient or adjacent to infiltration areas. Factors such as the amount of water to be detained, its residence time, and soil permeability have an important effect on seepage transmission and the potential adverse impacts that may occur if the storm water management features are not properly designed and constructed. We have not performed a hydrogeology study at the site. Down-gradient and adjacent structures may be subjected to seeps, movement of foundations and slabs, or other impacts as a result of water infiltration.

8.15 Grading and Foundation Plan Review

8.15.1 Geocon should review the project grading and foundation plans prior to final design submittal to verify that the plans have been prepared in substantial conformance with the recommendations of this report and to provide additional analyses or recommendations, if necessary.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. The firm that performed the geotechnical investigation for the project should be retained to provide testing and observation services during construction to provide continuity of geotechnical interpretation and to check that the recommendations presented for geotechnical aspects of site development are incorporated during site grading, construction of improvements, and excavation of foundations. If another geotechnical firm is selected to perform the testing and observation services during construction operations, that firm should prepare a letter indicating their intent to assume the responsibilities of project geotechnical engineer of record. A copy of the letter should be provided to the regulatory agency for their records. In addition, that firm should provide revised recommendations concerning the geotechnical aspects of the proposed development, or a written acknowledgement of their concurrence with the recommendations presented in our report. They should also perform additional analyses deemed necessary to assume the role of Geotechnical Engineer of Record.

2. The recommendations of this report pertain only to the site investigated and are based upon the assumption that the soil conditions do not deviate from those disclosed in the investigation. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that anticipated herein, Geocon should be notified so that supplemental recommendations can be given. The evaluation or identification of the potential presence of hazardous or corrosive materials was not part of the scope of services provided by Geocon.

3. This report is issued with the understanding that it is the responsibility of the owner or his representative to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project and incorporated into the plans, and the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.

4. The findings of this report are valid as of the date of this report. However, changes in the conditions of a property can occur with the passage of time, whether they be due to natural processes or 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 partially by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of three years.

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APPENDIX A

FIELD INVESTIGATION

Field work for our investigation included a subsurface exploration, soil sampling, and percolation testing. The *Geologic Map*, Figure 2 presents the locations of the exploratory borings. Boring logs and an explanation of the geologic units encountered are presented in figures following the text in this appendix. We located the borings in the field using existing reference points. Therefore, actual boring locations may deviate slightly. We performed a field investigation on December 17, 2018 which consisted of drilling 10 exploratory borings to a maximum depth of approximately 51½ feet below existing grade with a CME 75 drill rig equipped with 8-inch-diameter hollow-stem auger.

We collected bulk and relatively undisturbed samples from the borings by driving a 3-inch O. D., California Modified Sampler into the "undisturbed" soil mass with blows from a 140-pound hammer falling 30 inches on an auto hammer. The California Modified Sampler was equipped with 1-inch high by 2⅜-inch inside diameter brass sampler rings to facilitate removal and testing. Relatively undisturbed samples and bulk samples of disturbed soils were transported to our laboratory for testing. The type of sample is noted on the exploratory boring logs.

The samplers were driven 18 inches into the bottom of the excavations. Blow counts are recorded for every 6 inches the sampler is driven. The penetration resistances shown on the boring logs are shown in terms of blows per foot. The values indicated on the boring logs are the sum of the last 12 inches of the sampler if driven 18 inches. If the sampler was not driven for 18 inches, an approximate value is calculated in term of blows per foot or the final 6-inch interval is reported. These values are not to be taken as N-values, adjustments have not been applied. We estimated elevations shown on the boring logs from a topographic map.

We visually examined the soil conditions encountered within the borings, classified, and logged in general accordance with the Unified Soil Classification System (USCS). Logs of the borings are presented on Figures A-1 through A-10. The logs depict the general soil and geologic conditions encountered and the depth at which we obtained the samples.

Percolation testing was performed on December 18, 2018 in accordance with *Riverside County Flood Control and Water Conservation District, LID BMP Manual, Appendix A.* The percolation tests were run in accordance with *Section 2.3., Shallow Percolation Test*. The percolation test data is presented on Figures A-11 and A-14.

PROJECT NO. T2844-22-01

BORING B-1

ELEV. (MSL.) **1756** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **PDT**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B-1@0-5'			SM	**UNDOCUMENTED FILL (afu)** Silty SAND, loose, dry, reddish brown; fine to medium sand; some gravel and cobble; some concrete chunks			
2								
	B-1@2.5'			SM	**VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)** Silty SAND, very dense, damp, light brown; fine to coarse sand	85	124.6	4.6
4								
	B-1@5'				-Becomes dark reddish brown; damp; trace coarse sand; trace gravel; trace carbonate stringers	80	130.4	5.3
6								
8	B-1@7.5				-Becomes dense, moist; fine sand; some mica	56	125.4	7.8
10	B-1@10'				-Some medium sand	69	132.9	7.9
				ML	Sandy SILT, hard, moist, dark gray; fine sand; trace medium sand			
12								
14					-Becomes dark brown; some clay			
	B-1@15'			SM	Silty SAND, dense, moist, reddish brown; fine to medium sand; trace mica	60		
16								
18								
20	B-1@20				-Becomes very dense	80	126.0	10.8
22								
24								
	B-1@25'				-Becomes medium dense	44		
26								
28								

Figure A-1,
Log of Boring B-1, Page 1 of 2

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2844-22-01

BORING B-1

ELEV. (MSL.) **1756** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **PDT**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
30	B-1@30'			SM	Silty SAND, medium dense, moist, reddish brown; trace coarse sand; trace gravel; increase in silt	12		
32								
34								
36	B-1@35'				-Becomes brownish red; fine sand; trace medium sand	44		
38								
40	B-1@40'				-Some carbonate stringers	23		
42								
44								
46	B-1@45'				-Becomes dense; strong brown; fine to mediun sand; carbonate stringers; micaceous	62		
48								
50	B-1@50					34		
					Total depth 51.5 feet Groundwater not encountered Penetration resistance for 140-lb hammer falling 30" by auto-hammer Backfilled with cuttings 4/9/2018			

Figure A-1,
Log of Boring B-1, Page 2 of 2

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. T2844-22-01

BORING B-2

ELEV. (MSL.) **1753** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **PDT**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**UNDOCUMENTED FILL (afu)** Silty SAND, medium dense, dry, reddish brown; fine to medium sand			
2	B-2@2.5'					50/6"	117.3	6.2
4				ML	**VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)** Sandy SILT, stiff, damp, light brown; fine sand			
6	B-2@5-10 B-2@5'					33	96.7	9.6
8	B-2@7.5'				-Becomes moist moist, dark brown; micaceous	21	106.1	11.5
10	B-2@10'					24	102.9	10.3
12								
14				SM	Silty SAND, medium dense, moist, strong brown; fine sand			
16	B-2@15'					40		
18								
20	B-2@20'					42	128.0	4.5
22								
24								
26	B-2@25'				-Becomes dense	63		
					Total depth 26.5 feet Groundwater not encountered Penetration resistance for 140-lb hammer falling 30" by auto-hammer Backfilled with cuttings 4/9/2018			

Figure A-2,
Log of Boring B-2, Page 1 of 1

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2844-22-01

BORING B-3

ELEV. (MSL.) **1751** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **PDT**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**UNDOCUMENTED FILL (afu)** Silty SAND, loose, dry, reddish brown; fine to medium sand; some gravel and cobble			
2				SM	**VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)** Silty SAND, very dense, damp, brownish red; fine to medium sand; carbonate stringers			
2	B-3@2.5'					50/6"		
4								
6	B-3@5-10 B-3@5'				-Becomes moist; strong brown	50/6"	127.9	7.5
8	B-3@7.5'				-Trace carbonate stringers; micaceous	50/6"		
8				ML	Sandy SILT, hard, moist, dark brown; fine sand			
10	B-3@10'					44		
12								
14				CL	Sandy CLAY, stiff, moist, dark brown; fine sand			
16	B-3@15'					14	117.1	11.1
18				SC	Clayey SAND, medium dense, moist, reddish brown, fine to coarse sand; trace carbonate stringers			
20	B-3@20'					44		
					Total depth 21.5 feet Groundwater not encountered Penetration resistance for 140-lb hammer falling 30" by auto-hammer Backfilled with cuttings 12/17/2018			

Figure A-3,
Log of Boring B-3, Page 1 of 1

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. T2844-22-01

BORING B-4

ELEV. (MSL.) **1756** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **ATS**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**UNDOCUMENTED FILL (afu)** Silty SAND, dense, damp, brown; fine sand; some coarse sand; trace gravel			
2								
4	B-4@2.5' B-4@2.5-7.5'			SM	**VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)** Silty SAND, very dense, damp, light brown; fine sand; some medium and coarse sand; trace mica; root hairs	50/5"		
6	B-4@5'				-Becomes dense, strong brown; trace pinhole porosity; micaceous	63		
8	B-4@7.5'				-Becomes very dense; moist	85	130.9	7.0
10	B-4@10'				-Becomes dense; dark gray; fine sand	53		
12								
14								
16	B-4@15'				-Becomes very dense; brownish gray; some medium and coarse sand	50/5"		
18								
20	B-4@20'			SC	Clayaey SAND, medium dense, damp, reddish brown; fine sand; some coarse sand	42	135.2	6.1
					Total depth 21.5 feet Groundwater not encountered Penetration resistance for 140-lb hammer falling 30" by auto-hammer Backfilled with cuttings 12/17/2018			

Figure A-4,
Log of Boring B-4, Page 1 of 1

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2844-22-01

BORING B-5

ELEV. (MSL.) **1755** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **ATS**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B-5@0-5'			SM	**UNDOCUMENTED FILL (afu)** Silty SAND, dense, damp, brown; fine sand; some coarse sand; trace gravel			
2								
	B-5@2.5'			SM	**VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)** Silty SAND, very dense, moist, light brown; fine sand; some medium and coarse sand; trace mica; root hairs	66	116.6	6.5
4								
	B-5@5'				-Becomes very dense, moist, strong brown; pinhole porosity; micaceous	50/4"	134.1	7.6
6								
	B-5@7.5'			SC	Clayey SAND, very dense, moist, dark brown; fine sand; trace medium and coarse sand; trace gravel; pinhole porosity; trace mica	50/6"	130.7	7.8
8								
10	B-5@10'				-Becomes dense; reddish brown	50		
12								
14								
	B-5@15'				-Becomes brown	57	132.4	6.1
16								
18								
20	B-5@20'			SM	Silty SAND, medium dense, moist, light brown; fine sand; some medium and coarse sand; pinhole porosity	32		
					Total depth 21.5 feet Groundwater not encountered Penetration resistance for 140-lb hammer falling 30" by auto-hammer Backfilled with cuttings 12/17/2018			

Figure A-5,
Log of Boring B-5, Page 1 of 1

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. T2844-22-01

BORING B-6

ELEV. (MSL.) **1752** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **ATS**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B-6@0-5'			SM	**UNDOCUMENTED FILL (afu)** Silty SAND, dense, damp, brown; fine sand; trace gravel; root hairs			
2								
	B-6@2.5'			SP	Poorly Graded SAND, very dense, moist, light yellowish brown; fine sand; some medium and coarse sand; trace mica	50/5"	129.6	6.0
4								
	B-6@5'			SC	Clayey SAND, very dense, moist, light reddish brown; fine sand; pinhole porosity	50/6"		
6								
	B-6@7.5'			SM	Silty SAND, very dense, moist, grayish brown; fine sane; pinhole porosity	50/6"	131.5	6.0
8								
10	B-6@10'					50/6"		
12								
14								
	B-6@15'			SC	Clayey SAND, dense, moist, gray, fine sand	72		
16								
					Total depth 16.5 feet Groundwater not encountered Penetration resistance for 140-lb hammer falling 30" by auto-hammer Backfilled with cuttings 12/17/2018			

Figure A-6,
Log of Boring B-6, Page 1 of 1

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2844-22-01

BORING P-1

ELEV. (MSL.) **1751** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **ATS**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**UNDOCUMENTED FILL (afu)** Silty SAND, medium dense, dry, medium brown; fine sand; some medium and coarse sand			
2				SM	**VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)** Silty SAND, dense, damp, brown; fine to medium sand; some coarse sand; trace gravel			
4								
6								
	P-1@7-8'							
8					Total depth 8 feet Groundwater not encountered Set as Percolation Test P-1 Backfilled with cuttings 12/18/2018			

Figure A-7,
Log of Boring P-1, Page 1 of 1

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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PROJECT NO. T2844-22-01

BORING P-2

ELEV. (MSL.) **1751** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **ATS**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**UNDOCUMENTED FILL (afu)** Silty SAND, medium dense, dry, medium brown; fine sand; some medium and coarse sand			
2				SM	**VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)** Silty SAND, dense, damp, brown; fine to medium sand; some coarse sand; trace gravel			
4								
6	P-2@6-7"							
					Total depth 7 feet Groundwater not encountered Set as Percolation Test P-2 Backfilled with cuttings 12/18/2018			

Figure A-8,
Log of Boring P-2, Page 1 of 1

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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PROJECT NO. T2844-22-01

BORING P-3

ELEV. (MSL.) **1751** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **ATS**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SC	**UNDOCUMENTED FILL (afu)** Clayey SAND, medium dense, damp, medium brown; fine sand; some coarse sand			
2				SC	**VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)** Clayey SAND, dense, damp, light olive brown; fine sand; some coarse sand			
4								
6				SM	Silty SAND, dense, damp, medium brown; fine sand			
8								
10	P-3@9-10			ML	Sandy SILT, stiff, moist, dark yellowish brown; fine to medium sand; trace coarse sand			

Total depth 10 feet
Groundwater not encountered
Set as Percolation Test P-3
Backfilled with cuttings 12/18/2018

Figure A-9,
Log of Boring P-3, Page 1 of 1

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. T2844-22-01

BORING P-4

ELEV. (MSL.) **1752** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **ATS**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SC	**UNDOCUMENTED FILL (afu)** Clayey SAND, medium dense, damp, medium brown; fine sand; some coarse sand			
2				SC	**VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)** Clayey SAND, dense, damp, light olive brown; fine sand; some coarse sand			
4								
6				SM	Silty SAND, dense, damp, medium brown; fine sand			
8								
10	P-4@9-10			ML	Sandy SILT, stiff, moist, dark yellowish brown; fine to medium sand; trace coarse sand			

Total depth 10 feet
Groundwater not encountered
Set as Percolation Test P-4
Backfilled with cuttings 11/27/2018

Figure A-10,
Log of Boring P-4, Page 1 of 1

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

☐ ... SAMPLING UNSUCCESSFUL ◧ ... STANDARD PENETRATION TEST ■ ... DRIVE SAMPLE (UNDISTURBED)

⊠ ... DISTURBED OR BAG SAMPLE ◪ ... CHUNK SAMPLE ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PERCOLATION TEST REPORT

Project Name:		KIA Moreno Valley			**Project No.:**		T2844-22-01
Test Hole No.:		P-1			**Date Excavated:**		12/17/2018
Length of Test Pipe:			108.0	inches	**Soil Classification:**		SM
Height of Pipe above Ground:			16.8	inches	**Presoak Date:**		12/17/2018
Depth of Test Hole:			91.2	inches	**Perc Test Date:**		12/18/2018
Check for Sandy Soil Criteria Tested by:				SP	**Percolation Tested by:**		SP
Water level measured from bottom of hole							

Sandy Soil Criteria Test

Trial No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Level (in)	Final Water Level (in)	Δ in Water Level (inches)	Percolation Rate (min/inch)
1	8:52 AM 9:17 AM	25	25	43.2	43.1	0.1	208
2	9:17 AM 9:42 AM	25	50	43.1	43.0	0.1	208
			Soil Criteria: Normal				

Percolation Test

Reading No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Head (in)	Final Water Head (in)	Δ in Water Level (inches)	Percolation Rate (min/inch)
1	9:42 AM 10:12 AM	30	30	43.1	43.0	0.1	250
2	10:12 AM 10:42 AM	30	60	43.0	42.8	0.1	250
3	10:42 AM 11:12 AM	30	90	42.8	42.6	0.2	125
4	11:12 AM 11:42 AM	30	120	42.6	42.5	0.1	250
5	11:42 AM 12:12 PM	30	150	42.5	42.4	0.1	250
6	12:12 PM 12:42 PM	30	180	42.4	42.2	0.1	250
7	12:42 PM 1:12 PM	30	210	42.2	42.1	0.1	250
8	1:12 PM 1:42 PM	30	240	42.1	42.0	0.1	250
9	1:42 PM 2:12 PM	30	270	42.0	41.9	0.1	250
10	2:12 PM 2:42 PM	30	300	41.9	41.8	0.1	250
11	2:42 PM 3:12 PM	30	330	41.8	41.6	0.1	250
12	3:12 PM 3:42 PM	30	360	41.6	41.5	0.1	250

Infiltration Rate (in/hr):		0.01				
Radius of test hole (in):		4				**Figure A-11**
Average Head (in):		41.6				

PERCOLATION TEST REPORT							
Project Name:		KIA Moreno Valley			**Project No.:**		T2844-22-01
Test Hole No.:		P-2			**Date Excavated:**		12/17/2018
Length of Test Pipe:			95.8	inches	**Soil Classification:**		SM
Height of Pipe above Ground:			16.8	inches	**Presoak Date:**		12/17/2018
Depth of Test Hole:			79.0	inches	**Perc Test Date:**		12/18/2018
Check for Sandy Soil Criteria Tested by:				SP	**Percolation Tested by:**		SP
Water level measured from bottom of hole							
Sandy Soil Criteria Test							
Trial No.	**Time**	**Time Interval (min)**	**Total Elapsed Time (min)**	**Initial Water Level (in)**	**Final Water Level (in)**	**Δ in Water Level (inches)**	**Percolation Rate (min/inch)**
1	8:56 AM 9:21 AM	25	25	23.4	23.0	0.4	69
2	9:21 AM 9:46 AM	25	50	23.0	22.9	0.1	208
			Soil Criteria: Normal				
			Percolation Test				
Reading No.	**Time**	**Time Interval (min)**	**Total Elapsed Time (min)**	**Initial Water Head (in)**	**Final Water Head (in)**	**Δ in Water Level (inches)**	**Percolation Rate (min/inch)**
1	9:46 AM 10:16 AM	30	30	22.9	22.6	0.4	83
2	10:16 AM 10:46 AM	30	60	22.6	22.2	0.4	83
3	10:46 AM 11:16 AM	30	90	22.2	21.4	0.8	36
4	11:16 AM 11:46 AM	30	120	21.4	20.2	1.2	25
5	11:46 AM 12:16 PM	30	150	20.2	19.1	1.1	28
6	12:16 PM 12:46 PM	30	180	19.1	18.0	1.1	28
7	12:46 PM 1:16 PM	30	210	18.0	16.8	1.2	25
8	1:16 PM 1:46 PM	30	240	16.8	15.7	1.1	28
9	1:46 PM 2:16 PM	30	270	15.7	14.6	1.1	28
10	2:16 PM 2:46 PM	30	300	14.6	13.6	1.1	28
11	2:46 PM 3:16 PM	30	330	13.6	12.5	1.1	28
12	3:16 PM 3:46 PM	30	360	12.5	11.4	1.1	28
Infiltration Rate (in/hr):			0.31				
Radius of test hole (in):			4				**Figure A-12**
Average Head (in):			11.9				

PERCOLATION TEST REPORT

Project Name:		KIA Moreno Valley			**Project No.:**		T2844-22-01
Test Hole No.:		P-3			**Date Excavated:**		12/17/2018
Length of Test Pipe:			119.8	inches	**Soil Classification:**		ML
Height of Pipe above Ground:			2.4	inches	**Presoak Date:**		12/17/2018
Depth of Test Hole:			117.4	inches	**Perc Test Date:**		12/18/2018
Check for Sandy Soil Criteria Tested by:				SP	**Percolation Tested by:**		SP
Water level measured from bottom of hole							

Sandy Soil Criteria Test

Trial No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Level (in)	Final Water Level (in)	Δ in Water Level (inches)	Percolation Rate (min/inch)
1	9:03 AM 9:28 AM	25	25	42.6	42.5	0.1	208
2	9:28 AM 9:53 AM	25	50	42.5	42.4	0.1	208
			Soil Criteria: Normal				

Percolation Test

Reading No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Head (in)	Final Water Head (in)	Δ in Water Level (inches)	Percolation Rate (min/inch)
1	9:53 AM 10:23 AM	30	30	42.4	42.2	0.1	250
2	10:23 AM 10:53 AM	30	60	42.2	42.1	0.1	250
3	10:53 AM 11:23 AM	30	90	42.1	42.0	0.1	250
4	11:23 AM 11:53 AM	30	120	42.0	41.9	0.1	250
5	11:53 AM 12:23 PM	30	150	41.9	41.8	0.1	250
6	12:23 PM 12:53 PM	30	180	41.8	41.6	0.1	250
7	12:53 PM 1:23 PM	30	210	41.6	41.5	0.1	250
8	1:23 PM 1:53 PM	30	240	41.5	41.4	0.1	250
9	1:53 PM 2:23 PM	30	270	41.4	41.3	0.1	250
10	2:23 PM 2:53 PM	30	300	41.3	41.2	0.1	250
11	2:53 PM 3:23 PM	30	330	41.2	41.0	0.1	250
12	3:23 PM 3:53 PM	30	360	41.0	40.9	0.1	250

Infiltration Rate (in/hr):	0.01		
Radius of test hole (in):	4		**Figure A-13**
Average Head (in):	41.0		

PERCOLATION TEST REPORT

Project Name:		KIA Moreno Valley			**Project No.:**		T2844-22-01
Test Hole No.:		P-4			**Date Excavated:**		12/17/2018
Length of Test Pipe:			120.0	inches	**Soil Classification:**		ML
Height of Pipe above Ground:			0.0	inches	**Presoak Date:**		12/17/2018
Depth of Test Hole:			120.0	inches	**Perc Test Date:**		12/18/2018
Check for Sandy Soil Criteria Tested by:				SP	**Percolation Tested by:**		SP
Water level measured from bottom of hole							

Sandy Soil Criteria Test

Trial No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Level (in)	Final Water Level (in)	Δ in Water Level (inches)	Percolation Rate (min/inch)
1	9:06 AM 9:31 AM	25	25	31.3	31.2	0.1	208
2	9:31 AM 9:56 AM	25	50	31.2	30.6	0.6	42
			Soil Criteria: Normal				

Percolation Test

Reading No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Head (in)	Final Water Head (in)	Δ in Water Level (inches)	Percolation Rate (min/inch)
1	9:56 AM 10:26 AM	30	30	30.6	30.5	0.1	250
2	10:26 AM 10:56 AM	30	60	30.5	29.9	0.6	50
3	10:56 AM 11:26 AM	30	90	29.9	29.3	0.6	50
4	11:26 AM 11:56 AM	30	120	29.3	28.7	0.6	50
5	11:56 AM 12:26 PM	30	150	28.7	28.1	0.6	50
6	12:26 PM 12:56 PM	30	180	28.1	27.5	0.6	50
7	12:56 PM 1:26 PM	30	210	27.5	26.9	0.6	50
8	1:26 PM 1:56 PM	30	240	26.9	26.4	0.5	63
9	1:56 PM 2:26 PM	30	270	26.4	25.9	0.5	63
10	2:26 PM 2:56 PM	30	300	25.9	25.3	0.6	50
11	2:56 PM 3:26 PM	30	330	25.3	24.8	0.5	63
12	3:26 PM 3:56 PM	30	360	24.8	24.4	0.5	63

Infiltration Rate (in/hr):			0.07				
Radius of test hole (in):			4				**Figure A-14**
Average Head (in):			24.6				

APPENDIX B

LABORATORY TESTING

We performed laboratory tests in accordance with current, generally accepted test methods of ASTM International (ASTM) or other suggested procedures. We analyzed selected soil samples for *in-situ* density and moisture content, maximum dry density and optimum moisture content, expansion index, corrosivity, grain size distribution, consolidation characteristics, R-value and direct shear strength. The results of the laboratory tests are presented on Figures B-1 through B-5. The in-place dry density and moisture content of the samples tested are presented on the boring logs in *Appendix A.*

SUMMARY OF LABORATORY MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT TEST RESULTS ASTM D1557

Sample No.	Description	Maximum Dry Density (pcf)	Optimum Moisture Content (% of dry wt.)
B-1 @ 0-5’	Silty SAND (SM), reddish brown to light brown	135.2	6.7

SUMMARY OF LABORATORY EXPANSION INDEX TEST RESULTS ASTM D4829

Sample No.	Moisture Content		After Test Dry Density (pcf)	Expansion Index
	Before Test (%)	After Test (%)		
B-5 @ 0-5’	7.6	12.5	120.0	3

SUMMARY OF CORROSIVITY TEST RESULTS

Sample No.	Chloride Content (ppm)	Sulfate Content (%)	pH	Resistivity (ohm-centimeter)
B-1 @ 0-5’	98	0.001	8.3	4,600

Chloride content determined by California Test 422.
Water-soluble sulfate determined by California Test 417.
Resistivity and pH determined by Caltrans Test 643.

SUMMARY OF LABORATORY R-VALUE TEST RESULTS ASTM D2844

Sample No.	R-Value
B-6 @ 0-5”	33

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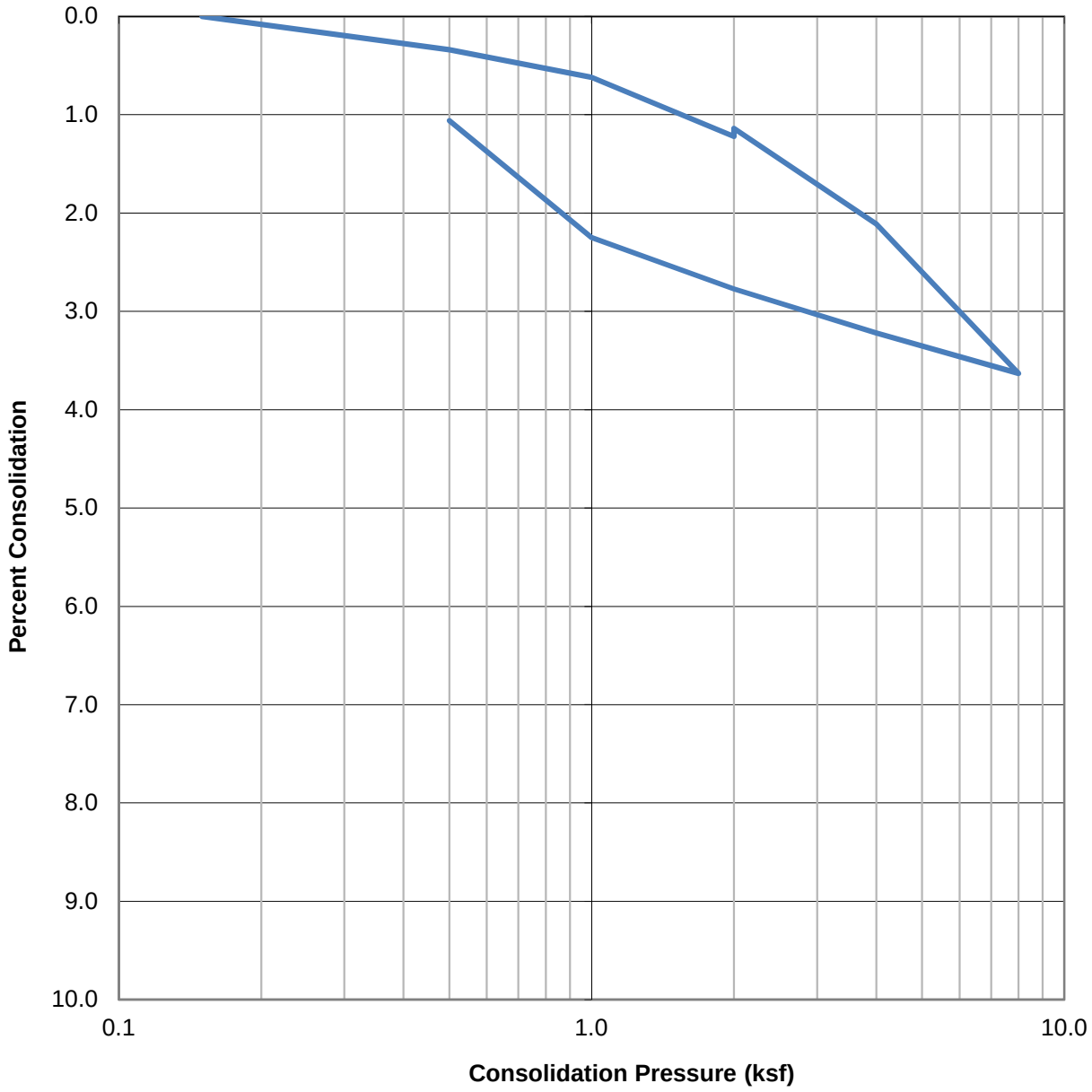
PDT		

LABORATORY TEST RESULTS

KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019	PROJECT NO. T2844-22-01	FIG B-1

WATER ADDED AT 2 KSF



SAMPLE ID	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B-2 @ 7.5'	ML	106.1	11.5	22.1

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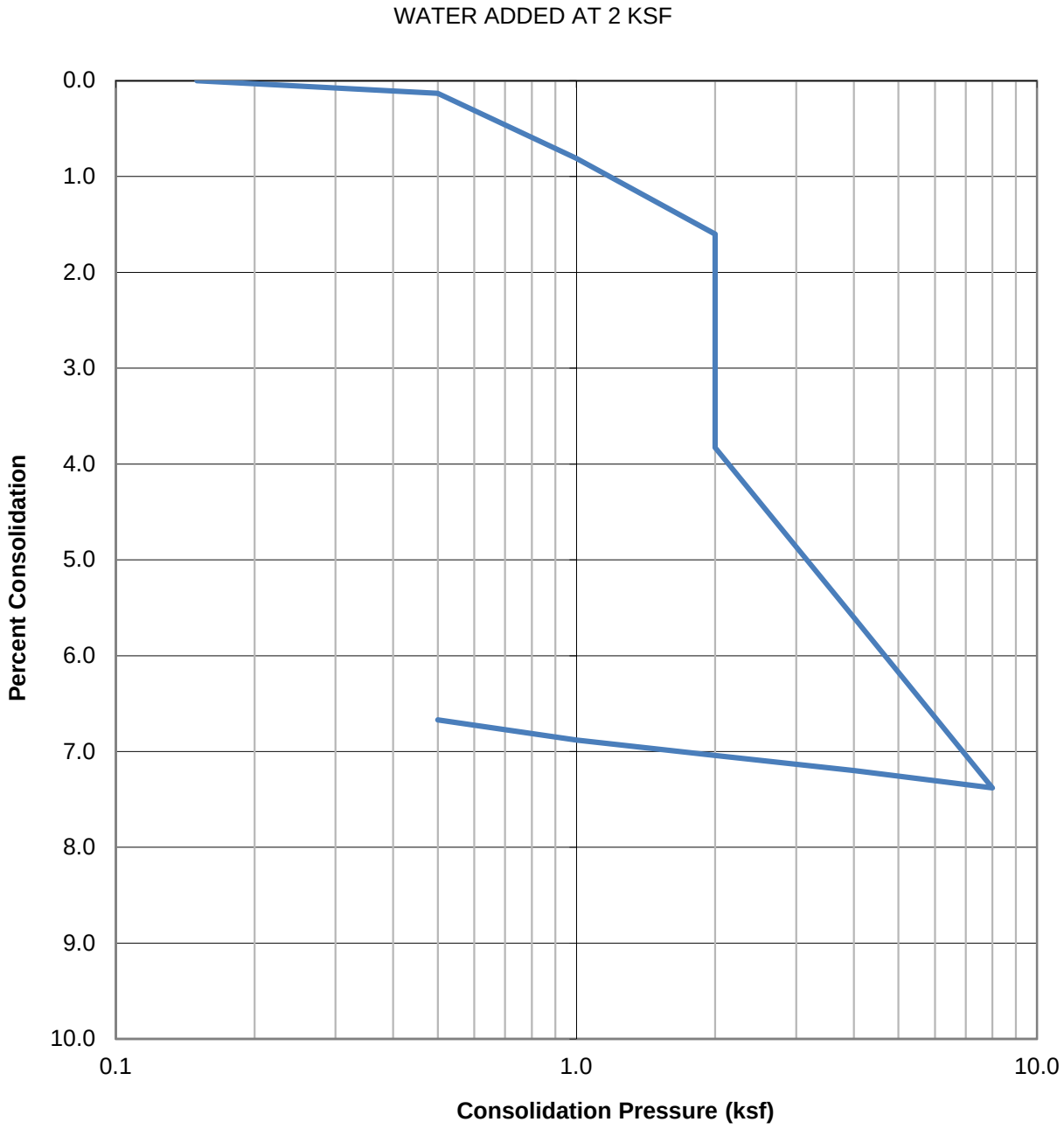
CONSOLIDATION TEST RESULTS

KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019	PROJECT NO. T2844-22-01	FIG B-2



SAMPLE ID	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B-5 @ 2.5'	SM	116.6	6.5	13.1

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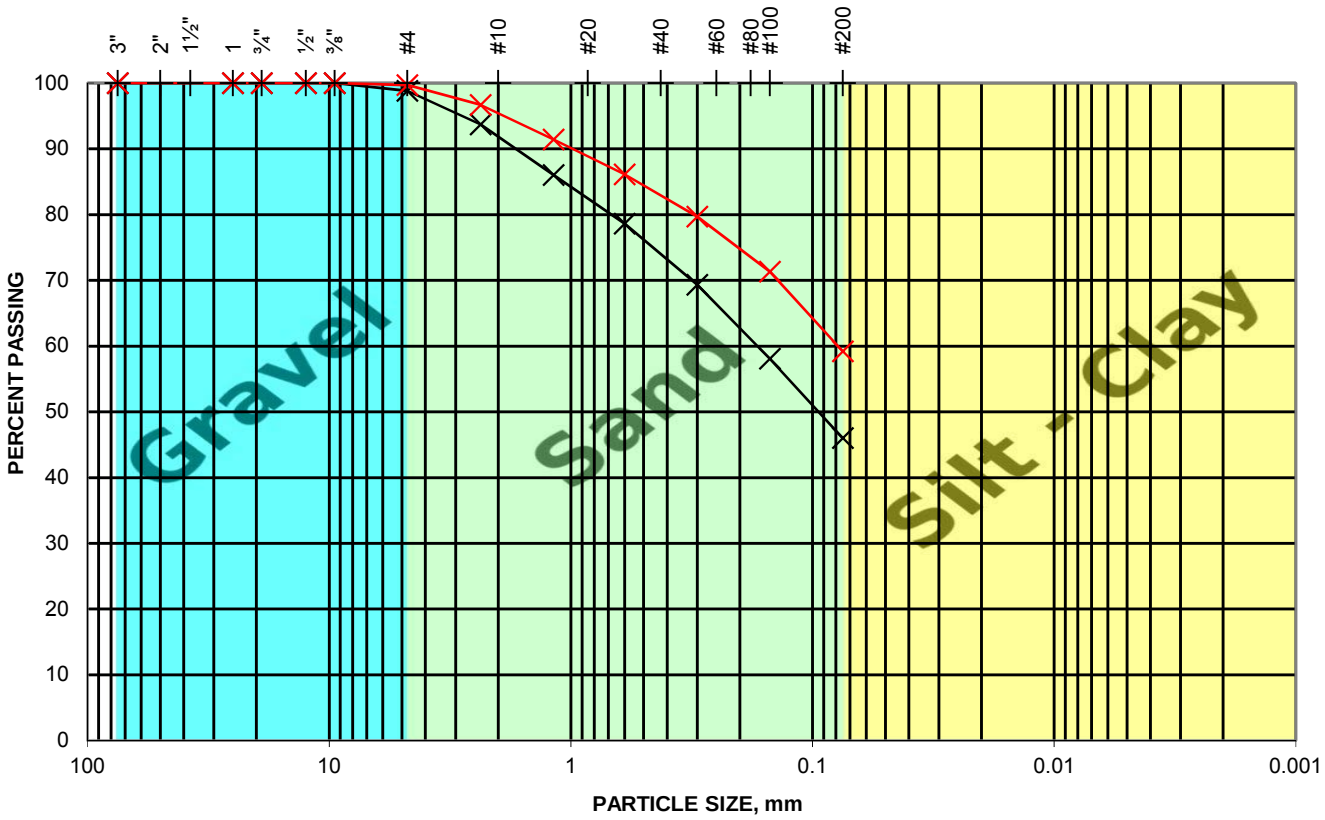
CONSOLIDATION TEST RESULTS

KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019 | PROJECT NO. T2844-22-01 | FIG B-3



SAMPLE ID	SAMPLE DESCRIPTION
P-1/P-2 Blend	SM - Silty Sand, trace gravel
P-3/P-4 Blend	ML - Sandy SILT

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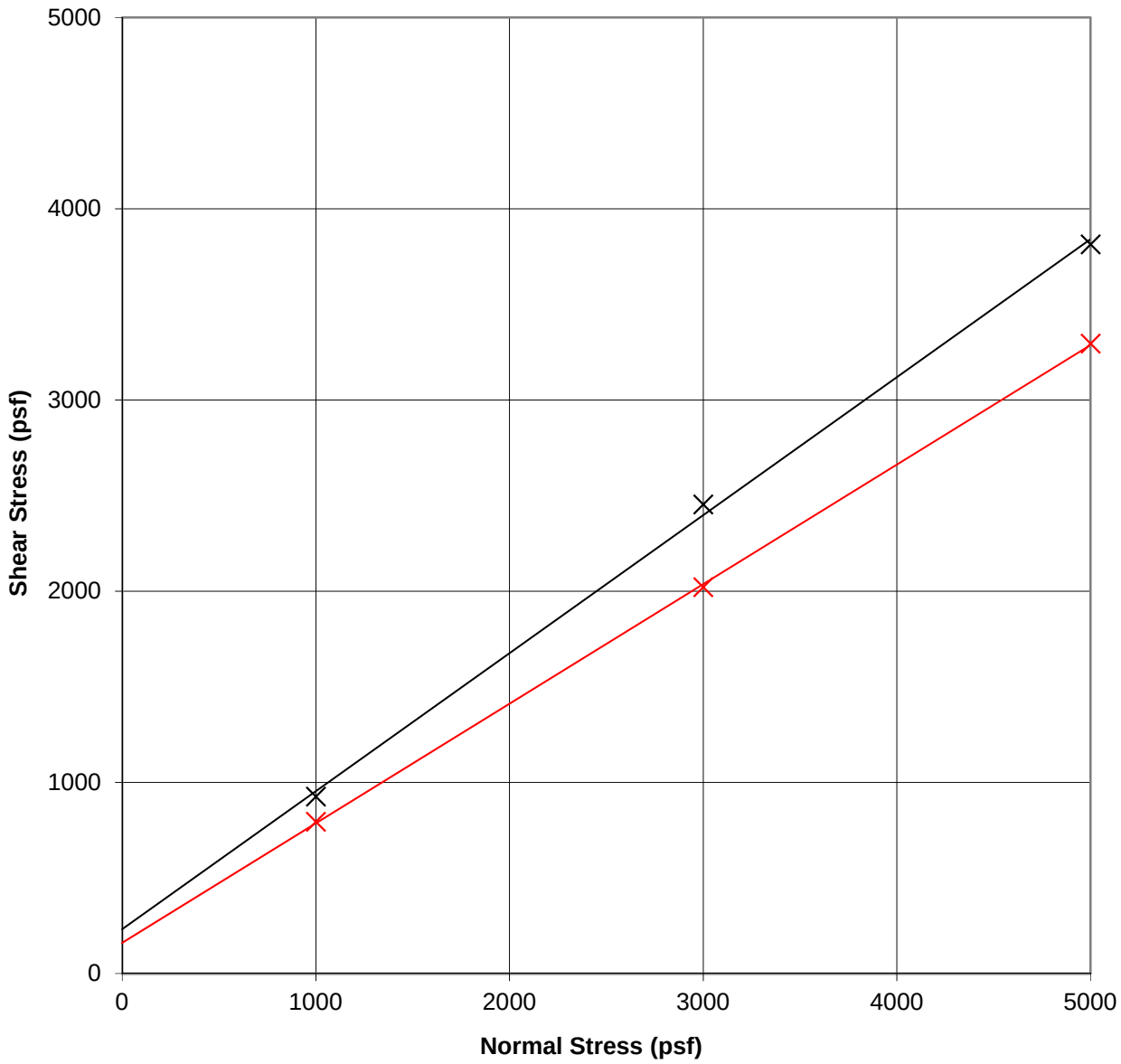
PDT		

GRAIN SIZE DISTRIBUTION

KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019	PROJECT NO. T2844-22-01	FIG B-4



SAMPLE ID	SOIL TYPE	INITIAL DRY DENSITY (pcf)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)	C (psf)	ϕ (deg)
*B-1 @ 0-5'	SM	121.7	6.7	11.3	230	36
B-2 @ 5'	ML	96.7	9.6	23.3	160	32

*Sample remolded to approximately 90% of the test maximum dry density at optimum moisture content.

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DIRECT SHEAR TEST RESULTS
KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019 | PROJECT NO. T2844-22-01 | FIG B-5

APPENDIX C

RECOMMENDED GRADING SPECIFICATIONS

FOR

KIA MORENO VALLEY
SOUTHEAST OF MORENO BEACH DRIVE
AND AUTO MALL WAY
MORENO VALLEY, CALIFORNIA

PROJECT NO. T2844-22-01

RECOMMENDED GRADING SPECIFICATIONS

1. GENERAL

1.1 These Recommended Grading Specifications shall be used in conjunction with the Geotechnical Report for the project prepared by Geocon. The recommendations contained in the text of the Geotechnical Report are a part of the earthwork and grading specifications and shall supersede the provisions contained hereinafter in the case of conflict.

1.2 Prior to the commencement of grading, a geotechnical consultant (Consultant) shall be employed for the purpose of observing earthwork procedures and testing the fills for substantial conformance with the recommendations of the Geotechnical Report and these specifications. The Consultant should provide adequate testing and observation services so that they may assess whether, in their opinion, the work was performed in substantial conformance with these specifications. It shall be the responsibility of the Contractor to assist the Consultant and keep them apprised of work schedules and changes so that personnel may be scheduled accordingly.

1.3 It shall be the sole responsibility of the Contractor to provide adequate equipment and methods to accomplish the work in accordance with applicable grading codes or agency ordinances, these specifications and the approved grading plans. If, in the opinion of the Consultant, unsatisfactory conditions such as questionable soil materials, poor moisture condition, inadequate compaction, and/or adverse weather result in a quality of work not in conformance with these specifications, the Consultant will be empowered to reject the work and recommend to the Owner that grading be stopped until the unacceptable conditions are corrected.

2. DEFINITIONS

2.1 **Owner** shall refer to the owner of the property or the entity on whose behalf the grading work is being performed and who has contracted with the Contractor to have grading performed.

2.2 **Contractor** shall refer to the Contractor performing the site grading work.

2.3 **Civil Engineer** or **Engineer of Work** shall refer to the California licensed Civil Engineer or consulting firm responsible for preparation of the grading plans, surveying and verifying as-graded topography.

2.4 **Consultant** shall refer to the soil engineering and engineering geology consulting firm retained to provide geotechnical services for the project.

2.5 **Soil Engineer** shall refer to a California licensed Civil Engineer retained by the Owner, who is experienced in the practice of geotechnical engineering. The Soil Engineer shall be responsible for having qualified representatives on-site to observe and test the Contractor's work for conformance with these specifications.

2.6 **Engineering Geologist** shall refer to a California licensed Engineering Geologist retained by the Owner to provide geologic observations and recommendations during the site grading.

2.7 **Geotechnical Report** shall refer to a soil report (including all addenda) which may include a geologic reconnaissance or geologic investigation that was prepared specifically for the development of the project for which these Recommended Grading Specifications are intended to apply.

3. MATERIALS

3.1 Materials for compacted fill shall consist of any soil excavated from the cut areas or imported to the site that, in the opinion of the Consultant, is suitable for use in construction of fills. In general, fill materials can be classified as *soil* fills, *soil-rock* fills or *rock* fills, as defined below.

3.1.1 **Soil fills** are defined as fills containing no rocks or hard lumps greater than 12 inches in maximum dimension and containing at least 40 percent by weight of material smaller than ¾ inch in size.

3.1.2 **Soil-rock fills** are defined as fills containing no rocks or hard lumps larger than 4 feet in maximum dimension and containing a sufficient matrix of soil fill to allow for proper compaction of soil fill around the rock fragments or hard lumps as specified in Paragraph 6.2. **Oversize rock** is defined as material greater than 12 inches.

3.1.3 **Rock fills** are defined as fills containing no rocks or hard lumps larger than 3 feet in maximum dimension and containing little or no fines. Fines are defined as material smaller than ¾ inch in maximum dimension. The quantity of fines shall be less than approximately 20 percent of the rock fill quantity.

3.2 Material of a perishable, spongy, or otherwise unsuitable nature as determined by the Consultant shall not be used in fills.

3.3 Materials used for fill, either imported or on-site, shall not contain hazardous materials as defined by the California Code of Regulations, Title 22, Division 4, Chapter 30, Articles 9

and 10; 40CFR; and any other applicable local, state or federal laws. The Consultant shall not be responsible for the identification or analysis of the potential presence of hazardous materials. However, if observations, odors or soil discoloration cause Consultant to suspect the presence of hazardous materials, the Consultant may request from the Owner the termination of grading operations within the affected area. Prior to resuming grading operations, the Owner shall provide a written report to the Consultant indicating that the suspected materials are not hazardous as defined by applicable laws and regulations.

3.4 The outer 15 feet of *soil-rock* fill slopes, measured horizontally, should be composed of properly compacted *soil* fill materials approved by the Consultant. *Rock* fill may extend to the slope face, provided that the slope is not steeper than 2:1 (horizontal:vertical) and a soil layer no thicker than 12 inches is track-walked onto the face for landscaping purposes. This procedure may be utilized provided it is acceptable to the governing agency, Owner and Consultant.

3.5 Samples of soil materials to be used for fill should be tested in the laboratory by the Consultant to determine the maximum density, optimum moisture content, and, where appropriate, shear strength, expansion, and gradation characteristics of the soil.

3.6 During grading, soil or groundwater conditions other than those identified in the Geotechnical Report may be encountered by the Contractor. The Consultant shall be notified immediately to evaluate the significance of the unanticipated condition

4. CLEARING AND PREPARING AREAS TO BE FILLED

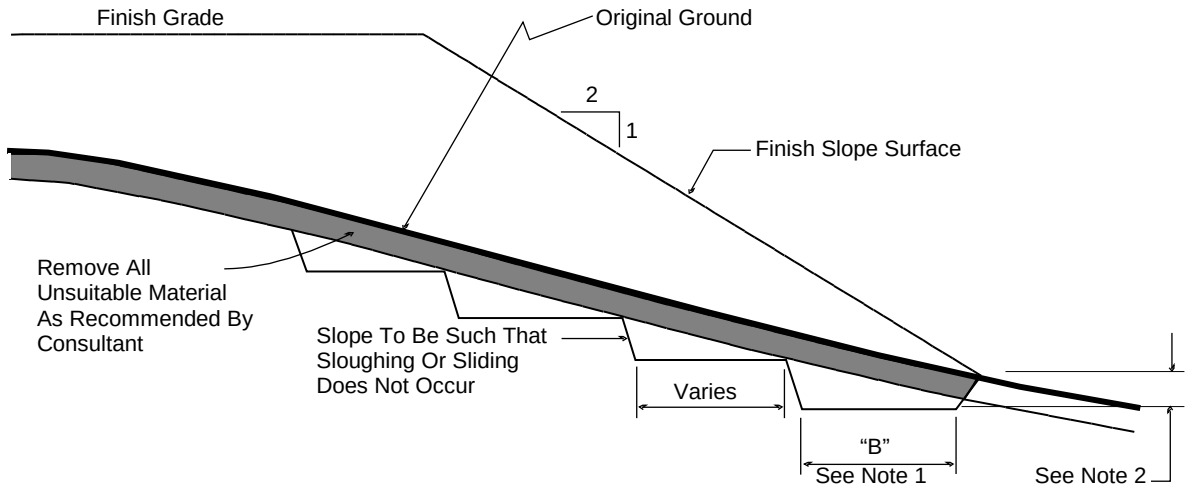
4.1 Areas to be excavated and filled shall be cleared and grubbed. Clearing shall consist of complete removal above the ground surface of trees, stumps, brush, vegetation, man-made structures, and similar debris. Grubbing shall consist of removal of stumps, roots, buried logs and other unsuitable material and shall be performed in areas to be graded. Roots and other projections exceeding 1½ inches in diameter shall be removed to a depth of 3 feet below the surface of the ground. Borrow areas shall be grubbed to the extent necessary to provide suitable fill materials.

4.2 Asphalt pavement material removed during clearing operations should be properly disposed at an approved off-site facility or in an acceptable area of the project evaluated by Geocon and the property owner. Concrete fragments that are free of reinforcing steel may be placed in fills, provided they are placed in accordance with Section 6.2 or 6.3 of this document.

4.3 After clearing and grubbing of organic matter and other unsuitable material, loose or porous soils shall be removed to the depth recommended in the Geotechnical Report. The depth of removal and compaction should be observed and approved by a representative of the Consultant. The exposed surface shall then be plowed or scarified to a minimum depth of 6 inches and until the surface is free from uneven features that would tend to prevent uniform compaction by the equipment to be used.

4.4 Where the slope ratio of the original ground is steeper than 5:1 (horizontal:vertical), or where recommended by the Consultant, the original ground should be benched in accordance with the following illustration.

TYPICAL BENCHING DETAIL



No Scale

DETAIL NOTES: (1) Key width "B" should be a minimum of 10 feet, or sufficiently wide to permit complete coverage with the compaction equipment used. The base of the key should be graded horizontal, or inclined slightly into the natural slope.

(2) The outside of the key should be below the topsoil or unsuitable surficial material and at least 2 feet into dense formational material. Where hard rock is exposed in the bottom of the key, the depth and configuration of the key may be modified as approved by the Consultant.

4.5 After areas to receive fill have been cleared and scarified, the surface should be moisture conditioned to achieve the proper moisture content, and compacted as recommended in Section 6 of these specifications.

5. COMPACTION EQUIPMENT

5.1 Compaction of *soil* or *soil-rock* fill shall be accomplished by sheepsfoot or segmented-steel wheeled rollers, vibratory rollers, multiple-wheel pneumatic-tired rollers, or other types of acceptable compaction equipment. Equipment shall be of such a design that it will be capable of compacting the *soil* or *soil-rock* fill to the specified relative compaction at the specified moisture content.

5.2 Compaction of *rock* fills shall be performed in accordance with Section 6.3.

6. PLACING, SPREADING AND COMPACTION OF FILL MATERIAL

6.1 *Soil* fill, as defined in Paragraph 3.1.1, shall be placed by the Contractor in accordance with the following recommendations:

6.1.1 *Soil* fill shall be placed by the Contractor in layers that, when compacted, should generally not exceed 8 inches. Each layer shall be spread evenly and shall be thoroughly mixed during spreading to obtain uniformity of material and moisture in each layer. The entire fill shall be constructed as a unit in nearly level lifts. Rock materials greater than 12 inches in maximum dimension shall be placed in accordance with Section 6.2 or 6.3 of these specifications.

6.1.2 In general, the *soil* fill shall be compacted at a moisture content at or above the optimum moisture content as determined by ASTM D 1557.

6.1.3 When the moisture content of *soil* fill is below that specified by the Consultant, water shall be added by the Contractor until the moisture content is in the range specified.

6.1.4 When the moisture content of the *soil* fill is above the range specified by the Consultant or too wet to achieve proper compaction, the *soil* fill shall be aerated by the Contractor by blading/mixing, or other satisfactory methods until the moisture content is within the range specified.

6.1.5 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. Relative compaction is defined as the ratio (expressed in percent) of the in-place dry density of the compacted fill to the maximum laboratory dry density as determined in accordance with ASTM D 1557. Compaction shall be continuous over the entire area, and compaction equipment shall make sufficient passes so that the specified minimum relative compaction has been achieved throughout the entire fill.

6.1.6 Where practical, soils having an Expansion Index greater than 50 should be placed at least 3 feet below finish pad grade and should be compacted at a moisture content generally 2 to 4 percent greater than the optimum moisture content for the material.

6.1.7 Properly compacted *soil* fill shall extend to the design surface of fill slopes. To achieve proper compaction, it is recommended that fill slopes be over-built by at least 3 feet and then cut to the design grade. This procedure is considered preferable to track-walking of slopes, as described in the following paragraph.

6.1.8 As an alternative to over-building of slopes, slope faces may be back-rolled with a heavy-duty loaded sheepsfoot or vibratory roller at maximum 4-foot fill height intervals. Upon completion, slopes should then be track-walked with a D-8 dozer or similar equipment, such that a dozer track covers all slope surfaces at least twice.

6.2 *Soil-rock* fill, as defined in Paragraph 3.1.2, shall be placed by the Contractor in accordance with the following recommendations:

6.2.1 Rocks larger than 12 inches but less than 4 feet in maximum dimension may be incorporated into the compacted *soil* fill, but shall be limited to the area measured 15 feet minimum horizontally from the slope face and 5 feet below finish grade or 3 feet below the deepest utility, whichever is deeper.

6.2.2 Rocks or rock fragments up to 4 feet in maximum dimension may either be individually placed or placed in windrows. Under certain conditions, rocks or rock fragments up to 10 feet in maximum dimension may be placed using similar methods. The acceptability of placing rock materials greater than 4 feet in maximum dimension shall be evaluated during grading as specific cases arise and shall be approved by the Consultant prior to placement.

6.2.3 For individual placement, sufficient space shall be provided between rocks to allow for passage of compaction equipment.

6.2.4 For windrow placement, the rocks should be placed in trenches excavated in properly compacted *soil* fill. Trenches should be approximately 5 feet wide and 4 feet deep in maximum dimension. The voids around and beneath rocks should be filled with approved granular soil having a Sand Equivalent of 30 or greater and should be compacted by flooding. Windrows may also be placed utilizing an "open-face" method in lieu of the trench procedure, however, this method should first be approved by the Consultant.

6.2.5 Windrows should generally be parallel to each other and may be placed either parallel to or perpendicular to the face of the slope depending on the site geometry. The minimum horizontal spacing for windrows shall be 12 feet center-to-center with a 5-foot stagger or offset from lower courses to next overlying course. The minimum vertical spacing between windrow courses shall be 2 feet from the top of a lower windrow to the bottom of the next higher windrow.

6.2.6 Rock placement, fill placement and flooding of approved granular soil in the windrows should be continuously observed by the Consultant.

6.3 *Rock* fills, as defined in Section 3.1.3, shall be placed by the Contractor in accordance with the following recommendations:

6.3.1 The base of the *rock* fill shall be placed on a sloping surface (minimum slope of 2 percent). The surface shall slope toward suitable subdrainage outlet facilities. The *rock* fills shall be provided with subdrains during construction so that a hydrostatic pressure buildup does not develop. The subdrains shall be permanently connected to controlled drainage facilities to control post-construction infiltration of water.

6.3.2 *Rock* fills shall be placed in lifts not exceeding 3 feet. Placement shall be by rock trucks traversing previously placed lifts and dumping at the edge of the currently placed lift. Spreading of the *rock* fill shall be by dozer to facilitate *seating* of the rock. The *rock* fill shall be watered heavily during placement. Watering shall consist of water trucks traversing in front of the current rock lift face and spraying water continuously during rock placement. Compaction equipment with compactive energy comparable to or greater than that of a 20-ton steel vibratory roller or other compaction equipment providing suitable energy to achieve the required compaction or deflection as recommended in Paragraph 6.3.3 shall be utilized. The number of passes to be made should be determined as described in Paragraph 6.3.3. Once a *rock* fill lift has been covered with *soil* fill, no additional *rock* fill lifts will be permitted over the *soil* fill.

6.3.3 Plate bearing tests, in accordance with ASTM D 1196, may be performed in both the compacted *soil* fill and in the *rock* fill to aid in determining the required minimum number of passes of the compaction equipment. If performed, a minimum of three plate bearing tests should be performed in the properly compacted *soil* fill (minimum relative compaction of 90 percent). Plate bearing tests shall then be performed on areas of *rock* fill having two passes, four passes and six passes of the compaction equipment, respectively. The number of passes required for the *rock* fill shall be determined by comparing the results of the plate bearing tests for the *soil* fill and the *rock* fill and by evaluating the deflection

variation with number of passes. The required number of passes of the compaction equipment will be performed as necessary until the plate bearing deflections are equal to or less than that determined for the properly compacted *soil* fill. In no case will the required number of passes be less than two.

6.3.4 A representative of the Consultant should be present during *rock* fill operations to observe that the minimum number of "passes" have been obtained, that water is being properly applied and that specified procedures are being followed. The actual number of plate bearing tests will be determined by the Consultant during grading.

6.3.5 Test pits shall be excavated by the Contractor so that the Consultant can state that, in their opinion, sufficient water is present and that voids between large rocks are properly filled with smaller rock material. In-place density testing will not be required in the *rock* fills.

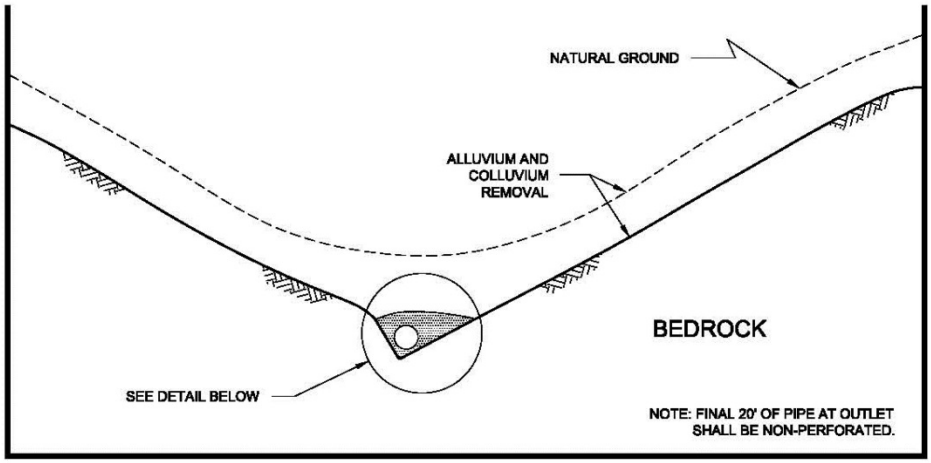
6.3.6 To reduce the potential for "piping" of fines into the *rock* fill from overlying *soil* fill material, a 2-foot layer of graded filter material shall be placed above the uppermost lift of *rock* fill. The need to place graded filter material below the *rock* should be determined by the Consultant prior to commencing grading. The gradation of the graded filter material will be determined at the time the *rock* fill is being excavated. Materials typical of the *rock* fill should be submitted to the Consultant in a timely manner, to allow design of the graded filter prior to the commencement of *rock* fill placement.

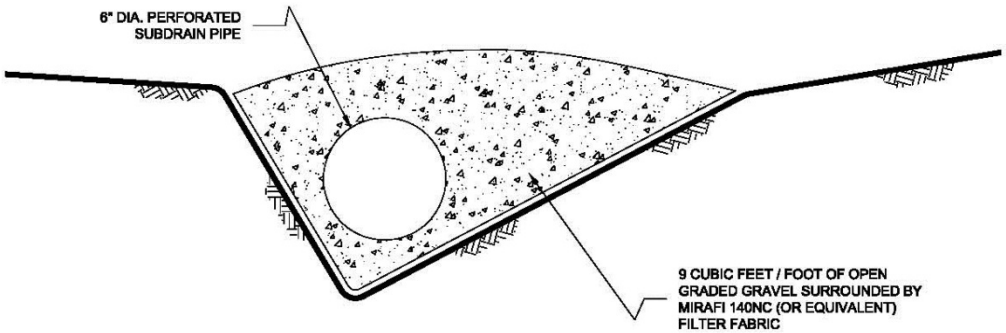
6.3.7 *Rock* fill placement should be continuously observed during placement by the Consultant.

7. SUBDRAINS

7.1 The geologic units on the site may have permeability characteristics and/or fracture systems that could be susceptible under certain conditions to seepage. The use of canyon subdrains may be necessary to mitigate the potential for adverse impacts associated with seepage conditions. Canyon subdrains with lengths in excess of 500 feet or extensions of existing offsite subdrains should use 8-inch-diameter pipes. Canyon subdrains less than 500 feet in length should use 6-inch-diameter pipes.

TYPICAL CANYON DRAIN DETAIL





NOTES:

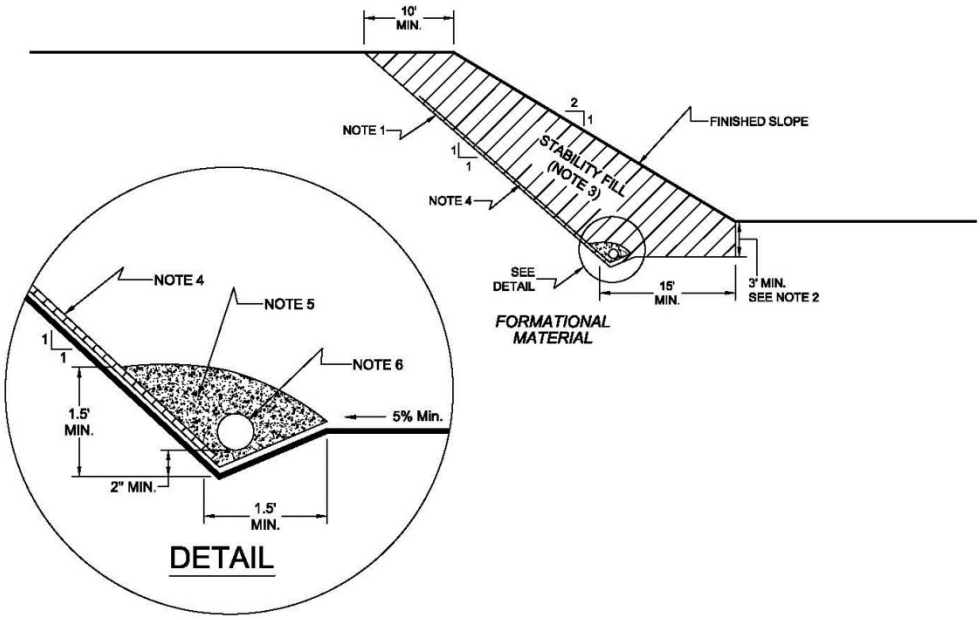
1.....6-INCH DIAMETER, SCHEDULE 80 PVC PERFORATED PIPE FOR FILLS
IN EXCESS OF 100-FEET IN DEPTH OR A PIPE LENGTH OF LONGER THAN 500 FEET.

2.....6-INCH DIAMETER, SCHEDULE 40 PVC PERFORATED PIPE FOR FILLS
LESS THAN 100-FEET IN DEPTH OR A PIPE LENGTH SHORTER THAN 500 FEET.

NO SCALE

7.2 Slope drains within stability fill keyways should use 4-inch-diameter (or larger) pipes.

TYPICAL STABILITY FILL DETAIL



NOTES:

1.....EXCAVATE BACKCUT AT 1:1 INCLINATION (UNLESS OTHERWISE NOTED).

2.....BASE OF STABILITY FILL TO BE 3 FEET INTO FORMATIONAL MATERIAL, SLOPING A MINIMUM 5% INTO SLOPE.

3.....STABILITY FILL TO BE COMPOSED OF PROPERLY COMPACTED GRANULAR SOIL.

4.....CHIMNEY DRAINS TO BE APPROVED PREFABRICATED CHIMNEY DRAIN PANELS (MIRADRAIN G200N OR EQUIVALENT) SPACED APPROXIMATELY 20 FEET CENTER TO CENTER AND 4 FEET WIDE. CLOSER SPACING MAY BE REQUIRED IF SEEPAGE IS ENCOUNTERED.

5.....FILTER MATERIAL TO BE 3/4-INCH, OPEN-GRADED CRUSHED ROCK ENCLOSED IN APPROVED FILTER FABRIC (MIRAFI 140NC).

6.....COLLECTOR PIPE TO BE 4-INCH MINIMUM DIAMETER, PERFORATED, THICK-WALLED PVC SCHEDULE 40 OR EQUIVALENT, AND SLOPED TO DRAIN AT 1 PERCENT MINIMUM TO APPROVED OUTLET.

NO SCALE

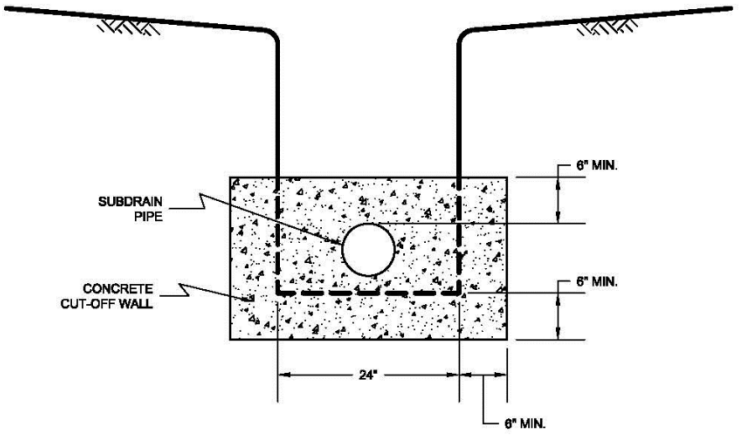
7.3 The actual subdrain locations will be evaluated in the field during the remedial grading operations. Additional drains may be necessary depending on the conditions observed and the requirements of the local regulatory agencies. Appropriate subdrain outlets should be evaluated prior to finalizing 40-scale grading plans.

7.4 *Rock* fill or *soil-rock* fill areas may require subdrains along their down-slope perimeters to mitigate the potential for buildup of water from construction or landscape irrigation. The subdrains should be at least 6-inch-diameter pipes encapsulated in gravel and filter fabric. *Rock* fill drains should be constructed using the same requirements as canyon subdrains.

7.5 Prior to outletting, the final 20-foot segment of a subdrain that will not be extended during future development should consist of non-perforated drainpipe. At the non-perforated/ perforated interface, a seepage cutoff wall should be constructed on the downslope side of the pipe.

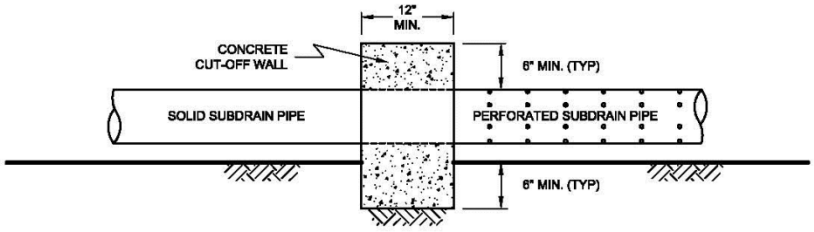
TYPICAL CUT OFF WALL DETAIL

FRONT VIEW



NO SCALE

SIDE VIEW

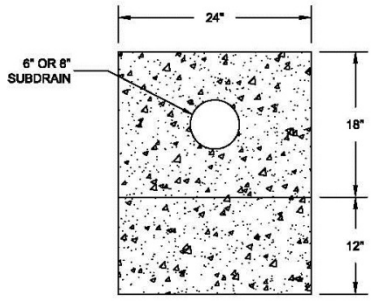


NO SCALE

7.6 Subdrains that discharge into a natural drainage course or open space area should be provided with a permanent headwall structure.

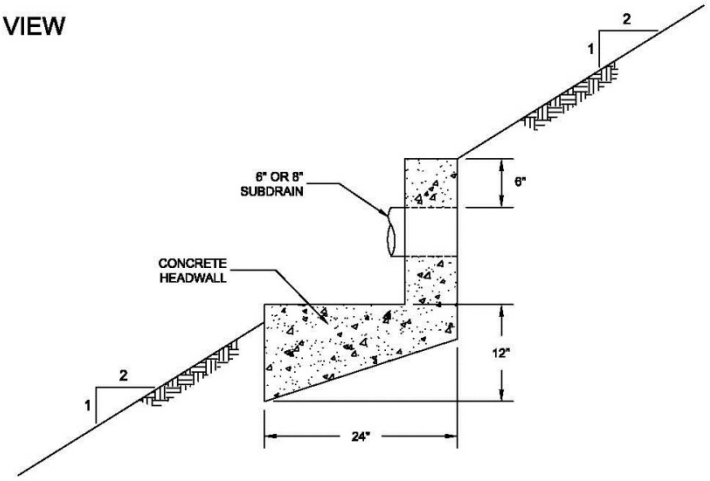
TYPICAL HEADWALL DETAIL

FRONT VIEW



NO SCALE

SIDE VIEW



NOTE: HEADWALL SHOULD OUTLET AT TOE OF FILL SLOPE OR INTO CONTROLLED SURFACE DRAINAGE

NO SCALE

7.7 The final grading plans should show the location of the proposed subdrains. After completion of remedial excavations and subdrain installation, the project civil engineer should survey the drain locations and prepare an “as-built” map showing the drain locations. The final outlet and connection locations should be determined during grading operations. Subdrains that will be extended on adjacent projects after grading can be placed on formational material and a vertical riser should be placed at the end of the subdrain. The grading contractor should consider videoing the subdrains shortly after burial to check proper installation and functionality. The contractor is responsible for the performance of the drains.

8. OBSERVATION AND TESTING

8.1 The Consultant shall be the Owner's representative to observe and perform tests during clearing, grubbing, filling, and compaction operations. In general, no more than 2 feet in vertical elevation of *soil* or *soil-rock* fill should be placed without at least one field density test being performed within that interval. In addition, a minimum of one field density test should be performed for every 2,000 cubic yards of *soil* or *soil-rock* fill placed and compacted.

8.2 The Consultant should perform a sufficient distribution of field density tests of the compacted *soil* or *soil-rock* fill to provide a basis for expressing an opinion whether the fill material is compacted as specified. Density tests shall be performed in the compacted materials below any disturbed surface. When these tests indicate that the density of any layer of fill or portion thereof is below that specified, the particular layer or areas represented by the test shall be reworked until the specified density has been achieved.

8.3 During placement of *rock* fill, the Consultant should observe that the minimum number of passes have been obtained per the criteria discussed in Section 6.3.3. The Consultant should request the excavation of observation pits and may perform plate bearing tests on the placed *rock* fills. The observation pits will be excavated to provide a basis for expressing an opinion as to whether the *rock* fill is properly seated and sufficient moisture has been applied to the material. When observations indicate that a layer of *rock* fill or any portion thereof is below that specified, the affected layer or area shall be reworked until the *rock* fill has been adequately seated and sufficient moisture applied.

8.4 A settlement monitoring program designed by the Consultant may be conducted in areas of *rock* fill placement. The specific design of the monitoring program shall be as recommended in the Conclusions and Recommendations section of the project Geotechnical Report or in the final report of testing and observation services performed during grading.

8.5 We should observe the placement of subdrains, to check that the drainage devices have been placed and constructed in substantial conformance with project specifications.

8.6 Testing procedures shall conform to the following Standards as appropriate:

8.6.1 Soil and Soil-Rock Fills:

8.6.1.1 Field Density Test, ASTM D 1556, *Density of Soil In-Place By the Sand-Cone Method.*

8.6.1.2 Field Density Test, Nuclear Method, ASTM D 6938, *Density of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth).*

8.6.1.3 Laboratory Compaction Test, ASTM D 1557, *Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-Pound Hammer and 18-Inch Drop.*

8.6.1.4. Expansion Index Test, ASTM D 4829, *Expansion Index Test*.

9. PROTECTION OF WORK

9.1 During construction, the Contractor shall properly grade all excavated surfaces to provide positive drainage and prevent ponding of water. Drainage of surface water shall be controlled 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 features have been installed. Areas subjected to erosion or sedimentation shall be properly prepared in accordance with the Specifications prior to placing additional fill or structures.

9.2 After completion of grading as observed and tested by the Consultant, no further excavation or filling shall be conducted except in conjunction with the services of the Consultant.

10. CERTIFICATIONS AND FINAL REPORTS

10.1 Upon completion of the work, Contractor shall furnish Owner a certification by the Civil Engineer stating that the lots and/or building pads are graded to within 0.1 foot vertically of elevations shown on the grading plan and that all tops and toes of slopes are within 0.5 foot horizontally of the positions shown on the grading plans. After installation of a section of subdrain, the project Civil Engineer should survey its location and prepare an *as-built* plan of the subdrain location. The project Civil Engineer should verify the proper outlet for the subdrains and the Contractor should ensure that the drain system is free of obstructions.

10.2 The Owner is responsible for furnishing a final as-graded soil and geologic report satisfactory to the appropriate governing or accepting agencies. The as-graded report should be prepared and signed by a California licensed Civil Engineer experienced in geotechnical engineering and by a California Certified Engineering Geologist, indicating that the geotechnical aspects of the grading were performed in substantial conformance with the Specifications or approved changes to the Specifications.

APPENDIX E: PHASE I PALEONTOLOGICAL RESOURCES ASSESSMENT

MATERIAL CULTURE
CONSULTING

PHASE I PALEONTOLOGICAL RESOURCES ASSESSMENT: CARS PROS KIA PROJECT, THE CITY OF MORENO VALLEY, RIVERSIDE COUNTY, CALIFORNIA

Prepared for:
Cars Pro Automotive Group

EPD Solutions, Inc.
2030 Main St., Ste. 1200
Irvine, CA 92614

Prepared by:
Jennifer Kelly, M.Sc. and Sonia Sifuentes, M.Sc., RPA

Principal Investigator:
Jennifer Kelly, M.Sc., Riverside County Qualified Paleontologist
Material Culture Consulting, Inc.
2701-B North Towne Avenue
Pomona, CA 91767
626-205-8279

March 2019

MCC Project Number: 20190304
Type of Study: Paleontological resources assessment
Paleontological Resources within Area of Potential Impact: None
Paleontological Sensitivity: High Sensitivity B
USGS 7.5-minute Quadrangle: Sunnymead, Section 2 of Township 3 S, Range 3 W
City and County: Moreno Valley, Riverside County
Survey Acreage: Approx. 6.3 acres
APN(s): 488-390-015 and 488-390-016
Date of Fieldwork: March 1, 2019
Key Words: Paleontology, CEQA, Phase I Survey, Riverside County, High Sensitivity B

MANAGEMENT SUMMARY

Cars Pro Automotive Group proposes the construction of a new automotive commercial complex, called Kia Moreno Valley (Project). The proposed Project consists of two parcels totaling approximately 6.3 acres (APN 488-390-015 and 488-390-016), located at the intersection of Auto Mall Drive and Moreno Beach Drive in the City of Moreno Valley, Riverside County, California. The proposed Project consists of construction of a sales and service facility building which will include a service reception, a parts receiving location and multiple vehicle display areas. Material Culture Consulting, Inc. (MCC) was retained by E|P|D Solutions, Inc. to conduct a Phase I paleontological resource investigation of the Project Area. This assessment was conducted in accordance with the California Environmental Quality Act (CEQA) and included a locality search, an examination of geologic maps and paleontological literature, and a field survey.

Based on the paleontological literature, the Project Area is mapped as surficial younger Quaternary alluvium with older Quaternary alluvium at unknown deposits. No significant paleontological resources were identified directly within the Project Area during the locality search or the field survey. The locality search conducted by the Natural History Museum of Los Angeles County (NHMLA) did yield nearby localities from sedimentary deposits similar to those that may occur subsurface in the Project Area. The Riverside County Land Information System (RCLIS) GIS data reveals all of the Project Area lie within an area mapped as High B sensitivity. High B sensitivity indicates that these sedimentary rock units have high potential for containing significant non-renewable paleontological resources at depths at or below 5 feet. Excavation during the course of the Project may reach paleontologically sensitive deposits, and, as a result, could impact paleontological resources. Therefore, MCC recommends the following procedures:

- A trained and qualified paleontological monitor should perform full-time monitoring of any excavations on the Project that have the potential to impact paleontological resources in undisturbed High sensitivity native sediments, at or below 5 feet in depth. The monitor will have the ability to redirect construction activities to ensure avoidance of adverse impacts to paleontological resources.
- The project paleontologist may re-evaluate the necessity for paleontological monitoring after examination of the affected sediments during excavation, with approval from County and Client representatives.
- Any potentially significant fossils observed shall be collected and recorded in conjunction with best management practices and Society of Vertebrate Paleontology (SVP) professional standards.
- Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.
- A report documenting the results of the monitoring, including any salvage activities and the significance of any fossils, will be prepared and submitted to the appropriate County personnel.

All notes, photographs, correspondence and other materials related to this Project are located at Material Culture Consulting, Inc., located in Pomona, California.

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APPENDIX A: QUALIFICATIONS
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INTRODUCTION AND SETTING

Cars Pro Automotive Group proposes the construction of a new automotive commercial complex, called Kia Moreno Valley (Project). The proposed Project consists of two parcels totaling approximately 6.3 acres (APN 488-390-015 and 488-390-016), located at the intersection of Auto Mall Drive and Moreno Beach Drive in the City of Moreno Valley, Riverside County, California. Material Culture Consulting, Inc. (MCC) was retained by E|P|D Solutions, Inc. to conduct a Phase I paleontological resource investigation of the Project Area. This paleontological resource assessment was conducted in compliance with the California Environmental Quality Act (CEQA), Public Resources Code (13 PRC) 2100, (14 CAC) 15000, Appendix G, Section J, (PRC) 2100-21177, Appendix G, (PRC) 5097.5. This study included a locality records search, an examination of geologic maps and paleontological literature and field survey to determine whether the proposed project would adversely affect any significant paleontological resources. According to these regulations and guidelines, if development of a Project has the potential to result in significant impacts to paleontological resources, a plan must be developed to mitigate those impacts to a level which is less than a significant. This assessment documents the potential for encountering paleontological resources during development of this Project and provides recommendations on how to mitigate impacts to those resources. The lead agency for this Project is the City of Moreno Valley.

PROJECT LOCATION AND DESCRIPTION

The Project is located in the City of Moreno Valley, located within northwestern Riverside County (Figure 1). The Project consists of two vacant parcels totaling approximately 6.3 acres (APNs 488-390-015 and 488-390-016), located at the intersection of Auto Mall Drive and Moreno Beach Drive in the City of Moreno Valley, Riverside County, California (Figures 2 and 3). The Project Area is situated northeast of the Moreno Peak and south of the Moreno Valley highway (State Route 60). Specifically, the Project Area is bounded by Auto Mall Drive to west/northwest, Moreno Beach Drive to the south, Pettit Street to the north, and a vacant lot east. Specifically, the proposed Project is located within Section 2, Township 3 South, Range 3 West on the Sunnymead USGS 7.5-minute quadrangle (San Bernardino Base Meridian) (Figure 2). The proposed Project is a Kia vehicle sales and service facility with a car wash.

PROJECT PERSONNEL

Jennifer Kelly, M.S., a Qualified Riverside County Paleontologist, served as the Principal Investigator for the study. Ms. Kelly conducted the paleontological resource literature and map reviews, oversaw the field study, and prepared this report. Ms. Kelly has a M.Sc. in Geology from California State University, Long Beach. Ms. Kelly has over ten years of experience in environmental and paleontological compliance in California (See Appendix A).

Sonia Sifuentes, M.A., RPA, Material Culture archaeologist and cross-trained paleontologist, co-authored this report. Ms. Sifuentes has a M.Sc in Archaeology of the North from University of Aberdeen, Scotland, a B.A. in Anthropology from University of Southern California, and over ten years of experience as an archaeologist in Southern California, including completion of several projects in Riverside County and three years of professional experience working as a cross-trained paleontologist in Southern California. Julia Carvajal, B.A., Material Culture archaeologist and cross-trained paleontologist, conducted the pedestrian survey on March 1, 2019. Ms. Carvajal has completed her M.A. coursework in Archaeology at California State University, Los Angeles and her B.A. in Anthropology from California State Polytechnic University, Pomona. Ms. Carvajal has over eight years of experience as an archaeologist in Southern California including completion of several projects in Riverside County and two years of professional experience working as a cross-trained paleontologist in Southern California.

Figure 1. Cars Pro Kia Project Vicinity (1:250,000)

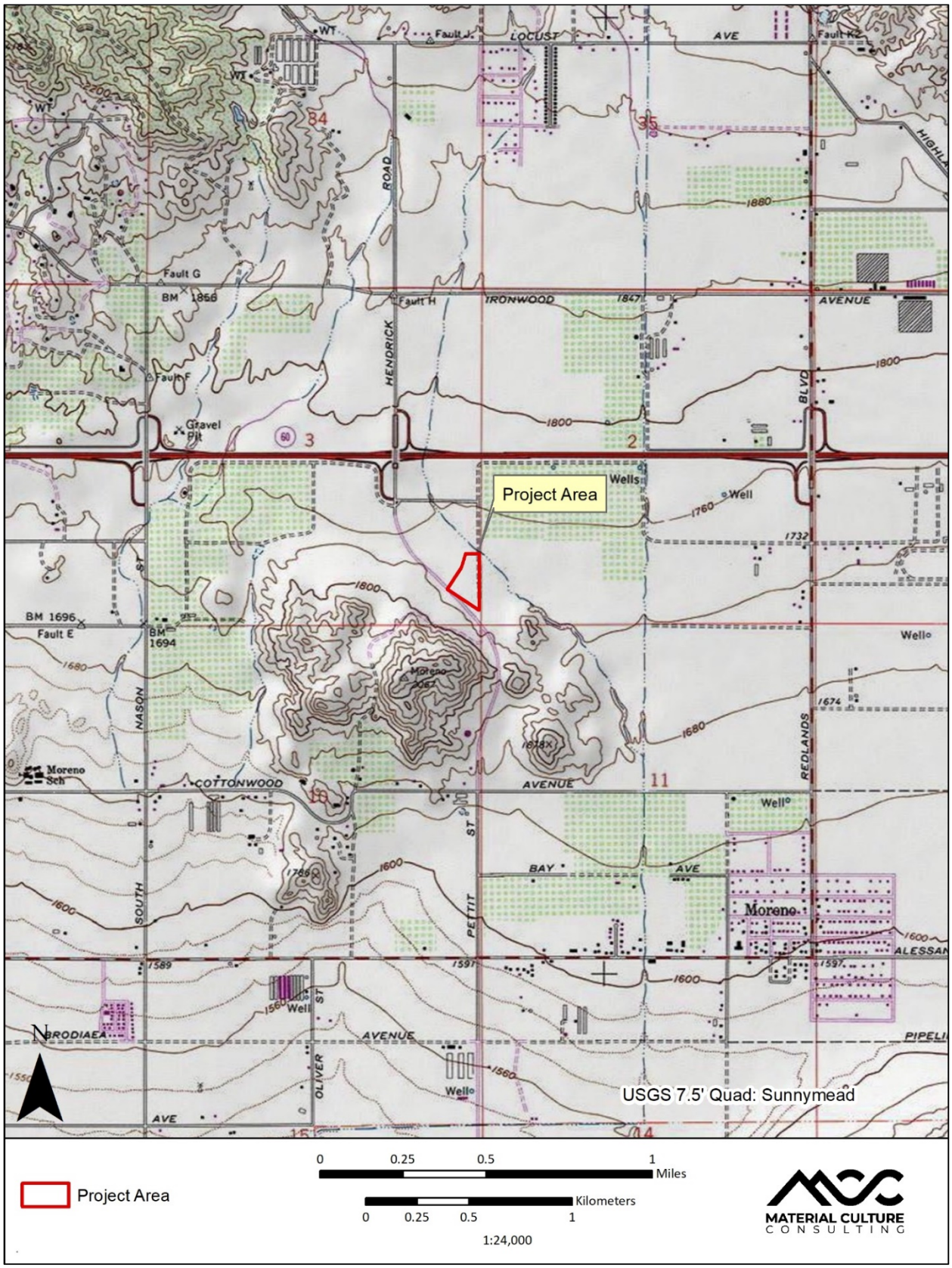

Figure 2. Cars Pro Kia Project Location (as depicted on Sunnymead USGS 7.5 minute Quadrangle, 1:24,000)

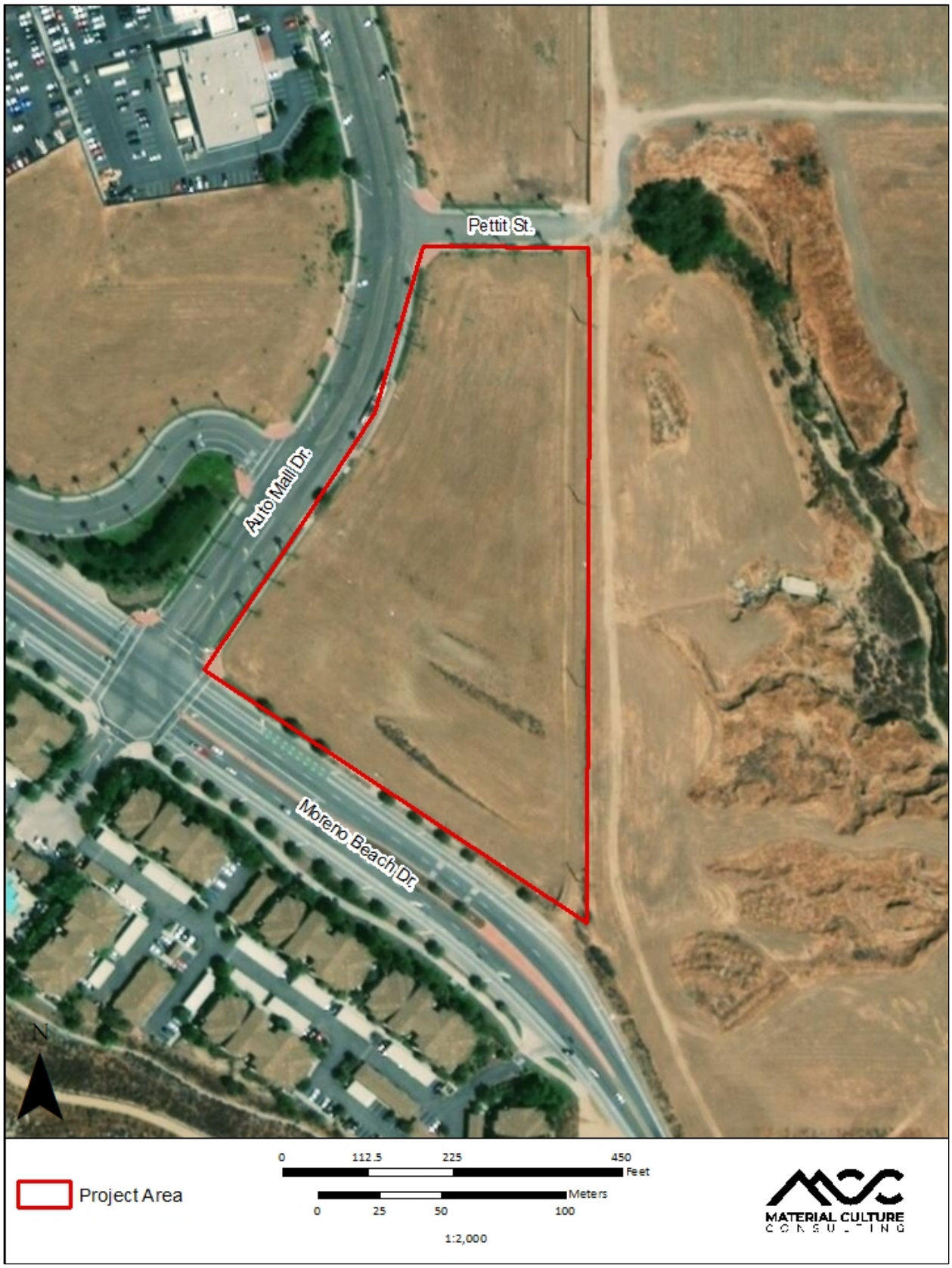

Figure 3. Cars Pro Kia Project Area (as depicted on aerial photograph, 1:2,000)

ENVIRONMENTAL SETTING

The Project Area is located within the City of Moreno Valley city limits in northwestern Riverside County, approximately 0.43 mile south of California State Route 60. Bounded by the Box Springs Mountain to the north, the Badlands to the east, and Lake Perris Recreation Area and associated mountains to the south, the Project Area is located within a relatively flat valley floor that is surrounded by hills and mountains. Elevations are approximately 533 meters (m) (1748 ft) above mean sea level (AMSL) throughout the Project Area. The region is located within the Peninsular Ranges, a northwest-southeast oriented complex of blocks separated by similarly trending faults (Norris and Webb 1978). Most geological formations found within this area are comprised the Southern California Batholith, a great mass of basement igneous rocks. Vegetation observed within the Project Area include invasive grasses and weeds and brittle bush observed along the southern portion. Non-native landscaping is present within the surround region, with a residential and commercial development located to the South-southwest and Northwest of the Project Area. The climate in the region is characterized as Mediterranean, with hot, dry summers and temperate, wet winters.

GEOLOGICAL CONTEXT

The Project Area lies within the Sunnymead quadrangle, which lies within the geomorphic province known as the Peninsular Ranges Province, sitting near the eastern margin of the Perris Block (Kenney 1999). The Perris Block is a structurally stable, internally cohesive mass of crustal rocks bounded on the east by the San Jacinto fault zone, bounded on the west by the Elsinore and Chino fault zones, and on the north by the Cucamonga fault zone (Norris and Webb, 1976; Morton and Matti, 1989), and on the south by a series of sedimentary basins (Morton and Matti 1989). The Project area is mapped as mostly Quaternary alluvium with the southern portion mapped within Mesozoic granitic rock by Jennings, Strand, and Rogers (1977, Figure 4). Additional literature maps the northeastern portion of the Project Area within surficial Quaternary alluvial fan deposits and within the southwestern-most portion of the Project Area is early Pleistocene alluvial fan deposits with exposures of Cretaceous tonalite to the south of the Project Area (Morton and Matti 2001, Figure 5).
Plutonic igneous rocks/tonalite (Kt) are generic Cretaceous rocks of the Peninsular Ranges batholith. These areintrusive igneous bedrock made of mainly biotite-hornblende tonalite not associated with specific plutons (Morton and Matti 2001). These rocks are gray, medium-grained and typically foliated.

Young Quaternary alluvial fan deposits (arenaceous to gravel) (Qya_{ag}) are Holocene to late Pleistocene-aged alluvial fan deposit that is derived from lithicly diverse sediment units. The sediments range from arenaceous to gravel and are gray-hued, slightly consolidated sand (Morton and Matti 2001).

Very Old Alluvial fan deposits (Qvof) are early Pleistocene deposits consisting of mostly well-dissected, well-indurated, reddish-brown sand deposits with minor gravel (Morton and Matti 2001). These deposits are commonly flanking bedrock areas and can contain duripans and locally silcretes (Morton and Matti 2001). These sediments are derived as alluvial fan deposits from the elevated terrain located immediately to the south of the Project Area (McLeod 2019). The surficial sediments can be relatively coarse and lack significant vertebrate fossils in the uppermost layers but may have pockets of finer-grained Quaternary deposits that do contain significant vertebrate fossils (McLeod 2019).

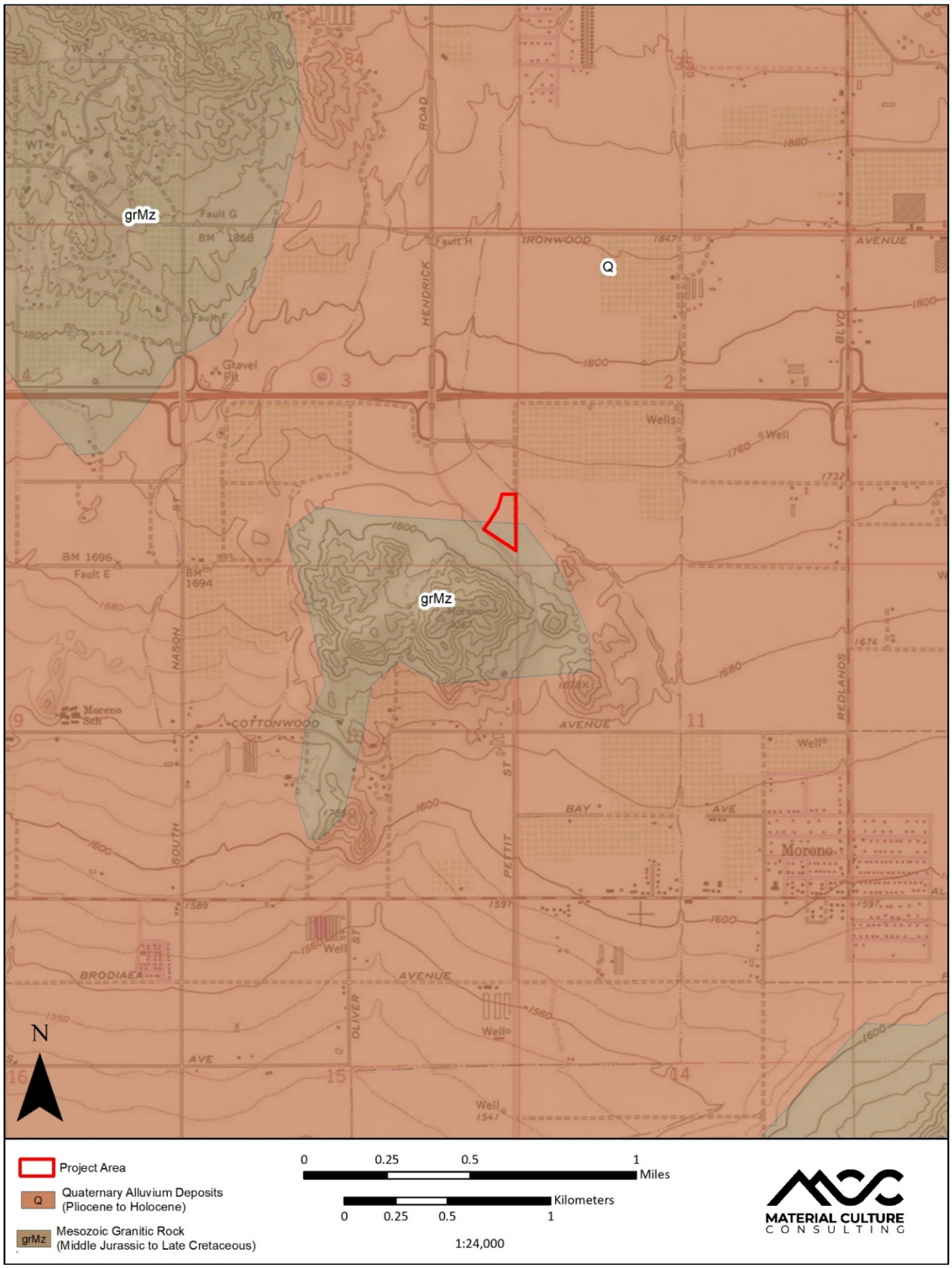

Figure 4. Cars Pro Kia Project Geologic Map (from Jennings, Strand, and Rogers 1977, 1:24,0000)

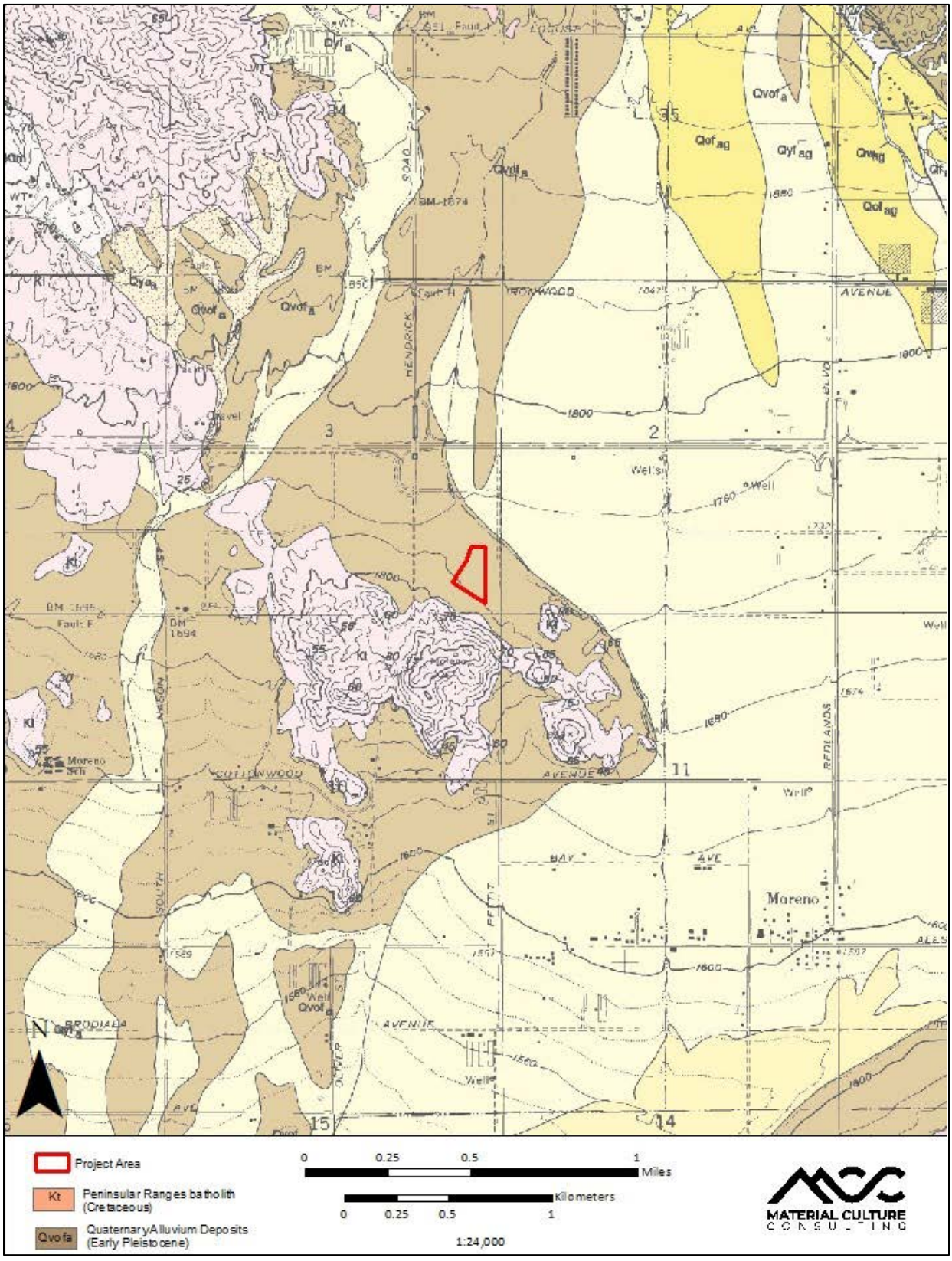

Figure 5. Cars Pro Kia Project Geologic Map 2 (from Morton and Matti 2001, 1:24,0000)

RESEARCH DESIGN

The paleontological resources assessment was conducted according to CEQA, Public Resources Code (13 PRC) 2100, (14 CAC) 15000, Appendix G, Section J, (PRC) 2100-21177, Appendix G, (PRC) 5097.5. The paleontological resources assessment was conducted to evaluate the potential existence of resources that would require a preparation of a monitoring plan and monitoring activities, in order to reduce impacts to a less than significant level. Guidelines set forth by Riverside County were consulted to ensure that all local and state requirements were met.

The Riverside County Land Information System (RCLIS) overlay map defines what significant impact on paleontological resources consists of, and requires monitoring of, activities within designated High sensitivity areas (both High A and B) that may affect these resources. Areas with a "High Potential" for paleontological resources include sedimentary rock units with a high potential for containing significant non-renewable paleontological resources and are rock units within which vertebrate or significant invertebrate fossils have been determined to be present or likely to be present. These units include, but are not limited to, sedimentary formations which contain significant non-renewable paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils. High sensitivity includes not only the potential for yielding abundant vertebrate fossils, but also for production of a few significant fossils that may provide new and significant (taxonomic, phylogenetic, ecologic, and/or stratigraphic) data. High sensitivity areas are mapped as either "High A" or "High B."

The *Moreno Valley General Plan*'s (2006) Conservation Element Programs 7-6 states "in areas where archaeological or paleontological resources are known or reasonably expected to exist, based upon the citywide survey conducted by the UCR Archaeological Research Unit, incorporate the recommendations and determinations of that report to reduce potential impacts to levels of insignificance". Additionally, the *Environmental Impact Report for City of Moreno Valley General Plan* (P&D Consultants 2006) has one mitigation measure concerning paleontological resources:

- MM-1. Prior to the approval of a project, the City will assess potential impacts to significant historic, prehistoric archeological, and paleontological resources, including impacts to human remains, pursuant to Section 15064.5 of the California Environmental Quality Act Guidelines. If significant impacts are identified, the City will require the project to be modified to avoid the impacts, or require measures to mitigate the impacts. Mitigation may involve monitoring, resource recovery, documentation or other measures.

Paleontological resources (fossils) are the remains of prehistoric life. These remains can be bones, teeth, shells, wood or leaves, or trace fossils (including burrows and trackways). The Society for Vertebrate Paleontology (SVP) generally considers any resource greater than 5,000 years old to be a fossil (SVP 2010). Fossils are evidence of ancient life, and as such provide an invaluable window into the past. Fossils are considered non-renewable resources and in California, impacts to paleontological resources must be considered pursuant to CEQA requirements for environmental reviews.

METHODS

LITERATURE AND MAP REVIEW AND LOCALITY SEARCH

The literature review included an examination of geologic maps of the Project Area and a review of relevant geological and paleontological literature to determine which geologic units are present within the Project Area and whether fossils have been recovered from those geologic units elsewhere in the region. As geologic units may extend over large geographic areas and contain similar lithologies and fossils, the literature review includes areas well beyond the Project Area. The results of this literature review include an overview of the geology of the Project Areas and a discussion of the paleontological sensitivity (or potential) of the geologic units within the Project Area. The County of Riverside also provides a paleontological resource sensitivity map for the entire county (RCLIS). This map was consulted by MCC staff on February 13, 2019. Additional sources reviewed included the University of California Museum of Paleontology (UCMP) Miocene Mammal Mapping Project (MioMap) and the Paleobiology Database (PBDB).

The purpose of a locality search is to establish the status and extent of previously recorded paleontological resources within and adjacent to the study area for a given project. On February 19, 2019, the results of a locality search were provided by the Natural History Museum of Los Angeles County (NHMLA) of Los Angeles, California (Appendix B). This search identified any vertebrate localities in the NHMLA records that exist near the Project Area in the same or similar deposits.

PALEONTOLOGICAL RESOURCES SURVEY METHODS

The survey stage is important in a Project's environmental assessment phase to verify the exact location of each identified paleontological resource (if any), the condition or integrity of the resource, and provides invaluable information on the type of sediment present within the Project Area, which informs the assessment of paleontological sensitivity. On March 1, 2019, MCC qualified archaeologist and crossed-trained paleontologist Julia Carvajal conducted a pedestrian survey of the Project Area. Special attention was paid to any graded areas and to rodent burrows that offered a better view of the underlying sediment. The purpose of a field survey is to note the sediments in the Project Area, relocate any known paleontological localities, and identify any unrecorded paleontological resources exposed on the surface. In this way, impacts to existing, unrecorded paleontological material may be mitigated prior to the beginning of ground-disturbing activities and portions of the Project Area that are more likely to contain paleontological resources may be identified.

RESULTS

NHMLA LOCALITY SEARCH AND LITERATURE REVIEW RESEARCH

The record search results from the NHMLA (McLeod 2019, Appendix B) did not indicate any fossils have been found directly within the Project Area; however, there are known localities nearby from the same sedimentary deposits mapped within the Project Area. The closest vertebrate fossil locality from similar deposits is LACM 4540, from gravel pits just west of the Jack Rabbit Trail, located east-southeast of the Project Area. This locality produced a fossil specimen of horse (Equus) at unknown depth (McLeod 2019).

The Paleobiology Database (PBDB) yielded no results within the region. The MioMap yielded seven fossil assemblage localities located within 5 miles of the Project Area (Appendix B). The closest fossil assemblage is mapped approximately 3.6 miles northeast of the Project Area within San Timoteo Canyon, which contained fossil specimen of mammoth (*Mammuthus imperator*) (Carrasco et al. 2005). Six of these assemblages were found within the San Timoteo Formation and one was found within the Upper San Timoteo Formation. The RCLIS map indicates that the Project Area has a high potential (High B) to produced paleontological resources during ground disturbing activities that reach 5 ft and below depth (Figure 5).

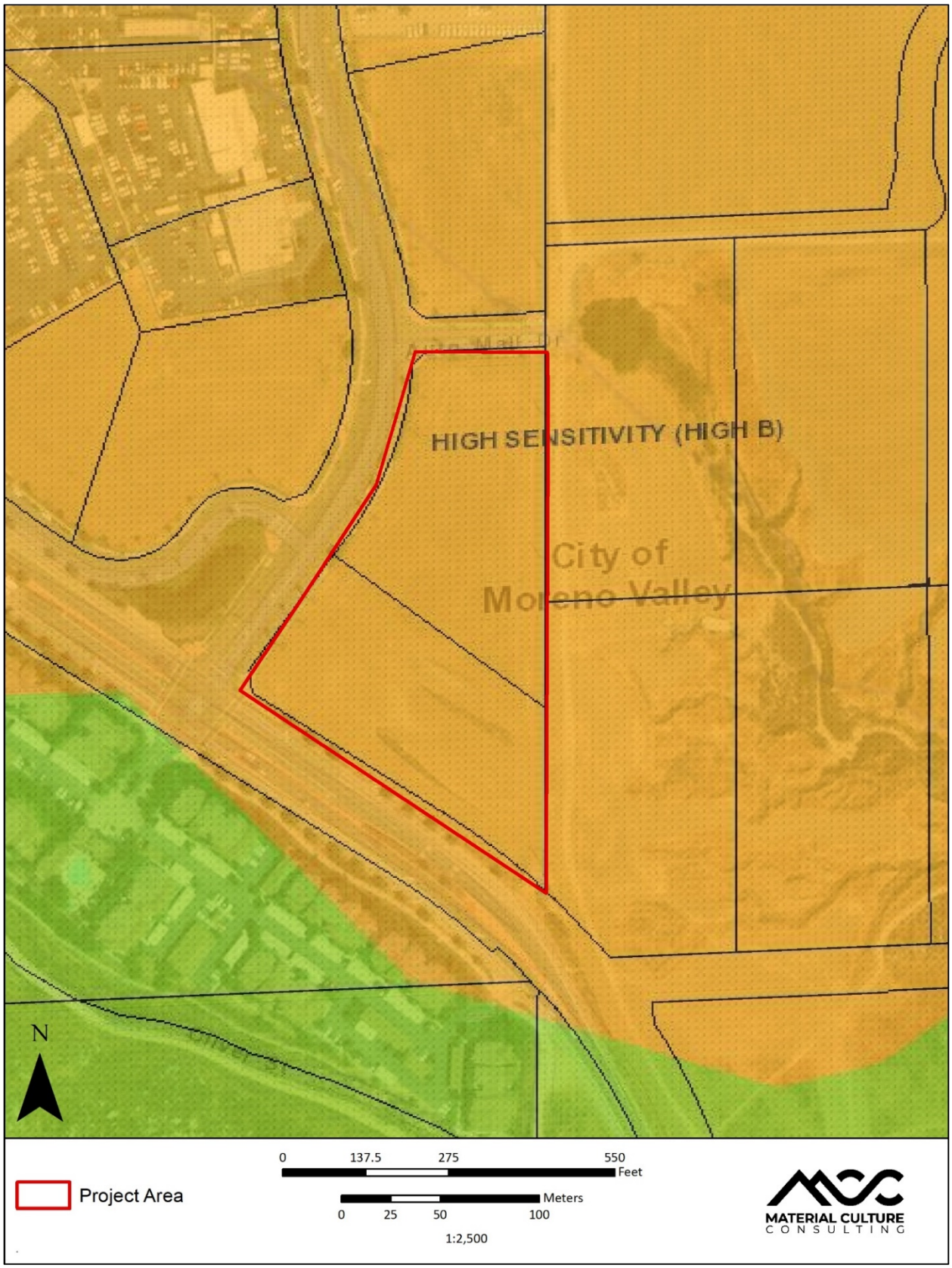

Figure 6. Paleontological Sensitivity (from RCLIS, orange indicates High B Sensitivity, green indicates Low Sensitivity)

PALEONTOLOGICAL FIELD SURVEY RESULTS

On March 1, 2019, the paleontological field survey of the Project Area was conducted by Ms. Carvajal. Overall, field conditions were good and visibility ranged greatly within the Project Area. In areas with recent grading activities, such as a two-track dirt road located along the Eastern boundary had 100 percent visibility. Elsewhere, dense vegetation coverage, particularly within the Southern portion of the Project Area, had reduced visibility to less than 10 percent. The entire area shows heavy disturbance from grading and dumping activities. There is a small mound observed within the southern portion of the Project Area, which runs in a Northwest-Southeast direction. This mound appears unnatural, most likely an old push pile, with remnants of pavement, concrete, and natural occurring granite and cryptocrystalline (CCS) rock observed. The mound measures 34 m (Northeast to Southwest) and 72 m (Northwest to Southeast). There is evidence of modern dumping surrounding the mound and a homeless encampment was observed within the Southeast corner of the Project Area. Due to the presence of the encampment, this section of the Project Area was not survey, approximately .35 acres total. Soil observed is consistent with the mapped Quaternary sediments with the only major inclusions observed the rocks located within the mound. No paleontological resources were observed during the field survey. Representative photos of the area are found in Figures 6-12.

Figure 7. Project Area from Northwest corner, view East

Figure 8. Overview of Project Area, small mound in background, view Southeast

Figure 9. Representative photo of sediments and inclusions observed within Project Area

Figure 10. Overview of Project Area from Southwest corner, view North

Figure 11. Overview of Project Area from top of mount, view West

Figure 12. Overview of Project Area from Northeast corner, view South

Figure 13. Overview of homeless encampment and area not surveyed, view South-Southeast

SUMMARY AND RECOMMENDATIONS

MCC conducted a Phase I paleontological resource assessment of the Project Area that included a fossil locality records search, literature review, and an intensive pedestrian survey covering majority of the 6.3 acres. No significant paleontological resources were identified within the Project Area during the locality search or field survey. However, there are nearby fossil localities that have known significant paleontological resources within sedimentary deposits that are mapped within the Project Area. The uppermost layers of soil within the Project Area consists of Quaternary alluvium that may have older, fine-grained Quaternary deposits that may encounter significant fossil vertebrates. In addition, the Project Area is mapped in RCLIS as High B is based on geologic formations or mapped rock units that are known to contain (or have the correct age and depositional conditions to contain) significant paleontological resources at depths below 5 ft.

RECOMMENDED MITIGATION

Based on the results of the Phase I paleontological resource assessment, the proposed Area is considered to have moderate-to-high sensitivity for the potential to impact paleontological resources during ground-disturbing construction activities in undisturbed sedimentary deposits. MCC recommends preparation of a Paleontological Resource Management Plan (PRMP) prior to construction excavation, in order to mitigate any potential impact to non-renewable fossil resources to a less-than-significant level. It is recommended that a professional paleontologist be hired to oversee monitoring and the preparation of a PRMP. At a minimum, the PRMP should include the following items:

- A trained and qualified paleontological monitor should perform full-time monitoring of any excavations on the Project that have undisturbed native sediments below 5 ft in depth. The monitor will have the ability to redirect construction activities to ensure avoidance of adverse impacts to paleontological resources.
- The Project paleontologist may re-evaluate the necessity for paleontological monitoring after examination of the affected sediments during excavation, with approval from County and Client representatives.
- Any potentially significant fossils observed shall be collected and recorded in conjunction with best management practices and SVP professional standards.
- Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.
- A report documenting the results of the monitoring, including any salvage activities and the significance of any fossils, will be prepared and submitted to the appropriate County personnel.

CERTIFICATION: I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Date: March 15, 2019 **Signature: _____**

Name: Jennifer Kelly, MSc., Geology
Riverside County Qualified Paleontologist

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Appendix A: Qualification

APPENDIX F: PHASE I ENVIRONMENTAL SITE ASSESSMENT

HMC
HAZARD MANAGEMENT CONSULTING

PHASE I ENVIRONMENTAL SITE ASSESSMENT

Vacant Land
APN 488-390-015-4 & 488-390-016-5
Moreno Valley, California

Prepared for:

Camino Real Holding, LLC
181 S 33rd St Bldg. C, STE 210
Federal Way, WA 98003

Prepared by:

Hazard Management Consulting, Inc.
211 W. Avenida Cordoba, Suite 200
San Clemente, CA 92672
(949) 361-3902

July 27, 2018-Rev1.

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Figure 1 Site Location Map
Figure 2 Site and Site Vicinity Map

APPENDICES

A – Site Photographs
B – EDR Historical Reports
C – Supporting Documents

Executive Summary

Hazard Management Consulting, Inc. (HMC) is pleased to submit this Environmental Site Assessment (ESA) for the property referenced above in the City of Moreno Valley, California (Site) (Figures 1 & 2). This ESA is intended to evaluate the Site for potential Recognized Environmental Conditions (RECs) that may be present at the Site and was conducted as part of your due diligence efforts to acquire the Site. It is our understanding that your plans for the Site call for development of a facility for car sales. The Site is located at the northeast corner of the intersection of Moreno Beach Drive and Auto Mall Drive. The Site is relatively flat with an elevation of approximately 1,751 feet above mean sea level (msl) and a regional slope to the northeast. The Site is currently a graded and vacant parcel located in an area developed as an auto mall. The northern parcel was noted as being used to park cars for the adjacent dealership.

The Site is located on the northeast corner of the intersection of Moreno Beach Drive and Auto Mall Parkway and comprises approximately 6.55 acres. The Site is relatively flat with an elevation of approximately 1,751 feet above mean sea level (msl). The Site is located in a developing area of Moreno Valley and adjacent parcels are used as an auto mall, residential and open undeveloped land.

The Site is located within the City of Moreno Valley and is in an area zoned for Regional Commercial (RC), and is bound:

- on the north by Pettit St., beyond which are a variety of automobile dealerships;
- on the east by open land that is zoned residential;
- on the south by Moreno Beach Dr. across which is a multi-family development; and,
- on the west by Auto Mall Drive across which is vacant commercially zoned property.

Key findings of this Phase I ESA are as follows:

The Site was historically either undeveloped vacant land or in agricultural use as early as the 1930s and remained that way until graded as part of the development of the adjacent auto mall. There were no RECs noted from the historical use of the Site.

The Site is currently open undeveloped land. The northern parcel was noted as being used to park cars for the adjacent dealership The northern parcel was noted as being used to park cars for the adjacent dealership The northern parcel was noted as being used to park cars for the adjacent dealership There were no chemicals noted nor stains or evidence of spills.

There were no RECs noted from the current use of the Site.

There were no off site facilities that experienced releases of hazardous substances that would be considered an REC to the Site.

Conclusions

HMC conducted a Phase I ESA for the Site in accordance with the ASTM E1527-13 guidelines. Based on the data obtained as part of this assessment, we have found no RECs, HRECs or CRECs associated with the Site.

Recommendations

We have no recommendations for further action.

PHASE I ENVIRONMENTAL SITE ASSESSMENT
Vacant Land
APN 488-390-015-4 & 488-390-016-5
Moreno Valley, California

1. INTRODUCTION

Hazard Management Consulting, Inc. (HMC) is pleased to submit this Environmental Site Assessment (ESA) for the property referenced above in the City of Moreno Valley, California (Site) (Figures 1 & 2). This ESA is intended to evaluate the Site for potential Recognized Environmental Conditions (RECs) that may be present at the Site and was conducted as part of your due diligence efforts to acquire the Site. It is our understanding that your plans for the Site call for development of a facility for car sales. The Site is located at the northeast corner of the intersection of Moreno Beach Drive and Auto Mall Drive. The Site is relatively flat with an elevation of approximately 1,751 feet above mean sea level (msl) and a regional slope to the northeast. The Site is currently a graded and vacant parcel located in an area developed as an auto mall. The northern parcel was noted as being used to park cars for the adjacent dealership

1.1. Objective

In accordance with the ASTM E 1527-13 Standard Practice for Environmental Site Assessments, the objective of the ESA is to assess, to the extent feasible under the standard, the likelihood that Recognized Environmental Conditions (RECs), as defined by ASTM, are present at the Site.

A Recognized Environmental Condition "means the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term is not intended to include *de minimis* conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies" (ASTM Standard Practice E1527-13). Performance of a Phase I ESA is intended to reduce, but not eliminate, uncertainty regarding the potential for Recognized Environmental Conditions in connection with a property, within reasonable limits of time and cost.

All Appropriate Inquires (AAI) as defined in the Final Rule (40 CFR, Part 312), must be conducted by persons seeking the landowner liability protections under the Comprehensive Environmental

Response, Compensation, and Liability Act (CERCLA) prior to acquiring a property or seeking or receiving federal brownfields grants under the authorities of CERCLA. The purpose of AAI, as defined in the AAI Final Rule, is to identify releases and threatened releases of hazardous substances, which cause or threaten to cause the incurrence of response costs. The U.S. Environmental Protection Agency (EPA) has stated that ASTM Standard E-1527-13 is consistent with the Standards and Practices for AAI, and is compliant with the statutory criteria for AAI.

1.2. Scope Of Services, Methodology And Limitations

The findings of this ESA must be viewed in recognition of certain limiting conditions. The scope of work commissioned for this project does not represent an exhaustive study, but rather a reasonable inquiry, consistent with good commercial practice, in general accordance with ASTM Practice E-1527-13.

The scope of work for this ESA included the following activities:

- A site walk to document the current condition of the Site and neighboring facilities.
- Review of a regulatory database report.
- Interviews with the current Owner and purchaser of the Site.
- Review of historical references including aerial photographs, city directories, Sanborn Maps and topographic maps.
- On-line research and file review requests concerning the Site and suspect off site sources at the State of California Regional Water Quality Control Board (RWQCB) and Department of Toxic Substances Control (DTSC) websites.
- Review of prior reports prepared for the Site.
- Review of files maintained by the County of Riverside.
- Preparation of this report of findings.

In the course of this assessment, HMC has relied on information provided by outside parties, such as regulatory agencies, previous reports and interview sources. For the purpose of this assessment, such third-party information is assumed to be accurate unless contradictory evidence is noted, and HMC does not express or imply any warranty regarding information provided by third-party sources.

2. SITE DESCRIPTION

2.1. Site Setting

The Site is located on the northeast corner of the intersection of Moreno Beach Drive and Auto Mall Parkway and comprises approximately 6.55 acres. The Site is relatively flat with an elevation of approximately 1,751 feet above mean sea level (msl). The Site is located in a developing area of Moreno Valley and adjacent parcels are used as an auto mall, residential and open undeveloped land.

The Site is located within the City of Moreno Valley and is in an area zoned for Regional Commercial (RC), and is bound:

- on the north by Auto Mall Drive, beyond which are a variety of automobile dealerships;
- on the east by open land that was currently under construction;
- on the south by Auto Mall Parkway across which is a multi family development; and,
- on the west by Auto Mall Parkway across which is a multi family development.

Southern California Gas provides gas service to the Site while Southern California Edison (SCE) provides electrical service. Water and sewer services are reportedly provided by the Eastern Municipal Water District (EMWD).

2.2. Regional Geology and Hydrogeology

The Site is situated within the San Jacinto Basin and is located within Perris Valley sub-area of San Jacinto Valley Groundwater Basin. The San Jacinto Groundwater Basin underlies San Jacinto, Perris, Moreno, and Menifee Valleys in western Riverside County. This basin is bounded by the San Jacinto Mountains on the east, the San Timoteo Badlands on the northeast, the Box Mountains on the north, the Santa Rosa Hills and Bell Mountain on the south, and unnamed hills on the west. Lake Perris is located in the eastern part of Perris Valley. The valleys are drained by the San Jacinto River and its tributaries. Average annual precipitation ranges from 10 to 18 inches.

The San Jacinto Groundwater Basin contains sediments that have filled valleys and underlying canyons incised into crystalline basement rock. The valley fill deposits are generally divided into younger and older alluvium. Maximum depths of valley fill reach about 900 feet in the western and northern parts of the basin, but may exceed 5,000 feet in the eastern part of the basin between the Casa Loma and Claremont faults. Confined groundwater is found in the eastern part of the basin between the Casa Loma and Claremont fault. According to a LUST facility nearby, the depth to groundwater is at approximately 85 feet bgs and the groundwater flows to the south/southeast.

3. USER PROVIDED INFORMATION

The User of this report is Camino Real Holding, LLC, their affiliate Car Pros and their investors and lender.

3.1. User Information

We submitted a User Questionnaire to Ms. Mary Roloff of Car Pros to inquire regarding their knowledge and information regarding the Site. Ms. Roloff indicated that her firm had no prior knowledge or unique information regarding the Site and was unaware of any litigation, or remedial actions at the Site or any Land Use Restrictions. Ms. Roloff indicated that she had received a copy of a previously prepared environmental report from the Seller, which was provided to HMC for review. Ms. Roloff indicated that they are paying fair market value for the Site. A copy of the completed questionnaire is included in Appendix C.

3.2. Title Records

A Preliminary Title Report was prepared by Commonwealth Land Title Company dated June 6, 2018 and provided to HMC for review. Title to the Site is reportedly vested in Auto Mall Resolution, LLC. The document indicated typical easements for utilities and tax responsibilities as well as agreement with the former redevelopment agency and covenants related to financing but no references or mention of issues of an environmental nature such as a Land Use Covenant or restrictions.

3.3. Owner Knowledge

The owners of the Site did not want to complete the owner's questionnaire but did provide a copy of a previously prepared ESA that included the Site and adjacent parcels.

3.4. Environmental Liens or Activity and Use Limitations

We are not aware of any land use restrictions regarding the Site nor was any information obtained as part of this assessment to suggest that such restrictions would be necessary.

4. SITE USE AND HISTORY

Past usage of the subject site was assessed through a review of historical aerial photographs, topographic maps and an EDR search of city directories and prior reports. Review of the Sanborn Map collection indicates that Sanborn Maps were not produced for the Site. We also reviewed previous environmental assessments as described in Section 7.

4.1. Aerial Photograph Review

Aerial photographs covering the Site were obtained from Environmental Data Resources, Inc. (EDR). Photographs were available from the period 1938 through 2016. Copies of the aerial photographs are included in Appendix B. A summary of the observations noted from the aerial photographs is as follows:

1938-1985 The photograph from 1938 indicates the land may have been in agricultural use with remnants of a stream present along the northern and eastern portion of the Site. Adjacent parcels were either vacant land or in agricultural use. A road was present in what appeared to be the current location of Interstate Highway 60. No significant changes were noted during this time period.

1989 In the photograph from 1989, the Site and adjacent parcels appear to have been graded though the Site remained as vacant land

1997-2016 During this period, the Site remained as a vacant, graded parcel. Development of the adjacent auto mall was first noted in the photograph from 1997 and the adjacent multifamily development was first noted as under construction in the photograph from 2006.

4.2. Topographic Maps

Historical topographic maps were also reviewed as part of this effort and aided in interpreting the overall site history. No specific information was obtained beyond that seen in the aerial photographs for the Site. However, the topographic maps indicated that the Moreno Valley Freeway (Interstate 60) was present immediately south of the Site beginning in 1967.

4.3. Sanborn Maps

Sanborn maps are maps that were created for the insurance industry to document site activities in metropolitan areas of the country and were used in underwriting. They often times contain detailed information about a site. While they were prepared for insurance underwriting and were not environmental maps per se, they often times contain information that is useful in evaluating the historical use of a Site. Sanborn Maps were not reportedly prepared for the Site.

4.4. EDR City Directory Review

EDR performed a search of the City Directory records for the Site address at approximately five-year intervals. No listings were present for the Site, which is consistent with observations of the Site being undeveloped land.

4.5. City of Moreno Valley

A review of the City of Moreno Valley Planning Department files indicated that the Site was zoned for Commercial in the Moreno Valley General Plan (2006). A review of Building Department files was conducted online at the City of Moreno Valley. No files were listed for the Site.

4.6. Summary

The Site was undeveloped vacant land or in agricultural use as early as 1938 and graded as part of the adjacent auto mall development but construction on the Site has not occurred.

5. PRIOR INVESTIGATIONS

A previous ESA was prepared by LFR in 2000 for a collection of parcels that included the Site and adjacent properties and was presented to HMC for review. The ESA was prepared in accordance with the ASTM Guidelines in effect at the time of the survey and included a review of the historical, then current and neighboring uses to assess whether RECs were present at the Site. The information obtained by LFR was consistent with that presented in this current ESA. The Site was historically open undeveloped land or used for agricultural purposes prior to the grading of the Site. There were no RECs noted from the historical, current or adjacent uses to the Site.

6. SITE RECONNAISSANCE.

Mr. Mark Cousineau of HMC conducted a Site and Site Vicinity reconnaissance on July 20, 2018 in order to identify visible evidence of RECs of concern at the Site and to assess possible conditions off Site that may impact the Site. HMC was unescorted during the Site visit. At the time of our inspection, the Site was noted to include a grade and vacant parcel of land. The northern parcel was noted as being used to park cars for the adjacent dealership The northern parcel was noted as being used to park cars for the adjacent dealership Only minor trash and debris were noted on Site. There were no chemicals present and no areas of stained soil indicative a release of chemicals. Adjacent land included an active auto mall to the north and a multifamily development to the west. The land to the east of the Site was under construction. Selected photographs illustrating the Site and nearby off site conditions are included in Appendix A. Summaries of the Site and observations are detailed below.

Description and Use of Site:	The Site is currently undeveloped land.

Underground and Aboveground Storage Tanks:	No USTs or ASTs are present at the Site.
Hazardous Materials, Hazardous Wastes or Petroleum Products:	No hazardous substances were identified at the Site.
Drains, Drain lines and Sumps:	There were no drainage features noted on Site.
Pits, Ponds, Lagoons	No ponds, pits or lagoons were observed at the Site.
Industrial Wastewater:	No Industrial wastewater was generated at the Site.
Stains:	No significant stains were observed at the Site.
Wells:	There are no groundwater wells, monitoring wells or oil/gas wells identified at the Site.
Transformers:	There were no transformers observed at the Site.
Other Features:	No other features of concern were noted during the Site walk.

6.1. Site Vicinity

The Site is located within the City of Moreno Valley and is in an area zoned for Regional Commercial (RC), and is bound:

- on the north by Pettit St., beyond which are a variety of automobile dealerships;
- on the east by open land that is zoned residential;
- on the south by Moreno Beach Dr. across which is a multi-family development; and,
- on the west by Auto Mall Drive across which is vacant commercially zoned property.

There were no nearby properties were identified that appeared to pose a concern to the Site from a visual basis.

7. REGULATORY AGENCY DATABASE RESEARCH

Regulatory agency database information was obtained from a standard radius Site Assessment (ASTM) report by Environmental Data Resources, Inc. The center of the search was in the

approximate center of the Site. Search distances for specific databases were one-quarter to one mile as specified in the ASTM 1527-13 standard. The database search includes over 70 federal, state, local, and proprietary records.

A complete copy of this report is included in Appendix B.

7.1. Database Records Concerning the Target Property

The Site was not listed in any of the databases searched as part of this assessment.

7.2. Database Records Concerning the Site Vicinity

A review of the EDR Radius Map database search was conducted to assess potential off Site facilities that could be contributing hazardous substances to the Site and represent an REC. In review of the many entries on the database, we reviewed the following factors that affect the ability of a facility to affect the Site:

- Distance from the Site,
- Location from the Site with regard to the direction of groundwater flow,
- Nature of the release and whether the release has affected soil, groundwater or both,
- Status of the investigation (e.g. open or closed)

Only those facilities judged using these factors are discussed below. Given the direction of groundwater flow to the south southeast, only those facilities adjacent or north northwest were further considered. These facilities are discussed below:

- *Moss Brothers Chevrolet*- 12625 Auto Mall Dr. ~745' NNW. This facility is listed as containing an Above Ground Storage Tank though no evidence or listing of a release was noted. This would not be considered an REC to the Site in our judgment.
- *Moreno Valley Toyota*- 27990 Eucalyptus Ave. ~942' N. This facility is listed in the RCRA SQG, Finds, Echo and Haznet databases for their use and storage of chemicals at the facility. There was no evidence or listing of a release was noted. This would not be considered an REC to the Site in our judgment.
- *Moreno Valley Honda*- 27910 Eucalyptus St. This facility is listed in the RCRA SQG, Finds, Echo and Haznet databases for their use and storage of chemicals at the facility. There was no evidence or listing of a release was noted. This would not be considered an REC to the Site in our judgment.
- *Moreno Valley Nissan*-27810 Eucalyptus St. ~1125' NNW. This facility was listed in the RCRA SQG database for chemical waste disposal. There was no evidence or listing of a release was noted. This would not be considered an REC to the Site in our judgment.

7.3. Orphan Sites

Orphan Sites are those properties that are included on various agency lists, but for which the records do not have sufficient address information for the database program to map the site. None of the addresses listed were close enough to be of concern.

7.4. Summary of Off Site Issues

There are facilities located in the Site vicinity that use chemicals but no evidence of releases was included in the database. There were no RECs noted from off site uses.

7.5. Tribal Records

The Site is not located in a tribal area so there were no tribal records to review.

7.6. Oil and Gas Wells

The State of California Department of Conservation, Division of Oil, Gas, and Geothermal Resources online mapping website was reviewed for the location of active, plugged, or abandoned oil wells in the vicinity of the Site. There was no record of oil wells on Site or in the immediate Site vicinity.

7.7. State of California

The State of California Geotracker and EnviroStor websites were also reviewed for information on potential on or off site facilities that are being investigated or remediated under either RWQCB or DTSC oversight. The Site was not listed and the only facility listed in the search zone that was not already listed in the EDR Radius Report reviewed as part of this assessment was an ARCO gas station located northwest of the Site. No release was listed at this facility.

7.8. County of Riverside

A request was made for records search from the County of Riverside Department of Environmental Health (RCDEH). As of the date of this report, no response has been received. Given that the Site is undeveloped land, we would not expect the County to have a file for the Site.

8. VAPOR INTRUSION, ASBESTOS AND OTHER MATERIALS

8.1. Vapor Intrusion

Based on the findings of this ESA, we have not seen any data or issues that would suggest a vapor intrusion condition is present at the Site.

8.2. Asbestos

As there are no structures on Site, there is a low likelihood that asbestos containing materials are present on Site.

8.3. Radon

The Site is listed as being located in Zone 2 with regards to radon indicating that radon maybe present at concentrations less than 4 pico curies / liter.

8.4. Mold

No evidence of water damage or mold growth was observed.

9. SUMMARY OF FINDINGS

Key findings of this Phase I ESA are as follows:

- The Site was historically either undeveloped vacant land or in agricultural use as early as the 1930s and remained that way until graded as part of the development of the adjacent auto mall. There were no RECs noted from the historical use of the Site.

- The Site is currently open undeveloped land. The northern parcel was noted as being used to park cars for the adjacent dealership. There were no chemicals noted nor stains or evidence of spills. There were no RECs noted from the current use of the Site.

  There were no off site facilities that experienced releases of hazardous substances that would be considered an REC to the Site.

10. DATA GAPS

We did not receive a questionnaire from the owner of the Site though we did receive a copy of a previous ESA from the seller. In addition, we have not received a response from the County of Riverside Health Department. However, given the undeveloped nature of the Site and fact that the County regulates facilities that generate hazardous waste, we would not expect them to have a file. We do not view these as critical datagaps.

11. CONCLUSIONS

HMC conducted a Phase I ESA for the Site in accordance with the ASTM E1527-13 guidelines. Based on the data obtained as part of this assessment, we have found no RECs, HRECs or CRECs associated with the Site.

12. RECOMMENDATIONS

Given the findings of this ESA, we have no recommendations for further action.

13. QUALIFICATIONS

Mark S. Cousineau, NREP

Mr. Mark S. Cousineau, principal with HMC, has a diverse professional background in environmental management, which includes working as a generator, regulator, consultant, and corporate advisor in hazardous waste and other environmental issues.

Mr. Cousineau's technical background is focused in the area of overseeing large-scale environmental investigations and regulatory compliance management related to site assessments, subsurface investigations, facility surveys, and site remediation. To projects such as these, Mr. Cousineau brings expertise in evaluating complex sites and developing solutions to solve the technical, operational, regulatory, financial and timing issues. In addition, Mr. Cousineau routinely assists clients in developing environmental business plans for single assets and multi-site real estate portfolios and has designed and implemented several tenant audit programs involving the proactive management of environmental risk caused by on-site commercial and industrial tenant activities.

Mr. Cousineau has provided litigation support and has served, as a court-appointed expert on environmental issues, is a member of the National Registry of Environmental Professionals, holds a M.S. in Environmental Sciences from California State University Fullerton and a B.S. in Chemistry from University California San Diego.

As signatory to this report, I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in § 312.10 of this part. I have the specific qualifications based on education, training, and experience to assess the property of the nature, history, and setting of the subject property. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312."

Mark Cousineau, NREP
Principal

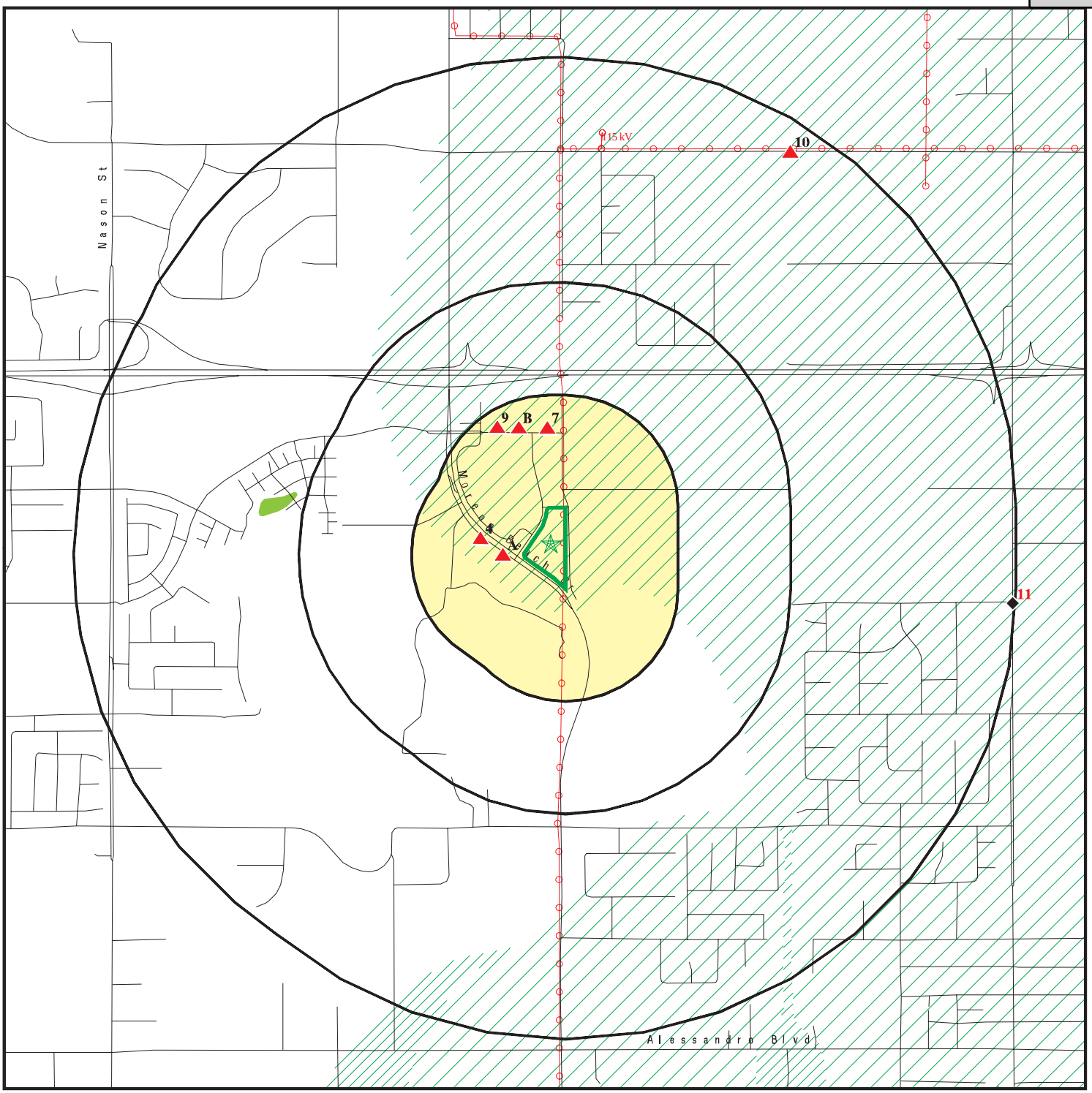
14. REFERENCES

LFR, 2000, Phase I Environmental Site Assessment, Vacant Parcels Southeast Corner of State Highway 60 and Moreno Beach Drive, Moreno Valley California, March, 10, 2000.

TABLES

TABLE 1.

OVERVIEW MAP - 5359139.2S



0 1/4 1/2 1 Miles

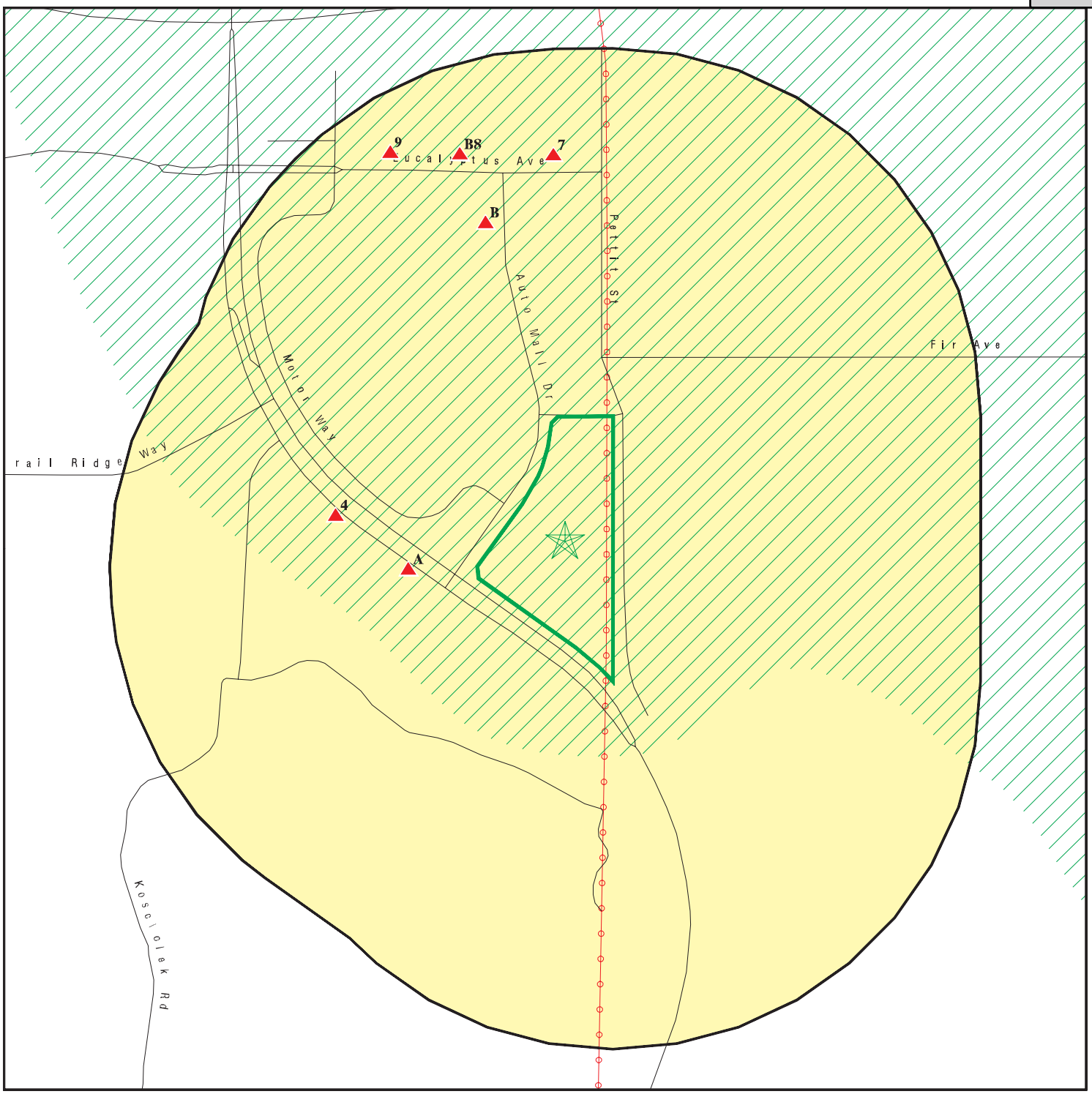
- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Upgradient Area
- Areas of Concern

This report includes Interactive Map Layers display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Car Pros Moreno Valley	CLIENT:	Hazard Management Consulting
ADDRESS:	Highway 60/ Moreno Beach Drive Moreno Valley CA 92555	CONTACT:	Mark Cousineau
LAT/LONG:	33.933697 / 117.174561	INQUIRY #:	5359139.2s
		DATE:	July 12, 2018 12:25 pm

TABLE 1.

DETAIL MAP - 5359139.2S



0 1/16 1/8 1/4 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- 100-year flood zone
- 500-year flood zone
- Areas of Concern

This report includes Interactive Map Layers display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Car Pros Moreno Valley	CLIENT:	Hazard Management Consulting
ADDRESS:	Highway 60/ Moreno Beach Drive Moreno Valley CA 92555	CONTACT:	Mark Cousineau
LAT/LONG:	33.933697 / 117.174561	INQUIRY #:	5359139.2s
		DATE:	July 12, 2018 12:26 pm

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	0.001		0	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		1	4	NR	NR	NR	5
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	2	NR	2
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		2	1	NR	NR	NR	3
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
CERS TANKS	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0
LIENS 2	0.001		0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	0.001		0	NR	NR	NR	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.001		0	NR	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001		0	NR	NR	NR	NR	0
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.001		0	NR	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001		0	NR	NR	NR	NR	0
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
CIWQS	0.001		0	NR	NR	NR	NR	0
CERS	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		1	NR	NR	NR	NR	1
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		0	4	5	0	2	0	11

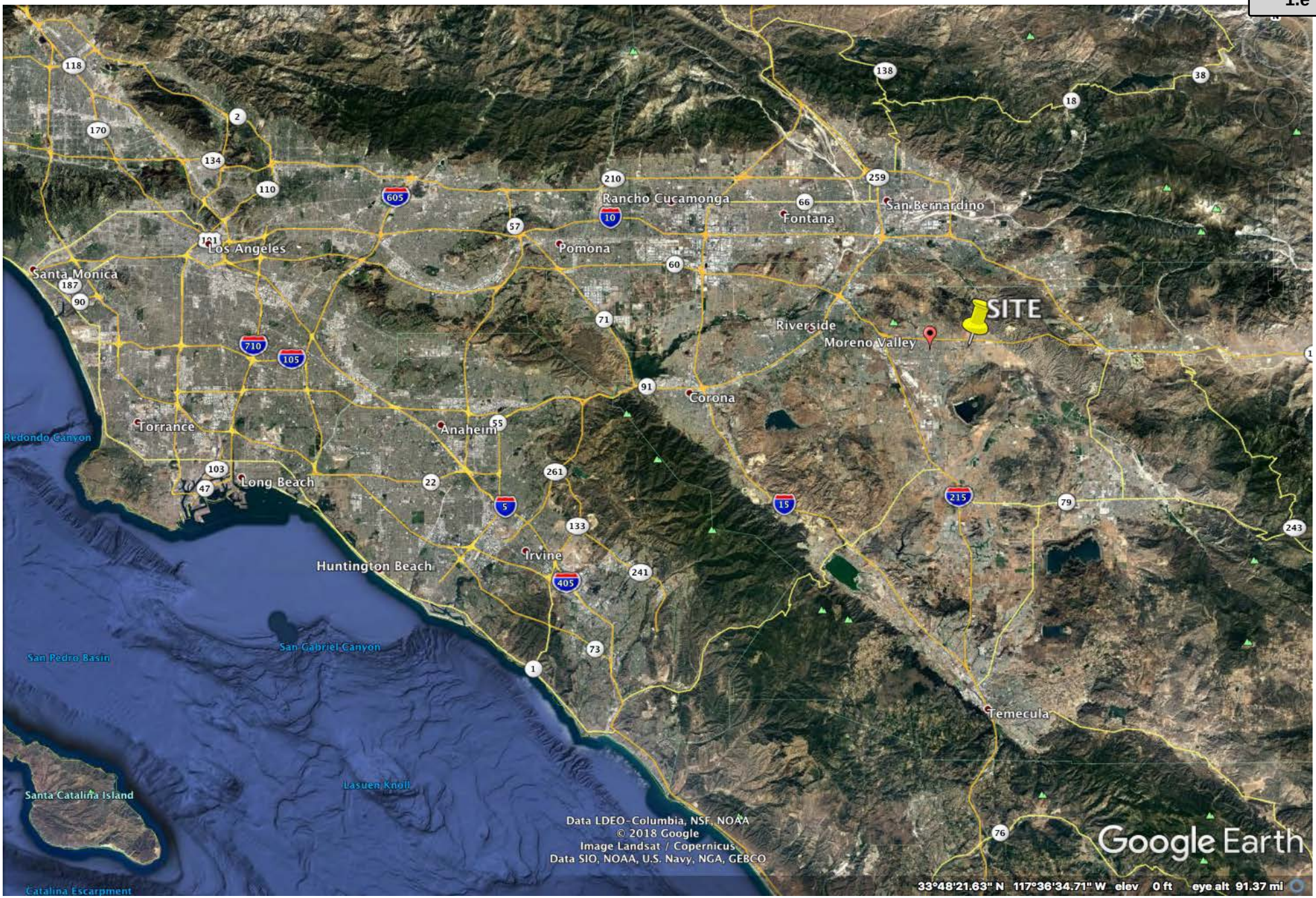
NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

FIGURES



HMC

Figure 1: Site Location Map

HMC

Figure 2: Site & Vicinity Map

APPENDIX A

Looking Across Site

View of Site

Looking Across Street to North

Looking North

Car Parking

View of Adjacent Bldg Under Construction

Parcel to East

Looking Across Site to Southwest

Looking Across Site

IMG_1203.JPG

APPENDIX B

Car Pros Moreno Valley
Highway 60 & Moreno Beach Drive
Moreno Valley, CA 92555

Inquiry Number: 5359139.5
July 13, 2018

The EDR-City Directory Image Repor

EDR® Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION

Executive Summary

Findings

City Directory Images

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available city directory data at 5 year intervals.

RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Bradstreet. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

EDR is licensed to reproduce certain City Directory works by the copyright holders of those works. The purchaser of this EDR City Directory Report may include it in report(s) delivered to a customer. Reproduction of City Directories without permission of the publisher or licensed vendor may be a violation of copyright.

Data by infoUSA®

RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

Year	Target Street	Cross Street	Source
2014	☑	☐	EDR Digital Archive
2011	☑	☐	Haines Criss-Cross Directory
2005	☑	☐	Haines Criss-Cross Directory
2000	☐	☐	Haines Criss-Cross Directory
1995	☐	☐	Haines Criss-Cross Directory
1990	☐	☐	Haines Criss-Cross Directory
1985	☐	☐	Haines Criss-Cross Directory
1980	☐	☐	Haines Criss-Cross Directory
1975	☐	☐	Haines Criss-Cross Directory

FINDINGS

TARGET PROPERTY STREET

Highway 60 & Moreno Beach Drive
Moreno Valley, CA 92555

Year	*CD Image*	*Source*	
HWY 60			
2014	-	EDR Digital Archive	Target and Adjoining not listed in Source
2011	-	Haines Criss-Cross Directory	Street not listed in Source
2005	-	Haines Criss-Cross Directory	Street not listed in Source
2000	-	Haines Criss-Cross Directory	Street not listed in Source
1995	-	Haines Criss-Cross Directory	Street not listed in Source
1990	-	Haines Criss-Cross Directory	Street not listed in Source
1985	-	Haines Criss-Cross Directory	Street not listed in Source
1980	-	Haines Criss-Cross Directory	Street not listed in Source
1975	-	Haines Criss-Cross Directory	Street not listed in Source
MORENO BEACH DR			
2014	pg A2	EDR Digital Archive	
2011	pg A6	Haines Criss-Cross Directory	
2005	pg A7	Haines Criss-Cross Directory	
2000	-	Haines Criss-Cross Directory	Street not listed in Source
1995	-	Haines Criss-Cross Directory	Street not listed in Source
1990	-	Haines Criss-Cross Directory	Street not listed in Source
1985	-	Haines Criss-Cross Directory	Street not listed in Source
1980	-	Haines Criss-Cross Directory	Street not listed in Source
1975	-	Haines Criss-Cross Directory	Street not listed in Source

FINDINGS

CROSS STREETS

No Cross Streets Identified

City Directory Images

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

MORENO BEACH DR 2014

11370	AJS TRUCKING INC
	DIVERSIFIED REALTY INC
	STEPHENS, JEROME P
11399	KELLEY, LES C
12611	ARCO AM PM
	DHRMA BHAKTI INC
12641	DEL TACO LLC
12671	MORENO VALLEY HIGH SCHOOL
	WENDYS INTERNATIONAL INC
12721	BLIMPIE SUBS MO VALLEY
	DAVI NAILS
	FIRSTSIGHT VISON SERVICES INC
	US BANK NATIONAL ASSOCIATION
	WAL-MART STORES INC
12751	MEXICAN-AMERICAN DESIGNS
	MORENO BEACH EXPRESS INC
	OCCUPANT UNKNOWN,
	STARBUCKS CORPORATION
12761	GAMESTOP INC
12821	EL POLLO LOCO INC
12831	ANGELS NAILS & SPA
	ARMENDARES, STEFFANIE
	BOLTON, TIFFANY
	CALIBER CREDIT SOLUTIONS
	CIVIL RECOVERY GROUP INC
	DELMAE GIFTS
	DEPENDABLE ENGINEERING CNSTR
	FIATM GROUP
	FINNEY, LAMONT
	GNI & G FIRST STANDARD RES
	GONZALEZ, IVAN
	JUICE IT UP MORENO BEACH
	KANDD LLC
	KEY STONE PROPERTY MANAGEMENT
	KIM IMPORTS EXPORTS
	LOVE, TERI L
	MAN OF GOD FAMILY MANAGEMENT L
	MR YOU CHINESE FOOD
	N E H & P CONSOLIDATED FIN
	NETSTELLER IT SOLUTIONS LLC
	NONPROFIT SECTOR FOUNDATION
	OBIORA, PRECIOUS
	PIZZA HUT
	RANDALL, SALLY
	REMNANT LIFE WORSHIP CENTER
	SADIA HOUSE OF BEAUTY
	SJ CAPITOL LLC
	SODEN ENTERPRISES INC
	TWIRL JET SPAS INC
12927	ANDERSON, FLOYD A

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

MORENO BEACH DR 2014 (Cont'd)

12927	BAYNE, DYRICK B
	BROWN, SACHA
	CAMPBELL, BRANDON J
	CLARK, CHRIS
	DEGUIA, ROMULO
	IBANEZ, OMAR
	JOHNSON, KATHERINE
	LACOSTE, JAMES
	LINTAG, ANABELLE
	MALONE, LESLIE
	MUNOZ, ALEJANDRA
	OTT, TRAVIS W
	PATE, MICHAEL
	SCOTT, RAQUEL
	WILLIAMS, MONICA
12931	ANTOINETTE BABERS
	AYALA, BENJAMIN
	BROWN, RHONDA M
	CLARK, VINCENT A
	FINDLAY, ONEIL
	GILLETTE, SUZANNE L
	GUTIERREZ, FRANK
	HERNANDEZ, CELENA
	LINDA BROWN INSURANCE
	MEANS, BRITTNEY M
	NOLEN, SAM
	ODEA, LUZ M
	ROWELL, ANTOINETTE
	WASHINGTON, DENISHA
12935	BARKER, SHATOVIA
	COCAN TRANSPORT
	DECOUD, PHILIP
	JOHNSON, KIMBERLY M
	LEE, HERMAN
	LINARES, JR R
	MAROLDA, STACY
	MOON, JASON H
12939	ABLAHAD, AMMER
	APARICIO, ASHLEY
	MAGALLANES, MARTHA E
	MEJIA, LARA
	NIETO, EMERIL
	REYMUNDO, JOSE G
	SINCLAIR, TOM
	WRIGHT, GREGORY J
12943	A2S PERFORMANCE INC
	ALDRETE, ANNE
	BALES, JAY
	BERDUGO, MIRNA
	CAIOZZO, MATTHEW

MORENO BEACH DR 2014 (Cont'd)

12943 HARRIS, DUSTIN
HUECIAS, ANTONIO B
MASGULA, HEAVEN M
MCADORY, MYKAEL
ONEAL, FRANTZ A
REGIS, ANNA
ROMERO, VANESSA
12947 ALLEN, MARCUS
BALDERAS, CHRISTIAN
BELL, ROXANNE
CBA BALLERS INC
HATTON, JUSTIN
LESTER, DAVID
LINDER, ERIC
SCOTT, JEREMY
12951 BROWN, KEITH D
DRESSEL, JUSTIN G
GONZALES, ALISON T
JACKSON, YOLLESSE
MITCHELL, LEE
NORWOOD, MILTON N
RAWLINGS, ROBIN
ROBINSON, JOSEPH
SANCHEZ, MELISSA M
VALENTINE, MARCIE L
VASQUEZ, ANDREA
WILLIAMS, ANNTANET
12955 ABLHAD, VEVIAN
BEGGS, BEVERLY
BRITT, KIARA
CURTIS, RUSSELL A
JACKSON, RAMIAH
NEAL, TYRONDA
NEWVILLE, CHARLES C
RUSSELL, CURTIS
SADER, YOUSUF
SHARPE, FRANK R
VANGENUCHTEN, BO
WILLIAMS, JUNE
YOUSUF, SADER
12959 ALLEN, CARL I
DAVIS, GERALD
EDWARDS, JASMYNE D
HILL, LATANYA L
INLAND EMPIRE KRAV MAGA LLC
JONES, GORDON
LEAZOTT, DARLA J
MARSYLA, ALEXANDER N
MCGEE, JASMIN
NARISCAL, ANTHONY

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

MORENO BEACH DR 2014 (Cont'd)

12959	PACHECO, SERGIO
	RUMBAUGH, GARY D
	THOMAS, DAYVEION
	VASQUEZ, RICHARD M
	YERENA, MONICA
12963	BROADSTONE OVERLOOK LLC
12971	BAJARIN, PRISCILA
	BLAND, KENNETH
	BROWN, DEBORAH
	DALE, KARYNANN
	HEART TO HEARTS CARE
	HOFSTRA, DEBORAH
	KORNACKI, ROBERT
	LENTZ, ALLEN
	MALONE, JANIE E
	MORRIS, BONNIE
	RODRIGUEZ, JESSE
	SAAFIR, ABDUL
	SERRECCHIA, SARAH N
	STEVENS HOME IMPROVEMENT
	WILKINS, ANDREW
12975	BROOKS, RITA
	BROWN, MAINE
	BYE, DAN
	CHANCE, JENNIFER
	MARTINEZ, ANTONIO
	NESBY, RYSHEAR L
	REZZETTI, JOHN J
	SHEPPARD, SAMANTHA L
	TATE, ARLELIA
	VILLANUEVA, BELJOHN
	WEATHERSBY, KENNETH A
	WILCOX, JASON D
12979	1 LUV PRODUCTIONS LLC
12983	JOSE ROCHA
12987	EPIPHANY STYLE STUDIO

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

MORENO BEACH DR 2011

MORENO BEACH DR
(03) 92555
MORENO VALLEY

WEALTH CODE 4.9

X LOCUST AVE

11370 ● STEPHENS Jerome OO 3

X KALMIA AVE

11399 ● KELLEY L OO 4

X IRONWOOD AVE

X EUCALYPTUS AVE

12611 ★BP 951-247-9174 8
12641 ★DEL TACO 773 951-243-8340 6
12671 ★WENDY'S INTL 951-601-9701 6
12721 ★BLIMPIE SUBS& SALDS INSDE WLMRT 951-485-4452 6
★DAVI NAILS 951-601-2048 6
★FIRSTSIGHT VSN SV INSDE WL-MRT 951-247-1341 5
★HAIRWORKS FAMILY SALON 951-247-2030 5
★WALMART 951-242-6379 6
★WAL-MART SPRCNTR GEN INF 951-242-6379 6
★WALMART SUPERCENTER MOR VLY 951-242-1185 6
12751 ★ONO HAWAIIAN BBQ 951-242-2988 6
★STARBUCKS COFFEE COMPANY 951-485-6878 6
12761 ♣★4G WIRELESS 951-242-3334 6
♣★GAMESTOP 951-242-0504 6
12821 ★EL POLLO LOCO 951-243-6631 9
12831 107 ★ANGELS NAILS & SPA 951-488-1768 6
♣HOUSE Of Beauty 951-485-3300 +0
103 ★JUICE IT UP 951-485-4555 6
101 ★MR YOU CHINESE FOOD 951-243-5827 6
♣★POSTALANNEX+ 951-924-3700 6
102 ★QUIZNOS 951-243-8888 6
♣★SERVICE PLUS CREDIT UNION 951-601-3540 6
♣★SERVICE PLUS CREDIT UNION 951-924-1144 6
♣★SUSHI PALMS 951-486-0293 6
12927 ♣GRIER Lance 951-208-0663 +0
12935 ♣ARCHER Joan 951-485-7274 +0
6204 BOSTON Alquincia 951-485-8809 +0
12939 ♣PALMER Cindy 951-208-2855 +0
12943 7306 DECOUD Teresa 951-485-2764 7
♣LOZANO Mark 951-485-7832 6
12947 ♣LINDER Eric 951-208-0761 9
♣PARKER Alisha 951-485-1359 +0
12959 ♣THOMAS Tiffany 951-485-7027 9
12963 ★BROADSTONE OVERLOOK LLC 951-601-0036 6
12971 ♣BRYNT Sybil 951-208-2349 +0
♣TULLY David 951-247-9724 8
12975 ♣VARELA Mary 951-924-7902 +0
♣WADE Kenny 951-486-9959 8
12979 1210 ♣BARMORE Bernard 951-924-7385 8
♣MATHEWS Stephanie 951-208-0638 8 ★
♣RIDDLE Vallere 951-243-5953 +0
12983 ♣HUYNH Khanh 951-242-8978 +0
12987 ♣CLINTON Richard 951-208-4212 8
1410 ♣LANCASTER Shirley 951-488-1181 7
12991 ♣CASTELLO Kystal 951-485-3360 8
♣DORAME Gina 951-242-6308 8
1520 ♣GARCIA David 951-208-0011 +0
♣★INTEGRA ELECTRONICS 951-485-2447 +0
1520 ♣RAMIREZ Norma 951-485-8642 8

X COTTONWOOD AVE

X BROADIAEA AVE

14395 ★WELLS FARGO BANK 951-486-3536 9
14400 ★D R HORTON 951-485-5115 8
14425 ♣★STATER BROS MARKETS 951-242-1461 8
♣★SUPER RX PHARMACY 951-242-7471 +0
14435 ♣FANTASTIC Sams 951-242-0100 9
♣★MORENO BEACH DENTAL 951-247-6000 8
14465 ♣★SUBWAY SANDWICHES 951-243-7704 +0
14475 ♣★TNP SRT MORENO MARKETPLACE LLC 951-601-1538 +0

X CACTUS AVE ★

15052 ♣JONES Kerstin 951-242-5384 9
2011 MAGLABE Hindus 951-488-1137 7
♣MORALES Sergio 951-208-1537 +0
2013 WHEELER Meredith 951-208-0294 +0
15060 2124 BANKHEAD Laura 951-208-0735 7
2113 KUEHNER Cara 951-924-0262 8
2114 THOMAS Noreen 951-485-1072 8
15068 ♣DIAZ Irma 951-486-9409 8
15084 ♣JACKSON Nomeece 951-488-1150 7
1813 PALMER Mary 951-208-0613 +0
15092 222 CABRERA Alicia 951-243-7121 +0
214 MCCORINCK Michael 951-208-4292 7
15100 ★RESERVE AT MORENO VLY RNCH THE 951-924-1725 5
15108 ♣SEARLO Scott 951-208-2427 +0
15124 ♣GONZALEZ Jesse 951-601-6832 +0
15132 ♣BRYSON Jay 951-924-1905 8
15148 1721 RAHMAN Ismat 951-924-4935 6 ★
♣TORRES Dina 951-601-9086 +0
15156 ♣MARTIN Kenneth 951-485-0693 6
1611 VARONA Lenece 951-601-2307 8
15164 ♣BLATCHLEY Joanne 951-208-2016 9

X FOREST OAKS WAY

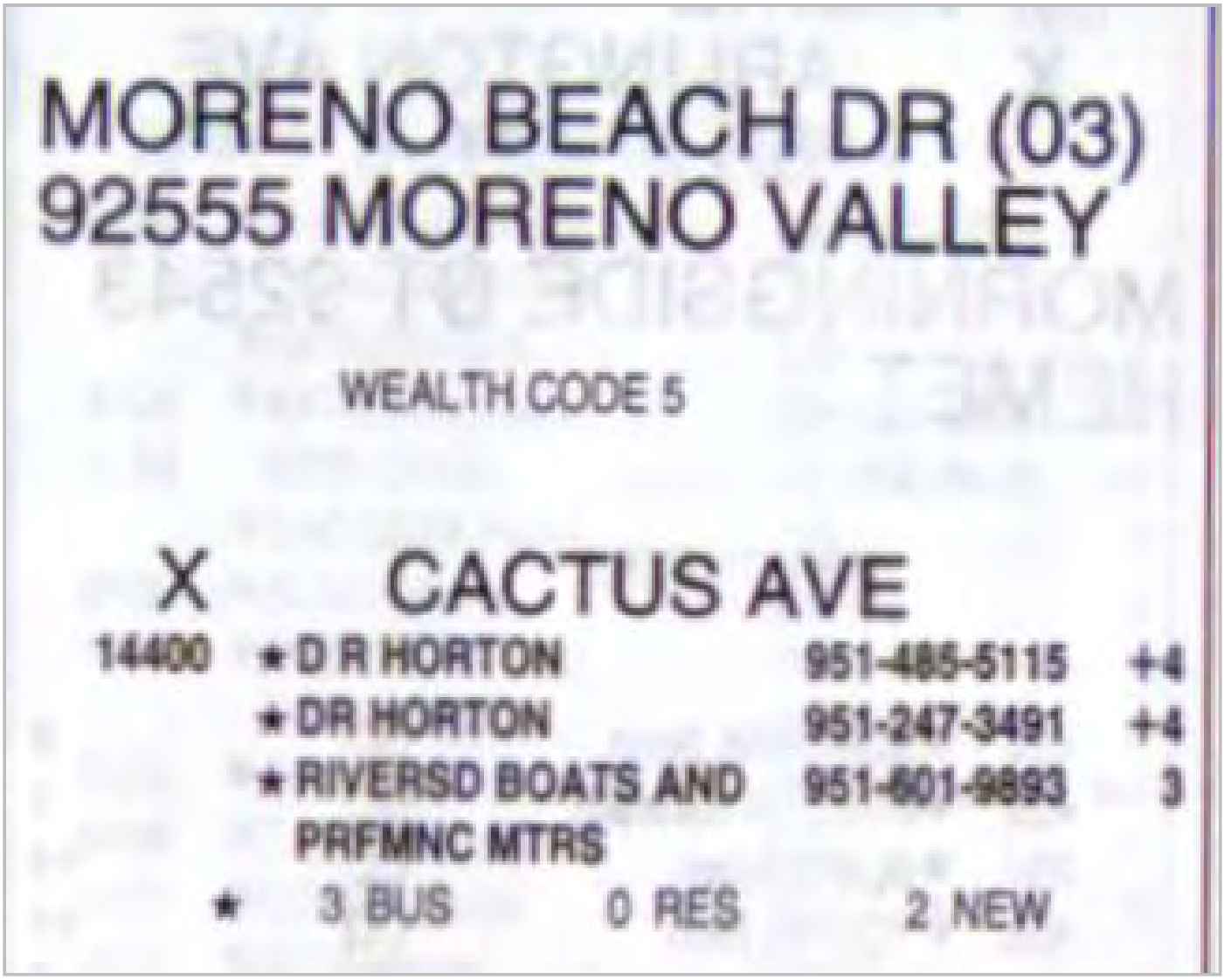
15204 ♣DOMINECK Clint 951-485-0801 +0
15212 923 ZARRINFAR Navid 951-247-2031 7

X CHAMPIONSHIP DR

★ 33 BUS 49 RES 23 NEW

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

MORENO BEACH DR 2005



MORENO BEACH DR (03)
92555 MORENO VALLEY

WEALTH CODE 5

X CACTUS AVE

14400	* D R HORTON	951-485-5115	+4
	* DR HORTON	951-247-3491	+4
	* RIVERSD BOATS AND PRFMNC MTRS	951-601-9893	3

* 3 BUS 0 RES 2 NEW

Car Pros Moreno Valley

Highway 60/ Moreno Beach Drive

Moreno Valley, CA 92555

Inquiry Number: 5359139.8

July 16, 2018

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

07/10/18

Site Name:

Car Pros Moreno Valley
Highway 60/ Moreno Beach Dr
Moreno Valley, CA 92555
EDR Inquiry # 5359139.8

Client Name:

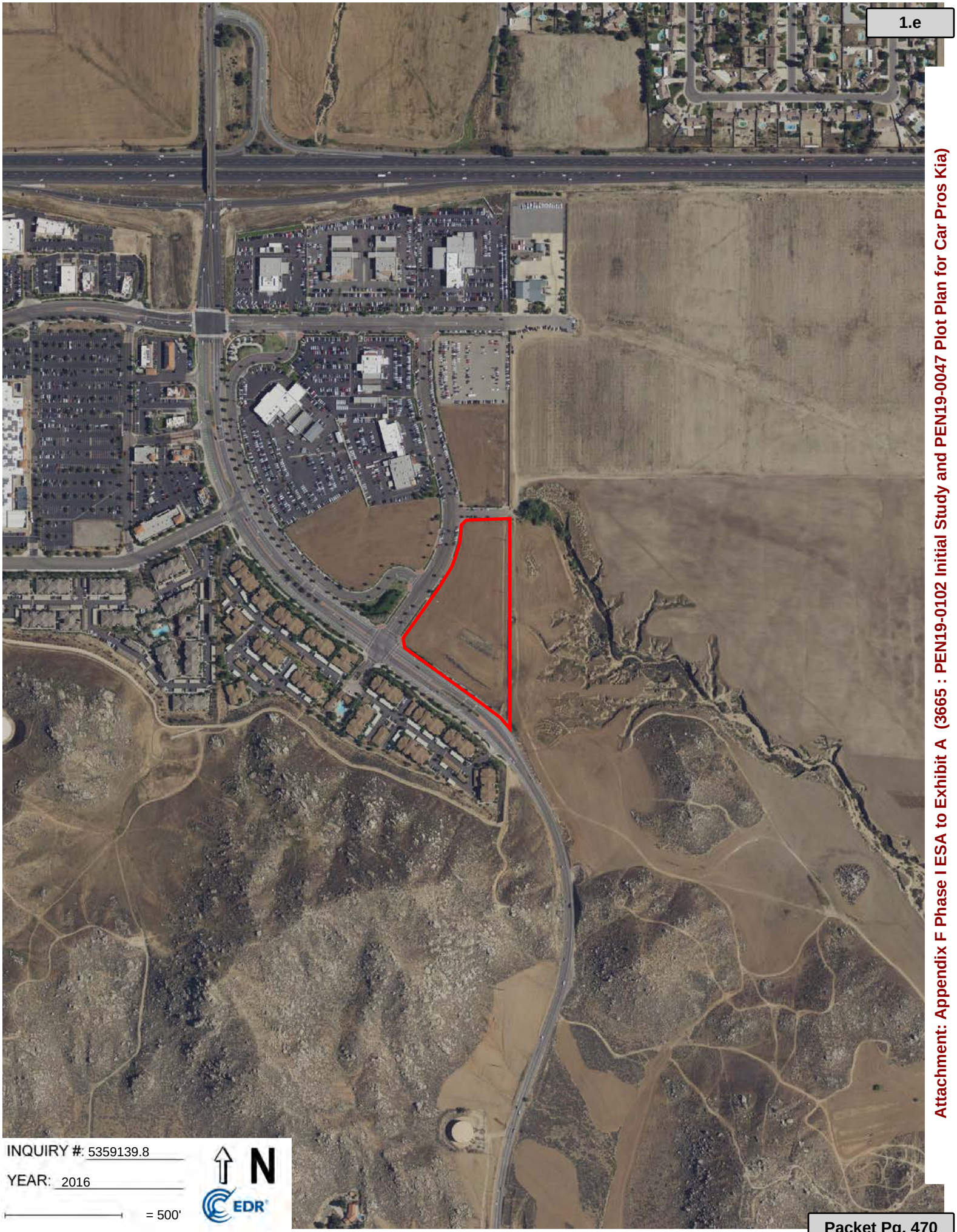
Hazard Management Consulting
211 W. Avenida Cordoba
San Clemente, CA 92672
Contact: Mark Cousineau

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	Scale	Details	Source
2016	1"=500'	Flight Year: 2016	USDA/NAIP
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
2002	1"=500'	Acquisition Date: May 22, 2002	USGS/DOQQ
1997	1"=500'	Flight Date: October 16, 1997	USGS
1989	1"=500'	Flight Date: August 15, 1989	USDA
1985	1"=500'	Flight Date: July 28, 1985	USDA
1978	1"=500'	Flight Date: September 20, 1978	USDA
1967	1"=500'	Flight Date: May 15, 1967	USDA
1953	1"=500'	Flight Date: August 28, 1953	USDA
1949	1"=500'	Flight Date: May 23, 1949	USDA
1938	1"=500'	Flight Date: June 14, 1938	USDA

When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.



Attachment: Appendix F Phase I ESA to Exhibit A (3665 : PEN19-0102 Initial Study and PEN19-0047 Plot Plan for Car Pros Kia)

INQUIRY #: 5359139.8

YEAR: 2006

= 500'

N

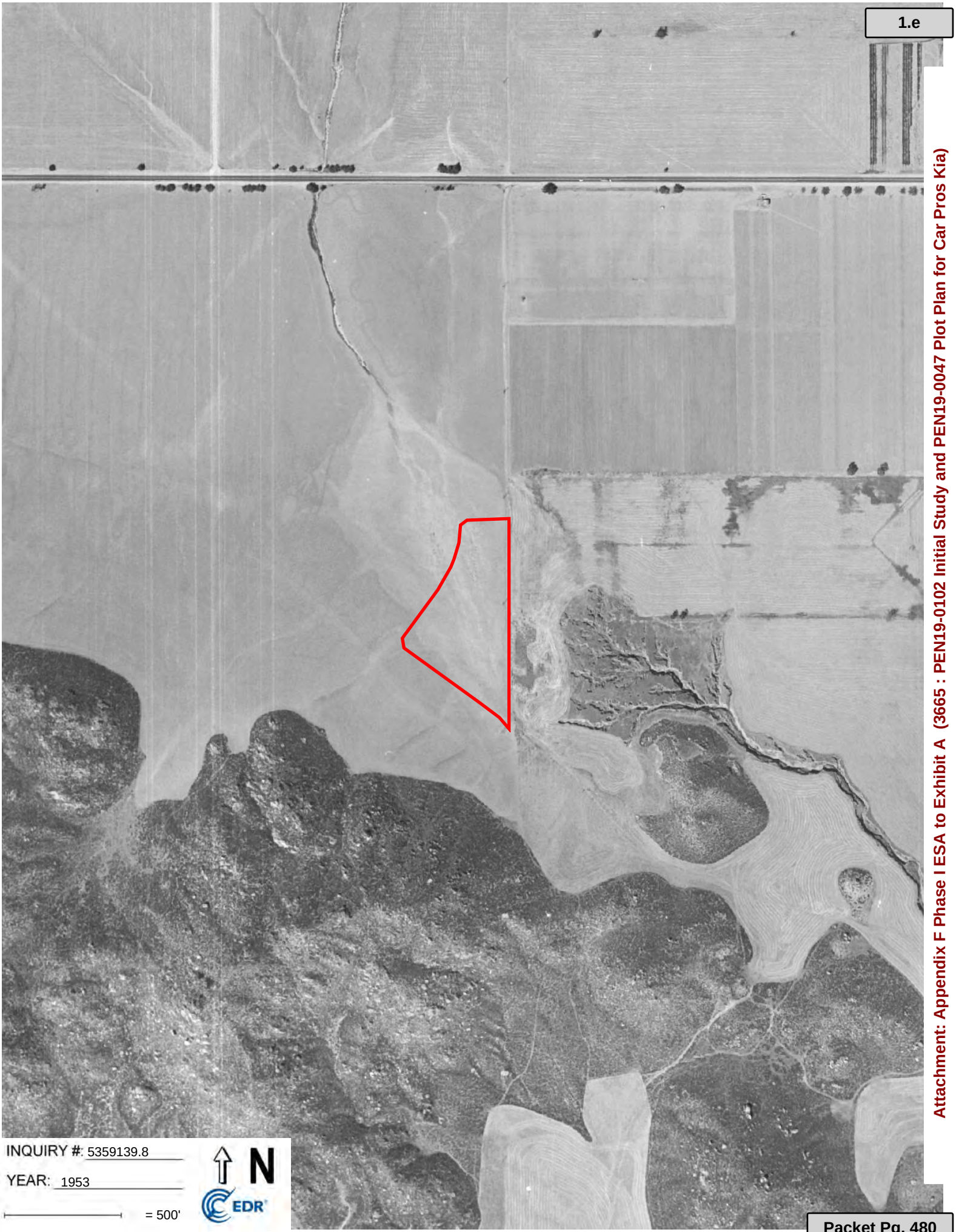
EDR

Attachment: Appendix F Phase I ESA to Exhibit A (3665 : PEN19-0102 Initial Study and PEN19-0047 Plot Plan for Car Pros Kia)


INQUIRY #: 5359139.8
YEAR: 1989
= 500'
N
EDR

Attachment: Appendix F Phase I ESA to Exhibit A (3665 : PEN19-0102 Initial Study and PEN19-0047 Plot Plan for Car Pros Kia)

Attachment: Appendix F Phase I ESA to Exhibit A (3665 : PEN19-0102 Initial Study and PEN19-0047 Plot Plan for Car Pros Kia)



INQUIRY #: 5359139.8

YEAR: 1953

= 500'

N

EDR

INQUIRY #: 5359139.8

YEAR: 1949

= 500'

N

EDR

INQUIRY #: 5359139.8

YEAR: 1938

= 500'

N

EDR

Car Pros Moreno Valley
Highway 60/ Moreno Beach Drive
Moreno Valley, CA 92555

Inquiry Number: 5359139.4
July 12, 2018

EDR Historical Topo Map Repo

with QuadMatch

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

07/12/18

Site Name:

Car Pros Moreno Valley
Highway 60/ Moreno Beach Dr
Moreno Valley, CA 92555
EDR Inquiry # 5359139.4

Client Name:

Hazard Management Consulting
211 W. Avenida Cordoba
San Clemente, CA 92672
Contact: Mark Cousineau

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Hazard Management Consulting were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:

P.O.# NA
Project: NA

Coordinates:

Latitude:	33.933697 33° 56' 1" North
Longitude:	-117.174561 -117° 10' 28" West
UTM Zone:	Zone 11 North
UTM X Meters:	483867.15
UTM Y Meters:	3754818.19
Elevation:	1751.24' above sea level

Maps Provided:

2012
1980
1973
1967
1953
1943
1942
1901

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2012 Source Sheets

Sunnymead
2012
7.5-minute, 24000

1980 Source Sheets

Sunnymead
1980
7.5-minute, 24000
Aerial Photo Revised 1978

1973 Source Sheets

Sunnymead
1973
7.5-minute, 24000
Aerial Photo Revised 1973

1967 Source Sheets

Sunnymead
1967
7.5-minute, 24000
Aerial Photo Revised 1966

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1953 Source Sheets

Sunnymead
1953
7.5-minute, 24000
Aerial Photo Revised 1951

1943 Source Sheets

PERRIS
1943
15-minute, 62500

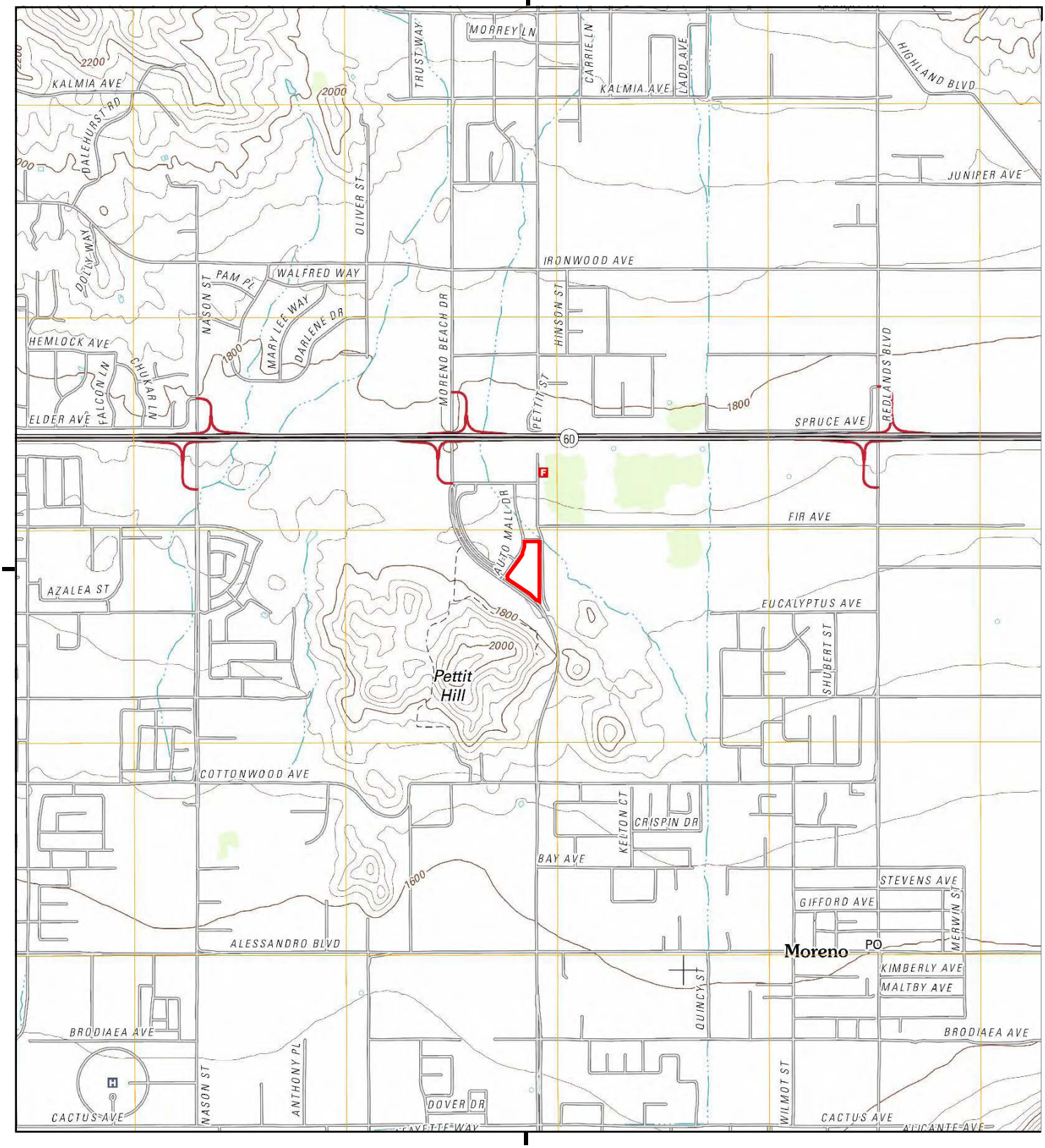
1942 Source Sheets

Perris
1942
15-minute, 62500
Aerial Photo Revised 1939

1901 Source Sheets

Elsinore
1901
30-minute, 125000

Historical Topo Map



This report includes information from the following map sheet(s).

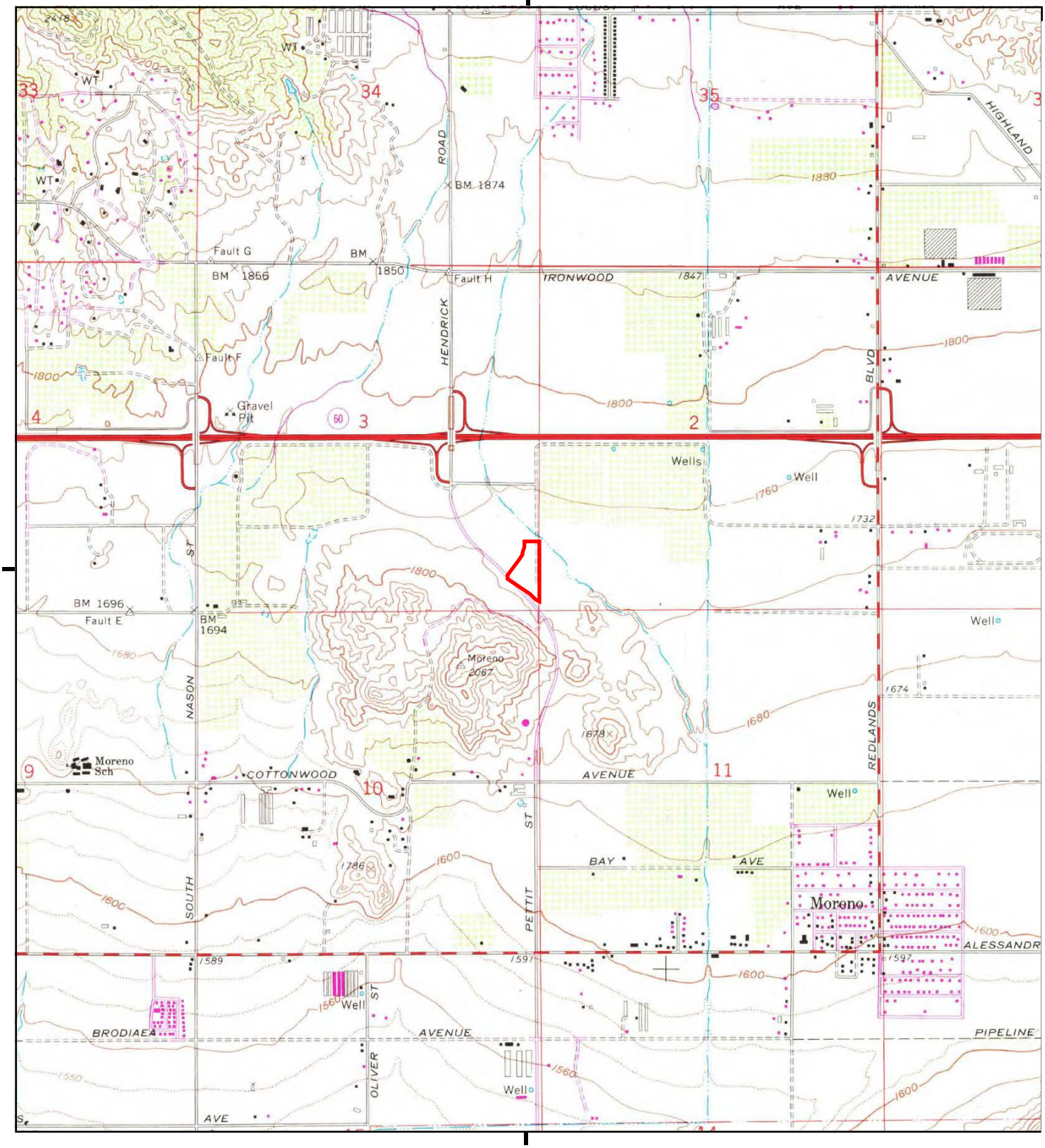
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Sunnymead, 2012, 7.5-minute

SITE NAME: Car Pros Moreno Valley
ADDRESS: Highway 60/ Moreno Beach Drive
Moreno Valley, CA 92555
CLIENT: Hazard Management Consulting

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

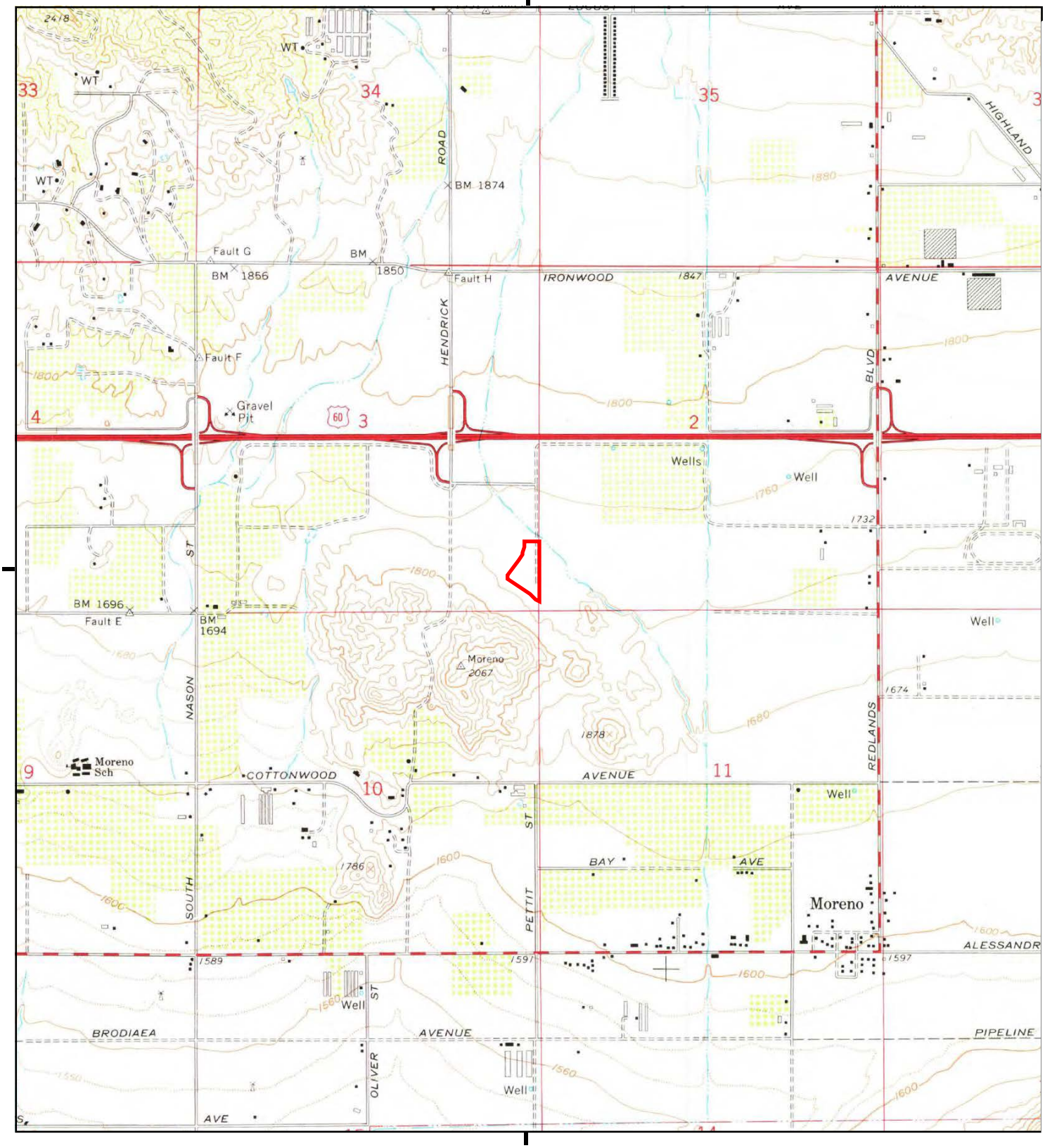
NW N NE
W E
SW S SE

TP, Sunnymead, 1980, 7.5-minute

SITE NAME: Car Pros Moreno Valley
ADDRESS: Highway 60/ Moreno Beach Drive
Moreno Valley, CA 92555
CLIENT: Hazard Management Consulting

N

Historical Topo Map



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

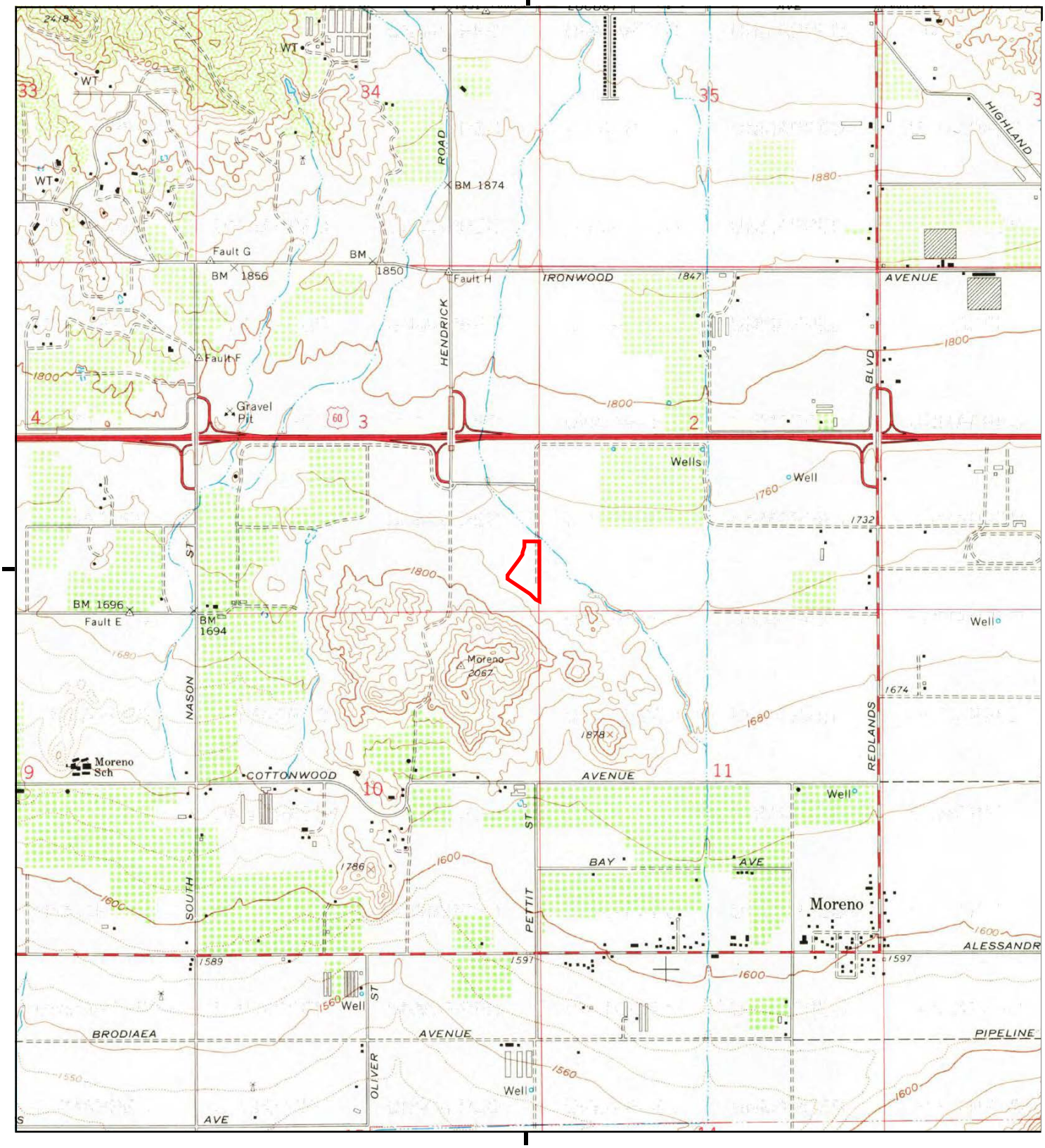
NW N NE
W E
SW S SE

TP, Sunnymead, 1973, 7.5-minute

SITE NAME: Car Pros Moreno Valley
ADDRESS: Highway 60/ Moreno Beach Drive
Moreno Valley, CA 92555
CLIENT: Hazard Management Consulting

N

Historical Topo Map



This report includes information from the following map sheet(s).

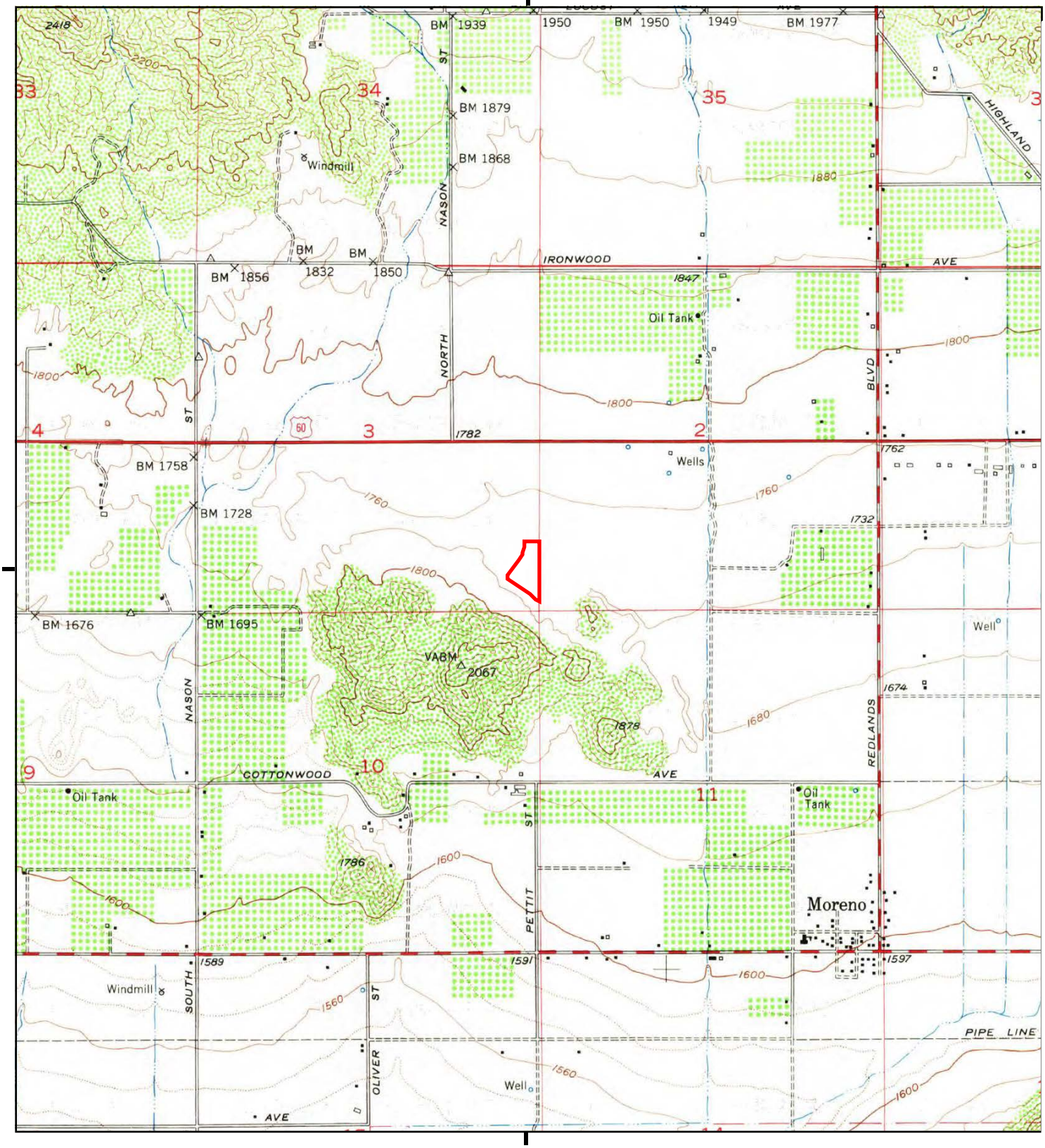
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Sunnymead, 1967, 7.5-minute

SITE NAME: Car Pros Moreno Valley
ADDRESS: Highway 60/ Moreno Beach Drive
Moreno Valley, CA 92555
CLIENT: Hazard Management Consulting

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

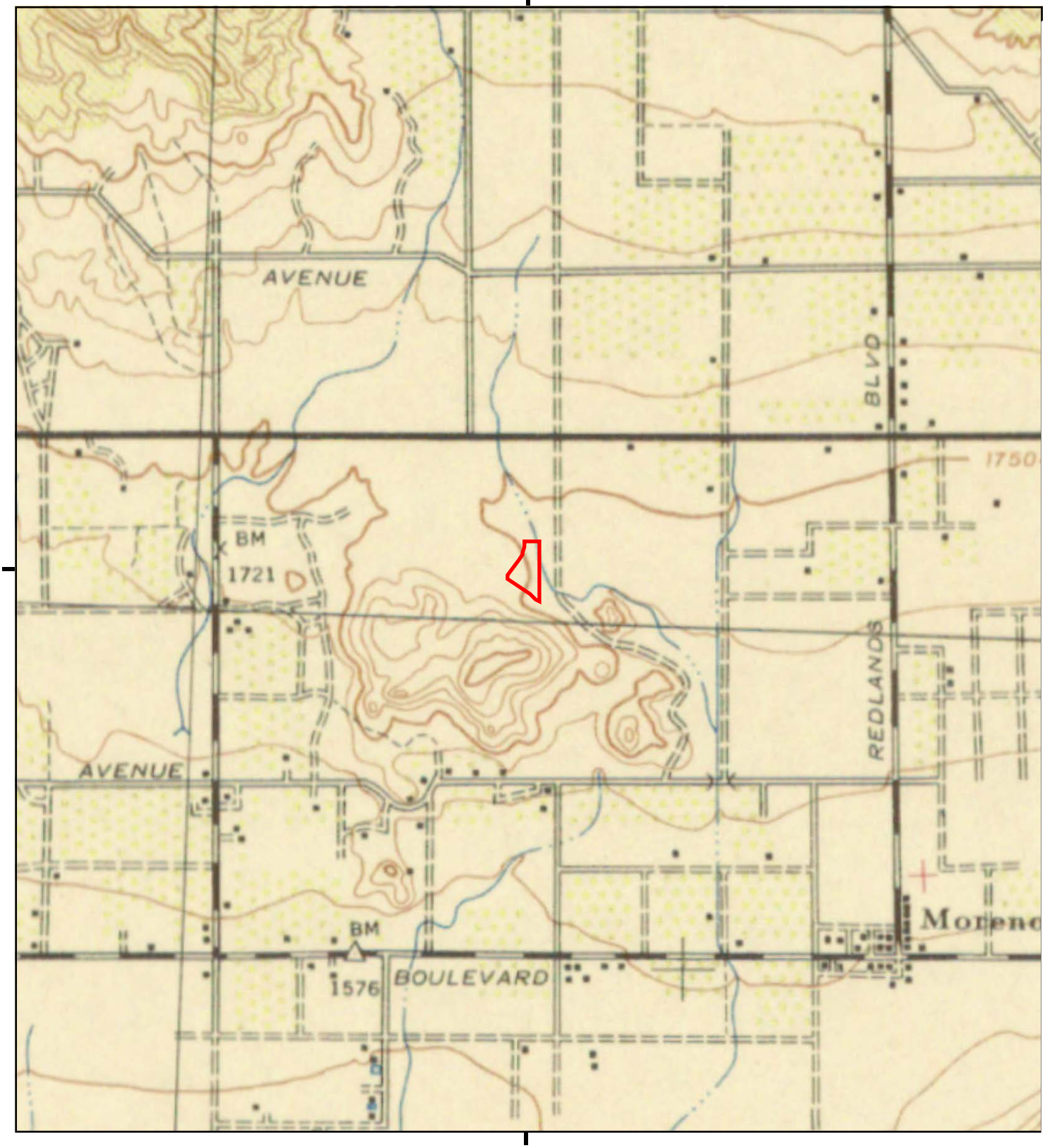
TP, Sunnymead, 1953, 7.5-minute

SITE NAME: Car Pros Moreno Valley
ADDRESS: Highway 60/ Moreno Beach Drive
Moreno Valley, CA 92555
CLIENT: Hazard Management Consulting

N

Attachment: Appendix F Phase I ESA to Exhibit A (3665 : PEN19-0102 Initial Study and PEN19-0047 Plot Plan for Car Pros Kia)

Historical Topo Map



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

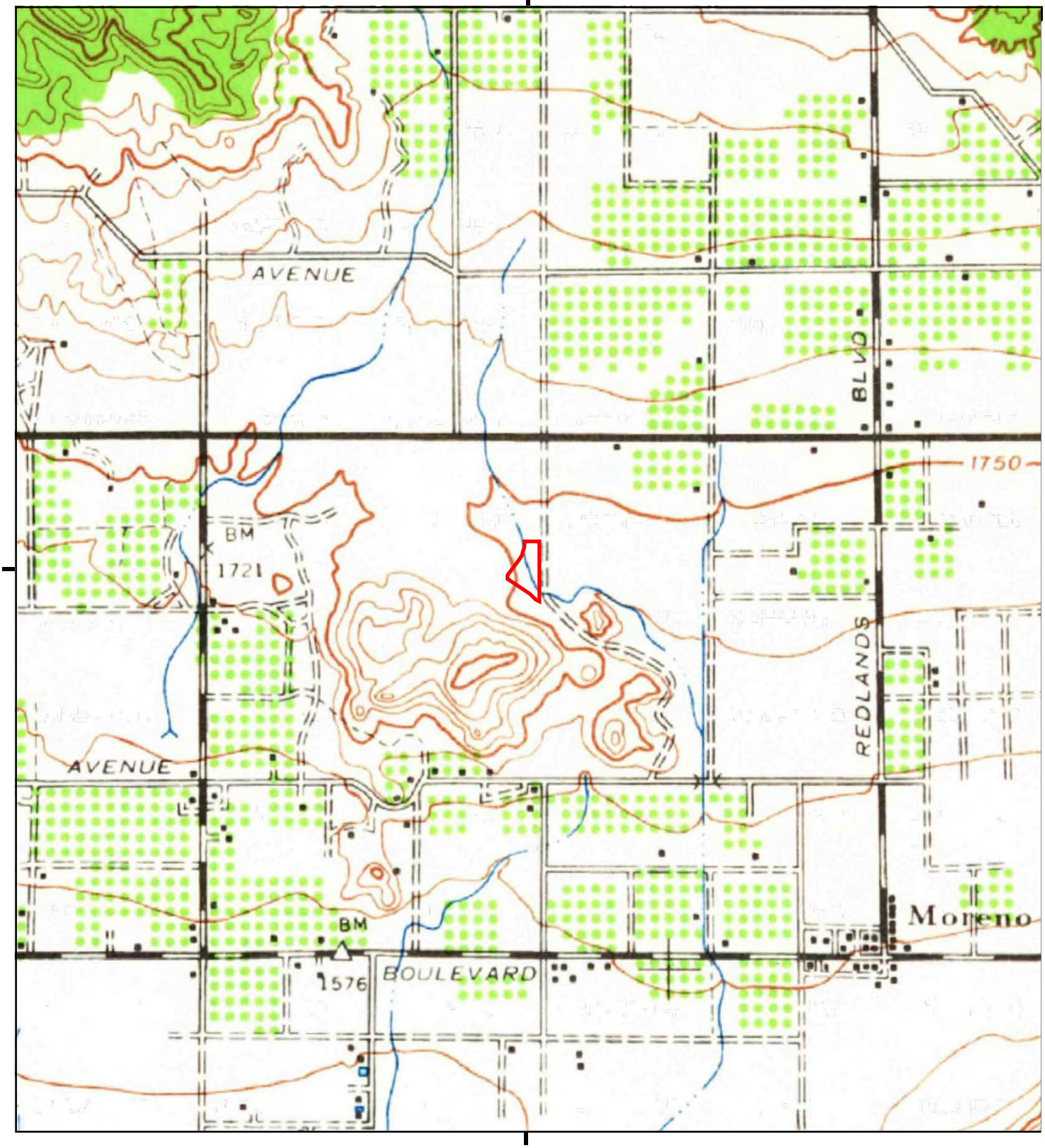
NW N NE
W E
SW S SE

TP, PERRIS, 1943, 15-minute

SITE NAME: Car Pros Moreno Valley
ADDRESS: Highway 60/ Moreno Beach Drive
Moreno Valley, CA 92555
CLIENT: Hazard Management Consulting

N

Historical Topo Map



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

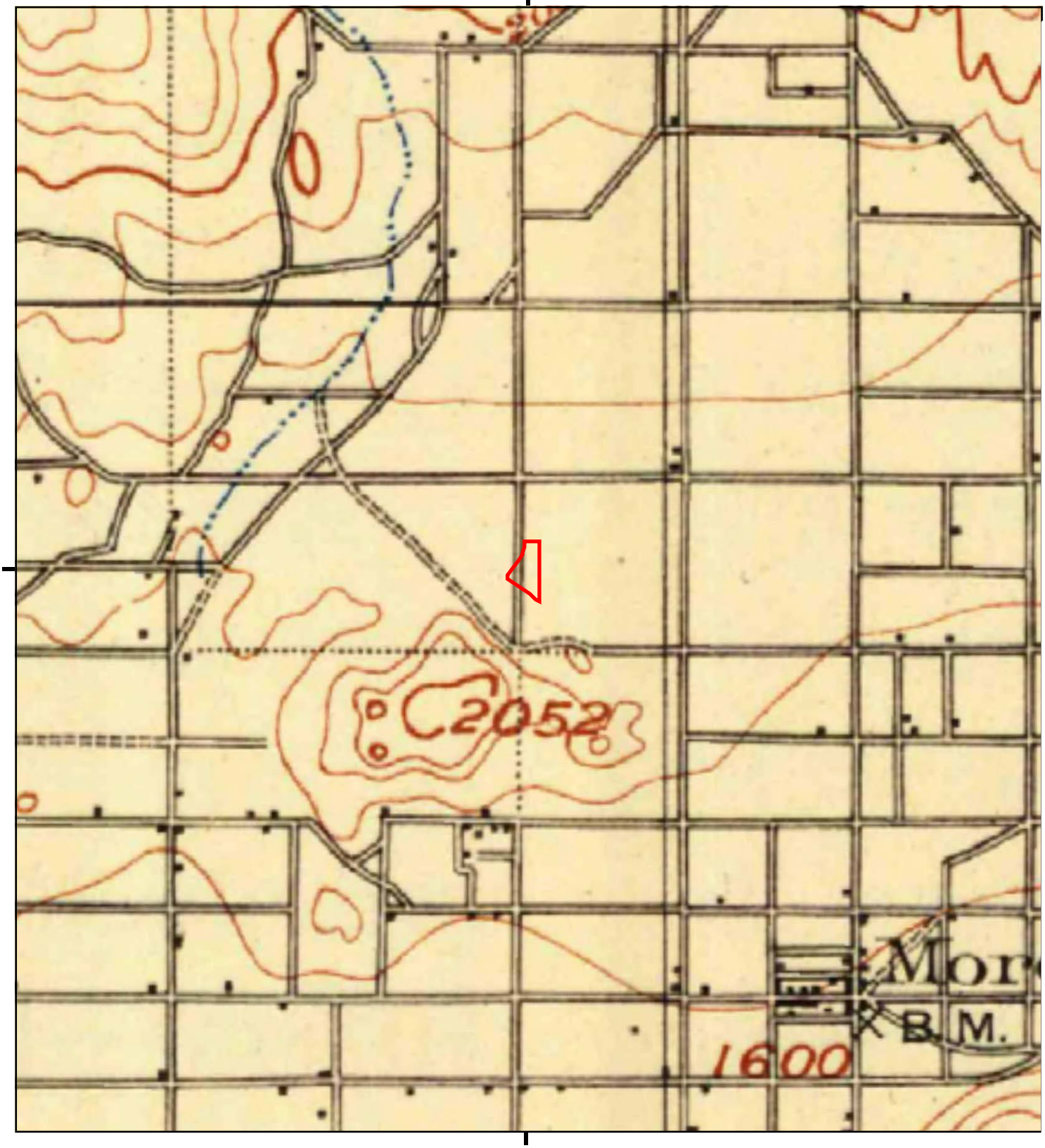
NW N NE
W E
SW S SE

TP, Perris, 1942, 15-minute

SITE NAME: Car Pros Moreno Valley
ADDRESS: Highway 60/ Moreno Beach Drive
Moreno Valley, CA 92555
CLIENT: Hazard Management Consulting

N

Historical Topo Map



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Elsinore, 1901, 30-minute

SITE NAME: Car Pros Moreno Valley
ADDRESS: Highway 60/ Moreno Beach Drive
Moreno Valley, CA 92555
CLIENT: Hazard Management Consulting

N

Car Pros Moreno Valley
Highway 60/ Moreno Beach Drive
Moreno Valley, CA 92555

Inquiry Number: 5359139.3
July 12, 2018

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

07/12/18

Site Name:

Car Pros Moreno Valley
Highway 60/ Moreno Beach Dri
Moreno Valley, CA 92555
EDR Inquiry # 5359139.3

Client Name:

Hazard Management Consulting
211 W. Avenida Cordoba
San Clemente, CA 92672
Contact: Mark Cousineau

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Hazard Management Consulting were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # 3DDE-4320-80A2

PO # NA

Project NA

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: 3DDE-4320-80A2

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

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Car Pros Moreno Valley
Highway 60/ Moreno Beach Drive
Moreno Valley, CA 92555

Inquiry Number: 5359139.2s
July 12, 2018

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Physical Setting Source Summary	A-2
Physical Setting SSURGO Soil Map	A-5
Physical Setting Source Map	A-17
Physical Setting Source Map Findings	A-19
Physical Setting Source Records Searched	PSGR-1

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

HIGHWAY 60/ MORENO BEACH DRIVE
MORENO VALLEY, CA 92555

COORDINATES

Latitude (North):	33.9336970 - 33° 56' 1.30''
Longitude (West):	117.1745610 - 117° 10' 28.41''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	483866.8
UTM Y (Meters):	3754624.0
Elevation:	1751 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5641326 SUNNYMEAD, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140530, 20140603
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
HIGHWAY 60/ MORENO BEACH DRIVE
MORENO VALLEY, CA 92555

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & DIRECTIO
A1	WAL-MART SUPERCENTER	12721 MORENO BEACH D	AST	Higher	247, 0.047, t
A2	WALMART #5193	12721 MORENO BEACH D	RCRA-SQG, FINDS, HAZNET	Higher	247, 0.047, t
A3	WALMART #5193	12721 MORENO BEACH D	AST	Higher	247, 0.047, t
4	ARCO AM PM	12611 MORENO BEACH D	EDR Hist Auto	Higher	541, 0.102, t
B5	MORINO VALLEY CHEV G	12625 AUTO MALL DR	RCRA-SQG, FINDS, ECHO	Higher	745, 0.141, V
B6	MOSS BROS CHEVROLET	12625 AUTO MALL DR	AST	Higher	745, 0.141, V
7	MORENO VALLEY TOYOTA	27990 EUCALYPTUS AVE	RCRA-SQG, FINDS, ECHO, HAZNET	Higher	942, 0.178, h
B8	MORENO VALLEY HONDA	27910 EUCALYPTUS ST	RCRA-SQG, FINDS, ECHO, HAZNET	Higher	1008, 0.191 W
9	MORENO VALLEY NISSAN	27810 EUCALYPTUS ST	RCRA-SQG	Higher	1125, 0.213 W
10	PROPOSED HIGH SCHOOL	IRONWOOD / QUINCY	ENVIROSTOR, SCH	Higher	4939, 0.935 E
11	EUCALYPTUS HIGH SCHO	REDLANDS BOULEVARD/E	ENVIROSTOR, SCH	Lower	5246, 0.994 st

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System
US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

EXECUTIVE SUMMARY

Federal ERNS list

ERNS ..... Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ..... State Response Sites

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ..... Solid Waste Information System

State and tribal leaking storage tank lists

LUST ..... Geotracker's Leaking Underground Fuel Tank Report
INDIAN LUST ..... Leaking Underground Storage Tanks on Indian Land
CPS-SLIC ..... Statewide SLIC Cases

State and tribal registered storage tank lists

FEMA UST ..... Underground Storage Tank Listing
UST ..... Active UST Facilities
INDIAN UST ..... Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

INDIAN VCP ..... Voluntary Cleanup Priority Listing
VCP ..... Voluntary Cleanup Program Properties

State and tribal Brownfields sites

BROWNFIELDS ..... Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT ..... Waste Management Unit Database
SWRCY ..... Recycler Database
HAULERS ..... Registered Waste Tire Haulers Listing
INDIAN ODI ..... Report on the Status of Open Dumps on Indian Lands
ODI ..... Open Dump Inventory
DEBRIS REGION 9 ..... Torres Martinez Reservation Illegal Dump Site Locations
IHS OPEN DUMPS ..... Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ..... Delisted National Clandestine Laboratory Register
HIST Cal-Sites ..... Historical Calsites Database

EXECUTIVE SUMMARY

SCH	School Property Evaluation Program
CDL	Clandestine Drug Labs
Toxic Pits	Toxic Pits Cleanup Act Sites
US CDL	National Clandestine Laboratory Register
CERS HAZ WASTE	CERS HAZ WASTE

Local Lists of Registered Storage Tanks

SWEEPS UST	SWEEPS UST Listing
HIST UST	Hazardous Substance Storage Container Database
CA FID UST	Facility Inventory Database
CERS TANKS	California Environmental Reporting System (CERS) Tanks

Local Land Records

LIENS	Environmental Liens Listing
LIENS 2	CERCLA Lien Information
DEED	Deed Restriction Listing

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
CHMIRS	California Hazardous Material Incident Report System
LDS	Land Disposal Sites Listing
MCS	Military Cleanup Sites Listing
SPILLS 90	SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated
FUDS	Formerly Used Defense Sites
DOD	Department of Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
ROD	Records Of Decision
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees

EXECUTIVE SUMMARY

INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines
FINDS	Facility Index System/Facility Registry System
ECHO	Enforcement & Compliance History Information
DOCKET HWC	Hazardous Waste Compliance Docket Listing
UXO	Unexploded Ordnance Sites
FUELS PROGRAM	EPA Fuels Program Registered Listing
CA BOND EXP. PLAN	Bond Expenditure Plan
Cortese	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings	CUPA Resources List
DRYCLEANERS	Cleaner Facilities
EMI	Emissions Inventory Data
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
HAZNET	Facility and Manifest Data
ICE	ICE
HIST CORTESE	Hazardous Waste & Substance Site List
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
NPDES	NPDES Permits Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
Notify 65	Proposition 65 Records
UIC	UIC Listing
WASTEWATER PITS	Oil Wastewater Pits Listing
WDS	Waste Discharge System
WIP	Well Investigation Program Case List
CIWQS	California Integrated Water Quality System
CERS	CERS
SAMPLING POINT	SAMPLING POINT (GEOTRACKER)
WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)
NON-CASE INFO	NON-CASE INFO (GEOTRACKER)
OTHER OIL GAS	OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS	PROD WATER PONDS (GEOTRACKER)
PROJECT	PROJECT (GEOTRACKER)
UIC GEO	UIC GEO (GEOTRACKER)
MILITARY PRIV SITES	MILITARY PRIV SITES (GEOTRACKER)

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR Hist Cleaner	EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF	Recovered Government Archive Solid Waste Facilities List

EXECUTIVE SUMMARY

RGA LUST ---------- Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Federal RCRA generators list

RCRA-SQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

A review of the RCRA-SQG list, as provided by EDR, and dated 03/01/2018 has revealed that there are 5 RCRA-SQG sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
WALMART #5193	***12721 MORENO BEACH D***	***W 0 - 1/8 (0.047 mi.)***	***A2***	***8***
MORINO VALLEY CHEV G	***12625 AUTO MALL DR***	***NNW 1/8 - 1/4 (0.141 mi.)***	***B5***	***25***
MORENO VALLEY TOYOTA	***27990 EUCALYPTUS AVE***	***N 1/8 - 1/4 (0.178 mi.)***	***7***	***27***
MORENO VALLEY HONDA	***27910 EUCALYPTUS ST***	***NNW 1/8 - 1/4 (0.191 mi.)***	***B8***	***30***
MORENO VALLEY NISSAN	27810 EUCALYPTUS ST	NNW 1/8 - 1/4 (0.213 mi.)	9	33

State- and tribal - equivalent CERCLIS

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 04/30/2018 has revealed that there are

EXECUTIVE SUMMARY

2 ENVIROSTOR sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
PROPOSED HIGH SCHOOL	***IRONWOOD / QUINCY***	***NNE 1/2 - 1 (0.935 mi.)***	***10***	***34***
Facility Id: 60000931				
Status: No Further Action				

Lower Elevation	Address	Direction / Distance	Map ID	Page
EUCALYPTUS HIGH SCHO	***REDLANDS BOULEVARD/E***	***E 1/2 - 1 (0.994 mi.)***	***11***	***37***
Facility Id: 60000326				
Status: No Further Action				

State and tribal registered storage tank lists

AST: A listing of aboveground storage tank petroleum storage tank locations.

A review of the AST list, as provided by EDR, has revealed that there are 3 AST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
WAL-MART SUPERCENTER	12721 MORENO BEACH D	W 0 - 1/8 (0.047 mi.)	A1	8
Database: AST, Date of Government Version: 07/06/2016				
WALMART #5193	12721 MORENO BEACH D	W 0 - 1/8 (0.047 mi.)	A3	24
Database: AST, Date of Government Version: 07/06/2016				
MOSS BROS CHEVROLET	12625 AUTO MALL DR	NNW 1/8 - 1/4 (0.141 mi.)	B6	26
Database: AST, Date of Government Version: 07/06/2016				

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR Hist Auto: EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

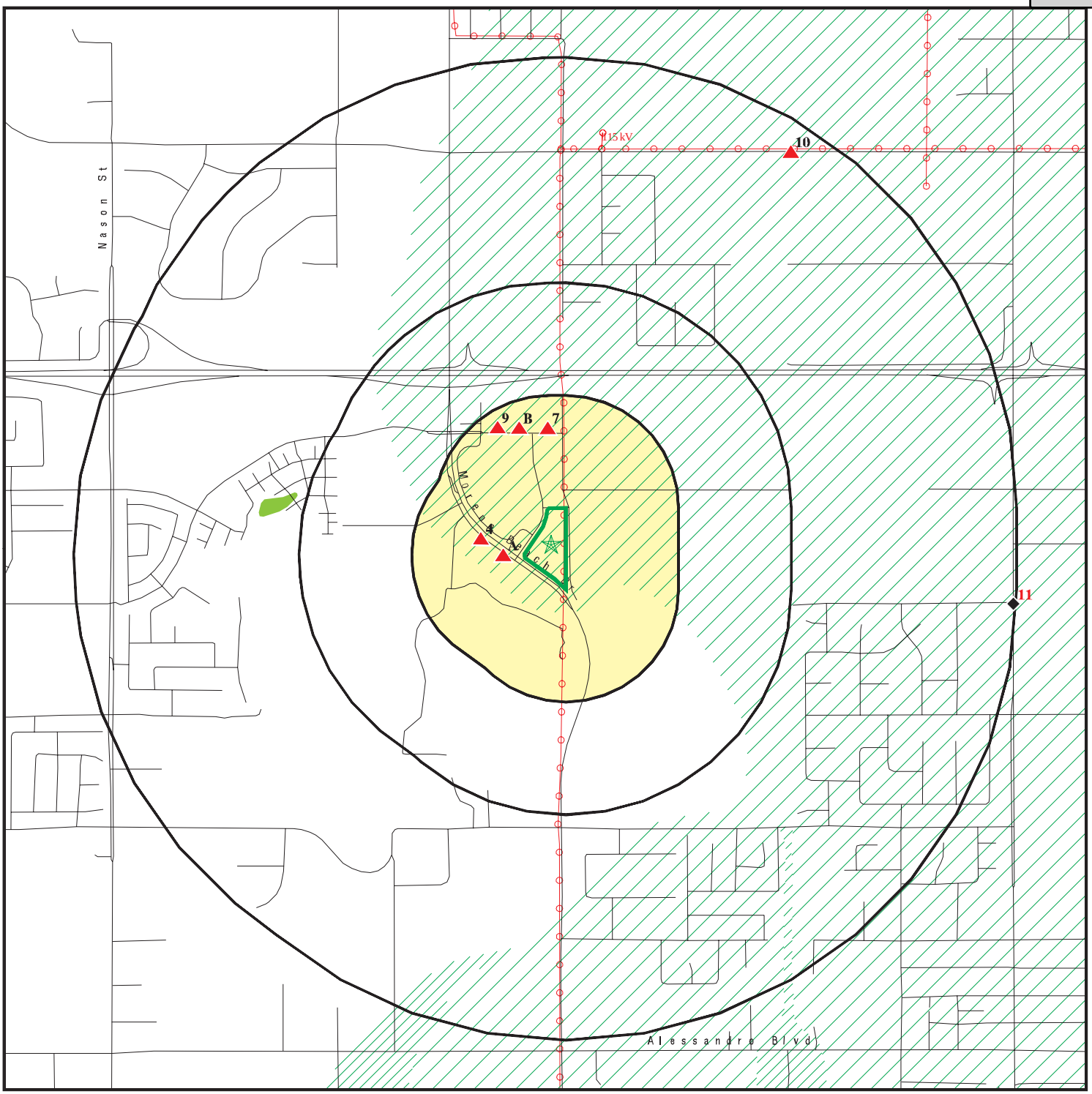
A review of the EDR Hist Auto list, as provided by EDR, has revealed that there is 1 EDR Hist Auto site within approximately 0.125 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ARCO AM PM	12611 MORENO BEACH D	W 0 - 1/8 (0.102 mi.)	4	25

EXECUTIVE SUMMARY

There were no unmapped sites in this report.

OVERVIEW MAP - 5359139.2S



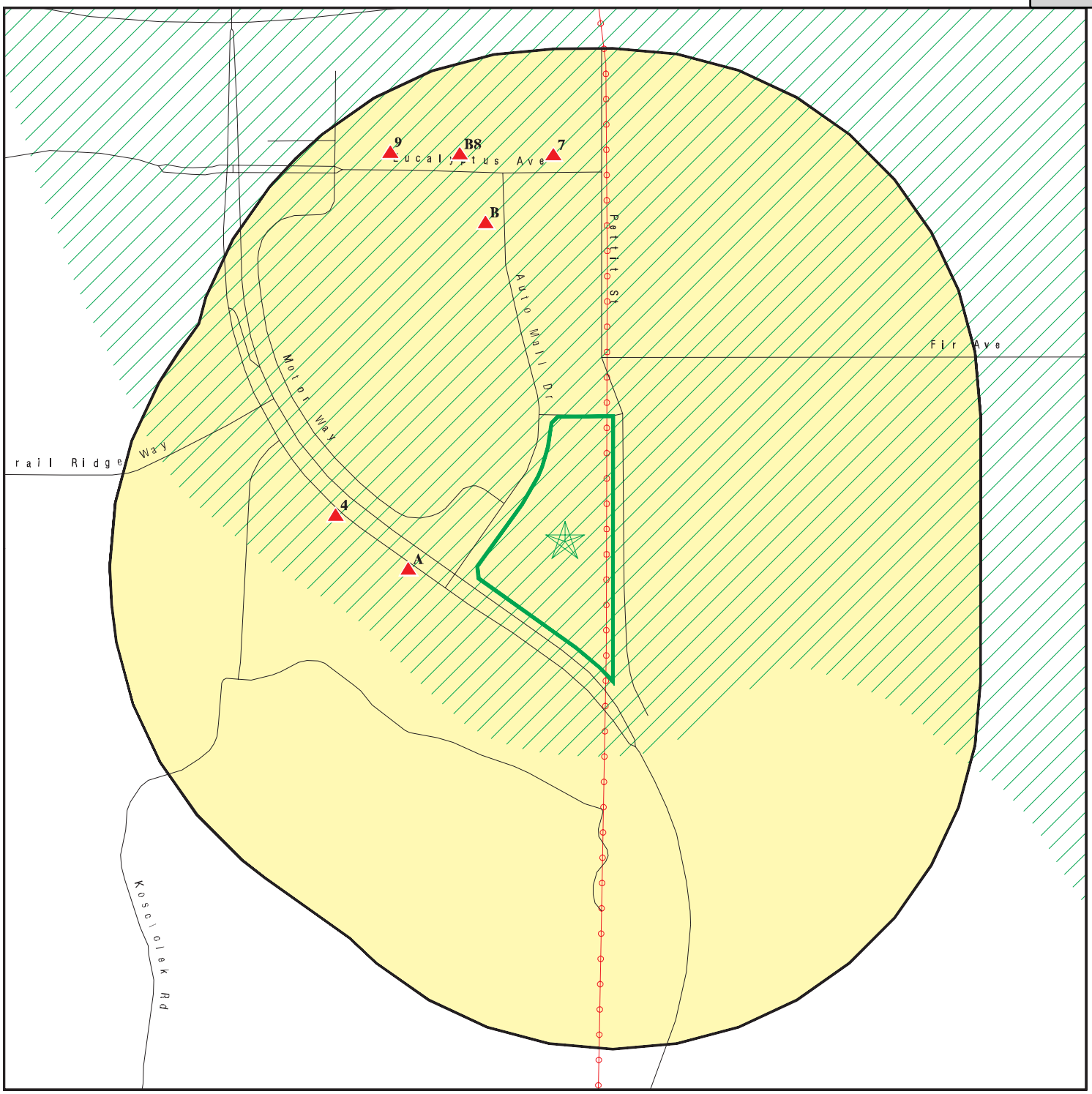
0 1/4 1/2 1 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Upgradient Area
- Areas of Concern

This report includes Interactive Map Layers display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Car Pros Moreno Valley	CLIENT:	Hazard Management Consulting
ADDRESS:	Highway 60/ Moreno Beach Drive Moreno Valley CA 92555	CONTACT:	Mark Cousineau
LAT/LONG:	33.933697 / 117.174561	INQUIRY #:	5359139.2s
		DATE:	July 12, 2018 12:25 pm

DETAIL MAP - 5359139.2S



0 1/16 1/8 1/4 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- 100-year flood zone
- 500-year flood zone
- Areas of Concern

This report includes Interactive Map Layers display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Car Pros Moreno Valley	CLIENT:	Hazard Management Consulting
ADDRESS:	Highway 60/ Moreno Beach Drive Moreno Valley CA 92555	CONTACT:	Mark Cousineau
LAT/LONG:	33.933697 / 117.174561	INQUIRY #:	5359139.2s
		DATE:	July 12, 2018 12:26 pm

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	0.001		0	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		1	4	NR	NR	NR	5
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	2	NR	2
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		2	1	NR	NR	NR	3
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
CERS TANKS	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0
LIENS 2	0.001		0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	0.001		0	NR	NR	NR	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.001		0	NR	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001		0	NR	NR	NR	NR	0
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.001		0	NR	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001		0	NR	NR	NR	NR	0
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
CIWQS	0.001		0	NR	NR	NR	NR	0
CERS	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		1	NR	NR	NR	NR	1
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		0	4	5	0	2	0	11

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

MAP FINDINGS

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number
A1 **West** **< 1/8** **0.047 mi.** **247 ft.**	**WAL-MART SUPERCENTER STORE NO. 5193** **12721 MORENO BEACH DRIVE** **MORENO VALLEY, CA**	**AST**	**A100325480** **N/A**

Site 1 of 3 in cluster A

Relative: Higher

Actual: 1763 ft.

AST:

Certified Unified Program Agencies:	Riverside
Owner:	WAL-MART STORES INC.
Total Gallons:	1,840
CERSID:	Not reported
Facility ID:	Not reported
Business Name:	Not reported
Phone:	Not reported
Fax:	Not reported
Mailing Address:	Not reported
Mailing Address City:	Not reported
Mailing Address State:	Not reported
Mailing Address Zip Code:	Not reported
Operator Name:	Not reported
Operator Phone:	Not reported
Owner Phone:	Not reported
Owner Mail Address:	Not reported
Owner State:	Not reported
Owner Zip Code:	Not reported
Owner Country:	Not reported
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported
Property Owner Stat :	Not reported
Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	Not reported

A2 **West** **< 1/8** **0.047 mi.** **247 ft.**	**WALMART #5193** **12721 MORENO BEACH DR** **MORENO VALLEY, CA 92555**	**RCRA-SQG** **FINDS** **HAZNET**	**1014387171** **CAR000206318**

Site 2 of 3 in cluster A

Relative: Higher

Actual: 1763 ft.

RCRA-SQG:

Date form received by agency:	06/20/2016
Facility name:	WALMART SUPERCENTER NO 5193
Facility address:	12721 MORENO BEACH DR MORENO VALLEY, CA 92555
EPA ID:	CAR000206318
Mailing address:	PO BOX 8041 BENTONVILLE, AR 72712-8041
Contact:	ROSE ARNOLD
Contact address:	PO BOX 8041 BENTONVILLE, AR 72712-8041
Contact country:	US
Contact telephone:	479-277-8972
Contact email:	ROSE.ARNOLD@WALMART.COM
EPA Region:	09
Classification:	Small Small Quantity Generator
Description:	Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous

WALMART #5193 (Continued) **1014387171**

waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:

Owner/operator name:	WAL MART STORES INC
Owner/operator address:	PO BOX 8041
	BENTONVILLE, AR 72712
Owner/operator country:	US
Owner/operator telephone:	479-277-8972
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	11/12/2008
Owner/Op end date:	Not reported

Owner/operator name:	WAL MART STORES INC
Owner/operator address:	Not reported
	Not reported
Owner/operator country:	US
Owner/operator telephone:	Not reported
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	11/12/2008
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

. Waste code:	122
. Waste name:	Alkaline solution without metals (pH > 12.5)

. Waste code:	141
. Waste name:	Off-specification, aged, or surplus inorganics

. Waste code:	181
. Waste name:	Other inorganic solid waste

MAP FINDINGS

Map ID
Direction
Distance
Elevation | Site | Database(s) | EDR ID Number
EPA ID Number

WALMART #5193 (Continued) **1014387171**

. Waste code: 213
. Waste name: Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)

. Waste code: 214
. Waste name: Unspecified solvent mixture

. Waste code: 221
. Waste name: Waste oil and mixed oil

. Waste code: 223
. Waste name: Unspecified oil-containing waste

. Waste code: 232
. Waste name: Pesticides and other waste associated with pesticide production

. Waste code: 311
. Waste name: Pharmaceutical waste

. Waste code: 331
. Waste name: Off-specification, aged, or surplus organics

. Waste code: 352
. Waste name: Other organic solids

. Waste code: 791
. Waste name: Liquids with pH < 2

. Waste code: D001
. Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.

. Waste code: D002
. Waste name: A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.

. Waste code: D003
. Waste name: A MATERIAL IS CONSIDERED TO BE A REACTIVE HAZARDOUS WASTE IF IT IS NORMALLY UNSTABLE, REACTS VIOLENTLY WITH WATER, GENERATES TOXIC GASES WHEN EXPOSED TO WATER OR CORROSIVE MATERIALS, OR IF IT IS CAPABLE OF DETONATION OR EXPLOSION WHEN EXPOSED TO HEAT OR A FLAME. ONE EXAMPLE OF SUCH WASTE WOULD BY WASTE GUNPOWDER.

. Waste code: D004
. Waste name: ARSENIC

. Waste code: D005
. Waste name: BARIUM

Map ID
Direction
Distance
Elevation | Site | MAP FINDINGS | Database(s) | EDR ID Number EPA ID Number

WALMART #5193 (Continued) **1014387171**

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D016
. Waste name: 2,4-D

. Waste code: D018
. Waste name: BENZENE

. Waste code: D022
. Waste name: CHLOROFORM

. Waste code: D024
. Waste name: M-CRESOL

. Waste code: D026
. Waste name: CRESOL

. Waste code: D027
. Waste name: 1,4-DICHLOROBENZENE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D039
. Waste name: TETRACHLOROETHYLENE

. Waste code: D043
. Waste name: VINYL CHLORIDE

. Waste code: P001
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: P075
. Waste name: NICOTINE, & SALTS

. Waste code: U002
. Waste name: ACETONE (I)

. Waste code: U034
. Waste name: ACETALDEHYDE, TRICHLORO-

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

WALMART #5193 (Continued) **1014387171**

. Waste code: U035
. Waste name: BENZENEBUTANOIC ACID, 4-[BIS(2-CHLOROETHYL)AMINO]-

. Waste code: U058
. Waste name: CYCLOPHOSPHAMIDE

. Waste code: U072
. Waste name: BENZENE, 1,4-DICHLORO-

. Waste code: U089
. Waste name: DIETHYLSTILBESTEROL

. Waste code: U122
. Waste name: FORMALDEHYDE

. Waste code: U129
. Waste name: CYCLOHEXANE, 1,2,3,4,5,6-HEXACHLORO-, (1ALPHA,2ALPHA,3BETA,4ALPHA,5ALPHA,6BETA)-

. Waste code: U132
. Waste name: HEXACHLOROPHENE

. Waste code: U134
. Waste name: HYDROFLUORIC ACID (C,T)

. Waste code: U150
. Waste name: MELPHALAN

. Waste code: U154
. Waste name: METHANOL (I)

. Waste code: U159
. Waste name: 2-BUTANONE (I,T)

. Waste code: U165
. Waste name: NAPHTHALENE

. Waste code: U188
. Waste name: PHENOL

. Waste code: U200
. Waste name: RESERPINE

. Waste code: U205
. Waste name: SELENIUM SULFIDE

. Waste code: U210
. Waste name: ETHENE, TETRACHLORO-

. Waste code: U249
. Waste name: ZINC PHOSPHIDE ZN3P2, WHEN PRESENT AT CONCENTRATIONS OF 10% OR LESS

. Waste code: U279
. Waste name: CARBARYL (OR) 1-NAPHTHALENOL, METHYLCARBAMATE

. Waste code: U409
. Waste name: CARBAMIC ACID, [1,2-PHENYLENEBIS (IMINOCARBONOTHIOYL)]BIS-, DIMETHYL

WALMART #5193 (Continued) **1014387171**

ESTER (OR) THIOPHANATE-METHYL

Historical Generators:
Date form received by agency: 10/28/2014
Site name: WALMART SUPERCENTER NO 5193
Classification: Small Quantity Generator

. Waste code: 122
. Waste name: Alkaline solution without metals (pH > 12.5)

. Waste code: 141
. Waste name: Off-specification, aged, or surplus inorganics

. Waste code: 181
. Waste name: Other inorganic solid waste

. Waste code: 213
. Waste name: Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)

. Waste code: 214
. Waste name: Unspecified solvent mixture

. Waste code: 221
. Waste name: Waste oil and mixed oil

. Waste code: 232
. Waste name: Pesticides and other waste associated with pesticide production

. Waste code: 311
. Waste name: Pharmaceutical waste

. Waste code: 331
. Waste name: Off-specification, aged, or surplus organics

. Waste code: 352
. Waste name: Other organic solids

. Waste code: 541
. Waste name: Photochemicals / photo processing waste

. Waste code: 791
. Waste name: Liquids with pH < 2

. Waste code: D001
. Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.

. Waste code: D002
. Waste name: A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS

WALMART #5193 (Continued) **1014387171**

USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.

. Waste code: D003
. Waste name: A MATERIAL IS CONSIDERED TO BE A REACTIVE HAZARDOUS WASTE IF IT IS NORMALLY UNSTABLE, REACTS VIOLENTLY WITH WATER, GENERATES TOXIC GASES WHEN EXPOSED TO WATER OR CORROSIVE MATERIALS, OR IF IT IS CAPABLE OF DETONATION OR EXPLOSION WHEN EXPOSED TO HEAT OR A FLAME. ONE EXAMPLE OF SUCH WASTE WOULD BY WASTE GUNPOWDER.

. Waste code: D004
. Waste name: ARSENIC

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D016
. Waste name: 2,4-D

. Waste code: D018
. Waste name: BENZENE

. Waste code: D022
. Waste name: CHLOROFORM

. Waste code: D024
. Waste name: M-CRESOL

. Waste code: D026
. Waste name: CRESOL

. Waste code: D027
. Waste name: 1,4-DICHLOROBENZENE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D039

Map ID
Direction
Distance
Elevation | Site | MAP FINDINGS | Database(s) | EDR ID Number
EPA ID Number

WALMART #5193 (Continued) **1014387171**

. Waste name: TETRACHLOROETHYLENE

. Waste code: D043
. Waste name: VINYL CHLORIDE

. Waste code: P001
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: P075
. Waste name: NICOTINE, & SALTS

. Waste code: U002
. Waste name: ACETONE (I)

. Waste code: U034
. Waste name: ACETALDEHYDE, TRICHLORO-

. Waste code: U035
. Waste name: BENZENEBUTANOIC ACID, 4-[BIS(2-CHLOROETHYL)AMINO]-

. Waste code: U058
. Waste name: CYCLOPHOSPHAMIDE

. Waste code: U072
. Waste name: BENZENE, 1,4-DICHLORO-

. Waste code: U112
. Waste name: ACETIC ACID ETHYL ESTER (I)

. Waste code: U122
. Waste name: FORMALDEHYDE

. Waste code: U129
. Waste name: CYCLOHEXANE, 1,2,3,4,5,6-HEXACHLORO-, (1ALPHA,2ALPHA,3BETA,4ALPHA,5ALPHA,6BETA)-

. Waste code: U132
. Waste name: HEXACHLOROPHENE

. Waste code: U134
. Waste name: HYDROFLUORIC ACID (C,T)

. Waste code: U150
. Waste name: MELPHALAN

. Waste code: U154
. Waste name: METHANOL (I)

. Waste code: U159
. Waste name: 2-BUTANONE (I,T)

. Waste code: U165
. Waste name: NAPHTHALENE

. Waste code: U188
. Waste name: PHENOL

WALMART #5193 (Continued) **1014387171**

. Waste code: U200
. Waste name: RESERPINE

. Waste code: U205
. Waste name: SELENIUM SULFIDE

. Waste code: U210
. Waste name: ETHENE, TETRACHLORO-

. Waste code: U249
. Waste name: ZINC PHOSPHIDE ZN3P2, WHEN PRESENT AT CONCENTRATIONS OF 10% OR LESS

. Waste code: U279
. Waste name: CARBARYL (OR) 1-NAPHTHALENOL, METHYLCARBAMATE

. Waste code: U409
. Waste name: CARBAMIC ACID, [1,2-PHENYLENEBIS (IMINOCARBONOTHIOYL)]BIS-, DIMETHYL ESTER (OR) THIOPHANATE-METHYL

Date form received by agency: 06/27/2011
Site name: WALMART SUPERCENTER NO 5193
Classification: Small Quantity Generator

. Waste code: 122
. Waste name: Alkaline solution without metals (pH > 12.5)

. Waste code: 135
. Waste name: Unspecified aqueous solution

. Waste code: 141
. Waste name: Off-specification, aged, or surplus inorganics

. Waste code: 181
. Waste name: Other inorganic solid waste

. Waste code: 212
. Waste name: Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)

. Waste code: 213
. Waste name: Hydrocarbon solvents (benzene, hexane, Stoddard, etc.)

. Waste code: 214
. Waste name: Unspecified solvent mixture

. Waste code: 221
. Waste name: Waste oil and mixed oil

. Waste code: 223
. Waste name: Unspecified oil-containing waste

. Waste code: 232
. Waste name: Pesticides and other waste associated with pesticide production

. Waste code: 281
. Waste name: Adhesives

. Waste code: 291

MAP FINDINGS

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number

WALMART #5193 (Continued) **1014387171**

. Waste name: Latex waste

. Waste code: 311
. Waste name: Pharmaceutical waste

. Waste code: 331
. Waste name: Off-specification, aged, or surplus organics

. Waste code: 343
. Waste name: Unspecified organic liquid mixture

. Waste code: 352
. Waste name: Other organic solids

. Waste code: 561
. Waste name: Detergent and soap

. Waste code: 791
. Waste name: Liquids with pH < 2

. Waste code: 792
. Waste name: Liquids with pH < 2 with metals

. Waste code: D001
. Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.

. Waste code: D002
. Waste name: A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.

. Waste code: D003
. Waste name: A MATERIAL IS CONSIDERED TO BE A REACTIVE HAZARDOUS WASTE IF IT IS NORMALLY UNSTABLE, REACTS VIOLENTLY WITH WATER, GENERATES TOXIC GASES WHEN EXPOSED TO WATER OR CORROSIVE MATERIALS, OR IF IT IS CAPABLE OF DETONATION OR EXPLOSION WHEN EXPOSED TO HEAT OR A FLAME. ONE EXAMPLE OF SUCH WASTE WOULD BY WASTE GUNPOWDER.

. Waste code: D004
. Waste name: ARSENIC

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

Map ID
Direction
Distance
Elevation | Site | MAP FINDINGS | Database(s) | EDR ID Number
EPA ID Number

WALMART #5193 (Continued) **1014387171**

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D016
. Waste name: 2,4-D

. Waste code: D018
. Waste name: BENZENE

. Waste code: D022
. Waste name: CHLOROFORM

. Waste code: D024
. Waste name: M-CRESOL

. Waste code: D026
. Waste name: CRESOL

. Waste code: D027
. Waste name: 1,4-DICHLOROBENZENE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D039
. Waste name: TETRACHLOROETHYLENE

. Waste code: P001
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: P075
. Waste name: NICOTINE, & SALTS

. Waste code: U002
. Waste name: ACETONE (I)

. Waste code: U034
. Waste name: ACETALDEHYDE, TRICHLORO-

. Waste code: U035
. Waste name: BENZENEBUTANOIC ACID, 4-[BIS(2-CHLOROETHYL)AMINO]-

. Waste code: U058
. Waste name: CYCLOPHOSPHAMIDE

Map ID
Direction
Distance
Elevation | Site | MAP FINDINGS | Database(s) | EDR ID Number EPA ID Number

WALMART #5193 (Continued) **1014387171**

. Waste code: U072
. Waste name: BENZENE, 1,4-DICHLORO-

. Waste code: U080
. Waste name: METHANE, DICHLORO-

. Waste code: U122
. Waste name: FORMALDEHYDE

. Waste code: U129
. Waste name: CYCLOHEXANE, 1,2,3,4,5,6-HEXACHLORO-, (1ALPHA,2ALPHA,3BETA,4ALPHA,5ALPHA,6BETA)-

. Waste code: U132
. Waste name: HEXACHLOROPHENE

. Waste code: U150
. Waste name: MELPHALAN

. Waste code: U154
. Waste name: METHANOL (I)

. Waste code: U159
. Waste name: 2-BUTANONE (I,T)

. Waste code: U165
. Waste name: NAPHTHALENE

. Waste code: U182
. Waste name: PARALDEHYDE

. Waste code: U188
. Waste name: PHENOL

. Waste code: U200
. Waste name: RESERPINE

. Waste code: U205
. Waste name: SELENIUM SULFIDE

. Waste code: U248
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYL-BUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS OF 0.3% OR LESS

. Waste code: U249
. Waste name: ZINC PHOSPHIDE ZN3P2, WHEN PRESENT AT CONCENTRATIONS OF 10% OR LESS

. Waste code: U279
. Waste name: CARBARYL (OR) 1-NAPHTHALENOL, METHYLCARBAMATE

. Waste code: U409
. Waste name: CARBAMIC ACID, [1,2-PHENYLENEBIS (IMINOCARBONOTHIOYL)]BIS-, DIMETHYL ESTER (OR) THIOPHANATE-METHYL

. Waste code: U411
. Waste name: PHENOL, 2-(1-METHYLETHOXY)-, METHYLCARBAMATE (OR) PROPOXUR

WALMART #5193 (Continued) **1014387171**

Date form received by agency: 03/12/2010
Site name: WALMART SUPERCENTER NO 5193
Classification: Small Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.

. Waste code: D002
. Waste name: A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.

. Waste code: D003
. Waste name: A MATERIAL IS CONSIDERED TO BE A REACTIVE HAZARDOUS WASTE IF IT IS NORMALLY UNSTABLE, REACTS VIOLENTLY WITH WATER, GENERATES TOXIC GASES WHEN EXPOSED TO WATER OR CORROSIVE MATERIALS, OR IF IT IS CAPABLE OF DETONATION OR EXPLOSION WHEN EXPOSED TO HEAT OR A FLAME. ONE EXAMPLE OF SUCH WASTE WOULD BY WASTE GUNPOWDER.

. Waste code: D004
. Waste name: ARSENIC

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D016
. Waste name: 2,4-D

. Waste code: D018

WALMART #5193 (Continued) **1014387171**

. Waste name: BENZENE

. Waste code: D022
. Waste name: CHLOROFORM

. Waste code: D026
. Waste name: CRESOL

. Waste code: D027
. Waste name: 1,4-DICHLOROBENZENE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D039
. Waste name: TETRACHLOROETHYLENE

. Waste code: P001
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: P046
. Waste name: BENZENEETHANAMINE, ALPHA,ALPHA-DIMETHYL-

. Waste code: P075
. Waste name: NICOTINE, & SALTS

. Waste code: U002
. Waste name: ACETONE (I)

. Waste code: U034
. Waste name: ACETALDEHYDE, TRICHLORO-

. Waste code: U072
. Waste name: BENZENE, 1,4-DICHLORO-

. Waste code: U080
. Waste name: METHANE, DICHLORO-

. Waste code: U154
. Waste name: METHANOL (I)

. Waste code: U159
. Waste name: 2-BUTANONE (I,T)

. Waste code: U165
. Waste name: NAPHTHALENE

. Waste code: U182
. Waste name: PARALDEHYDE

. Waste code: U188
. Waste name: PHENOL

. Waste code: U249
. Waste name: ZINC PHOSPHIDE ZN3P2, WHEN PRESENT AT CONCENTRATIONS OF 10% OR LESS

Map ID
Direction
Distance
Elevation | Site | MAP FINDINGS | Database(s) | EDR ID Number EPA ID Number

WALMART #5193 (Continued) **1014387171**

. Waste code: U279
. Waste name: CARBARYL (OR) 1-NAPHTHALENOL, METHYLCARBAMATE

. Waste code: U409
. Waste name: CARBAMIC ACID, [1,2-PHENYLENEBIS (IMINOCARBONOTHIOYL)]BIS-, DIMETHYL ESTER (OR) THIOPHANATE-METHYL

. Waste code: U411
. Waste name: PHENOL, 2-(1-METHYLETHOXY)-, METHYLCARBAMATE (OR) PROPOXUR

Violation Status: No violations found

FINDS:

Registry ID: 110055910992

Environmental Interest/Information System
STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

HAZNET:

envid: 1014387171
Year: 2016
GEPAID: CAR000206318
Contact: ROSE ARNOLD
Telephone: 4792778972
Mailing Name: Not reported
Mailing Address: P.O. BOX 8041
Mailing City,St,Zip: BENTONVILLE, AR 727128041
Gen County: Riverside
TSD EPA ID: CAD008364432
TSD County: Los Angeles
Waste Category: Pharmaceutical waste
Disposal Method: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 0.0065
Cat Decode: Pharmaceutical waste
Method Decode: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Riverside

envid: 1014387171
Year: 2016
GEPAID: CAR000206318
Contact: ROSE ARNOLD
Telephone: 4792778972
Mailing Name: Not reported
Mailing Address: P.O. BOX 8041
Mailing City,St,Zip: BENTONVILLE, AR 727128041
Gen County: Riverside
TSD EPA ID: AZR000515924
TSD County: 99
Waste Category: Other organic solids
Disposal Method: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery

Map ID
Direction
Distance
Elevation | Site | MAP FINDINGS | Database(s) | EDR ID Number EPA ID Number

WALMART #5193 (Continued) **1014387171**

(H010-H129) Or (H131-H135)
Tons: 0.075
Cat Decode: Other organic solids
Method Decode: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Riverside

envid: 1014387171
Year: 2016
GEPAID: CAR000206318
Contact: ROSE ARNOLD
Telephone: 4792778972
Mailing Name: Not reported
Mailing Address: P.O. BOX 8041
Mailing City,St,Zip: BENTONVILLE, AR 727128041
Gen County: Riverside
TSD EPA ID: CAD008364432
TSD County: Los Angeles
Waste Category: Alkaline solution without metals pH >= 12.5
Disposal Method: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 0.056
Cat Decode: Alkaline solution without metals pH >= 12.5
Method Decode: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Riverside

envid: 1014387171
Year: 2016
GEPAID: CAR000206318
Contact: ROSE ARNOLD
Telephone: 4792778972
Mailing Name: Not reported
Mailing Address: P.O. BOX 8041
Mailing City,St,Zip: BENTONVILLE, AR 727128041
Gen County: Riverside
TSD EPA ID: CAD008364432
TSD County: Los Angeles
Waste Category: Off-specification, aged or surplus inorganics
Disposal Method: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 0.0145
Cat Decode: Off-specification, aged or surplus inorganics
Method Decode: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Riverside

envid: 1014387171
Year: 2016
GEPAID: CAR000206318
Contact: ROSE ARNOLD
Telephone: 4792778972
Mailing Name: Not reported
Mailing Address: P.O. BOX 8041
Mailing City,St,Zip: BENTONVILLE, AR 727128041
Gen County: Riverside
TSD EPA ID: CAD008364432

MAP FINDINGS

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number

WALMART #5193 (Continued) **1014387171**

TSD County:	Los Angeles
Waste Category:	Unspecified solvent mixture
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.0205
Cat Decode:	Unspecified solvent mixture
Method Decode:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	Riverside

Click this hyperlink while viewing on your computer to access
108 additional CA_HAZNET: record(s) in the EDR Site Report.

A3 **WALMART #5193** **AST** **A100426064**
West **12721 MORENO BEACH DR** **N/A**
< 1/8 **MORENO VALLEY, CA 92555**
0.047 mi.
247 ft. **Site 3 of 3 in cluster A**

Relative: **Higher**

Actual: **1763 ft.**

AST:

Certified Unified Program Agencies:	Not reported
Owner:	Walmart Stores, Inc.
Total Gallons:	Not reported
CERSID:	10149211
Facility ID:	Not reported
Business Name:	Walmart
Phone:	(951) 242-1185
Fax:	Not reported
Mailing Address:	702 Southwest 8th Street
Mailing Address City:	Bentonville
Mailing Address State:	AR
Mailing Address Zip Code:	Not reported
Operator Name:	Walmart Stores, Inc.
Operator Phone:	(479) 204-3911
Owner Phone:	(479) 204-3911
Owner Mail Address:	702 Southwest 8th Street
Owner State:	AR
Owner Zip Code:	Not reported
Owner Country:	United States
Property Owner Name:	Walmart Real Estate Business Trust
Property Owner Phone:	(479) 204-3911
Property Owner Mailing Address:	P.O. Box 8050 MS 0555
Property Owner City:	Bentonville
Property Owner Stat :	AR
Property Owner Zip Code:	72712
Property Owner Country:	United States
EPAID:	CAR000206318

MAP FINDINGS

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number
4 **West** **< 1/8** **0.102 mi.** **541 ft.**	**ARCO AM PM** **12611 MORENO BEACH DR** **MORENO VALLEY, CA 92555**	**EDR Hist Auto**	**1021502808** **N/A**

Relative: Higher

Actual: 1771 ft.

EDR Hist Auto

Year:	Name:	Type:
2011	BP OIL	Gasoline Service Stations, NEC
2012	BP OIL	Gasoline Service Stations, NEC
2012	ARCO AM PM	Gasoline Service Stations, NEC
2013	ARCO AM PM	Gasoline Service Stations, NEC

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number
B5 **NNW** **1/8-1/4** **0.141 mi.** **745 ft.**	**MORINO VALLEY CHEV GEO OLDS** **12625 AUTO MALL DR** **MORENO VALLEY, CA 92555**	**RCRA-SQG** **FINDS** **ECHO**	**1000905172** **CA0000367912**

Site 1 of 3 in cluster B

Relative: Higher

Actual: 1761 ft.

RCRA-SQG:

Date form received by agency:	06/14/1994
Facility name:	MORINO VALLEY CHEV GEO OLDS
Facility address:	12625 AUTO MALL DR MORENO VALLEY, CA 92555
EPA ID:	CA0000367912
Mailing address:	AUTO MALL DR MORENO VALLEY, CA 92555
Contact:	MIKE BOWERS
Contact address:	12625 AUTO MALL DR MORENO VALLEY, CA 92555
Contact country:	US
Contact telephone:	909-485-3500
Contact email:	Not reported
EPA Region:	09
Classification:	Small Small Quantity Generator
Description:	Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:

Owner/operator name:	DIAMOND CHEVROLET INC
Owner/operator address:	12625 AUTO MALL DR MORINO VALLEY, CA 92555
Owner/operator country:	Not reported
Owner/operator telephone:	909-485-3500
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No

MORINO VALLEY CHEV GEO OLDS (Continued) **1000905172**

Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

FINDS:

Registry ID: 110002617507

Environmental Interest/Information System

California Hazardous Waste Tracking System - Datamart (HWTS-DATAMART) provides California with information on hazardous waste shipments for generators, transporters, and treatment, storage, and disposal facilities.

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1000905172
Registry ID:	110002617507
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110002617507

B6
NNW
1/8-1/4
0.141 mi.
745 ft.

MOSS BROS CHEVROLET **AST** **A100422522**
12625 AUTO MALL DR **N/A**
MORENO VALLEY, CA 92555

Site 2 of 3 in cluster B

Relative:
Higher

Actual:
1761 ft.

AST:

Certified Unified Program Agencies:	Not reported
Owner:	Glenn Moss
Total Gallons:	Not reported
CERSID:	10328113
Facility ID:	Not reported
Business Name:	Moss Bros
Phone:	(951) 992-1754
Fax:	Not reported
Mailing Address:	8146 Auto Mall Dr

MAP FINDINGS

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number

MOSS BROS CHEVROLET (Continued) **A100422522**

Mailing Address City:	Riverside
Mailing Address State:	CA
Mailing Address Zip Code:	92504
Operator Name:	Amer Ali
Operator Phone:	(951) 992-1754
Owner Phone:	(951) 992-1754
Owner Mail Address:	8146 Auto Drive
Owner State:	CA
Owner Zip Code:	92504
Owner Country:	United States
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported
Property Owner Stat :	Not reported
Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	CAL000354246

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7 **MORENO VALLEY TOYOTA** **RCRA-SQG** **1000840882**
North **27990 EUCALYPTUS AVE** **FINDS** **CAD983607540**
1/8-1/4 **MORENO VALLEY, CA 92555** **ECHO**
0.178 mi. **HAZNET**
942 ft.

Relative:
Higher

Actual:
1767 ft.

RCRA-SQG:

Date form received by agency:	03/11/1992
Facility name:	MORENO VALLEY TOYOTA
Facility address:	27990 EUCALYPTUS AVE MORENO VALLEY, CA 92555
EPA ID:	CAD983607540
Contact:	RANDY NORTH
Contact address:	27990 EUCALYPTUS AVE MORENO VALLEY, CA 92555
Contact country:	US
Contact telephone:	714-247-8000
Contact email:	Not reported
EPA Region:	09
Classification:	Small Small Quantity Generator
Description:	Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:

Owner/operator name:	TERRY WILOX
Owner/operator address:	10518 SUNNINSDALE RANCHO MIRAGE, CA 92270
Owner/operator country:	Not reported
Owner/operator telephone:	619-324-9963
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported

MORENO VALLEY TOYOTA (Continued) **1000840882**

Owner/Op end date: Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

FINDS:

Registry ID: 110002862224

Environmental Interest/Information System

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1000840882
Registry ID:	110002862224
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110002862224

HAZNET:

envid:	1000840882
Year:	2004
GEPAID:	CAD983607540
Contact:	DAN COSCIA
Telephone:	9092478000
Mailing Name:	Not reported
Mailing Address:	27990 EUCALYPTUS AVE
Mailing City,St,Zip:	MORENO VALLEY, CA 925554400
Gen County:	Not reported
TSD EPA ID:	CAT080013352
TSD County:	Not reported
Waste Category:	Oil/water separation sludge
Disposal Method:	Recycler

Map ID
Direction
Distance
Elevation | Site | MAP FINDINGS | Database(s) | EDR ID Number EPA ID Number

MORENO VALLEY TOYOTA (Continued) **1000840882**

Tons: 0.18
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Riverside

envid: 1000840882
Year: 2003
GEPAID: CAD983607540
Contact: DAN COSCIA
Telephone: 9092478000
Mailing Name: Not reported
Mailing Address: 27990 EUCALYPTUS AVE
Mailing City,St,Zip: MORENO VALLEY, CA 925554400
Gen County: Not reported
TSD EPA ID: CAT080013352
TSD County: Not reported
Waste Category: Oil/water separation sludge
Disposal Method: Recycler
Tons: 5.92
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Riverside

envid: 1000840882
Year: 2003
GEPAID: CAD983607540
Contact: DAN COSCIA
Telephone: 9092478000
Mailing Name: Not reported
Mailing Address: 27990 EUCALYPTUS AVE
Mailing City,St,Zip: MORENO VALLEY, CA 925554400
Gen County: Not reported
TSD EPA ID: CAD028409019
TSD County: Not reported
Waste Category: Unspecified organic liquid mixture
Disposal Method: Transfer Station
Tons: 0.45
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Riverside

envid: 1000840882
Year: 2002
GEPAID: CAD983607540
Contact: DAN COSCIA
Telephone: 9092478000
Mailing Name: Not reported
Mailing Address: 27990 EUCALYPTUS AVE
Mailing City,St,Zip: MORENO VALLEY, CA 925554400
Gen County: Not reported
TSD EPA ID: CAT080013352
TSD County: Not reported
Waste Category: Oil/water separation sludge
Disposal Method: Recycler
Tons: 3.75
Cat Decode: Not reported
Method Decode: Not reported

MAP FINDINGS

Map ID / Direction / Distance / Elevation	Site	Database(s)	EDR ID Number / EPA ID Number

MORENO VALLEY TOYOTA (Continued) **1000840882**

Facility County: Riverside

envid: 1000840882
Year: 2002
GEPAID: CAD983607540
Contact: DAN COSCIA
Telephone: 9092478000
Mailing Name: Not reported
Mailing Address: 27990 EUCALYPTUS AVE
Mailing City,St,Zip: MORENO VALLEY, CA 925554400
Gen County: Not reported
TSD EPA ID: CAT080013352
TSD County: Not reported
Waste Category: Unspecified aqueous solution
Disposal Method: Recycler
Tons: 1.29
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Riverside

Click this hyperlink while viewing on your computer to access
17 additional CA_HAZNET: record(s) in the EDR Site Report.

B8 **MORENO VALLEY HONDA** **RCRA-SQG** **1000857370**
NNW **27910 EUCALYPTUS ST** **FINDS** **CAD983668021**
1/8-1/4 **MORENO VALLEY, CA 92555** **ECHO**
0.191 mi. **HAZNET**
1008 ft. **Site 3 of 3 in cluster B**

Relative:
Higher

Actual:
1767 ft.

RCRA-SQG:
Date form received by agency: 05/13/1993
Facility name: MORENO VALLEY HONDA
Facility address: 27910 EUCALYPTUS ST
MORENO VALLEY, CA 92555
EPA ID: CAD983668021
Mailing address: EUCALYPTUS ST
MORENO VALLEY, CA 92555
Contact: RON SANCHEZ
Contact address: 27910 EUCALYPTUS ST
MORENO VALLEY, CA 92555
Contact country: US
Contact telephone: 909-486-9366
Contact email: Not reported
EPA Region: 09
Classification: Small Small Quantity Generator
Description: Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:
Owner/operator name: FIVE STAR ENTERPRISES
Owner/operator address: 11404 E IMPERIAL HWY
NORWALK, CA 90650
Owner/operator country: Not reported
Owner/operator telephone: 310-868-0035

MORENO VALLEY HONDA (Continued) **1000857370**

Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Violation Status: No violations found

FINDS:

Registry ID: 110002898972

Environmental Interest/Information System
California Hazardous Waste Tracking System - Datamart (HWTS-DATAMART) provides California with information on hazardous waste shipments for generators, transporters, and treatment, storage, and disposal facilities.

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1000857370
Registry ID: 110002898972
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110002898972

HAZNET:
envid: 1000857370
Year: 2006

Map ID
Direction
Distance
Elevation | Site | MAP FINDINGS | Database(s) | EDR ID Number EPA ID Number

MORENO VALLEY HONDA (Continued) **1000857370**

GEPAID: CAD983668021
Contact: FRANK BULOT/SERVICE MGR
Telephone: 9094869366
Mailing Name: Not reported
Mailing Address: PO BOX 6500
Mailing City,St,Zip: MORENO VALLEY, CA 925540000
Gen County: Not reported
TSD EPA ID: CAT000613927
TSD County: Not reported
Waste Category: Aqueous solution with total organic residues less than 10 percent
Disposal Method: Transfer Station
Tons: 0.25
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Riverside

envid: 1000857370
Year: 2006
GEPAID: CAD983668021
Contact: FRANK BULOT/SERVICE MGR
Telephone: 9094869366
Mailing Name: Not reported
Mailing Address: PO BOX 6500
Mailing City,St,Zip: MORENO VALLEY, CA 925540000
Gen County: Not reported
TSD EPA ID: CAT000613927
TSD County: Not reported
Waste Category: Aqueous solution with total organic residues less than 10 percent
Disposal Method: Transfer Station
Tons: 0.18
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Riverside

envid: 1000857370
Year: 2006
GEPAID: CAD983668021
Contact: FRANK BULOT/SERVICE MGR
Telephone: 9094869366
Mailing Name: Not reported
Mailing Address: PO BOX 6500
Mailing City,St,Zip: MORENO VALLEY, CA 925540000
Gen County: Not reported
TSD EPA ID: CAT000613927
TSD County: Not reported
Waste Category: Aqueous solution with total organic residues less than 10 percent
Disposal Method: Transfer Station
Tons: 0.05
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Riverside

envid: 1000857370
Year: 2005
GEPAID: CAD983668021
Contact: FRANK BULOT/SERVICE MGR
Telephone: 9094869366

MORENO VALLEY HONDA (Continued) **1000857370**

Mailing Name: Not reported
Mailing Address: PO BOX 6500
Mailing City,St,Zip: MORENO VALLEY, CA 925540000
Gen County: Not reported
TSD EPA ID: CAT080013352
TSD County: Not reported
Waste Category: Oil/water separation sludge
Disposal Method: Recycler
Tons: 3.75
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Riverside

envid: 1000857370
Year: 2005
GEPAID: CAD983668021
Contact: FRANK BULOT/SERVICE MGR
Telephone: 9094869366
Mailing Name: Not reported
Mailing Address: PO BOX 6500
Mailing City,St,Zip: MORENO VALLEY, CA 925540000
Gen County: Not reported
TSD EPA ID: CAT000613927
TSD County: Not reported
Waste Category: Aqueous solution with total organic residues less than 10 percent
Disposal Method: Transfer Station
Tons: 2.35
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Riverside

Click this hyperlink while viewing on your computer to access
33 additional CA_HAZNET: record(s) in the EDR Site Report.

9
NNW
1/8-1/4
0.213 mi.
1125 ft.

MORENO VALLEY NISSAN **RCRA-SQG** **1000857369**
27810 EUCALYPTUS ST **CAD983668013**
MORENO VALLEY, CA 92555

Relative:
Higher

Actual:
1763 ft.

RCRA-SQG:
Date form received by agency: 05/13/1993
Facility name: MORENO VALLEY NISSAN
Facility address: 27810 EUCALYPTUS ST
MORENO VALLEY, CA 92555
EPA ID: CAD983668013
Mailing address: EUCALYPTUS ST
MORENO VALLEY, CA 92555
Contact: RON SANCHEZ
Contact address: 27810 EUCALYPTUS ST
MORENO VALLEY, CA 92555
Contact country: US
Contact telephone: 909-486-9366
Contact email: Not reported
EPA Region: 09
Classification: Small Small Quantity Generator
Description: Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of

Map ID
Direction
Distance
Elevation | Site | MAP FINDINGS | Database(s) | EDR ID Number EPA ID Number

MORENO VALLEY NISSAN (Continued) **1000857369**

hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:

Owner/operator name:	FIVE STAR ENTERPRISES
Owner/operator address:	11404 E IMPERIAL HWY NORWALK, CA 90650
Owner/operator country:	Not reported
Owner/operator telephone:	310-868-0035
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

10
NNE
1/2-1
0.935 mi.
4939 ft.

PROPOSED HIGH SCHOOL **ENVIROSTOR** **S109149584**
IRONWOOD / QUINCY **SCH** **N/A**
MORENO VALLEY, CA 92555

Relative: Higher

Actual: 1850 ft.

ENVIROSTOR:

Facility ID:	60000931
Status:	No Further Action
Status Date:	10/23/2008
Site Code:	404806
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	56
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Not reported
Supervisor:	Shahir Haddad
Division Branch:	Southern California Schools & Brownfields Outreach
Assembly:	61

PROPOSED HIGH SCHOOL (Continued) **S109149584**

Senate: 31
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: School District
Latitude: 33.94639
Longitude: -117.1653
APN: NONE SPECIFIED
Past Use: AGRICULTURAL - ROW CROPS
Potential COC: Arsenic Chlordane DDD DDE DDT Endrin Toxaphene
Confirmed COC: 30001-NO 30004-NO 30023-NO 30006-NO 30007-NO 30008-NO 30010-NO
Potential Description: SOIL
Alias Name: 404806
Alias Type: Project Code (Site Code)
Alias Name: 60000931
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Environmental Oversight Agreement
Completed Date: 07/21/2008
Comments: Signed agreement sent (FedEx) to District.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Workplan
Completed Date: 08/14/2008
Comments: DTSC concurs with Scoping document.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 10/23/2008
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 11/13/2008
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

SCH:

Facility ID: 60000931
Site Type: School Investigation
Site Type Detail: School

PROPOSED HIGH SCHOOL (Continued) **S109149584**

Site Mgmt. Req.:	NONE SPECIFIED
Acres:	56
National Priorities List:	NO
Cleanup Oversight Agencies:	SMBRP
Lead Agency:	SMBRP
Lead Agency Description:	DTSC - Site Cleanup Program
Project Manager:	Not reported
Supervisor:	Shahir Haddad
Division Branch:	Southern California Schools & Brownfields Outreach
Site Code:	404806
Assembly:	61
Senate:	31
Special Program Status:	Not reported
Status:	No Further Action
Status Date:	10/23/2008
Restricted Use:	NO
Funding:	School District
Latitude:	33.94639
Longitude:	-117.1653
APN:	NONE SPECIFIED
Past Use:	AGRICULTURAL - ROW CROPS
Potential COC:	Arsenic, Chlordane, DDD, DDE, DDT, Endrin, Toxaphene
Confirmed COC:	30001-NO, 30004-NO, 30023-NO, 30006-NO, 30007-NO, 30008-NO, 30010-NO
Potential Description:	SOIL
Alias Name:	404806
Alias Type:	Project Code (Site Code)
Alias Name:	60000931
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Environmental Oversight Agreement
Completed Date:	07/21/2008
Comments:	Signed agreement sent (FedEx) to District.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Workplan
Completed Date:	08/14/2008
Comments:	DTSC concurs with Scoping document.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Report
Completed Date:	10/23/2008
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	11/13/2008
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported

PROPOSED HIGH SCHOOL (Continued) **S109149584**

Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

11
East
1/2-1
0.994 mi.
5246 ft.

EUCALYPTUS HIGH SCHOOL #5 SITE **ENVIROSTOR** **S107770253**
REDLANDS BOULEVARD/EUCALYPTUS AVENUE **SCH** **N/A**
MORENO VALLEY, CA 92553

Relative:
Lower

Actual:
1707 ft.

ENVIROSTOR:
Facility ID: 60000326
Status: No Further Action
Status Date: 02/06/2007
Site Code: 404711
Site Type: School Investigation
Site Type Detailed: School
Acres: 70
NPL: NO
Regulatory Agencies: SMBRP
Lead Agency: SMBRP
Program Manager: Not reported
Supervisor: Yolanda Garza
Division Branch: Southern California Schools & Brownfields Outreach
Assembly: 75
Senate: 28
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: School District
Latitude: 33.5603
Longitude: -117.0939
APN: NONE SPECIFIED
Past Use: AGRICULTURAL - ORCHARD, AGRICULTURAL - ROW CROPS, RESIDENTIAL AREA
Potential COC: Arsenic Chlordane DDD DDE DDT Endrin Lead Mercury (elemental Silver Toxaphene Aldrin Antimony and compounds Barium and compounds Beryllium and compounds Cadmium and compounds Chromium III Chromium VI Cobalt Copper and compounds Dieldrin Endosulfan Heptachlor Lead, Organic (tetraethyl lead Methoxychlor Molybdenum Nickel Selenium Thallium and compounds Vanadium and compounds Zinc
Confirmed COC: 30515-NO 30542-NO 30021-NO 30023-NO 30043-NO 30058-NO 30067-NO 30080-NO 30108-NO 30152-NO 30153-NO 30154-NO 30156-NO 30207-NO 30261-NO 30308-NO 30343-NO 30367-NO 30402-NO 30407-NO 30001-NO 30004-NO 30006-NO 30007-NO 30008-NO 30010-NO 30013-NO 30014-NO No Contaminants found 30587-NO 30594-NO
Potential Description: SOIL
Alias Name: 404711
Alias Type: Project Code (Site Code)
Alias Name: 60000326
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 02/06/2007

EUCALYPTUS HIGH SCHOOL #5 SITE (Continued) **S107770253**

Comments:	CRU memo prepared and submitted to Cost Recovery Unit 02/06/07.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Environmental Oversight Agreement
Completed Date:	06/15/2006
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Workplan
Completed Date:	08/15/2006
Comments:	PEA Tech Memo approved.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Report
Completed Date:	02/05/2007
Comments:	Revised Draft PEA approved 02/05/07.
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

SCH:

Facility ID:	60000326
Site Type:	School Investigation
Site Type Detail:	School
Site Mgmt. Req.:	NONE SPECIFIED
Acres:	70
National Priorities List:	NO
Cleanup Oversight Agencies:	SMBRP
Lead Agency:	SMBRP
Lead Agency Description:	DTSC - Site Cleanup Program
Project Manager:	Not reported
Supervisor:	Yolanda Garza
Division Branch:	Southern California Schools & Brownfields Outreach
Site Code:	404711
Assembly:	75
Senate:	28
Special Program Status:	Not reported
Status:	No Further Action
Status Date:	02/06/2007
Restricted Use:	NO
Funding:	School District
Latitude:	33.5603
Longitude:	-117.0939
APN:	NONE SPECIFIED
Past Use:	AGRICULTURAL - ORCHARD, AGRICULTURAL - ROW CROPS, RESIDENTIAL AREA
Potential COC:	Arsenic, Arsenic, Chlordane, DDD, DDE, DDT, Endrin, Lead, Mercury

EUCALYPTUS HIGH SCHOOL #5 SITE (Continued) **S107770253**

(elemental, Silver, Toxaphene, Aldrin, Antimony and compounds, Barium and compounds, Beryllium and compounds, Cadmium and compounds, Chromium III, Chromium VI, Cobalt, Copper and compounds, Dieldrin, Endosulfan, Heptachlor, Lead, Organic (tetraethyl lead, Methoxychlor, Molybdenum, Nickel, Selenium, Thallium and compounds, Vanadium and compounds, Zinc

Confirmed COC: 30515-NO, 30542-NO, 30021-NO, 30023-NO, 30043-NO, 30058-NO, 30067-NO, 30080-NO, 30108-NO, 30152-NO, 30153-NO, 30154-NO, 30156-NO, 30207-NO, 30261-NO, 30308-NO, 30343-NO, 30367-NO, 30402-NO, 30407-NO, 30001-NO, 30004-NO, 30006-NO, 30007-NO, 30008-NO, 30010-NO, 30013-NO, 30014-NO, No Contaminants found, 30587-NO, 30594-NO
Potential Description: SOIL
Alias Name: 404711
Alias Type: Project Code (Site Code)
Alias Name: 60000326
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 02/06/2007
Comments: CRU memo prepared and submitted to Cost Recovery Unit 02/06/07.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Environmental Oversight Agreement
Completed Date: 06/15/2006
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Workplan
Completed Date: 08/15/2006
Comments: PEA Tech Memo approved.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 02/05/2007
Comments: Revised Draft PEA approved 02/05/07.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

Count: 0 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
		NO SITES FOUND			

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 05/13/2018
Date Data Arrived at EDR: 05/30/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 23

Source: EPA
Telephone: N/A
Last EDR Contact: 07/06/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 05/13/2018
Date Data Arrived at EDR: 05/30/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 23

Source: EPA
Telephone: N/A
Last EDR Contact: 07/06/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 05/13/2018
Date Data Arrived at EDR: 05/30/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 23

Source: EPA
Telephone: N/A
Last EDR Contact: 07/06/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 11/07/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 92

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 07/06/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 05/18/2018
Date Data Arrived at EDR: 05/30/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 23

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 07/06/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 05/18/2018
Date Data Arrived at EDR: 05/30/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 23

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 07/06/2018
Next Scheduled EDR Contact: 07/30/2018
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/28/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/28/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/28/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/28/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/28/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 02/16/2018
Date Data Arrived at EDR: 02/22/2018
Date Made Active in Reports: 05/11/2018
Number of Days to Update: 78

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/09/2018
Next Scheduled EDR Contact: 08/27/2018
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 02/13/2018
Date Data Arrived at EDR: 02/27/2018
Date Made Active in Reports: 05/11/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/29/2018
Next Scheduled EDR Contact: 09/10/2018
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 02/13/2018
Date Data Arrived at EDR: 02/27/2018
Date Made Active in Reports: 05/11/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/29/2018
Next Scheduled EDR Contact: 09/10/2018
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 03/19/2018
Date Data Arrived at EDR: 03/27/2018
Date Made Active in Reports: 06/08/2018
Number of Days to Update: 73

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 06/27/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Quarterly

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 04/30/2018
Date Data Arrived at EDR: 05/02/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 51

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/02/2018
Next Scheduled EDR Contact: 08/13/2018
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 04/30/2018
Date Data Arrived at EDR: 05/02/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 51

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/02/2018
Next Scheduled EDR Contact: 08/13/2018
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 05/14/2018
Date Data Arrived at EDR: 05/16/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 37

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 05/16/2018
Next Scheduled EDR Contact: 08/27/2018
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LUST REG 7: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)
Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 03/21/2018
Number of Days to Update: 7

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 06/13/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Quarterly

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks
California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Varies

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 10/12/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 05/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 05/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 10/16/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 05/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 10/12/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 01/06/2018
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 05/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/14/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 05/16/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 10/14/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 10/24/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 03/21/2018
Number of Days to Update: 7

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Semi-Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: Annually

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 05/15/2017
Date Data Arrived at EDR: 05/30/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 136

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 07/11/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: Varies

MILITARY UST SITES: Military UST Sites (GEOTRACKER)
Military ust sites

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 51

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 06/11/2018
Date Data Arrived at EDR: 06/13/2018
Date Made Active in Reports: 07/09/2018
Number of Days to Update: 26

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 06/13/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Semi-Annually

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases
UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 06/11/2018
Date Data Arrived at EDR: 06/13/2018
Date Made Active in Reports: 07/10/2018
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 06/13/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Varies

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 06/21/2018
Next Scheduled EDR Contact: 10/01/2018
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 05/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 10/12/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 05/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 01/13/2018
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 04/24/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 12/08/2017
Number of Days to Update: 134

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 05/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 10/24/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 10/14/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 10/14/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 05/16/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 10/16/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 05/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 04/30/2018
Date Data Arrived at EDR: 05/02/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 51

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/02/2018
Next Scheduled EDR Contact: 08/13/2018
Data Release Frequency: Quarterly

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 06/22/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Varies

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 03/26/2018
Date Data Arrived at EDR: 03/27/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 38

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 06/27/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 03/19/2018
Date Data Arrived at EDR: 03/21/2018
Date Made Active in Reports: 06/08/2018
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 06/20/2018
Next Scheduled EDR Contact: 10/01/2018
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database
Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 05/03/2018
Next Scheduled EDR Contact: 08/13/2018
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 51

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/13/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 02/08/2018
Date Data Arrived at EDR: 02/09/2018
Date Made Active in Reports: 03/20/2018
Number of Days to Update: 39

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 05/22/2018
Next Scheduled EDR Contact: 08/27/2018
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 01/30/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 05/04/2018
Next Scheduled EDR Contact: 08/13/2018
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 02/22/2018
Date Data Arrived at EDR: 03/01/2018
Date Made Active in Reports: 05/11/2018
Number of Days to Update: 71

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/30/2018
Next Scheduled EDR Contact: 09/10/2018
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 04/30/2018
Date Data Arrived at EDR: 05/02/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 51

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/02/2018
Next Scheduled EDR Contact: 08/13/2018
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 06/30/2017
Date Data Arrived at EDR: 08/18/2017
Date Made Active in Reports: 09/21/2017
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 07/05/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: Varies

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/22/2018
Date Data Arrived at EDR: 03/01/2018
Date Made Active in Reports: 05/11/2018
Number of Days to Update: 71

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/30/2018
Next Scheduled EDR Contact: 09/10/2018
Data Release Frequency: Quarterly

CERS HAZ WASTE: CERS HAZ WASTE

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 06/07/2018
Number of Days to Update: 44

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 04/24/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Quarterly

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 03/28/2018
Date Data Arrived at EDR: 05/25/2018
Date Made Active in Reports: 07/10/2018
Number of Days to Update: 46

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 05/22/2018
Next Scheduled EDR Contact: 09/10/2018
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing

Aboveground storage tank sites

Date of Government Version: 04/19/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 10

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 05/02/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Varies

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CERS TANKS: California Environmental Reporting System (CERS) Tanks

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 06/07/2018
Number of Days to Update: 44

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 04/24/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Quarterly

Local Land Records

LIENS: Environmental Liens Listing

A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 01/28/2018
Date Data Arrived at EDR: 03/01/2018
Date Made Active in Reports: 04/16/2018
Number of Days to Update: 46

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/31/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 05/13/2018
Date Data Arrived at EDR: 05/30/2018
Date Made Active in Reports: 06/29/2018
Number of Days to Update: 30

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 07/06/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 02/08/2018
Date Data Arrived at EDR: 02/08/2018
Date Made Active in Reports: 02/08/2018
Number of Days to Update: 0

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 06/06/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

HMIRS: Hazardous Materials Information Reporting System
Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 03/26/2018
Date Data Arrived at EDR: 03/27/2018
Date Made Active in Reports: 06/08/2018
Number of Days to Update: 73

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 03/27/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System
California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 04/06/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 51

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 04/24/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)
Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 51

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)
Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 03/21/2018
Number of Days to Update: 7

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch
Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/28/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/31/2015
Date Data Arrived at EDR: 07/08/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 97

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 05/25/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 07/11/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/11/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 05/15/2018
Next Scheduled EDR Contact: 08/27/2018
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/27/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 87

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 06/27/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 05/07/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 04/22/2013
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 05/08/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/21/2017
Date Made Active in Reports: 01/05/2018
Number of Days to Update: 198

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 06/22/2018
Next Scheduled EDR Contact: 10/01/2018
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 01/10/2018
Date Made Active in Reports: 01/12/2018
Number of Days to Update: 2

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/25/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/09/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 05/13/2018
Date Data Arrived at EDR: 05/30/2018
Date Made Active in Reports: 06/29/2018
Number of Days to Update: 30

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 07/06/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 11/02/2017
Date Data Arrived at EDR: 11/17/2017
Date Made Active in Reports: 12/08/2017
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 04/20/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 10/17/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 3

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 07/06/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 06/01/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 126

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/13/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 07/09/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/30/2016
Date Data Arrived at EDR: 09/08/2016
Date Made Active in Reports: 10/21/2016
Number of Days to Update: 43

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 05/03/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data

A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 06/07/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List

A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 06/04/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 05/24/2017
Date Data Arrived at EDR: 11/30/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 15
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 04/27/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 04/03/2018
Date Data Arrived at EDR: 04/05/2018
Date Made Active in Reports: 06/29/2018
Number of Days to Update: 85
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 07/05/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data
Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42
Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 05/03/2018
Next Scheduled EDR Contact: 08/13/2018
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees
Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 03/31/2018
Date Data Arrived at EDR: 04/16/2018
Date Made Active in Reports: 06/29/2018
Number of Days to Update: 74

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 07/09/2018
Next Scheduled EDR Contact: 10/01/2018
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 09/28/2017
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 06/28/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 07/11/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 12/23/2016
Date Data Arrived at EDR: 12/27/2016
Date Made Active in Reports: 02/17/2017
Number of Days to Update: 52

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 05/07/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 06/23/2017
Date Data Arrived at EDR: 10/11/2017
Date Made Active in Reports: 11/03/2017
Number of Days to Update: 23

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 05/18/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 05/13/2018
Date Data Arrived at EDR: 05/30/2018
Date Made Active in Reports: 06/29/2018
Number of Days to Update: 30

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 07/06/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 05/03/2018
Date Data Arrived at EDR: 05/31/2018
Date Made Active in Reports: 06/29/2018
Number of Days to Update: 29

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 05/31/2018
Next Scheduled EDR Contact: 09/10/2018
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 05/30/2018
Next Scheduled EDR Contact: 09/10/2018
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 05/30/2018
Next Scheduled EDR Contact: 09/10/2018
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 03/08/2018
Date Data Arrived at EDR: 03/13/2018
Date Made Active in Reports: 06/08/2018
Number of Days to Update: 87

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 06/20/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 02/21/2018
Date Data Arrived at EDR: 02/23/2018
Date Made Active in Reports: 03/23/2018
Number of Days to Update: 28

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 06/06/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Quarterly

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 02/25/2018
Date Data Arrived at EDR: 03/17/2018
Date Made Active in Reports: 06/08/2018
Number of Days to Update: 83

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 06/06/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 09/30/2016
Date Data Arrived at EDR: 10/31/2017
Date Made Active in Reports: 01/12/2018
Number of Days to Update: 73

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 04/13/2018
Next Scheduled EDR Contact: 07/30/2018
Data Release Frequency: Varies

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 01/04/2018
Date Data Arrived at EDR: 01/19/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 06/01/2018
Next Scheduled EDR Contact: 09/10/2018
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 02/20/2018
Date Data Arrived at EDR: 02/21/2018
Date Made Active in Reports: 03/23/2018
Number of Days to Update: 30

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 05/23/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 03/26/2018
Date Data Arrived at EDR: 03/27/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 38

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 06/27/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Quarterly

CUPA SAN FRANCISCO CO: CUPA SAN FRANCISCO CO

Cupa facilities

Date of Government Version: 04/20/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 10

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 05/02/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Varies

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing

list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 04/03/2018
Date Data Arrived at EDR: 05/07/2018
Date Made Active in Reports: 06/15/2018
Number of Days to Update: 39

Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 05/07/2018
Next Scheduled EDR Contact: 08/27/2018
Data Release Frequency: Varies

DRYCLEAN AVAQMD: DRYCLEAN AVAQMD

A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 03/08/2018
Date Data Arrived at EDR: 03/13/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 52

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 06/22/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Varies

DRYCLEAN SOUTH COAST: DRYCLEAN SOUTH COAST

A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 03/16/2018
Date Data Arrived at EDR: 03/20/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 45

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 06/11/2018
Next Scheduled EDR Contact: 09/10/2018
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 03/27/2018
Date Data Arrived at EDR: 03/29/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 36

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 05/30/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 03/21/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 147

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 06/20/2018
Next Scheduled EDR Contact: 10/01/2018
Data Release Frequency: Varies

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 04/18/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 07/06/2018
Number of Days to Update: 73

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 04/18/2018
Date Data Arrived at EDR: 04/20/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 60

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 05/14/2018
Date Data Arrived at EDR: 05/15/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 38

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 05/09/2018
Next Scheduled EDR Contact: 08/27/2018
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 07/12/2017
Date Made Active in Reports: 10/17/2017
Number of Days to Update: 97

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/12/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ICE: ICE
Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 02/20/2018
Date Data Arrived at EDR: 02/21/2018
Date Made Active in Reports: 04/03/2018
Number of Days to Update: 41

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 05/23/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List
The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 02/20/2018
Date Data Arrived at EDR: 02/21/2018
Date Made Active in Reports: 04/03/2018
Number of Days to Update: 41

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/23/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 04/09/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 69

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 07/11/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 51

Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 06/13/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 02/27/2018
Date Data Arrived at EDR: 03/05/2018
Date Made Active in Reports: 04/16/2018
Number of Days to Update: 42

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 06/06/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 05/14/2018
Date Data Arrived at EDR: 05/16/2018
Date Made Active in Reports: 07/05/2018
Number of Days to Update: 50

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/16/2018
Next Scheduled EDR Contact: 08/27/2018
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 03/05/2018
Date Data Arrived at EDR: 03/05/2018
Date Made Active in Reports: 04/19/2018
Number of Days to Update: 45

Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 06/06/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Quarterly

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 51

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/13/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 03/23/2018
Date Data Arrived at EDR: 03/27/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 38

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 06/14/2018
Next Scheduled EDR Contact: 10/01/2018
Data Release Frequency: No Update Planned

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 51

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 06/13/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region's active disposal pits are operating without permission.

Date of Government Version: 04/10/2018
Date Data Arrived at EDR: 04/13/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 67

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 07/11/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 05/16/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Quarterly

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 06/25/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Varies

PROJECT: PROJECT (GEOTRACKER)
Projects sites

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 51

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Varies

NON-CASE INFO: NON-CASE INFO (GEOTRACKER)
Non-Case Information sites

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 51

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Varies

PROD WATER PONDS: PROD WATER PONDS (GEOTRACKER)
Produced water ponds sites

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 51

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Varies

OTHER OIL GAS: OTHER OIL & GAS (GEOTRACKER)
Other Oil & Gas Projects sites

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 51

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data
The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 06/07/2018
Number of Days to Update: 44

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 04/24/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

SAMPLING POINT: SAMPLING POINT (GEOTRACKER)
Sampling point - public sites

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 51

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Varies

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 51

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Varies

UIC GEO: UIC GEO (GEOTRACKER)
Underground control injection sites

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 51

Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Varies

CIWQS: The California Integrated Water Quality System
The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 03/05/2018
Date Data Arrived at EDR: 03/05/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 60

Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 06/06/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Varies

WELL STIM PROJ: WELL SAMP PROJ (GEOTRACKER)
Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 51

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites
A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 04/05/2018
Date Data Arrived at EDR: 04/10/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 65

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 07/05/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: Semi-Annually

Underground Tanks
Underground storage tank sites located in Alameda county.

Date of Government Version: 04/05/2018
Date Data Arrived at EDR: 04/10/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 24

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 07/05/2018
Next Scheduled EDR Contact: 04/24/2047
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA Facility List
Cupa Facility List

Date of Government Version: 03/31/2018
Date Data Arrived at EDR: 04/05/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 70

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 06/14/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA Facility Listing
Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 07/05/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 05/07/2018
Date Data Arrived at EDR: 05/09/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 36

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 06/25/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Quarterly

COLUSA COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CUPA Facility List
Cupa facility list.

Date of Government Version: 02/26/2018
Date Data Arrived at EDR: 03/01/2018
Date Made Active in Reports: 03/15/2018
Number of Days to Update: 14

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 05/16/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 02/22/2018
Date Data Arrived at EDR: 02/27/2018
Date Made Active in Reports: 04/16/2018
Number of Days to Update: 48

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 04/30/2018
Next Scheduled EDR Contact: 08/13/2018
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA Facility List
Cupa Facility list

Date of Government Version: 04/27/2018
Date Data Arrived at EDR: 05/02/2018
Date Made Active in Reports: 06/15/2018
Number of Days to Update: 44

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 04/25/2018
Next Scheduled EDR Contact: 08/13/2018
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 03/05/2018
Date Data Arrived at EDR: 03/08/2018
Date Made Active in Reports: 04/16/2018
Number of Days to Update: 39

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 04/30/2018
Next Scheduled EDR Contact: 08/13/2018
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/05/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 9

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 07/11/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Semi-Annually

GLENN COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

HUMBOLDT COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 03/05/2018
Date Data Arrived at EDR: 03/08/2018
Date Made Active in Reports: 04/30/2018
Number of Days to Update: 53

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 05/21/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 50

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 05/30/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 02/02/2018
Date Data Arrived at EDR: 02/02/2018
Date Made Active in Reports: 03/28/2018
Number of Days to Update: 54

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 05/02/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Quarterly

KINGS COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CUPA Facility List

A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 11/14/2017
Date Data Arrived at EDR: 11/17/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 28

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 05/16/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Varies

LAKE COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 05/09/2018
Date Data Arrived at EDR: 05/11/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 34

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 04/16/2018
Next Scheduled EDR Contact: 07/30/2018
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern

San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 06/13/2018
Next Scheduled EDR Contact: 10/01/2018
Data Release Frequency: No Update Planned

HMS: Street Number List

Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 04/12/2018
Date Data Arrived at EDR: 04/16/2018
Date Made Active in Reports: 06/15/2018
Number of Days to Update: 60

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 07/05/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities

Solid Waste Facilities in Los Angeles County.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 04/16/2018
Date Data Arrived at EDR: 04/17/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 63

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/17/2018
Next Scheduled EDR Contact: 07/30/2018
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2018
Date Data Arrived at EDR: 05/01/2018
Date Made Active in Reports: 05/14/2018
Number of Days to Update: 13

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 07/11/2018
Next Scheduled EDR Contact: 10/29/2018
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 04/01/2018
Date Data Arrived at EDR: 04/17/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 63

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/17/2018
Next Scheduled EDR Contact: 07/30/2018
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 07/11/2018
Next Scheduled EDR Contact: 10/29/2018
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/09/2017
Date Data Arrived at EDR: 03/10/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 54

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 01/04/2018
Date Data Arrived at EDR: 01/05/2018
Date Made Active in Reports: 01/18/2018
Number of Days to Update: 13

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 07/05/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 02/21/2018
Date Data Arrived at EDR: 02/22/2018
Date Made Active in Reports: 04/03/2018
Number of Days to Update: 40

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 05/16/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 03/30/2018
Date Data Arrived at EDR: 04/06/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 28

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 07/11/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 01/11/2018
Date Data Arrived at EDR: 01/12/2018
Date Made Active in Reports: 02/08/2018
Number of Days to Update: 27

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 05/16/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Varies

MONO COUNTY:

CUPA Facility List
CUPA Facility List

Date of Government Version: 02/22/2018
Date Data Arrived at EDR: 02/27/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 15

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 05/22/2018
Next Scheduled EDR Contact: 09/10/2018
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 03/27/2018
Date Data Arrived at EDR: 03/29/2018
Date Made Active in Reports: 04/16/2018
Number of Days to Update: 18

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 07/02/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 05/22/2018
Next Scheduled EDR Contact: 09/10/2018
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 05/23/2018
Date Data Arrived at EDR: 05/31/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 41

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 05/22/2018
Next Scheduled EDR Contact: 09/10/2018
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 04/24/2018
Date Data Arrived at EDR: 05/01/2018
Date Made Active in Reports: 06/15/2018
Number of Days to Update: 45

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 04/25/2018
Next Scheduled EDR Contact: 08/13/2018
Data Release Frequency: Varies

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 05/11/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 42

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/07/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 05/11/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 45

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/07/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/10/2018
Number of Days to Update: 63

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/08/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Quarterly

PLACER COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 03/15/2018
Date Data Arrived at EDR: 03/19/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 46

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 05/31/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/15/2018
Number of Days to Update: 50

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 04/05/2018
Date Data Arrived at EDR: 04/10/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 24

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/18/2018
Next Scheduled EDR Contact: 10/01/2018
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 04/05/2018
Date Data Arrived at EDR: 04/10/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 24

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/18/2018
Next Scheduled EDR Contact: 10/01/2018
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/02/2018
Date Data Arrived at EDR: 04/04/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 71

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 07/03/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 02/02/2018
Date Data Arrived at EDR: 04/04/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 76

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 07/03/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CUPA Facility List
Cupa facility list

Date of Government Version: 11/01/2017
Date Data Arrived at EDR: 11/03/2017
Date Made Active in Reports: 11/17/2017
Number of Days to Update: 14

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 05/16/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

Hazardous Material Permits
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 04/09/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 69

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 04/06/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database
The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 03/05/2018
Date Data Arrived at EDR: 03/07/2018
Date Made Active in Reports: 04/16/2018
Number of Days to Update: 40

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 06/06/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Quarterly

Solid Waste Facilities
San Diego County Solid Waste Facilities.

Date of Government Version: 04/18/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 56

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

Local Oversight Program Listing
A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 04/18/2018
Date Data Arrived at EDR: 04/23/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 11

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 05/31/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 05/02/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Quarterly

Underground Storage Tank Information

Underground storage tank sites located in San Francisco county.

Date of Government Version: 06/07/2018
Date Data Arrived at EDR: 06/12/2018
Date Made Active in Reports: 07/10/2018
Number of Days to Update: 28

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 05/02/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST

A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 06/14/2018
Next Scheduled EDR Contact: 10/01/2018
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List

Cupa Facility List.

Date of Government Version: 11/16/2017
Date Data Arrived at EDR: 11/17/2017
Date Made Active in Reports: 12/18/2017
Number of Days to Update: 31

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 05/16/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory

List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 03/14/2018
Date Data Arrived at EDR: 03/20/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 45

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 06/06/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Annually

Fuel Leak List

A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/15/2018
Date Data Arrived at EDR: 03/20/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 45

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 06/06/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing

CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 05/16/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Varies

SANTA CLARA COUNTY:

Cupa Facility List

Cupa facility list

Date of Government Version: 02/20/2018
Date Data Arrived at EDR: 02/20/2018
Date Made Active in Reports: 03/19/2018
Number of Days to Update: 27

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 05/16/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Varies

HIST LUST - Fuel Leak Site Activity Report

A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing

A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 05/22/2018
Next Scheduled EDR Contact: 09/10/2018
Data Release Frequency: Annually

Hazardous Material Facilities

Hazardous material facilities, including underground storage tank sites.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 02/04/2018
Date Data Arrived at EDR: 02/06/2018
Date Made Active in Reports: 03/20/2018
Number of Days to Update: 42

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 05/16/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 05/16/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 05/16/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 03/08/2018
Date Data Arrived at EDR: 03/13/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 52

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 05/31/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 03/08/2018
Date Data Arrived at EDR: 03/13/2018
Date Made Active in Reports: 03/29/2018
Number of Days to Update: 16

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 05/31/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Quarterly

SONOMA COUNTY:

Cupa Facility List
Cupa Facility list

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/27/2018
Date Made Active in Reports: 04/16/2018
Number of Days to Update: 20

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 06/21/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 04/03/2018
Date Data Arrived at EDR: 04/06/2018
Date Made Active in Reports: 05/09/2018
Number of Days to Update: 33

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 06/21/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 05/08/2018
Date Data Arrived at EDR: 05/11/2018
Date Made Active in Reports: 06/15/2018
Number of Days to Update: 35

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 04/16/2018
Next Scheduled EDR Contact: 07/30/2018
Data Release Frequency: Varies

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 06/04/2018
Date Data Arrived at EDR: 06/08/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 33

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 05/31/2018
Next Scheduled EDR Contact: 09/17/2018
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA Facility List
Cupa facilities

Date of Government Version: 01/26/2018
Date Data Arrived at EDR: 02/02/2018
Date Made Active in Reports: 03/21/2018
Number of Days to Update: 47

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 05/03/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/15/2018
Number of Days to Update: 51

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

TULARE COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CUPA Facility List
Cupa program facilities

Date of Government Version: 03/19/2018
Date Data Arrived at EDR: 03/22/2018
Date Made Active in Reports: 04/17/2018
Number of Days to Update: 26

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 07/02/2018
Next Scheduled EDR Contact: 08/20/2018
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 03/26/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 58

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/23/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/27/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/09/2018
Next Scheduled EDR Contact: 08/27/2018
Data Release Frequency: Quarterly

Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 03/26/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 04/23/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 04/26/2018
Date Data Arrived at EDR: 06/13/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 28

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/13/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 03/27/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 05/04/2018
Number of Days to Update: 31

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 06/27/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Annually

YUBA COUNTY:

CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 05/10/2018
Date Data Arrived at EDR: 05/15/2018
Date Made Active in Reports: 06/15/2018
Number of Days to Update: 31

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 04/25/2018
Next Scheduled EDR Contact: 08/13/2018
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 01/03/2018
Date Data Arrived at EDR: 02/14/2018
Date Made Active in Reports: 03/22/2018
Number of Days to Update: 36

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/18/2018
Next Scheduled EDR Contact: 08/27/2018
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 04/11/2017
Date Made Active in Reports: 07/27/2017
Number of Days to Update: 107

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/23/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 04/30/2018
Date Data Arrived at EDR: 05/03/2018
Date Made Active in Reports: 06/07/2018
Number of Days to Update: 35

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 05/03/2018
Next Scheduled EDR Contact: 08/13/2018
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 07/25/2017
Date Made Active in Reports: 09/25/2017
Number of Days to Update: 62

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/12/2018
Next Scheduled EDR Contact: 07/30/2018
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 02/23/2018
Date Made Active in Reports: 04/09/2018
Number of Days to Update: 45

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/21/2018
Next Scheduled EDR Contact: 09/03/2018
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/15/2018
Date Made Active in Reports: 07/09/2018
Number of Days to Update: 24

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 06/11/2018
Next Scheduled EDR Contact: 09/24/2018
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: PennWell Corporation
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data
Source: PennWell Corporation
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.
Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.
Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.
Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish & Game
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

CAR PROS MORENO VALLEY
HIGHWAY 60/ MORENO BEACH DRIVE
MORENO VALLEY, CA 92555

TARGET PROPERTY COORDINATES

Latitude (North):	33.933697 - 33° 56' 1.31''
Longitude (West):	117.174561 - 117° 10' 28.42''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	483866.8
UTM Y (Meters):	3754624.0
Elevation:	1751 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5641326 SUNNYMEAD, CA
Version Date:	2012

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

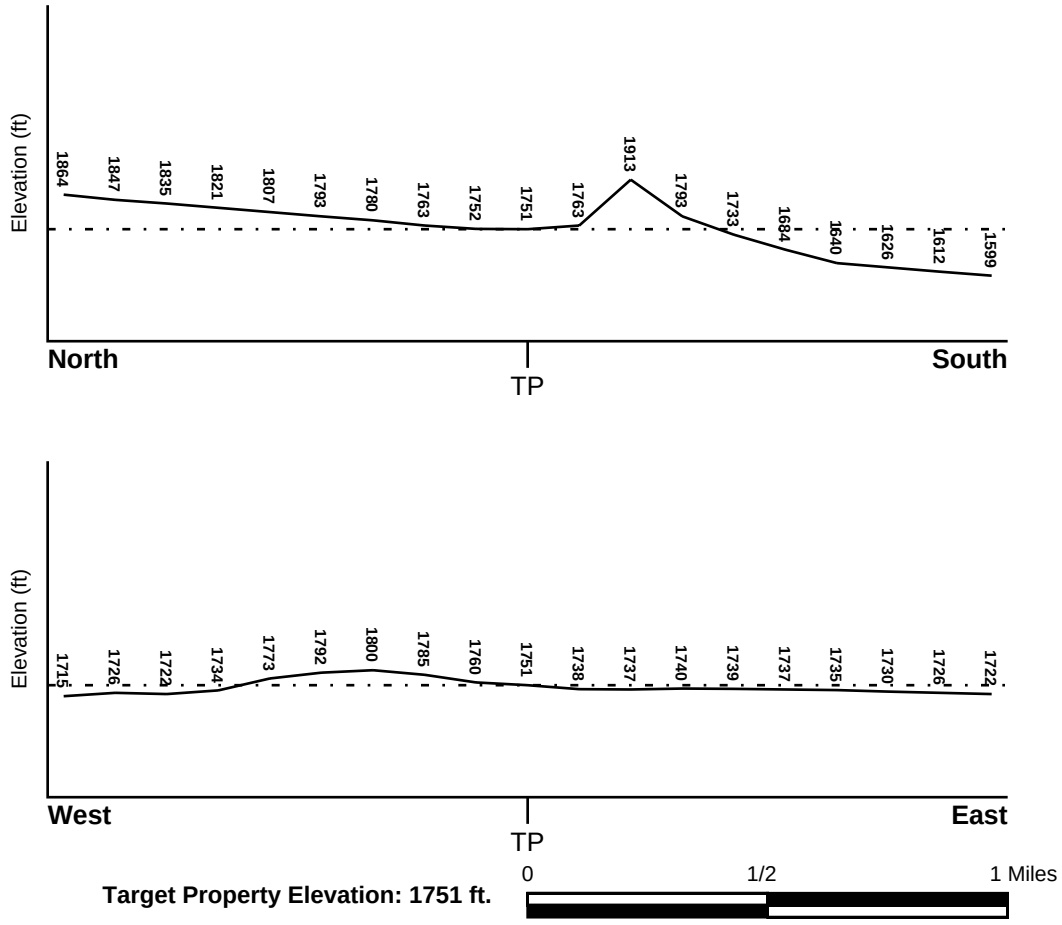
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General NNE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06065C0770G	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06065C0755G	FEMA FIRM Flood data
06065C0760G	FEMA FIRM Flood data
06065C0765G	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
NOT AVAILABLE	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

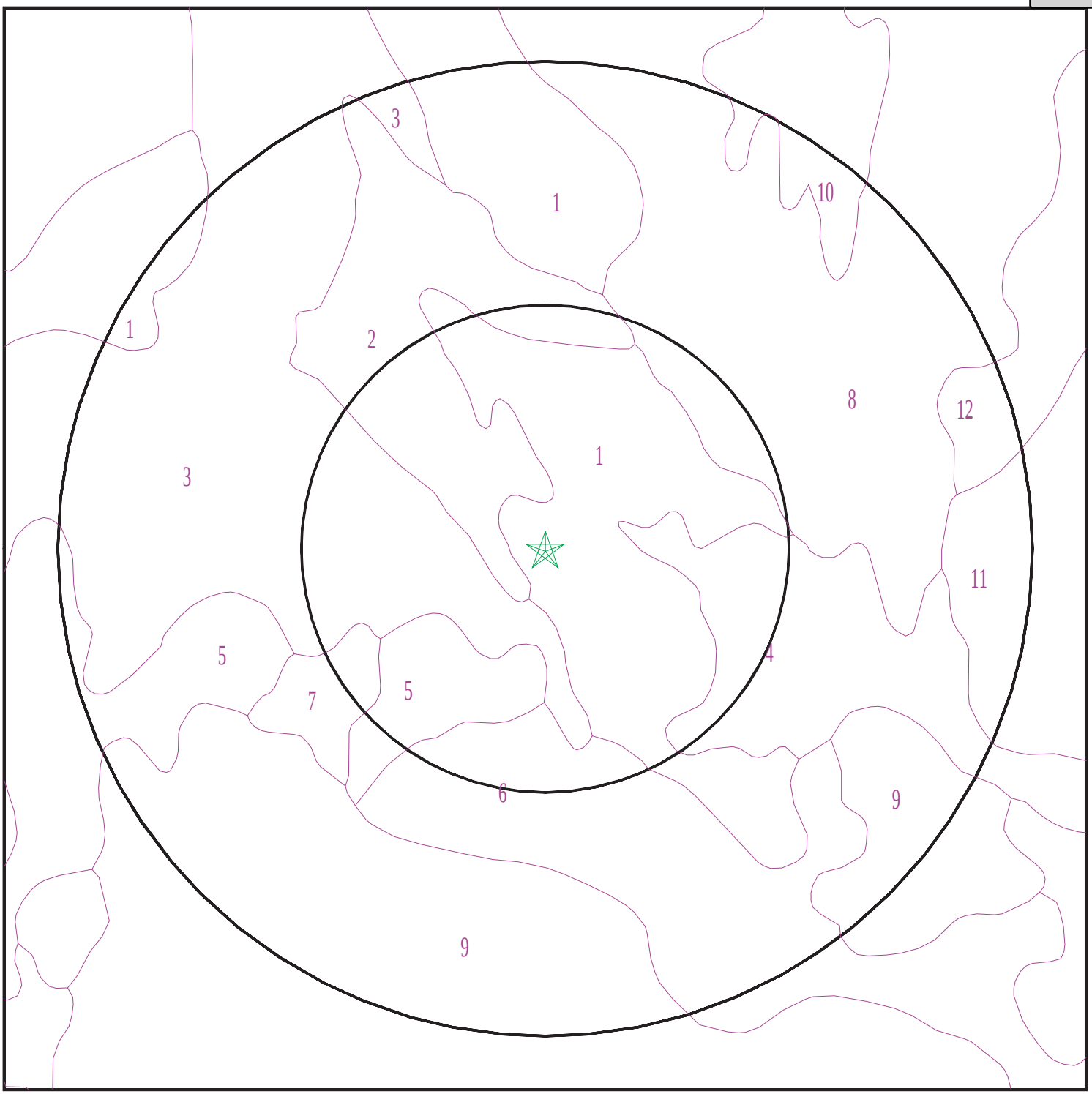
Era:	Mesozoic
System:	Cretaceous
Series:	Cretaceous granitic rocks
Code:	Kg *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Plutonic and Intrusive Rocks

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 5359139.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Car Pros Moreno Valley	CLIENT:	Hazard Management Consulting
ADDRESS:	Highway 60/ Moreno Beach Drive Moreno Valley CA 92555	CONTACT:	Mark Cousineau
LAT/LONG:	33.933697 / 117.174561	INQUIRY #:	5359139.2s
		DATE:	July 12, 2018 12:27 pm

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: PACHAPPA

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 7.8 Min: 6.1
2	20 inches	40 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 7.8 Min: 6.6
3	40 inches	62 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 6.6

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 2

Soil Component Name: GORGONIO

Soil Surface Texture: loamy sand

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	loamy sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.3 Min: 5.6
2	14 inches	59 inches	stratified gravelly loamy sand to gravelly loamy fine sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.3 Min: 5.6

Soil Map ID: 3

Soil Component Name: GREENFIELD

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	25 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.1
2	25 inches	42 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.1
3	42 inches	59 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 14 Min: 4	Max: 7.8 Min: 6.1
4	59 inches	72 inches	stratified loamy sand to sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6

Soil Map ID: 4

Soil Component Name: GULLIED LAND

Soil Surface Texture: variable

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class:

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	59 inches	variable	Not reported	Not reported	Max: Min:	Max: Min:

Soil Map ID: 5

Soil Component Name: HANFORD

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	coarse sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 5.6

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	7 inches	40 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 5.6
3	40 inches	59 inches	stratified loamy sand to coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 5.6

Soil Map ID: 6

Soil Component Name: GREENFIELD

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	25 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.1

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	25 inches	42 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.1
3	42 inches	59 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 14 Min: 4	Max: 7.8 Min: 6.1

Soil Map ID: 7

Soil Component Name: GREENFIELD

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	25 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.1

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	25 inches	42 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.1
3	42 inches	59 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 14 Min: 4	Max: 7.8 Min: 6.1

Soil Map ID: 8

Soil Component Name: SAN EMIGDIO

Soil Surface Texture: loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 42 Min: 14	Max: 8.4 Min: 7.9

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	7 inches	40 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 42 Min: 14	Max: 8.4 Min: 7.9
3	40 inches	59 inches	stratified sandy loam to silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 42 Min: 14	Max: 8.4 Min: 7.9

Soil Map ID: 9

Soil Component Name: Cieneba

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 5.1

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	14 inches	22 inches	weathered bedrock	Not reported	Not reported	Max: 0.42 Min: 0	Max: Min:

Soil Map ID: 10

Soil Component Name: HANFORD

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	coarse sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 5.6
2	7 inches	40 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 5.6
3	40 inches	59 inches	stratified loamy sand to coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 5.6

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 11

Soil Component Name: SAN EMIGDIO

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 42 Min: 14	Max: 8.4 Min: 7.9
2	7 inches	40 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 42 Min: 14	Max: 8.4 Min: 7.9
3	40 inches	59 inches	stratified sandy loam to silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 42 Min: 14	Max: 8.4 Min: 7.9

Soil Map ID: 12

Soil Component Name: SAN EMIGDIO

Soil Surface Texture: loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 42 Min: 14	Max: 8.4 Min: 7.9
2	7 inches	40 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 42 Min: 14	Max: 8.4 Min: 7.9
3	40 inches	59 inches	stratified sandy loam to silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 42 Min: 14	Max: 8.4 Min: 7.9

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 0.001 miles
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A2	USGS40000139168	1/4 - 1/2 Mile NE
B4	USGS40000139167	1/2 - 1 Mile ENE
6	USGS40000139052	1/2 - 1 Mile SSW
C8	USGS40000139084	1/2 - 1 Mile ESE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

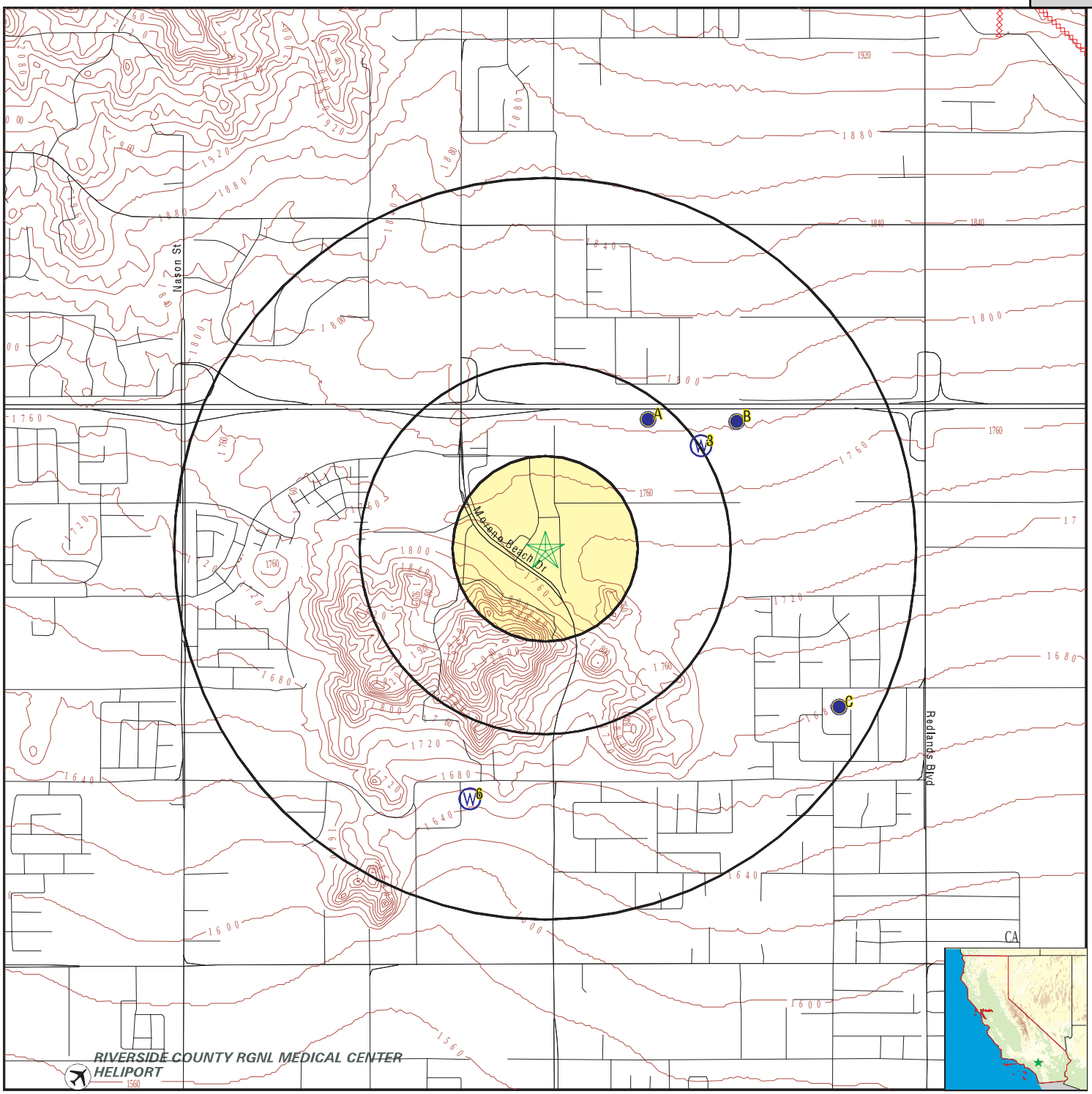
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	CADW60000010567	1/4 - 1/2 Mile NE
3	CADW60000010568	1/2 - 1 Mile ENE
B5	CADW60000010569	1/2 - 1 Mile NE
C7	CADW60000008723	1/2 - 1 Mile ESE

PHYSICAL SETTING SOURCE MAP - 5359139.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Airports
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	Car Pros Moreno Valley	CLIENT:	Hazard Management Consulting
ADDRESS:	Highway 60/ Moreno Beach Drive Moreno Valley CA 92555	CONTACT:	Mark Cousineau
LAT/LONG:	33.933697 / 117.174561	INQUIRY #:	5359139.2s
		DATE:	July 12, 2018 12:26 pm

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID / Direction / Distance / Elevation	Database	EDR ID Number
A1 **NE** **1/4 - 1/2 Mile** **Higher**	**CA WELLS**	**CADW60000010567**

Objectid:	10567
Latitude:	33.938895
Longitude:	-117.170247
Site code:	339389N1171702W001
State well numbe:	Not Reported
Local well name:	'EMWD12046'
Well use id:	1
Well use descrip:	Observation
County id:	33
County name:	Riverside
Basin code:	'8-5'
Basin desc:	San Jacinto
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000010567

A2 **NE** **1/4 - 1/2 Mile** **Higher**		**FED USGS**	**USGS40000139168**
Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-335619117100601		
Monloc name:	003S003W02L001S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070202	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	33.9386279
Longitude:	-117.1692024	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	Not Reported
Vert measure units:	Not Reported	Vertacc measure val:	Not Reported
Vert accmeasure units:	Not Reported		
Vertcollection method:	Not Reported		
Vert coord refsys:	Not Reported	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

---

3 **ENE** **1/2 - 1 Mile** **Higher**	**CA WELLS**	**CADW60000010568**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Objectid:	10568
Latitude:	33.937727
Longitude:	-117.167241
Site code:	339377N1171672W001
State well numbe:	Not Reported
Local well name:	'EMWD14352'
Well use id:	1
Well use descrip:	Observation
County id:	33
County name:	Riverside
Basin code:	'8-5'
Basin desc:	San Jacinto
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000010568

B4
ENE
1/2 - 1 Mile
Higher

FED USGS **USGS40000139167**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-335619117095301		
Monloc name:	003S003W02L002S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070202	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	33.9386279
Longitude:	-117.165591	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	Not Reported
Vert measure units:	Not Reported	Vertacc measure val:	Not Reported
Vert accmeasure units:	Not Reported		
Vertcollection method:	Not Reported		
Vert coord refsys:	Not Reported	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	1932	Welldepth:	1000
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

B5
NE
1/2 - 1 Mile
Higher

CA WELLS **CADW60000010569**

Objectid:	10569
Latitude:	33.938731
Longitude:	-117.16554
Site code:	339387N1171655W001
State well numbe:	Not Reported
Local well name:	'EMWD12047'
Well use id:	3
Well use descrip:	Irrigation
County id:	33
County name:	Riverside

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Basin code:	'8-5'
Basin desc:	San Jacinto
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000010569

6
SSW
1/2 - 1 Mile
Lower

FED USGS **USGS40000139052**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-335526117103801		
Monloc name:	010N003W27Q002S		
Monloc type:	Well		
Monloc desc:	COMPUTER GENERATED LAT/LONG. +/- 500FT		
Huc code:	Not Reported	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	33.9239059
Longitude:	-117.1780915	Sourcemap scale:	Not Reported
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	2190
Vert measure units:	feet	Vertacc measure val:	20
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

C7
ESE
1/2 - 1 Mile
Lower

CA WELLS **CADW60000008723**

Objectid:	8723
Latitude:	33.9275
Longitude:	-117.1612
Site code:	339275N1171612W001
State well numbe:	10N03W26K001S
Local well name:	''
Well use id:	6
Well use descrip:	Unknown
County id:	36
County name:	San Bernardino
Basin code:	'8-5'
Basin desc:	San Jacinto
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000008723

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

Database	EDR ID Number
FED USGS	**USGS40000139084**

C8
ESE
1/2 - 1 Mile
Lower

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-335539117093401		
Monloc name:	010N003W26K001S		
Monloc type:	Well		
Monloc desc:	COMPUTER GENERATED LAT/LONG. +/- 500FT		
Huc code:	Not Reported	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	33.9275169
Longitude:	-117.1603129	Sourcemap scale:	Not Reported
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	2170
Vert measure units:	feet	Vertacc measure val:	20
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	1944	Welldepth:	185
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1959-02-06	104.20	

Note: The site was being pumped.

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
92555	4	0

Federal EPA Radon Zone for RIVERSIDE County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for RIVERSIDE COUNTY, CA

Number of sites tested: 12

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.117 pCi/L	100%	0%	0%
Living Area - 2nd Floor	0.450 pCi/L	100%	0%	0%
Basement	1.700 pCi/L	100%	0%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish & Game
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

APPENDIX C

HMC
HAZARD MANAGEMENT CONSULTING

ESA USER QUESTIONNAIRE

Phase I Environmental Site Assessment
ASTM Standard 1527-05

Site: Vacant Parcels 488-390-015-4 + 488-390-016-5
outside of Moreno Valley, CA

In order to qualify for one of the *Landowner Liability Protections (LLPs)*35 offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the "*Brownfields Amendments*"), 36 the *user*[1] must provide the following information (if available) to the *environmental professional*. Failure to provide this information could result in a determination that "*all appropriate inquiry*" is not complete.
(Note: double-click boxes to check or uncheck)

(1) Are you aware of any environmental cleanup liens against the Site that are filed or recorded under federal, tribal, state or local law?

☒ No ☐ Yes (if yes, please describe)

(2) Are you aware of any Activity and Use Limitations (AULs), such as engineering controls, land use restrictions or institutional controls that are in place at the Site and/or have been filed or recorded in a registry under federal, tribal, state or local law?

☒ No ☐ Yes (if yes, please describe)

(3) As the user of this ESA do you have any specialized knowledge or experience related to the Site or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the Site or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business?

☒ No ☐ Yes (if yes, please describe)

[1] A User as defined in ASTM 1527-05 is the party seeking to use Practice E 1527 to complete an environmental site assessment of the property. A user may include, without limitation, a potential purchaser of the property, a potential tenant of property, an owner of property, a lender, or a property manager. The User ha specific obligations for completing a successful application of this process as outlined in Section 6 of this standard.

211 W. Avenida Cordoba, Suite 200 San Clemente, CA 92672
tel 949/361/3902 fax 949/361/3697 www.hmcinc.biz info@hmcinc.biz

(4) Does the purchase price being paid for this Site reasonably reflect the fair market value of the Site? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the Site?

☐ No ☒ Yes (if yes, please describe) price is reasonable fair no known contamination

(5) Are you aware of commonly known or *reasonably ascertainable* information about the Site that would help the *environmental professional* to identify conditions indicative of releases or threatened releases? For example, as *user*,

(a.) Do you know the past uses of the Site?

☒ No ☐ Yes (if yes, please describe)

(b.) Do you know of specific chemicals that are present or once were present at the Site?

☒ No ☐ Yes (if yes, please describe)

(c.) Do you know of spills or other chemical releases that have taken place at the Site?

☒ No ☐ Yes (if yes, please describe)

(d.) Do you know of any environmental cleanups that have taken place at the Site?

☒ No ☐ Yes (if yes, please describe)

(6) As the *user* of this *ESA*, based on your knowledge and experience related to the Site are there any *obvious* indicators that point to the presence or likely presence of contamination at the Site?

☒ No ☐ Yes (if yes, please describe)

Additional Information

This information is intended to assist the *environmental professional* conducting the ESA, but is not necessarily required to qualify for one of the *LLPs*. The information includes:

(a) Why is the Phase I being conducted?

For the purchase of the property

(b) What is the type of property and type of property transaction, for example, sale, purchase, exchange, etc. ?

purchase - vacant lot

(c) What is the complete and correct address for the Site (a map or other documentation showing Site location and boundaries is helpful),

PARCEL A:
PARCEL 7 OF PARCEL MAP NO. 23244, IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE
OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 161, PAGES 16 THROUGH 24 INCLUSIVE OF PARCEL
MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

PARCEL B:
PARCEL 8 OF PARCEL MAP NO. 23244, IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE
OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 161, PAGES 16 THROUGH 24 INCLUSIVE OF PARCEL
MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

Assessor's Parcel Number: 488-390-015-4 & 488-390-016-5

(d) the scope of services desired for the Phase I (including whether any parties to the *property* transaction may have a required standard scope of services on whether any considerations beyond the requirements of Practice E 1527 are to be considered),

common scope

(e) Please identify all parties who will rely on the Phase I *report.*

purchaser, bank

(f) Please identify the Site contact and how the contact can be reached,

TBD

(g) Please indicate any other knowledge or experience with the Site that may be pertinent to the *environmental professional* (for example, copies of any available prior *environmental site assessment reports*, documents, correspondence, etc., concerning

the Site and its environmental condition) and any environmental permits such as air quality management district, stormwater, wastewater, underground storage tanks or aboveground tanks.

Site is a vacant lot. Previous Phase I attached.

(g) Can you provide a recent Chain of Title report for the Site?

preliminary title report attached

This questionnaire was completed by:

Name: Mary Roloff

Signature: M Roloff Date: 7-11-18

Title: Exec Asst - Car Pros Auto Group

Please describe the length of and nature of your experience/knowledge of the Site.

In the process of currently purchasing

Phase I Environmental Site Assessment
Vacant Parcels
Southeast Corner of State Highway 60 and Moreno Beach Drive
Moreno Valley, California

March 10, 2000
7094.00

Prepared For
Stone & Youngberg, LLC
15260 Ventura Boulevard, Suite 1520
Sherman Oaks, California 91403

LFR
LEVINE • FRICKE

Printed on recycled materials

LFR
LEVINE • FRICKE

March 10, 2000 7094.00

Mr. J. Brian Masterman
Stone & Youngberg, LLC
15260 Ventura Boulevard, Suite 1520
Sherman Oaks, California 91403

Subject: Phase I Environmental Site Assessment, Vacant Parcels, Southeast Corner of State Highway 60 and Moreno Beach Drive, Moreno Valley, California

Dear Mr. Masterman:

Attached is our Phase I Environmental Site Assessment report for the vacant parcels located at the above-referenced site. The conclusions presented in this report are based on the results of a reconnaissance-level site visit conducted by LFR Levine · Fricke (LFR) personnel and a review of available and pertinent background information.

LFR appreciates this opportunity to provide consulting services to Stone & Youngberg, LLC. If you have any questions concerning this project, or would like to discuss other environmental matters, please contact me at (714) 444-0111.

Sincerely,

Ralph M. Beck, R.G., C.A.C., R.E.A.
Senior Project Geologist

Attachment

EXECUTIVE SUMMARY

Property Location and Use

LFR Levine · Fricke (LFR) performed a Phase I Environmental Site Assessment (ESA) of the vacant parcels located at the southeast corner of the intersection of State Highway 60 and Moreno Beach Drive, within the City of Moreno Valley, California ("the Site"). The approximately 30-acre Site is currently undeveloped land and contains natural chaparral vegetation.

Scope of Investigation

This Phase I ESA was conducted for Stone & Youngberg, LLC by LFR. Stone & Youngberg, LLC may rely on this report for further work or investigation conducted on the Site. The scope of work for the Phase I ESA included the following activities:

- a walk-through reconnaissance-level visit of the Site and a review of the site history for evidence of past releases of hazardous materials and petroleum products, and assessment of the potential for on-site releases of hazardous materials and petroleum products
- an evaluation of land use in the vicinity of the Site
- a review of selected regulatory files of reported on- and off-site release cases
- preparation of a report of our findings

Environmental Issues

On Site

Historically, the Site has been undeveloped, natural terrain since at least the early 1950s.

Various types of light chaparral vegetation were present on the Site at the time of the site inspection. Minimal amounts of general trash and debris were scattered throughout the Site. No evidence of hazardous materials, petroleum products or hazardous waste dumping was observed onsite at the time of the site inspection.

Off Site

Historically, the land surrounding the Site consisted of natural terrain and farmland from at least the early 1950s until the late 1970s. An auto mall was constructed adjacent to the north of the Site in the late 1980s to early 1990s. The northern-most portion of the Site is bordered by State Highway 60. An orange orchard occupies the

adjacent area east of the Site. Adjacent areas south and west of the Site are undeveloped hilly terrain.

An environmental database report prepared by VISTA Environmental Solutions, Inc. (VISTA) was reviewed for local, state, and federal listings for properties within the site area. Regulatory database lists were reviewed for cases pertaining to leaking aboveground and underground storage tanks, hazardous waste sites, and abandoned sites within the specified radii of standards established by the American Society for Testing and Materials. None of the facilities listed on the VISTA report appear to represent recognized environmental conditions due to their distance from the Site, type of release, groundwater flow patterns, soil characteristics or successful remediation.

Recommendations

Based upon the findings of this Phase I ESA, LFR does not recommend additional investigation of the Site at this time.

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Hanford Coarse Sandy Loam, Greenfield Sandy Loam, Cieneba Rocky Sandy Loam, Romona Sandy Loam, Greenfield Sandy Loam, Pachappa Fine Sandy Loam, and San Emigdio Loam.

2.4.2 Subsurface Features

According to the "Expanded Initial Study for the Moreno Valley Auto Mall Specific Plan" (April 5, 1988), the Site is situated near the northwest corner of a structural block of the earth's crust known as the Perris Block. The Perris block is an elongated, northwesterly-trending mass of mesozoic granitic rock within the Peninsular Range Geomorphic Province, one of the major geologic provinces of Southern California. The Perris Block measures approximately 20 miles by 50 miles, and is bounded by the San Jacinto Fault on the northeast, by the Cucamonga Fault on the north, and by the Elsinore Fault on the southwest. The rock complex extends generally from the San Bernadino Valley on the north to Temecula on the south.

2.5 Hydrology

2.5.1 Surface Water

No naturally occurring surface water is located on the Site. Rip-rap lined drainage culverts and a system of concrete channels are located on the southwestern portion of the Site on Site parcel APN 477-130-045.

2.5.2 Groundwater

According to Mr. Jeff Hale of the Eastern Municipal Water District, depth to groundwater in the Site vicinity is approximately 260 feet below ground surface (bgs). Mr. Hale stated that the direction of groundwater flow is generally toward the south-southeast. The presence of perched water-bearing zones in the Site vicinity is not known.

3.0 SURROUNDING PROPERTIES

3.1 Description

Land use in the immediate vicinity of the Site consists of vacant land, agricultural land, and an auto mall.

3.1.1 Historical Use

Historically, the land surrounding the Site consisted of natural terrain and farmland from at least the early 1950s to present day. North of the Site is State Highway 60,

which has been present from at least the early 1950s. Housing tracts were constructed in the site vicinity in the 1970s and 1980s. Several automobile dealerships were constructed north of the Site, along Eucalyptus Avenue and Moreno Beach Drive, in the early 1990s.

3.1.2 Current Use

The Site is currently bordered by State Highway 60 to the north, beyond which is undeveloped land. An orange grove borders the Site to the east. Adjacent areas west and south of the Site consist of undeveloped rugged, hilly terrain. Several automobile dealerships are located adjacent to the northern portions of the Site.

3.2 Regulatory Review

An environmental database report prepared by VISTA was reviewed for local, state, and federal listings for properties within the Site area. Regulatory database lists were reviewed for cases pertaining to leaking underground and aboveground storage tanks, hazardous waste sites, and abandoned sites within the specified radii of standards established by the ASTM. The information provided from VISTA and the inferred direction of groundwater flow were used to assist LFR in this assessment. A copy of the VISTA report dated February 25, 2000 is included in Appendix D.

None of the facilities listed on any of the databases within the ASTM-specified radius of the Site appear to represent recognized environmental conditions relative to the Site.

3.3 Other

Based upon historical land use in the site vicinity, no other off-site environmental concerns were encountered in this assessment.

4.0 SUMMARY AND CONCLUSIONS

LFR performed a Phase I ESA of the vacant parcels located at the southeast corner of the intersection of State Highway 60 and Moreno Beach Drive, in the City of Moreno Valley, County of San Bernardino, California. The approximately 30-acre Site is currently undeveloped land and contains natural chaparral vegetation.

4.1 On Site

Historically, the Site has been undeveloped, natural terrain since at least the early 1950s.

Various types of light chaparral vegetation were present on the Site at the time of the site inspection. Minimal amounts of general trash and debris were scattered throughout

the Site. No evidence of hazardous materials, petroleum products or hazardous waste dumping was observed onsite at the time of the site inspection.

4.2 Off Site

Historically, the land surrounding the Site consisted of natural terrain and farmland from at least the early 1950s until the late 1970s. An auto mall was constructed adjacent to the north of the Site in the late 1980s to early 1990s. The northern-most portion of the Site is bordered by State Highway 60. An orange orchard occupies the adjacent area east of the Site. Adjacent areas south and west of the Site are undeveloped hilly terrain.

An environmental database report prepared by VISTA was reviewed for local, state, and federal listings for properties within the site area. Regulatory database lists were reviewed for cases pertaining to leaking aboveground and underground storage tanks, hazardous waste sites, and abandoned sites within the specified radii of standards established by the ASTM. None of the facilities listed on the VISTA report appear to represent recognized environmental conditions due to their distance from the Site, type of release, groundwater flow patterns, soil characteristics or successful remediation.

5.0 RECOMMENDATIONS

Based upon the findings of this Phase I ESA, LFR does not recommend additional investigation of the Site at this time.

Phase I Environmental Site Assessment
Vacant Parcels
Southeast Corner of State Highway 60 and Moreno Beach Drive
Moreno Valley, California

March 10, 2000
7094.00

Prepared For
Stone & Youngberg, LLC
15260 Ventura Boulevard, Suite 1520
Sherman Oaks, California 91403

LFR
LEVINE • FRICKE

Printed on recycled materials

LFR
LEVINE • FRICKE

March 10, 2000 7094.00

Mr. J. Brian Masterman
Stone & Youngberg, LLC
15260 Ventura Boulevard, Suite 1520
Sherman Oaks, California 91403

Subject: Phase I Environmental Site Assessment, Vacant Parcels, Southeast Corner of State Highway 60 and Moreno Beach Drive, Moreno Valley, California

Dear Mr. Masterman:

Attached is our Phase I Environmental Site Assessment report for the vacant parcels located at the above-referenced site. The conclusions presented in this report are based on the results of a reconnaissance-level site visit conducted by LFR Levine · Fricke (LFR) personnel and a review of available and pertinent background information.

LFR appreciates this opportunity to provide consulting services to Stone & Youngberg, LLC. If you have any questions concerning this project, or would like to discuss other environmental matters, please contact me at (714) 444-0111.

Sincerely,

Ralph M. Beck, R.G., C.A.C., R.E.A.
Senior Project Geologist

Attachment

EXECUTIVE SUMMARY

Property Location and Use

LFR Levine · Fricke (LFR) performed a Phase I Environmental Site Assessment (ESA) of the vacant parcels located at the southeast corner of the intersection of State Highway 60 and Moreno Beach Drive, within the City of Moreno Valley, California ("the Site"). The approximately 30-acre Site is currently undeveloped land and contains natural chaparral vegetation.

Scope of Investigation

This Phase I ESA was conducted for Stone & Youngberg, LLC by LFR. Stone & Youngberg, LLC may rely on this report for further work or investigation conducted on the Site. The scope of work for the Phase I ESA included the following activities:

- a walk-through reconnaissance-level visit of the Site and a review of the site history for evidence of past releases of hazardous materials and petroleum products, and assessment of the potential for on-site releases of hazardous materials and petroleum products
- an evaluation of land use in the vicinity of the Site
- a review of selected regulatory files of reported on- and off-site release cases
- preparation of a report of our findings

Environmental Issues

On Site

Historically, the Site has been undeveloped, natural terrain since at least the early 1950s.

Various types of light chaparral vegetation were present on the Site at the time of the site inspection. Minimal amounts of general trash and debris were scattered throughout the Site. No evidence of hazardous materials, petroleum products or hazardous waste dumping was observed onsite at the time of the site inspection.

Off Site

Historically, the land surrounding the Site consisted of natural terrain and farmland from at least the early 1950s until the late 1970s. An auto mall was constructed adjacent to the north of the Site in the late 1980s to early 1990s. The northern-most portion of the Site is bordered by State Highway 60. An orange orchard occupies the

adjacent area east of the Site. Adjacent areas south and west of the Site are undeveloped hilly terrain.

An environmental database report prepared by VISTA Environmental Solutions, Inc. (VISTA) was reviewed for local, state, and federal listings for properties within the site area. Regulatory database lists were reviewed for cases pertaining to leaking aboveground and underground storage tanks, hazardous waste sites, and abandoned sites within the specified radii of standards established by the American Society for Testing and Materials. None of the facilities listed on the VISTA report appear to represent recognized environmental conditions due to their distance from the Site, type of release, groundwater flow patterns, soil characteristics or successful remediation.

Recommendations

Based upon the findings of this Phase I ESA, LFR does not recommend additional investigation of the Site at this time.

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1.0 INTRODUCTION

LFR Levine · Fricke (LFR) performed a Phase I Environmental Site Assessment (ESA) of the vacant parcels located at the southeast corner of the intersection of State Highway 60 and Moreno Beach Drive, within the City of Moreno Valley, County of San Bernardino, California ("the Site"). The approximately 30-acre Site is currently undeveloped land and contains natural chaparral vegetation.

1.1 Purpose

Stone & Youngberg, LLC requested that LFR conduct a Phase I ESA of the Site. The purpose of the Phase I ESA is to identify, to the extent feasible pursuant to the processes prescribed in American Society for Testing and Materials (ASTM) E 1527-97, recognized environmental conditions in connection with a property. This report is for the exclusive use of Stone & Youngberg, LLC and their lender. Use of this report by any other party shall be at such party's sole risk.

1.2 Scope and Limitations

1.2.1 Scope of Work

The scope of work for the Phase I ESA included the following activities:

- a walk-through reconnaissance-level visit of the Site, a review of the site history for evidence of past releases of hazardous materials and petroleum products, and an assessment of the potential for on-site releases of hazardous materials and petroleum products
- an evaluation of land use in the vicinity of the Site
- a review of selected regulatory files of reported on- and off-site release cases
- preparation of this report documenting our findings

1.2.2 Limitations and Exceptions of Assessment

Site-specific activities performed by LFR and information collected regarding these activities are summarized in the following sections. A summary and conclusions drawn by LFR, based on the information collected as part of the Phase I ESA, are presented in Section 4.0.

This ESA was conducted in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions.

The observations and conclusions presented in this report are professional opinions based on the scope of activities, work schedule, and information obtained through the ESA described herein. Opinions presented herein apply to site conditions existing at the time of our study and cannot necessarily be taken to apply to site conditions or changes that we are not aware of or have not had the opportunity to evaluate. It must be recognized that conclusions drawn from these data are limited to the amount, type, distribution, and integrity of the information collected at the time of the investigation, the methods utilized to collect and evaluate the data, and that a full and complete determination of environmental risks cannot be made. Although LFR has taken steps to obtain true copies of available information, we make no representation or warranty with respect to the accuracy or completeness of this information.

The scope of work for this Phase I ESA did not include an assessment of natural hazards such as naturally occurring asbestos, radon gas, or methane gas; assessment of the potential presence of radionuclides; or assessment of nonchemical hazards such as the potential for damage from earthquakes or floods, or the presence of endangered species or wildlife habitats.

2.0 SUBJECT SITE

2.1 Site Description

The approximately 30-acre Site is currently undeveloped natural land with chaparral vegetation.

2.1.1 Site Location and Legal Description

The Site is located at southeast corner of the intersection of State Highway 60 and Moreno Beach Drive, within the City of Moreno Valley, California.

The County of San Bernardino Assessor's Office designates the Site as parcel numbers (APN) 477-130-016, 477-130-020, 477-130-024, 477-130-025, 477-130-034, 477-130-035, 477-130-036, 477-130-037, 477-130-042, and 477-130-045. A Site Plan is shown in Appendix A2.

2.1.2 Site and Vicinity Characteristics

Agricultural land, undeveloped land, and an automobile dealership surround the Site. The Badlands land formation is approximately 1 mile northeast of the Site. Mount Russell is located approximately 1.5 miles southeast of the Site. The topography of the area is generally level with a gentle southerly slope.

2.1.3 Site Development

The Site is undeveloped. No structures are presently located on the Site.

2.1.3.1 Building Description. No buildings are presently located on the Site.

2.1.3.2 Source of Potable Water. Drinking water is currently not supplied to the Site. The Eastern Municipal Water District supplies potable water for the site area. The municipal supplies reportedly meet clean water regulatory standards mandated by the State of California.

2.1.3.3 Sewage Disposal System. No sewage disposal system was observed at the Site at the time of the site inspection.

2.1.3.4 Solid Waste Disposal. No solid waste disposal system was observed on the Site at the time of the site inspection.

2.1.3.5 Source of Fuel for Heating and Cooling. No heating or cooling systems are utilized on the Site.

2.1.3.6 Other Improvements and Features. No other improvements or features were observed on the Site.

2.2 Property Use

The Site is currently undeveloped. It is LFR's understanding that the Site will be developed for commercial use.

2.2.1 Former Property Use

The Site has historically been undeveloped natural terrain and agricultural land since at least the early 1950s.

LFR requested that VISTA Information Solutions, Inc. (VISTA) perform a search of available Sanborn Maps of the Site and immediate area. Sanborn Maps were originally generated in the late 1800s to mid-1900s to document possible fire hazards related to the type of building structure and its general use. No Sanborn Maps were found for the Site or immediate facility.

Aerial Photograph Review

Historical aerial photographs were reviewed to identify former land use in the site vicinity. Regional photographs dated 1953, 1959, 1967, 1978, 1992, and 1997 were reviewed from Rupp Aerial Photography of Corona, California. The photographs consisted of low-altitude, black-and-white and color photographs.

Brief descriptions of the Site and vicinity, as observed in the aerial photographs, follow:

1953

The 1953 photograph depicts the Site as undeveloped natural land. State Highway 60 is present north of the Site. Undeveloped, natural hilly terrain is visible west and south of the Site. A creek runs northwest to southeast near the eastern Site boundary. Agricultural land is visible further east, beyond the creek.

1959

In the 1959 photograph, the Site appears similar to the previous photograph, with the exception of different configurations of surrounding agricultural plots. More erosion channels are visible in the hilly terrain that borders the Site to the southwest.

1967

The 1967 photograph depicts the Site as undeveloped natural land. North of the Site, State Highway 60 appears to have been widened. The freeway off-ramp for Moreno Beach Drive is present. Small paved portions of Moreno Beach Drive and Eucalyptus Avenue are also visible. Moreno Beach Drive continues as a dirt road past the intersection of Moreno Beach Drive and Eucalyptus Avenue, and extends south to the neighboring hills.

1978

This photograph depicts the Site as a portion of graded land. The remainder of Moreno Beach Drive has been paved. An orchard is present east of the Site. Housing tracts are visible in the surrounding site vicinity. Areas directly adjacent to the west and south of the Site are undeveloped natural land. An extensive system of dirt trails is visible in the hills to the south of the Site.

1992

The 1992 aerial photograph depicts the Site as graded land. Automobile dealership buildings are under construction near the northern boundary of the Site. An orchard is still present to the east of the Site. Natural undeveloped land is located south and west of the Site. Drainage culverts are present on the southern portion of the Site. Many more housing tracts are visible in the site vicinity.

1997

The 1997 aerial photograph depicts the Site and vicinity in their current configuration.

2.2.2 Current Property Use

On March 3, 2000, Mr. Chris Blake, Staff Scientist with LFR, conducted a walk-through reconnaissance-level inspection of the Site to observe general site conditions and indications of the possible release(s) of hazardous materials and/or petroleum products to the subsurface. Mr. Blake accessed all areas of the Site.

The approximately 30-acre Site is currently in a natural state. Various types of light chaparral vegetation were observed at the time of the site inspection. Minimal amounts of general trash and debris were scattered throughout the Site. No evidence of hazardous materials, petroleum product or hazardous waste dumping was observed on Site at the time of the inspection.

2.2.3 Current and Historical Regulatory Review

Current and historical regulatory information pertaining to the Site was obtained from an environmental database search of local, state, and federal listings, selected environmental regulatory agency records, and building permits, as described below.

An environmental database report was obtained from VISTA, which compiles its information from a database of local, state, and federal agency lists. The Site is not listed on any of the databases.

No building or demolition permits or records were found at the City of Moreno Valley Building Department, Planning Department or Engineering Department.

2.3 Other Regulatory Issues – Site Specific

Sampling for radon gas was not conducted at the Site during this assessment. However, the soils underlying the Site are reportedly not associated with radon outgassing. The predicted average indoor screening level for the Moreno Valley area is approximately 2 picoCuries per liter (pCi/l) of air. The U.S. Environmental Protection Agency (U.S. EPA) has established an indoor action level of 4.0 pCi/l for radon.

2.4 Geology

2.4.1 Surface Features

According to an "Expanded Initial Study for the Moreno Valley Auto Mall" dated April 5, 1988, the Site is situated at an elevation ranging from approximately 1,760 to 1,800 feet above mean sea level, with an average gradient of 1 to 2 percent. Natural Site drainage is to the south.

The Site is located in the northern portion of Moreno Valley. Surface and shallow subsurface sediments found at the Site are comprised of Gorgonio Loamy Sand,

Hanford Coarse Sandy Loam, Greenfield Sandy Loam, Cieneba Rocky Sandy Loam, Romona Sandy Loam, Greenfield Sandy Loam, Pachappa Fine Sandy Loam, and San Emigdio Loam.

2.4.2 Subsurface Features

According to the "Expanded Initial Study for the Moreno Valley Auto Mall Specific Plan" (April 5, 1988), the Site is situated near the northwest corner of a structural block of the earth's crust known as the Perris Block. The Perris block is an elongated, northwesterly-trending mass of mesozoic granitic rock within the Peninsular Range Geomorphic Province, one of the major geologic provinces of Southern California. The Perris Block measures approximately 20 miles by 50 miles, and is bounded by the San Jacinto Fault on the northeast, by the Cucamonga Fault on the north, and by the Elsinore Fault on the southwest. The rock complex extends generally from the San Bernadino Valley on the north to Temecula on the south.

2.5 Hydrology

2.5.1 Surface Water

No naturally occurring surface water is located on the Site. Rip-rap lined drainage culverts and a system of concrete channels are located on the southwestern portion of the Site on Site parcel APN 477-130-045.

2.5.2 Groundwater

According to Mr. Jeff Hale of the Eastern Municipal Water District, depth to groundwater in the Site vicinity is approximately 260 feet below ground surface (bgs). Mr. Hale stated that the direction of groundwater flow is generally toward the south-southeast. The presence of perched water-bearing zones in the Site vicinity is not known.

3.0 SURROUNDING PROPERTIES

3.1 Description

Land use in the immediate vicinity of the Site consists of vacant land, agricultural land, and an auto mall.

3.1.1 Historical Use

Historically, the land surrounding the Site consisted of natural terrain and farmland from at least the early 1950s to present day. North of the Site is State Highway 60,

which has been present from at least the early 1950s. Housing tracts were constructed in the site vicinity in the 1970s and 1980s. Several automobile dealerships were constructed north of the Site, along Eucalyptus Avenue and Moreno Beach Drive, in the early 1990s.

3.1.2 Current Use

The Site is currently bordered by State Highway 60 to the north, beyond which is undeveloped land. An orange grove borders the Site to the east. Adjacent areas west and south of the Site consist of undeveloped rugged, hilly terrain. Several automobile dealerships are located adjacent to the northern portions of the Site.

3.2 Regulatory Review

An environmental database report prepared by VISTA was reviewed for local, state, and federal listings for properties within the Site area. Regulatory database lists were reviewed for cases pertaining to leaking underground and aboveground storage tanks, hazardous waste sites, and abandoned sites within the specified radii of standards established by the ASTM. The information provided from VISTA and the inferred direction of groundwater flow were used to assist LFR in this assessment. A copy of the VISTA report dated February 25, 2000 is included in Appendix D.

None of the facilities listed on any of the databases within the ASTM-specified radius of the Site appear to represent recognized environmental conditions relative to the Site.

3.3 Other

Based upon historical land use in the site vicinity, no other off-site environmental concerns were encountered in this assessment.

4.0 SUMMARY AND CONCLUSIONS

LFR performed a Phase I ESA of the vacant parcels located at the southeast corner of the intersection of State Highway 60 and Moreno Beach Drive, in the City of Moreno Valley, County of San Bernardino, California. The approximately 30-acre Site is currently undeveloped land and contains natural chaparral vegetation.

4.1 On Site

Historically, the Site has been undeveloped, natural terrain since at least the early 1950s.

Various types of light chaparral vegetation were present on the Site at the time of the site inspection. Minimal amounts of general trash and debris were scattered throughout

the Site. No evidence of hazardous materials, petroleum products or hazardous waste dumping was observed onsite at the time of the site inspection.

4.2 Off Site

Historically, the land surrounding the Site consisted of natural terrain and farmland from at least the early 1950s until the late 1970s. An auto mall was constructed adjacent to the north of the Site in the late 1980s to early 1990s. The northern-most portion of the Site is bordered by State Highway 60. An orange orchard occupies the adjacent area east of the Site. Adjacent areas south and west of the Site are undeveloped hilly terrain.

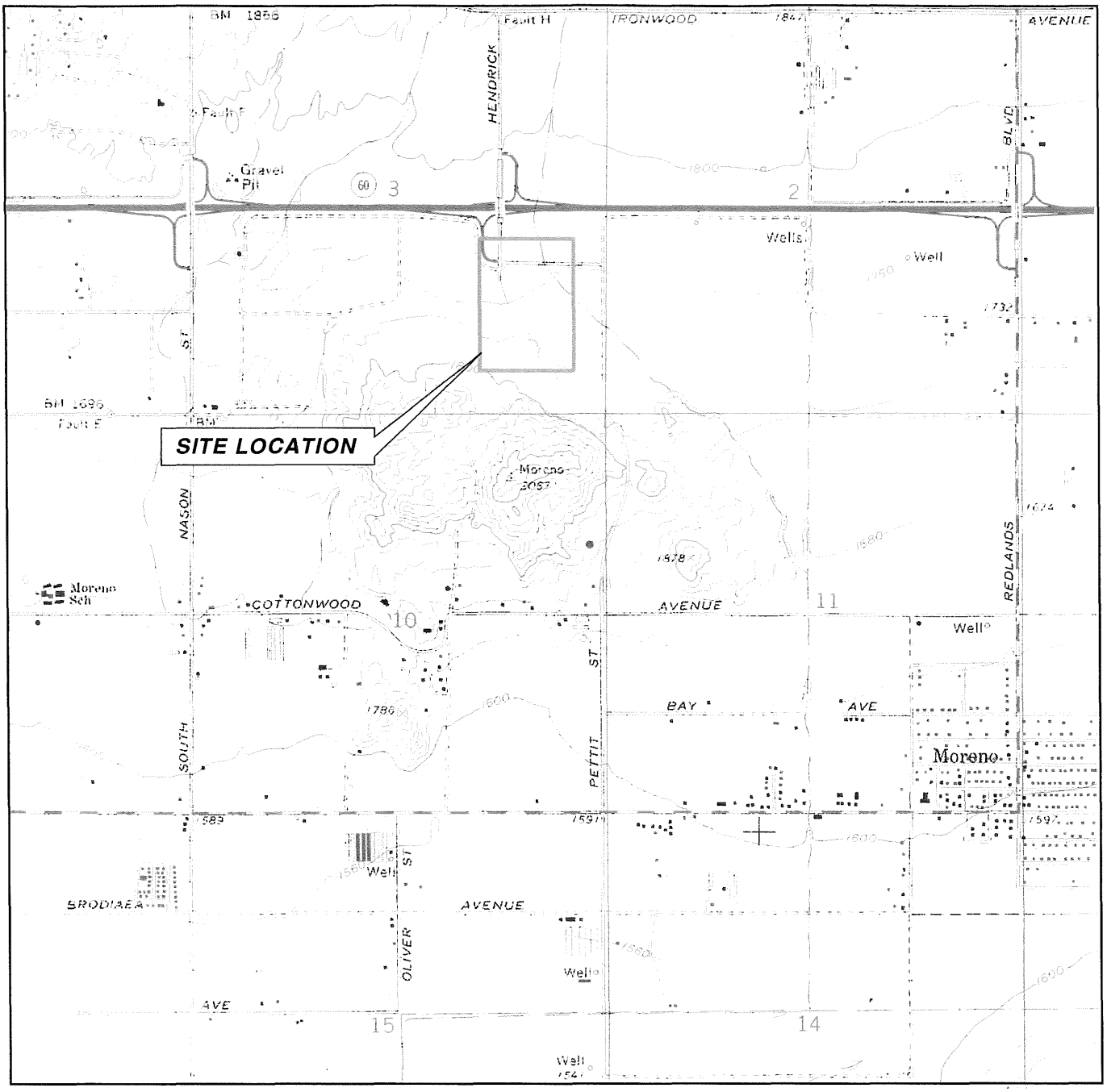
An environmental database report prepared by VISTA was reviewed for local, state, and federal listings for properties within the site area. Regulatory database lists were reviewed for cases pertaining to leaking aboveground and underground storage tanks, hazardous waste sites, and abandoned sites within the specified radii of standards established by the ASTM. None of the facilities listed on the VISTA report appear to represent recognized environmental conditions due to their distance from the Site, type of release, groundwater flow patterns, soil characteristics or successful remediation.

5.0 RECOMMENDATIONS

Based upon the findings of this Phase I ESA, LFR does not recommend additional investigation of the Site at this time.

APPENDIX A

Maps and Figures



MAP SOURCE: U.S.G.S Topographic Map, 7.5' Quadrangle, Sunnymead, California, 1980.

N

0 1,000 2,000 4,000 feet

7094-02 _ 030700CAB/ ryk

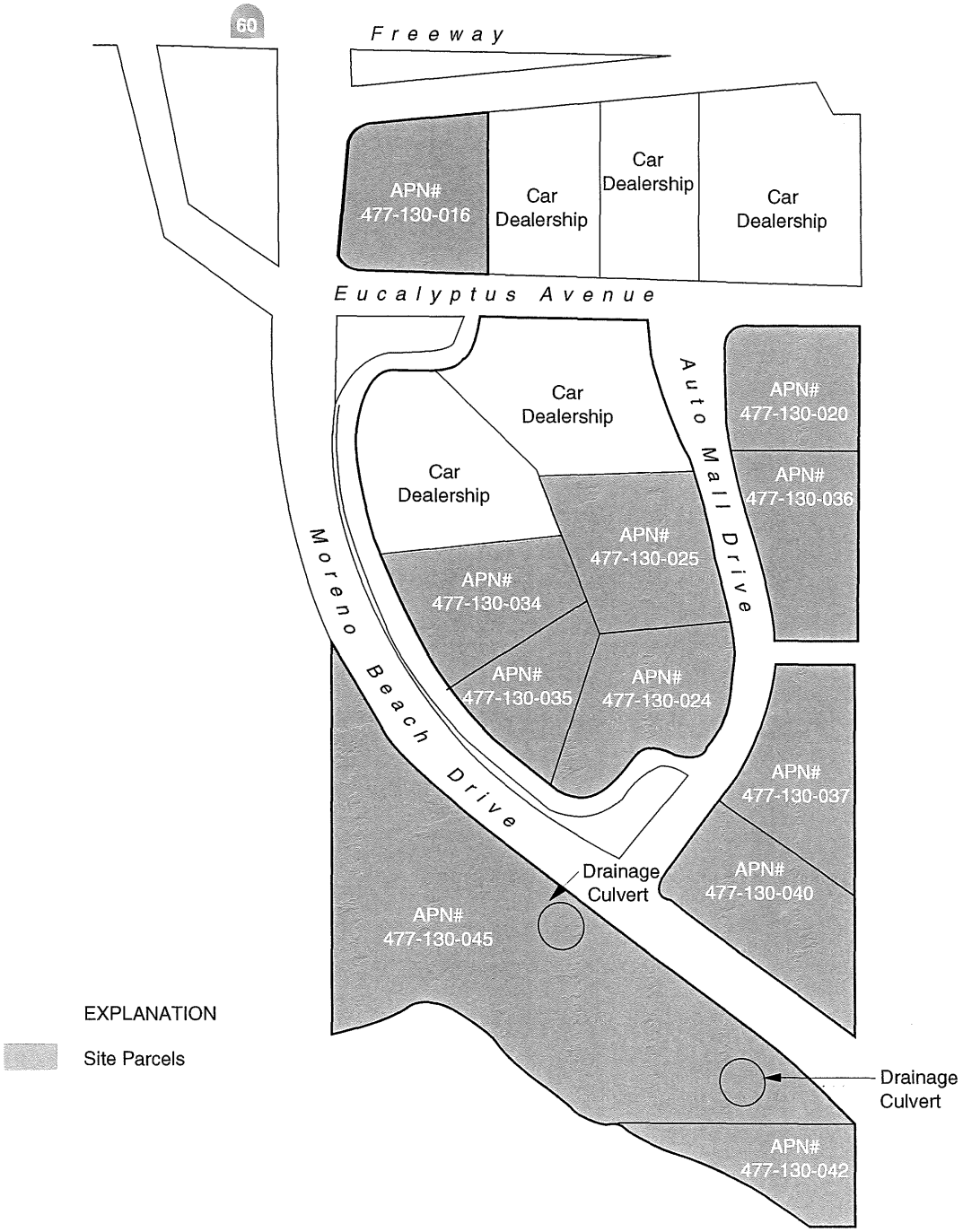
Moreno Valley Auto Mall

LFR LEVINE • FRICKE

Site Vicinity

Figure 1

Pro



30-Acre Site

Site Plan Map

Figure 2
Project No. 7094

7094-01_030700CAB/ ryk

LFR LEVINE•FRICKE

APPENDIX B

Current Ground-Level Photographs

1

Northwest portion of site. Auto Mall Drive ir the foreground and dealerships in background.

2

West view of parcel 47 130-045.

3

View of parcel 477-13 016. View is northeast Note dealership lot an Highway 60 in the background.

4

Typical view of vegetation on the Site. View is south.

5

General trash and debris found on the Site.

6

Adjacent orange orchar located east of the Site. Small debris pile in the foreground.

7

West view of Site. Note hilly terrain in the background.

8

Fenced drainage culver found on the western portion of the Site

9

Northeast view of site featuring Auto Mall Drive (foreground), parcel 477-130-020 wi adjacent dealership (background).

APPENDIX C

References

REFERENCES

American Society for Testing and Materials. 1997. E 1527-99 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process. May 10.

City of Moreno Valley Building, Planning, and Engineering Departments. 1988. Expanded Initial Study for the Moreno Valley Auto Mall Specific Plan. April.

County of San Bernardino Tax Assessor. Agency Records. March 2000.

Eastern Municipal Water District. Personal Communication, Jeff Hale. March 2000.

Norris, R.M. and R.W. Webb. 1990. *Geology of California*. New York: John Wiley & Sons, Inc.

Rupp Aerial Photography, 1141 Pomona Road, Suite G, Corona, CA 91720. Aerial photograph review. March 2000.

State of California, Department of Health Services. 1990. California Statewide Radon Survey.

United States Geological Survey. 1967. Topographic Map, 7.5 minute series, *Sunnymead*, San Bernardino County, CA, scale: 1:24,000. Photorevised 1980.

VISTA Environmental Solutions, Inc. 2000. Report ID #477601901. February 25.

APPENDIX D

Environmental Record Search Report

SITE ASSESSMENT PLUS REPORT

PROPERTY INFORMATION	CLIENT INFORMATION
Project Name/Ref #: 2U Moreno Valley SW corner of Hwy 60 Moreno Beach Blvd Moreno Valley, CA 92553 Latitude/Longitude: (33.934970, 117.175157)	Blake Hunter LFR LEVINE FRICKE 3150 Bristol Street Suite 250 Costa Mesa, CA 92626

Site Distribution Summary

Agency / Database - Type of Records			within 1/8 mile	1/8 to 1/4 mile	1/4 to 1/2 mile	1/2 to 1 mile
A) Databases searched to 1 mile:						
US EPA	NPL	National Priority List	0	0	0	0
US EPA	CORRACTS	RCRA Corrective Actions	0	0	0	0
STATE	SPL	State equivalent priority list	0	0	0	0
B) Databases searched to 1/2 mile:						
STATE	SCL	State equivalent CERCLIS list	0	0	0	-
US EPA	CERCLIS / NFRAP	Sites currently or formerly under review by US EPA	0	0	0	-
US EPA	TSD	RCRA permitted treatment, storage, disposal facilities	0	0	0	-
STATE REG CO	LUST	Leaking Underground Storage Tanks	0	0	0	-
STATE/ REG/CO	SWLF	Permitted as solid waste landfills, incinerators, or transfer stations	0	0	0	-
STATE	DEED RSTR	Sites with deed restrictions	0	0	0	-
STATE	CORTESE	State index of properties with hazardous waste	0	0	0	-
STATE	TOXIC PITS	Toxic Pits cleanup facilities	0	0	0	-
USGS/STATE	WATER WELLS	Federal and State Drinking Water Sources	0	0	1	-
C) Databases searched to 1/4 mile:						
US EPA	RCRA Viol	RCRA violations/enforcement actions	0	0	-	-
US EPA	TRIS	Toxic Release Inventory database	0	0	-	-
STATE	UST/AST	Registered underground or aboveground storage tanks	0	0	-	-

Site Distribution Summary Agency / Database - Type of Records			within 1/8 mile	1/8 to 1/4 mile	1/4 to 1/2 mile	1/2 to 1 mile
D) Databases searched to 1/8 mile:						
US EPA	ERNS	Emergency Response Notification System of spills	0	-	-	-
US EPA	GNRTR	RCRA registered small or large generators of hazardous waste	2	-	-	-

This report meets the ASTM standard E-1527 for standard federal and state government database research in a Phase I environmental site assessment. A (-) indicates a distance not searched because it exceeds these ASTM search parameters.

NOTES

SITE ASSESSMENT PLUS REPORT

SITE INVENTORY

MAP ID	PROPERTY AND THE ADJACENT AREA (within 1/8 mile)	VISTA ID / DISTANCE / DIRECTION	A			B										C			D	
			NPL	CORRACTS	SPL	SCL	CERCLIS/NFRAP	TSD	LUST	SWLF	DEED RSTR	CORTESE	TOXIC PITS	WATER WELLS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
1	MORINO VALLEY CHEV GEO OLDS 12625 AUTO MALL DR MORENO VALLEY, CA 92555	5209258 0.05 MI SE																	X
2	MORENO VALLEY HONDA 27910 EUCALYPTUS ST MORENO VALLEY, CA 92555	4061838 0.11 MI N																	X

MAP ID	SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile)	VISTA ID / DISTANCE / DIRECTION	A			B										C			D	
			NPL	CORRACTS	SPL	SCL	CERCLIS/NFRAP	TSD	LUST	SWLF	DEED RSTR	CORTESE	TOXIC PITS	WATER WELLS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
No Records Found																				

MAP ID	SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)	VISTA ID / DISTANCE / DIRECTION	A			B										C			D	
			NPL	CORRACTS	SPL	SCL	CERCLIS/NFRAP	TSD	LUST	SWLF	DEED RSTR	CORTESE	TOXIC PITS	WATER WELLS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
3	USGS WATER WELL ID #335619117100601 , CA	8849627 0.41 MI NE												X					

MAP ID	SITES IN THE SURROUNDING AREA (within 1/2 - 1 mile)	VISTA ID / DISTANCE / DIRECTION	A			B										C			D	
			NPL	CORRACTS	SPL	SCL	CERCLIS/NFRAP	TSD	LUST	SWLF	DEED RSTR	CORTESE	TOXIC PITS	WATER WELLS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR
No Records Found																				

SITE ASSESSMENT PLUS REPORT

DETAILS

PROPERTY AND THE ADJACENT AREA (within 1/8 mile)

VISTA Address*:	**MORINO VALLEY CHEV GEO OLDS** **12625 AUTO MALL DR** **MORENO VALLEY, CA 92555**	VISTA ID#: Distance/Direction: Plotted as:	5209258 0.05 MI / SE Point	Map ID **1**
RCRA-SmGen - RCRA-Small Generator / SRC# 6556		EPA ID:	CA0000367912	
Agency Address:	*SAME AS ABOVE*			
Generator Class:	*Generates 100 kg./month but less than 1000 kg./month of non-acutely hazardous waste*			

VISTA Address*:	**MORENO VALLEY HONDA** **27910 EUCALYPTUS ST** **MORENO VALLEY, CA 92555**	VISTA ID#: Distance/Direction: Plotted as:	4061838 0.11 MI / N Point	Map ID **2**
RCRA-SmGen - RCRA-Small Generator / SRC# 6556		EPA ID:	CAD983668021	
Agency Address:	*SAME AS ABOVE*			
Generator Class:	*Generates 100 kg./month but less than 1000 kg./month of non-acutely hazardous waste*			

SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile)

No Records Found

SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)

VISTA Address*:	**USGS WATER WELL ID #335619117100601** **CA**	VISTA ID#: Distance/Direction: Plotted as:	8849627 0.41 MI / NE Point	Map ID **3**
USGS Wells - Federal Drinking Water Sources / SRC# 5384		EPA/Agency ID:	N/A	
Agency Address:	*SAME AS ABOVE*			
Well ID:	*335619117100601*			
Latitude:	*33.938611111111*			
Longitude:	*-117.1683333333*			
Quadrangle Name:	*SUNNYMEAD*			
County FIPS:	*6065*			

SITES IN THE SURROUNDING AREA (within 1/2 - 1 mile)

No Records Found

UNMAPPED SITES

No Records Found

SITE ASSESSMENT PLUS REPORT

DESCRIPTION OF DATABASES SEARCHED

A) DATABASES SEARCHED TO 1 MILE

NPL
SRC#: 6558

VISTA conducts a database search to identify all sites within 1 mile of your property.
The agency release date for NPL was January, 2000.

The National Priorities List (NPL) is the EPA's database of uncontrolled or abandoned hazardous waste sites identified for priority remedial actions under the Superfund program. A site must meet or surpass a predetermined hazard ranking system score, be chosen as a state's top priority site, or meet three specific criteria set jointly by the US Dept of Health and Human Services and the US EPA in order to become an NPL site.

SPL
SRC#: 6599

VISTA conducts a database search to identify all sites within 1 mile of your property.
The agency release date for Calsites Database: Annual Workplan Sites was October, 1999.

This database is provided by the Cal. Environmental Protection Agency, Dept. of Toxic Substances Control. The agency may be contacted at: 916-323-3400.

CORRACTS
SRC#: 6556

VISTA conducts a database search to identify all sites within 1 mile of your property.
The agency release date for HWDMS/RCRIS was December, 1999.

The EPA maintains this database of RCRA facilities which are undergoing "corrective action". A "corrective action order" is issued pursuant to RCRA Section 3008 (h) when there has been a release of hazardous waste or constituents into the environment from a RCRA facility. Corrective actions may be required beyond the facility's boundary and can be required regardless of when the release occurred, even if it predates RCRA.

B) DATABASES SEARCHED TO 1/2 MILE

CERCLIS
SRC#: 6474

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for CERCLIS was October, 1999.

The CERCLIS List contains sites which are either proposed to or on the National Priorities List(NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL. The information on each site includes a history of all pre-remedial, remedial, removal and community relations activiies or events at the site, financial funding information for the events, and unrestricted enforcement activities.

Cal Cerclis
SRC#: 2462

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for Ca Cerclis w/Regional Utility Description was June, 1995.

This database is provided by the U.S. Environmental Protection Agency, Region 9. The agency may be contacted at: . These are regional utility descriptions for California CERCLIS sites.

NFRAP
SRC#: 6475

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for CERCLIS-NFRAP was October, 1999.

NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly, or the contamination was not serious enough to require Federal Superfund action or NPL consideration.

SCL
SRC#: 6598

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for Calsites Database: All Sites except Annual Workplan Sites (incl. ASPIS) was October, 1999.

This database is provided by the Department of Toxic Substances Control. The agency may be contacted at: .

The CalSites database includes both known and potential sites. Two- thirds of these sites have been classified, based on available information, as needing "No Further Action" (NFA) by the Department of Toxic Substances Control. The remaining sites are in various stages of review and remediation to determine if a problem exists at the site. Several hundred sites have been remediated and are considered certified. Some of these sites may be in long term operation and maintenance.

RCRA-TSD
SRC#: 6556

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for HWDMS/RCRIS was December, 1999.

The EPA's Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Facilities database is a compilation by the EPA of facilities which report generation, storage, transportation, treatment or disposal of hazardous waste. RCRA TSDs are facilities which treat, store and/or dispose of hazardous waste.

SWLF
SRC#: 5945

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for City of Los Angeles Landfills was April, 1999.

This database is provided by the City of Los Angeles, Environmental Affais Department. The agency may be contacted at: 213-580-1070.

SWLF
SRC#: 6544

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for Ca Solid Waste Information System (SWIS) was November, 1999.

This database is provided by the Integrated Waste Management Board. The agency may be contacted at: 916-255-4021.

The California Solid Waste Information System (SWIS) database consists of both open as well as closed and inactive solid waste disposal facilities and transfer stations pursuant to the Solid Waste Management and Resource Recovery Act of 1972, Government Code Section 2.66790(b). Generally, the California Integrated Waste Management Board learns of locations of disposal facilities through permit applications and from local enforcement agencies.

Riverside County Landfill SRC#: 6458

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for Exempt Site Inventory List within Riverside County was May, 1999.**

This database is provided by the Riverside Department of Health, Local Solid Waste Enforcement Agency. The agency may be contacted at: 909-275-8980.

WMUDS SRC#: 5857

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for Waste Management Unit Database System (WMUDS) was February, 1999.**

This database is provided by the State Water Resources Control Board. The agency may be contacted at: 916-892-0323. This is used for program tracking and inventory of waste management units. This system contains information from: Facility, Waste Management Unit, SWAT Program and Report Summary Information, Chapter 15 (formerly Subchapter 15), TPCA and RCRA Program Information, Closure Information; also some information from the WDS (Waste Discharge System).

The WMUDS system also accesses information from the following databases from the Waste Discharger System (WDS): Inspections, Violations, and Enforcements. The sites contained in these databases are subject to the California Code of Regulations - Title 23. Waters.

LUST SRC#: 5873

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for Region #9-SLIC List was August, 1996.**

This database is provided by the Regional Water Quality Control Board, Region #9. The agency may be contacted at: 619-467-2980.

LUST RG6 SRC#: 6275

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for Lahontan Region LUST List was August, 1999.**

This database is provided by the Lahontan Region Six South Lake Tahoe. The agency may be contacted at: 530-542-5400.

LUST SRC#: 6277

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for Region #8-SLIC List was July, 1999.**

This database is provided by the Regional Water Quality Control Board, Region #8. The agency may be contacted at: 909-782-4499.

LUST RG8 SRC#: 6542

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for Region #8-Santa Ana Regional Underground Tank Database List was October, 1999.**

This database is provided by the Regional Water Quality Control Board, Region #8. The agency may be contacted at: 909-782-4499.

Riverside County Cleanup SRC#: 6594

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for Riverside County-Listing of Underground Tank Cleanup Sites was November, 1999.**

This database is provided by the Riverside County Environmental Health Department, Haz Mat Division. The agency may be contacted at: 909-358-5055.

LUST RG9
SRC#: 6597

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for Region #9 Leaking Underground Storage Tank List was October, 1999.**

This database is provided by the Regional Water Quality Control Board, Region #9. The agency may be contacted at: 619-467-2980.

LUST
SRC#: 6658

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for Lust Information System (LUSTIS) was January, 2000.**

This database is provided by the California Environmental Protection Agency. The agency may be contacted at: 916-445-6532.

LUST RG7
SRC#: 6661

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for Region #7-Colorado River Basin Leaking Underground Storage Tank Listing was November, 1999.**

This database is provided by the Regional Water Quality Control Board, Region #7. The agency may be contacted at: 760-346-7491.

CORTESE
SRC#: 4840

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for Cortese List-Hazardous Waste Substance Site List was April, 1998.**

This database is provided by the Office of Environmental Protection, Office of Hazardous Materials. The agency may be contacted at: 916-445-6532.

The California Governor's Office of Planning and Research annually publishes a listing of potential and confirmed hazardous waste sites throughout the State of California under Government Code Section 65962.5. This database (CORTESE) is based on input from the following: (1)CALSITES-Department of Toxic Substances Control, Abandoned Sites Program Information Systems; (2)SARA Title III Section III Toxic Chemicals Release Inventory for 1987, 1988, 1989, and 1990; (3)FINDS; (4)HWIS-Department of Toxic Substances Control, Hazardous Waste Information System. Vista has not included one time generator facilities from Cortese in our database.; (5)SWRCB-State Water Resources Control Board; (6)SWIS-Integrated Waste Management Control Board (solid waste facilities); (7)AGT25-Air Resources Board, dischargers of greater than 25 tons of criteria pollutants to the air; (8)A1025-Air Resources Board, dischargers of greater than 10 and less than 25 tons of criteria pollutants to the air; (9)LTANK-SWRCB Leaking Underground Storage Tanks; (10)UTANK-SWRCB Underground tanks reported to the SWEEPS systems; (11)IUR-Inventory Update Rule (Chemical Manufacturers); (12)WB-LF- Waste Board - Leaking Facility, site has known migration; (13)WDSE-Waste Discharge System - Enforcement Action; (14)DTSCD-Department of Toxic Substance Control Docket.

Deed Restrictions SRC#: 1703

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for Deed Restriction Properties Report was April, 1994.

This database is provided by the Department of Health Services-Land Use and Air Assessment. The agency may be contacted at: 916-255-2014. These are voluntary deed restriction agreements with owners of property who propose building residences, schools, hospitals, or day care centers on property that is "on or within 2,000 feet of a significant disposal of hazardous waste".

California has a statutory and administrative procedure under which the California Department of Health Services (DHS) may designate real property as either a "Hazardous Waste Property" or a "Border Zone Property" pursuant to California Health Safety Code Sections 25220-25241. Hazardous Waste Property is land at which hazardous waste has been deposited, creating a significant existing or potential hazard to public health and safety. A Border Zone Property is one within 2,000 feet of a hazardous waste deposit. Property within either category is restricted in use, unless a written variance is obtained from DHS. A Hazardous Waste Property designation results in a prohibition of new uses, other than a modification or expansion of an industrial or manufacturing facility on land previously owned by the facility prior to January 1, 1981. A Border Zone Property designation results in prohibition of a variety of uses involving human habitation, hospitals, schools and day care center.

Toxic Pits SRC#: 2229

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for Summary of Toxic Pits Cleanup Facilities was February, 1995.

This database is provided by the Water Quality Control Board, Division of Loans Grants. The agency may be contacted at: 916-227-4396.

Water Wells SRC#: 5384

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for USGS WATER WELLS was March, 1998.

The Ground Water Site Inventory (GWSI) database was provided by the United States Geological Survey (USGS). The database contains information for over 1,000,000 wells and other sources of groundwater which the USGS has studied, used, or otherwise had reason to document through the course of research. The agency may be contacted at 703-648-6819.

C) DATABASES SEARCHED TO 1/4 MILE

RCRA-Viols/Enf

VISTA conducts a database search to identify all sites within 1/4 mile of your property.
The agency release date for HWDMS/RCRIS was December, 1999.

The EPA's Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Facilities database is a compilation by the EPA of facilities which report generation, storage, transportation, treatment or disposal of hazardous waste. RCRA Violators are facilities which have been cited for RCRA Violations at least once since 1980. RCRA Enforcements are enforcement actions taken against RCRA violators.

UST's
SRC#: 1612

VISTA conducts a database search to identify all sites within 1/4 mile of your property.
The agency release date for Underground Storage Tank Registrations Database was January, 1994.

This database is provided by the State Water Resources Control Board, Office of Underground Storage Tanks. The agency may be contacted at: 916-227-4364; Caution-Many states do not require registration of heating oil tanks, especially those used for residential purposes.

UST's
SRC#: 6659

VISTA conducts a database search to identify all sites within 1/4 mile of your property.
The agency release date for Riverside County UST List was January, 2000.

This database is provided by the Riverside County Environmental Health. The agency may be contacted at: 909-358-5055; Caution-Many states do not require registration of heating oil tanks, especially those used for residential purposes.

AST's
SRC#: 6669

VISTA conducts a database search to identify all sites within 1/4 mile of your property.
The agency release date for Aboveground Storage Tank Database was December, 1999.

This database is provided by the State Water Resources Control Board. The agency may be contacted at: 916-227-4364.

TRIS
SRC#: 4946

VISTA conducts a database search to identify all sites within 1/4 mile of your property.
The agency release date for TRIS was January, 1998.

Section 313 of the Emergency Planning and Community Right-to-Know Act (also known as SARA Title III) of 1986 requires the EPA to establish an inventory of Toxic Chemicals emissions from certain facilities(Toxic Release Inventory System). Facilities subject to this reporting are required to complete a Toxic Chemical Release Form(Form R) for specified chemicals.

D) DATABASES SEARCHED TO 1/8 MILE

ERNS
SRC#: 6181

VISTA conducts a database search to identify all sites within 1/8 mile of your property.
The agency release date for was August, 1999.

The Emergency Response Notification System (ERNS) is a national database containing records from October 1986 to the release date above and is used to collect information for reported releases of oil and hazardous substances. The database contains information from spill reports made to federal authorities including the EPA, the US Coast Guard, the National Response Center and the Department of Transportation. The ERNS hotline number is (202) 260-2342.

RCRA-LgGen
SRC#: 6556

VISTA conducts a database search to identify all sites within 1/8 mile of your property.
The agency release date for HWDMS/RCRIS was December, 1999.

The EPA's Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Facilities database is a compilation by the EPA of facilities which report generation, storage, transportation, treatment or disposal of hazardous waste. RCRA Large Generators are facilities which generate at least 1000 kg./month of non-acutely hazardous waste (or 1 kg./month of acutely hazardous waste).

RCRA-SmGen VISTA conducts a database search to identify all sites within 1/8 mile of your property.
SRC#: 6556 **The agency release date for HWDMS/RCRIS was December, 1999.**

The EPA's Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Facilities database is a compilation by the EPA of facilities which report generation, storage, transportation, treatment or disposal of hazardous waste. RCRA Small and Very Small generators are facilities which generate less than 1000 kg./month of non-acutely hazardous waste.

End of Report

APPENDIX G: PRELIMINARY DRAINAGE STUDY

PRELIMINARY DRAINAGE STUDY

PEN19-0047/LST19-0008
Car Pros-Kia Sales and Service Facility
APN: 488-390-015 & -016

May 2019

PREPARED FOR:

Car Pros Automotive Group
181 S. 333rd Street Building C, Suite 210
Federal Way, WA 98002

PREPARED BY:

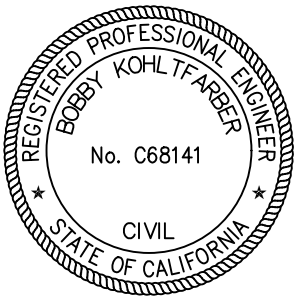
Kimley»Horn

3880 Lemon Street Suite 420
Riverside, CA 92501
(951) 543-9868

KHA Project # 194117001

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.



05/17/2019

Bobby Kohltfarber, PE — Date

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Exhibit 2 – FIRM Map
Exhibit 3 – Existing Drainage Map
Exhibit 4 – Proposed Drainage Map
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Appendices

Appendix A – Existing Hydrology Calculations – 10 Year Rainfall Frequency
Appendix B – Existing Hydrology Calculations – 100 Year Rainfall Frequency
Appendix C – Proposed Hydrology Calculations – 10 Year Rainfall Frequency
Appendix D – Proposed Hydrology Calculations – 100 Year Rainfall Frequency
Appendix E – Existing Hydrology Calculations – 2 Year Rainfall Frequency
Appendix F – Proposed Hydrology Calculations – 2 Year Rainfall Frequency
Appendix G – Geotechnical Investigation and Percolation Test Results
Appendix H –Hydrology Reference Material

References

Hydrology Manual. Riverside County Flood Control and Water Conservation District, April 1978.

Section 100

100.0 Introduction

Kimley-Horn and Associates, Inc. (KHA) has been retained to prepare a Preliminary Drainage Study for the proposed Car Pros Kia Sales and Service Facility in the City of Moreno Valley, California. The intention of this report is to comply with the requirements of the Riverside County Hydrology Manual to assist in the development of the existing site.

AES software was used to calculate the appropriate time of concentration for each subarea. The RCFC & WCD Hydrology Manual was utilized to determine runoff coefficients for each drainage area based on land use type, hydrologic soil group, and Antecedent Moisture Condition (AMC). Runoff coefficients for the project were determined using AES (Plate D-5.7 of the RCFC & WCD).

Per Riverside County Stormwater and Water Conservation Tracking Tool, the site consists of Type A and B soil which has a low potential for runoff and a high infiltration capacity. However, based on the Geotechnical Investigation and Percolation Test Results Report prepared by Geocon West, Inc on January 18, 2019 (See Appendix G) it was concluded that infiltration is between the ranges of 0.01 to 0.31 in/hr. Therefore, on-site soils will be classified as D for all calculations.

Due to the nature of the project, this report will be accompanied by a Water Quality Management Plan.

100.1 Project Description

The proposed development consists of the construction of an approximately 43,867 square foot building and associated improvements. The associated improvements include but are not limited to the following: site grading, domestic water service, sanitary sewer service, concrete and asphalt pavement, landscaping and irrigation, underground storm drain system, and modular wetland systems. The proposed development also includes a future car wash, and sales and service facility, which will be part of a later phase and do not alter the imperviousness proposed for the site.

The lot area is approximately 6.19 acres. The project proposes to treat the runoff required per the water quality requirements, as necessary.

The purpose of this report is to provide information regarding the Storm Water Management System (SWMS) design for the proposed development. This investigation was conducted to evaluate the hydrologic conditions in the existing and proposed conditions of the site. Hydraulic calculations to determine the sizing requirements for the proposed on-site drainage system will be provided in the Final Drainage Study.

100.2 Location

The project is located at the northeast corner of Moreno Beach Drive and Auto Mall Drive in Moreno Valley, CA. The project is bounded by a vacant lot to the east, Pettit Street to the north, Auto Mall Drive to the west, and Moreno Beach Drive to the south.

For reference, see **Exhibit 1**, *Location Map*.

100.3 Drainage Characteristics

The site is located in Zone X per the Federal Emergency Management Administration (FEMA) Flood Insurance Rate Map (FIRM) panel 06065C0770G, dated August 28, 2008. Flood Zone X is defined by FEMA as the area determined to be outside the 500-year flood. No portion of the site is located within the special flood hazard area inundated by the 100-year flood.

For reference, see **Exhibit 2**, *FIRM Map.*

100.3.1 Pre-development Condition

The site is currently undeveloped. The existing site has varying topography. The post-development drainage area is comprised of two (2) sub-areas. Approximately half of the site currently drains west and is captured by a 96" RCP along Pettit Street that discharges through an outlet structure adjacent to the site. The other half drains east and is captured by an existing 18" RCP that discharges through an existing headwall at the south-east corner of the site. For both drainage systems, storm water continues east via surface flow until it eventually reaches the Quincy Street Channel.

The existing 96" RCP is referred to as Line G under the Moreno Master Drainage Plan (MDP) and is currently sized to account for the commercial drainage areas proposed to discharge to the system. The existing 18" RCP is currently sized for a 100-year flowrate of 8.7 cfs per Parcel Map 23244 Storm Drain Plans. Reference material is included in Appendix H.

Table 1 shows a summary of the pre-development flows for 10 and 100-year storm events.

Table 1: Existing Hydrology Results

Sub-basin ID	Drainage Area (AC)	Q_{10} (cfs)	Q_{100} (cfs)
DMA-1	2.96	4.12	6.33
DMA-2	3.23	5.58	8.51

For an exhibit of the pre-development drainage condition, see **Exhibit 3**, Existing *Drainage Map*. See Appendix A and B for AES outputs.

100.3.2 Post-development Condition

The proposed development includes the construction of a car sales and service facility accompanied by asphalt pavement, concrete hardscape, and landscaping. The proposed development also includes a future car wash, and an expansion to the sales and service facility, which will be part of a later phase and do not alter the imperviousness proposed for the site. The proposed site grading intends to maintain the existing natural flow pattern by having about half of the site drain into the existing 96" RCP, while the other half drains to the existing headwall at the south-east corner.

The post-development drainage area is comprised of three (3) sub-areas. DMA-1 and DMA-2 are intercepted by two proposed inlets on-site, are treated through proposed modular wetland systems and then discharged to the proposed on-site storm drain system that is proposed to connect to the existing 96" RCP on Pettit Street, which has been sized to accept the discharge from our site with a commercial land use. DMA-1 and DMA-2 are expected to discharge 6.05 cfs under the 100-year condition which is less than the 6.33 cfs that currently discharges to the existing Line G. DMA-3 is intercepted by a proposed inlet on-site, treated through a proposed modular wetland system and then discharged to the proposed on-site storm drain system that is proposed to connect to the existing headwall on the south-east corner. DMA-3 is expected to discharge 8.13 cfs under the 100-year condition which is less than the 8.7 cfs that currently discharges from the existing 18" RCP. See **Exhibit 4**, *Proposed Drainage Map*. The proposed modular wetland systems are limited by their individual flow capacity, which is much lower than the expected flows under a 100-year storm event, but the proprietary systems include a standard by-pass system on all of their models, which will allow high flows to by-pass the treatment process and discharge directly to the storm drain system downstream.

Table 2 shows a summary of the post-development flows for 10 and 100-year storm events.

Table 2: Proposed Hydrology Results

Sub-basin ID	Drainage Area (AC)	Q_{10} (cfs)	Q_{100} (cfs)
DMA-1 & DMA-2	2.05	4.15	6.05
DMA-3	3.64	5.55	8.13

For an exhibit of the post-development drainage condition, see **Exhibit 4**, *Proposed Drainage Map*. See Appendix C and D for AES outputs.

The proposed development has lower peak discharges under the 100-year storm event when compared to the pre-development conditions.

100.4 Storm Water Mitigation

100.4.1 General

The proposed development intends to maintain the commercial land use that was used to size Line G per the Moreno MDP. Additionally, the proposed development does not increase the peak discharges currently exiting the site under the 100-year storm event. Therefore, since the proposed development is not expected to cause adverse effects downstream of the site, the proposed site only proposes to address Riverside County's water quality requirements. The site is required to treat smaller storm rain events and the first flush of larger storms. Due to this the site is subject to hydromodification review. Hydromodification requires mitigation for a significant change in runoff in the post-development condition versus the pre-development condition for the 2-year, 24-hour condition. As discussed in the Water Quality Management Plan, when comparing the two

scenarios (pre and post), the developed runoff does not produce a significant enough increase to require storm water retention. Ultimately, storm water treatment and conveyance are the proposal for the development. Please see the Water Quality Management Plan for reference.

100.5 Conclusion

100.5 Conclusion

In conclusion, the development of the existing site into the proposed Car Pros Kia Sales and Service Facility in the 6.19-acre lot will not increase storm water discharge to the downstream system. The proposed site will use modular wetlands to treat the runoff before being discharged into the existing storm drain pipe on Pettit Street and the headwall located on the south-east corner of the project site.

EXHIBIT 1

Location Map

Attachment: Appendix G Drainage to Exhibit A (3665 : PEN19-0102 Initial Study and PEN19-0047 Plot Plan

EXHIBIT 2

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.

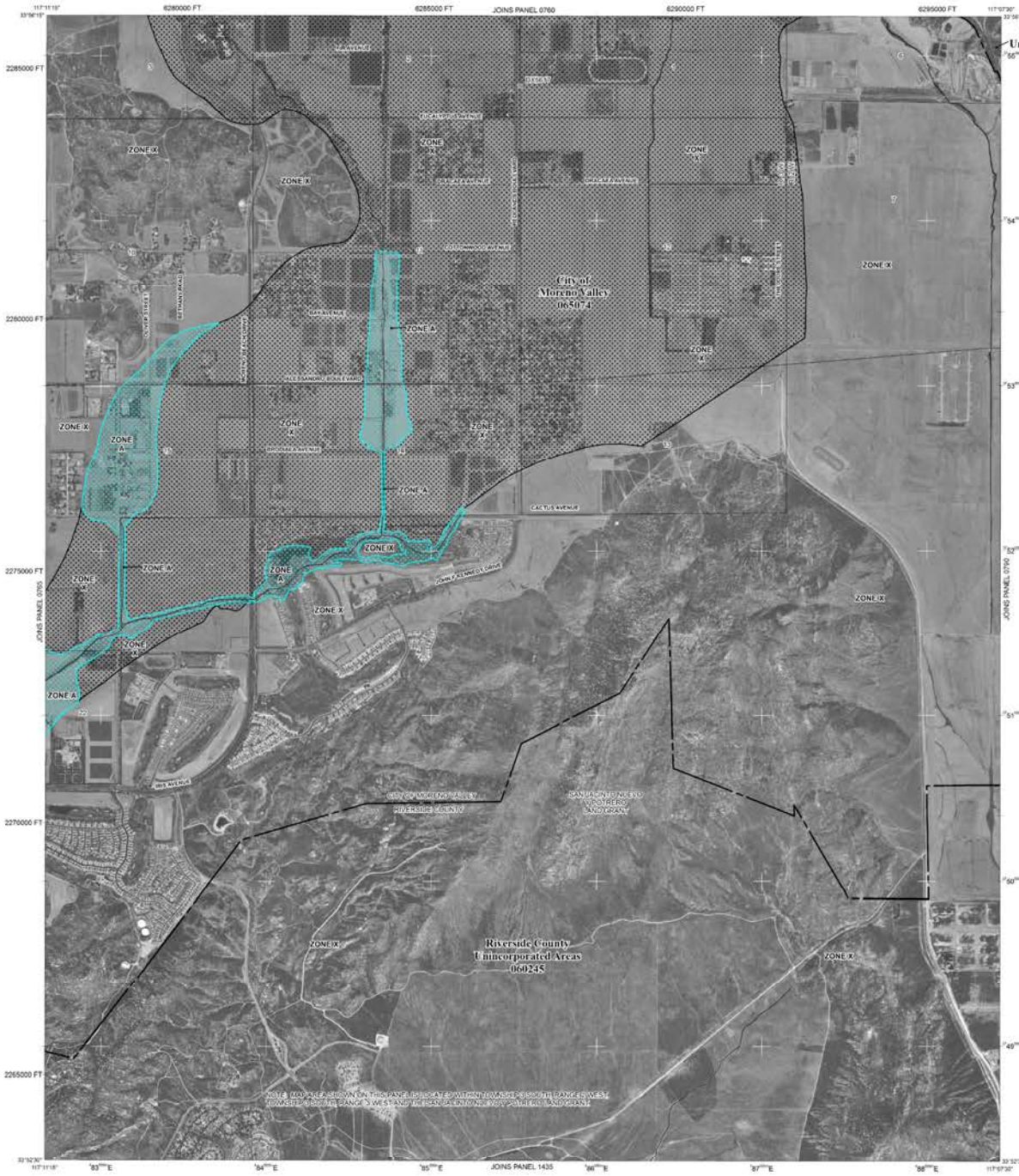
This map may reflect more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As 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 protected 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 Areas of different Base Flood Elevations, flood depths or flood velocities.
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*
- * Referenced to the North American Vertical Datum of 1988
- Cross section line
- Transect line
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4276000 mN — 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

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0770G

FIRM

FLOOD INSURANCE RAT

RIVERSIDE COUNTY, CALIFORNIA
AND INCORPORATED AREA

PANEL 770 OF 3805
(SEE MAP INDEX FOR FIRM PANEL

CONTAINS:

COMMUNITY	NUMBER	PAN
MORENO VALLEY, CITY OF	065074	077
RIVERSIDE COUNTY	060245	077

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
0606

EFFECTI
AUGUST

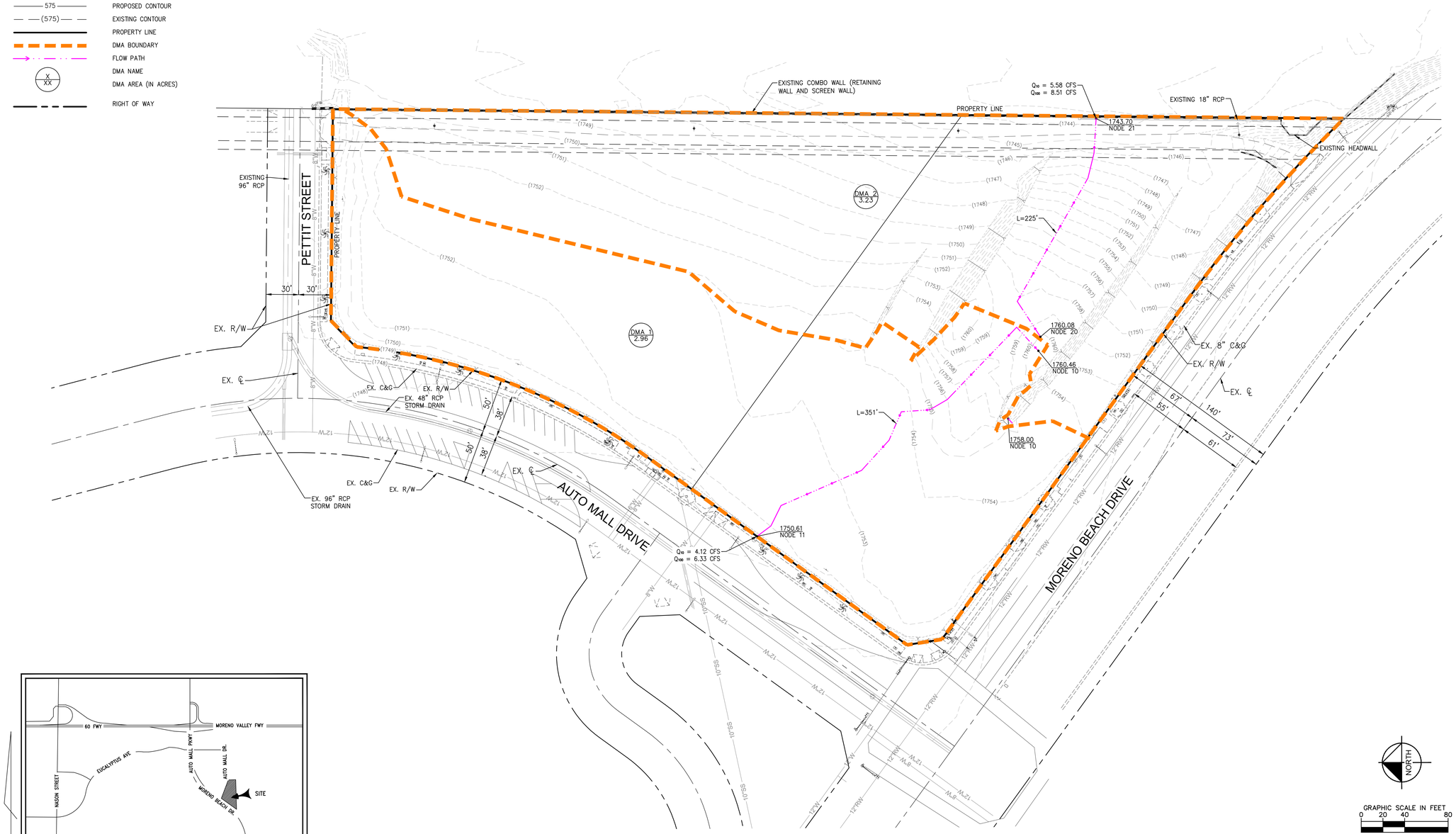
Federal Emergency Management Agency

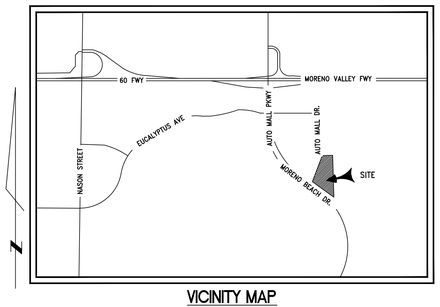
EXHIBIT 3

Existing Drainage Map

LEGEND

- 575 — PROPOSED CONTOUR
- (575) — EXISTING CONTOUR
- PROPERTY LINE
- DMA BOUNDARY
- FLOW PATH
- XX — DMA NAME
- X / XX — DMA AREA (IN ACRES)
- RIGHT OF WAY





VICINITY MAP
NTS

NORTH

GRAPHIC SCALE IN FEET
0 20 40 80
SCALE 1" = 40'

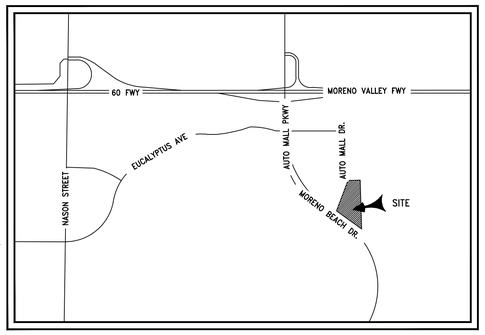
PEN 19-0047/LST19-0008

Kimley»Horn

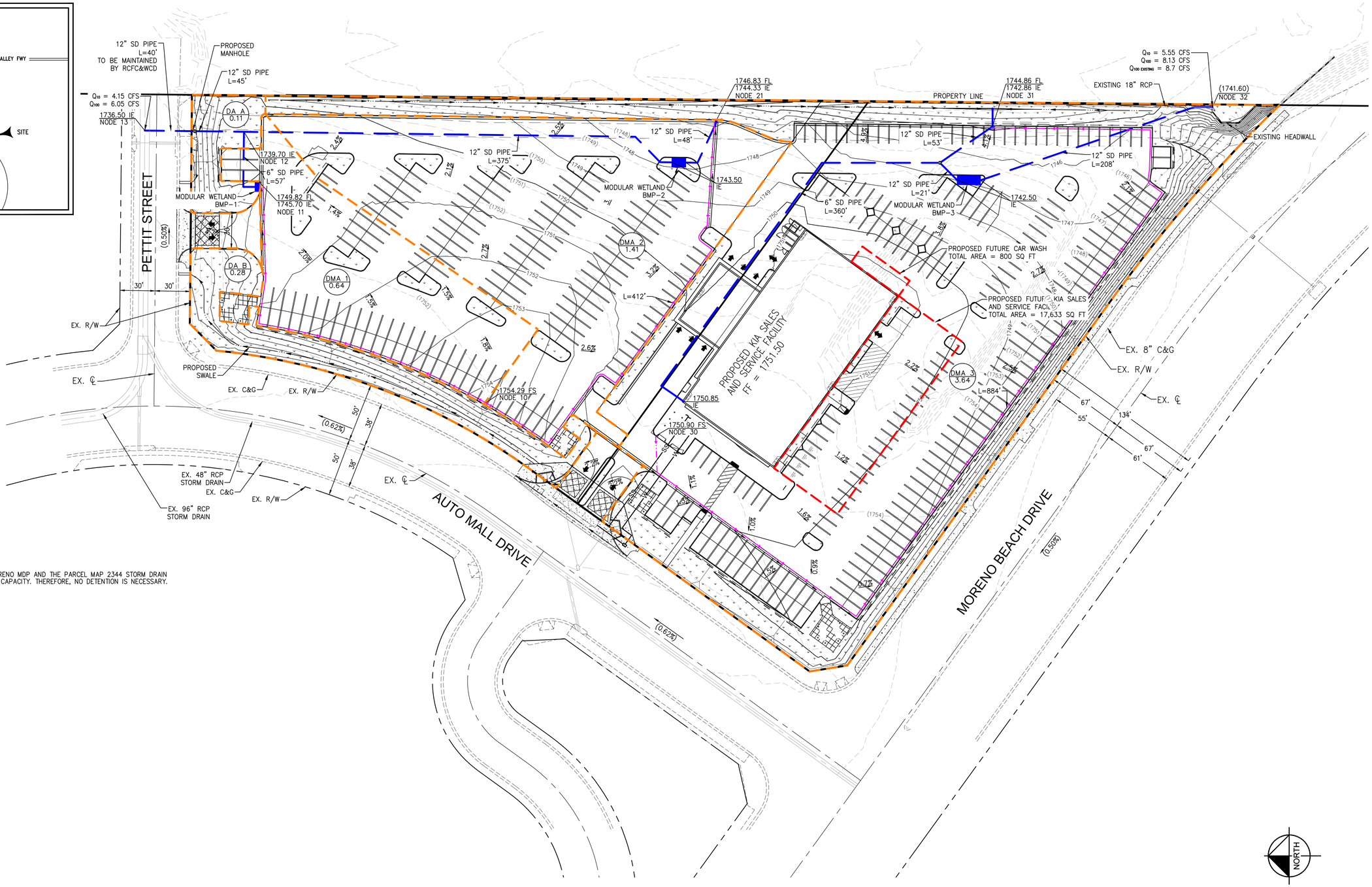
EXISTING DRAINAGE MAP
CAR PROS KIA SALES AND SERVICE FACILITY
5/17/2019

EXHIBIT 4

Proposed Drainage Map



VICINITY MAP
NTS



LEGEND

575	PROPOSED CONTOUR
(575)	EXISTING CONTOUR
	PROPERTY LINE
	DMA BOUNDARY
	FUTURE EXPANSION AREAS
	PROPOSED STORM DRAIN
	FLOW PATH
X / XX	DMA NAME / DMA AREA (IN ACRES)
	RIGHT OF WAY
	PROPOSED LANDSCAPE

NOTE: RECEIVING STORM DRAINS HAVE A SPECIFIED CAPACITY PER THE MORENO MDP AND THE PARCEL MAP 2344 STORM DRAIN PLANS. UNMITIGATED RUNOFF FROM THE PROJECT SITE IS LESS THAN THE CAPACITY. THEREFORE, NO DETENTION IS NECESSARY.

NORTH

GRAPHIC SCALE IN FEET
0 20 40 80
SCALE 1" = 40'

PEN 19-0047/LST19-0008

Kimley»Horn

PROPOSED DRAINAGE MAP
CAR PROS KIA SALES AND SERVICE FACILITY
5/17/2019

EXHIBIT 5

Preliminary Grading and Drainage Plans

CITY OF MORENO VALLEY
PLOT PLAN FOR
CAR PROS - KIA SALES AND SERVICE FACILITY

OWNER / APPLICANT:
MV HOLDINGS, LLC
181 S. 333RD STREET # C
FEDERAL WAY, WA 98003

OWNER'S REPRESENTATIVE / CONTACT
EPD SOLUTIONS
2030 MAIN STREET # 1200
IRVINE, CA 92614
(949) 278-5413
ANDREA ARCILLA
ANDREA@EPDSOLUTIONS.COM

ENGINEER
KIMLEY HORN & ASSOCIATES, INC.
3880 LEMON STREET # 420
RIVERSIDE, CA 92501
ATTN: BOBBY KOHLTFARBER
(951) 543-9870
BOBBY.KOHLTFARBER@KIMLEY-HORN.COM

ARCHITECT
CARLILE COATSWORTH ARCHITECTS, INC.
2495 CAMPUS DRIVE, 2ND FLOOR
ORVINE, CA 92612
(949) 833-1930
JAMIE C. POLADIAN, AIA

SURVEY
GRENIER AND SONS
28212 HORIZON CT
SUN CITY, CA 92585
ATTN: ANDY GRENIER, LS 7891
(951) 543-8462
ANDYG@GRENIER-AND-SONS.COM

SURVEY DATE
FEBRUARY 19, 2019

DATE PREPARED
5/17/19

LEGAL DESCRIPTION
PARCEL 7 AND 8 OF PARCEL MAP NO. 23244, IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 161, PAGES 16 THROUGH 24 INCLUSIVE OF PARCEL MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

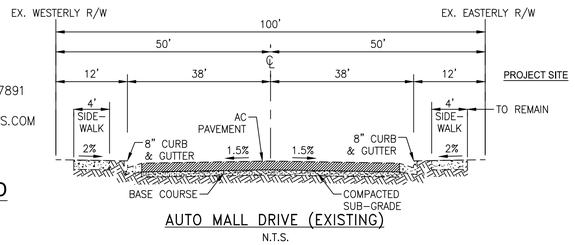
FEMA
THE SUBJECT PROPERTY LIES WITHIN ZONE "X" – AREAS OF 0.2% ANNUAL CHANCE FLOOD SHOWN ON FLOOD INSURANCE RATE MAP PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, COMMUNITY.PANEL NUMBER 06065C0770G, WHICH BEARS AN EFFECTIVE DATE AUGUST 28, 2008.

PROPERTY ADDRESS
NORTHEAST CORNER OF AUTO MALL DRIVE AND MORENO BEACH DRIVE INTERSECTION IN THE CITY OF MORENO VALLEY, CALIFORNIA.

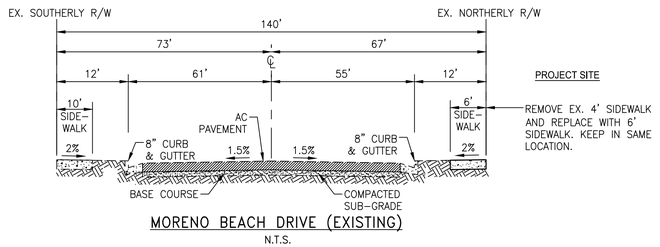
EASEMENTS
- ITEM 2D: THE FACT THAT THE OWNERSHIP OF SAID LAND DOES NOT INCLUDE RIGHTS OF ACCESS TO OR FROM MORENO BEACH DRIVE, SUCH RIGHTS HAVING BEEN RELINQUISHED BY PARCEL MAP NO. 23244.
- ITEM 6D: AN EASEMENT GRANTED TO SOUTHERN CALIFORNIA EDISON COMPANY, A CORPORATION FOR ELECTRIC SYSTEMS AND COMMUNICATION SYSTEMS PURPOSES RECORDED JULY 3, 1990 AS INSTRUMENT NO. 246837, OFFICIAL RECORDS.
- ITEM 8D: AN EASEMENT GRANTED TO GENERAL TELEPHONE COMPANY OF CALIFORNIA, A CORPORATION AND EASTERN MUNICIPAL WATER DISTRICT. A MUNICIPAL WATER DISTRICT FOR UTILITY PURPOSES RECORDED JUNE 22, 1990 AS INSTRUMENT NO. 231986, OFFICIAL RECORDS.
- ITEM 3C: AN EASEMENT FOR LANDSCAPE PURPOSES AS SHOWN OR AS OFFERED FOR DEDICATION ON PARCEL MAP 23244.
- ITEM 5C: AN EASEMENT GRANTED TO GENERAL TELEPHONE COMPANY OF CALIFORNIA, A CORPORATION AND EASTERN MUNICIPAL WATER DISTRICT. A MUNICIPAL WATER DISTRICT FOR UTILITY PURPOSES RECORDED JUNE 22, 1990 AS INSTRUMENT NO. 231986, OFFICIAL RECORDS.
- ITEM 6C: AN EASEMENT GRANTED TO SOUTHERN CALIFORNIA EDISON COMPANY, A CORPORATION FOR ELECTRIC SYSTEMS AND COMMUNICATION SYSTEMS PURPOSES RECORDED JULY 3,1990 AS INSTRUMENT NO. 246837, OFFICIAL RECORDS.

UTILITIES
WATER:	EASTERN MUNICIPAL WATER DISTRICT (800) 426-3693
SEWER	EASTERN MUNICIPAL WATER DISTRICT (800) 426-3693
TELEPHONE:	FRONTIER COMMUNICATIONS (855) 679-3074
GAS:	THE GAS COMPANY (800) 427-2200
ELECTRIC:	SO. CAL. EDISON CO. (800) 684-8123
CABLE:	SPECTRUM CABLE CO. (855) 757-7328

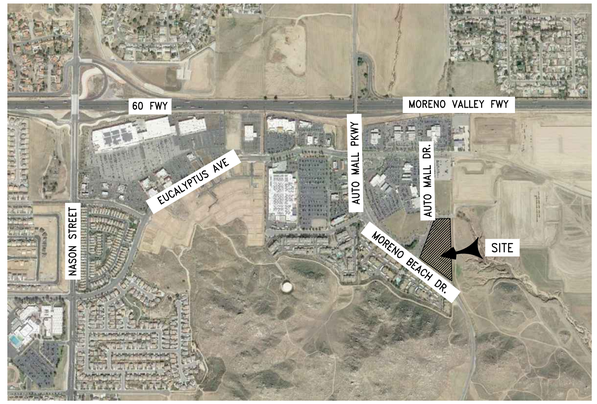
GENERAL NOTES:
1. ALL ROOF DRAINS TO DRAIN TO CONCRETE SPLASH PAD.
2. ROOF DRAINS TO BE DIRECTED TO A LANDSCAPE AREA.



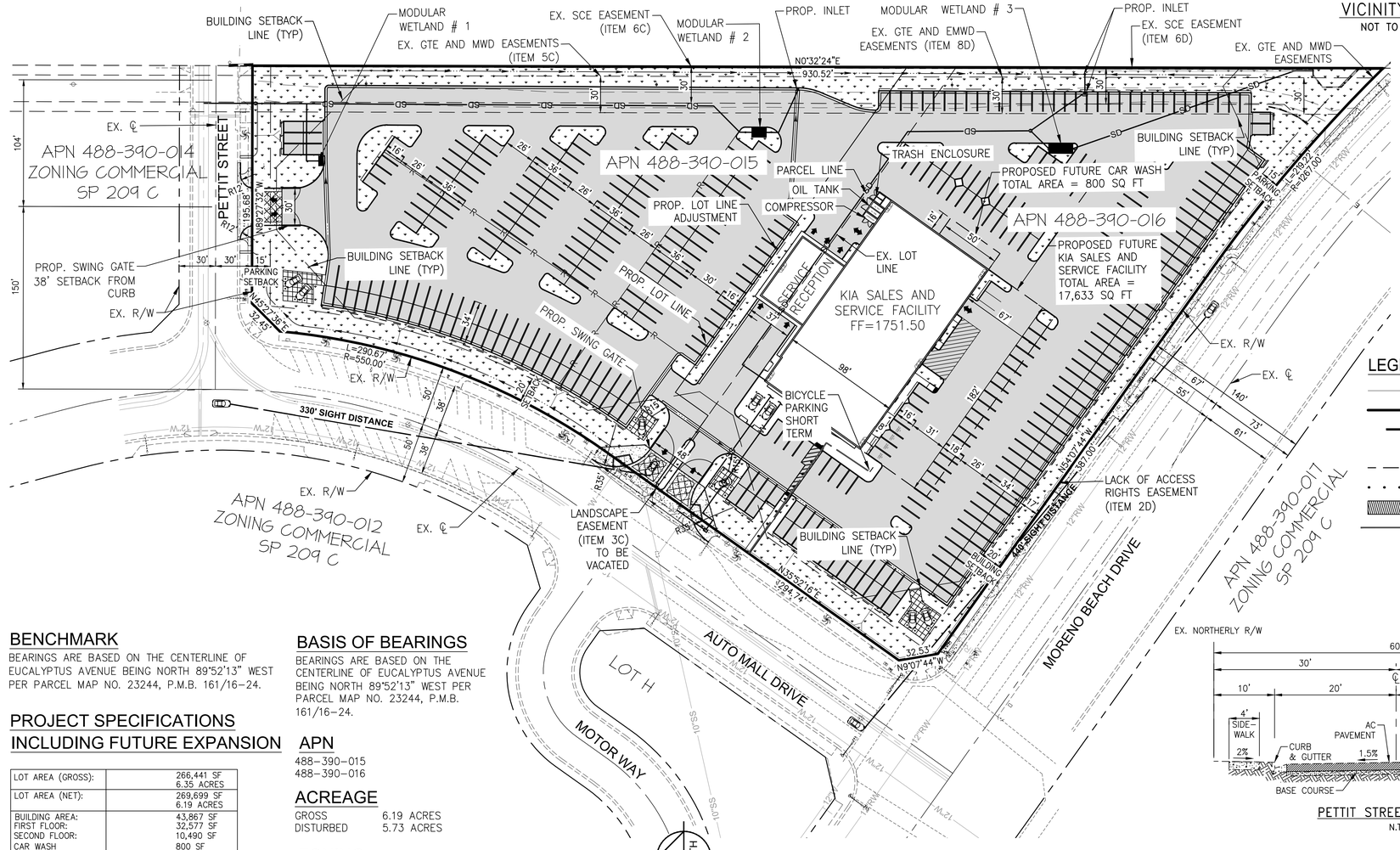
AUTO MALL DRIVE (EXISTING)
N.T.S.



MORENO BEACH DRIVE (EXISTING)
N.T.S.

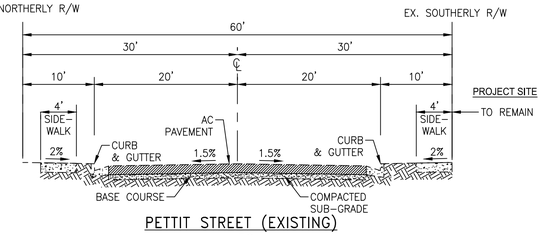


VICINITY MAP
NOT TO SCALE



ABBREVIATIONS:
AC	ACRES
APN	ASSESSOR'S PARCEL NUMBER
BLDG	BUILDING
CO	CLEAN OUT
EX	EXISTING
EG	EXISTING GROUND
FF	FINISHED FLOOR ELEVATION
FG	FINISHED GRADE
FH	FIRE HYDRANT
FL	FLOW LINE
FS	FINISHED SURFACE
FW	FIRE WATER
GB	GRADE BREAK
INV	INVERT
MH	MANHOLE
POC	POINT OF CONNECTION
PROP	PROPOSED
RL	RIDGE LINE
R/W	RIGHT-OF-WAY
SF	SQUARE FEET
STBK	SETBACK
SWLK	SIDEWALK
TC	TOP OF CURB
TRW	TOP OF RETAINING WALL
TYP	TYPICAL
C&G	CURB AND GUTTER

LEGEND
- CENTERLINE
- RIGHT-OF-WAY (R/W)
- STRIPING
- PROP. LIGHT
- FUTURE EXPANSION BLDG LIMITS
- ACCESSIBLE PATH OF TRAVEL
- 4' R/W DEDICATION
- BICYCLE PATH OF TRAVEL



PETTIT STREET (EXISTING)
N.T.S.

BENCHMARK
BEARINGS ARE BASED ON THE CENTERLINE OF EUCALYPTUS AVENUE BEING NORTH 89°52'13" WEST PER PARCEL MAP NO. 23244, P.M.B. 161/16-24.

BASIS OF BEARINGS
BEARINGS ARE BASED ON THE CENTERLINE OF EUCALYPTUS AVENUE BEING NORTH 89°52'13" WEST PER PARCEL MAP NO. 23244, P.M.B. 161/16-24.

PROJECT SPECIFICATIONS INCLUDING FUTURE EXPANSION

LOT AREA (GROSS):		266,441 SF 6.35 ACRES
LOT AREA (NET):		269,699 SF 6.19 ACRES
BUILDING AREA: FIRST FLOOR: SECOND FLOOR: CAR WASH		43,867 SF 32,577 SF 10,490 SF 800 SF
COVERAGE (ON NET):		12.38%
FLOOR AREA RATIO	(ON NET):	16.27%
PARKING REQUIRED: 24,414 SF @ 1 / 2,000 SF		22 SPACES
PARKING PROVIDED STANDARD: ADA		56 SPACES 52 SPACES 4 SPACES
LANDSCAPE PROVIDED:		60,680 SF (22.5%)

APN
488-390-015
488-390-016

ACREAGE
GROSS 6.19 ACRES
DISTURBED 5.73 ACRES

ZONING
SP 209-C
COMMERCIAL

CONTOUR INTERVAL
1'

GRAPHIC SCALE IN FEET
0 25 50 100
SCALE 1" = 50'

DIG BEFORE YOU DIG

IMPORTANT NOTICE
SECTION 4216/4217 OF THE GOVERNMENT CODE REQUIRES A DIG ALERT IDENTIFICATION NUMBER TO BE ISSUED BEFORE A "PERMIT TO EXCAVATE" WILL BE VALID.
UNDERGROUND SERVICE ALERT
TOLL FREE 1-800-422-4133
TWO WORKING DAYS BEFORE YOU DIG

DRAWN BY	RS
DESIGN BY	RS
CHECKED BY	BK

Kimley»Horn

3880 LEMON STREET, SUITE 420
RIVERSIDE, CA 92501
PHONE: (951) 543-9868
WWW.KIMLEY-HORN.COM

BOBBY KOHLTFARBER No. C68141 CIVIL

CITY OF MORENO VALLEY
PLOT PLAN
FOR
CAR PROS – KIA SALES AND SERVICE FACILITY
COVER SHEET

1
SHEET 1 OF 3
CITY I.D. NO.
PEN19-0047

PEN19-0047

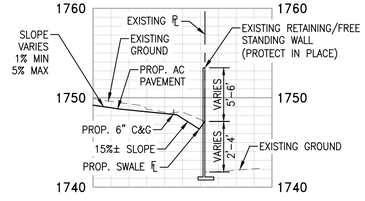
3RD REVIEW

WALL NOTE:

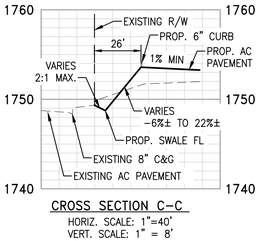
ADDITIONAL COURSES TO BE ADDED TO EXISTING WALL TO MAKE IT A MINIMUM OF 6' HIGH MEASURED FROM THE FINISH GRADE. IF SCE OWNS THE WALL, AN APPROVAL SHALL BE OBTAINED FROM SCE PRIOR TO ADDING COURSES FOR PROPER CLEARANCE TO THE EXISTING POWER LINES.

LEGEND

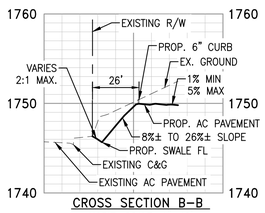
- CENTERLINE
- RIGHT–OF–WAY (R/W)
- STRIPING
- PROP. LIGHT
- 4' R/W DEDICATION
- FIRE TRUCK/DELIVERY TRUCK/ TRASH TRUCK CIRCULATION PER CALTRANS DESIGN MANUAL TURN TEMPLATES
- PROPOSED LOT LINE ADJUSTMENT



CROSS SECTION A–A
HORIZ. SCALE: 1"=40'
VERT. SCALE: 1" = 8'



CROSS SECTION C–C
HORIZ. SCALE: 1"=40'
VERT. SCALE: 1" = 8'



CROSS SECTION B–B
HORIZ. SCALE: 1"=40'
VERT. SCALE: 1" = 8'

ESTIMATED EARTHWORK QUANTITIES

CUT:	19,600 CY
FILL:	1,215 CY
NET:	18,385 CY – EXPORT

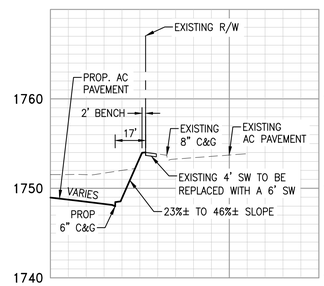
NOTE: THE ABOVE QUANTITIES ARE APPROXIMATE IN PLACE VOLUMES CALCULATED FROM THE EXISTING GROUND TO THE PROPOSED FINISHED GRADE. EXISTING GROUND IS DEFINED BY THE CONTOURS AND SPOT GRADES ON THE BASE SURVEY. PROPOSED FINISHED GRADE IS DEFINED AS THE FINAL GRADE AS INDICATED ON THE GRADING PLAN(S).

THE EARTHWORK QUANTITIES ABOVE ARE FOR PERMIT PURPOSES ONLY. THEY HAVE NOT BEEN FACTORED TO ACCOUNT FOR CHANGES IN VOLUME DUE TO BULKING, CLEARING AND GRUBBING, SHRINKAGE, OVER– EXCAVATION AND RE–COMPACTION, AND CONSTRUCTION METHODS. NOR DO THEY ACCOUNT FOR THE THICKNESS OF PAVEMENT SECTIONS, FOOTINGS, SLABS, REUSE OF PULVERIZED MATERIALS THAT WILL UNDERLIE NEW PAVEMENTS, ETC. THE CONTRACTOR SHALL RELY ON THEIR OWN EARTHWORK ESTIMATES FOR BIDDING PURPOSES.

GRAPHIC SCALE IN FEET
0 20 40 80
SCALE 1" = 40'

ROOF DRAIN KEY NOTES:

1. INTERNAL ROOF DRAIN TO BE CONNECTED TOGETHER UNDER THE ROOF AND ROUTED TO ADJACENT LANDSCAPE AREAS.
2. EXTERNAL ROOF DRAIN TO BE CONNECTED TO STORM DRAIN SYSTEM AS SHOWN.



CROSS SECTION D–D
HORIZ. SCALE: 1"=40'
VERT. SCALE: 1" = 8'

NOTES:

1– A COMMUNICATION CONDUIT ALONG PROJECT FRONTAGE ON MORENO BEACH DRIVE MAY BE REQUIRED PER CITY STANDARD NO. MVSI–186–0
2–FOR–SALE VEHICLE LOADING/UNLOADING SHALL BE DONE ON–SITE WITHIN THE PROJECT PARKING LOT
3–NO PARKING SIGNS SHALL BE INSTALLED ON PETTIT STREET

PEN19-0047

DRAWN BY	RS
DESIGN BY	RS
CHECKED BY	BK

Kimley»Horn

3880 LEMON STREET, SUITE 420
RIVERSIDE, CA 92501
PHONE: (951) 543–9868
WWW.KIMLEY–HORN.COM

BOBBY KOHLTFARBER No. C68141 CIVIL

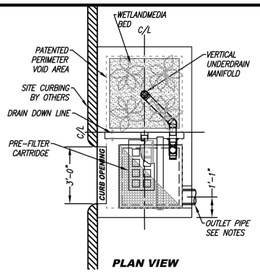
CITY OF MORENO VALLEY

PLOT PLAN FOR CAR PROS – KIA SALES AND SERVICE FACILITY CONCEPTUAL GRADING PLAN

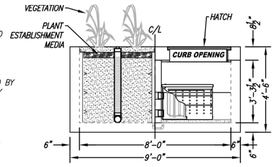
SHEET 2 OF 3
CITY I.D. NO. PEN19-0047

3RD REVIEW

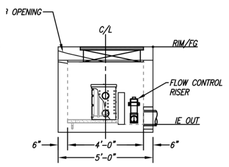
SITE SPECIFIC DATA			
PROJECT NUMBER	194117001		
ORDER NUMBER			
PROJECT NAME	CAR PROS KIA		
PROJECT LOCATION	MORENO VALLEY		
STRUCTURE ID	BMP-1		
TREATMENT REQUIRED			
VOLUME BASED (CF)	FLOW BASED (CFS)		
N/A	0.1		
TREATMENT HGL AVAILABLE (FT)			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			1.97
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	1745.7	HDPE	6"
INLET PIPE 2			
OUTLET PIPE	1745.7	HDPE	6"
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION	1749.8	1749.8	1749.8
SURFACE LOAD	PEDESTRIAN	OPEN PLANTER	PEDESTRIAN
FRAME & COVER	36" X 36"	N/A	N/A
WETLANDMEDIA VOLUME (CY)			TBD
ORIFICE SIZE (DIA. INCHES)			TBD
NOTES: PRELIMINARY NOT FOR CONSTRUCTION.			



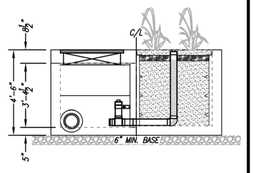
PLAN VIEW



LEFT END VIEW



ELEVATION VIEW



RIGHT END VIEW

TREATMENT FLOW (CFS)	0.115
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	2.0
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATER TIGHT PER MANUFACTURERS STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURERS WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.

GENERAL NOTES

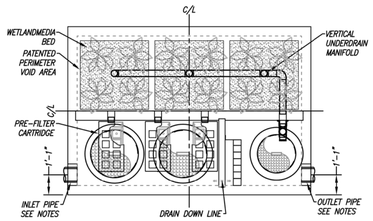
1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.

MWS-L-4-8-C
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

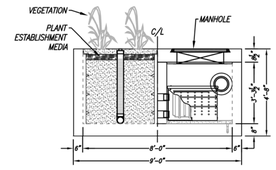
BMP-1
N.T.S.

3

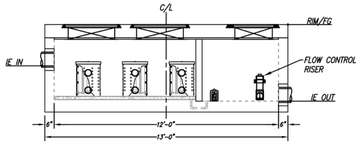
SITE SPECIFIC DATA			
PROJECT NUMBER	194117001		
ORDER NUMBER			
PROJECT NAME	CAR PROS KIA		
PROJECT LOCATION	MORENO VALLEY		
STRUCTURE ID	BMP-2		
TREATMENT REQUIRED			
VOLUME BASED (CF)	FLOW BASED (CFS)		
N/A	0.3		
TREATMENT HGL AVAILABLE (FT)			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			4.26
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	1743.5	HDPE	12"
INLET PIPE 2			
OUTLET PIPE	1743.5	HDPE	12"
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION	1747.6	1747.6	1747.6
SURFACE LOAD	PEDESTRIAN	OPEN PLANTER	PEDESTRIAN
FRAME & COVER	2EA ø30"	N/A	ø24"
WETLANDMEDIA VOLUME (CY)			TBD
ORIFICE SIZE (DIA. INCHES)			TBD
NOTES: PRELIMINARY NOT FOR CONSTRUCTION.			



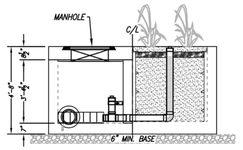
PLAN VIEW



LEFT END VIEW



ELEVATION VIEW



RIGHT END VIEW

TREATMENT FLOW (CFS)	0.346
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	2.0
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASS. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATER TIGHT PER MANUFACTURERS STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURERS WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.

GENERAL NOTES

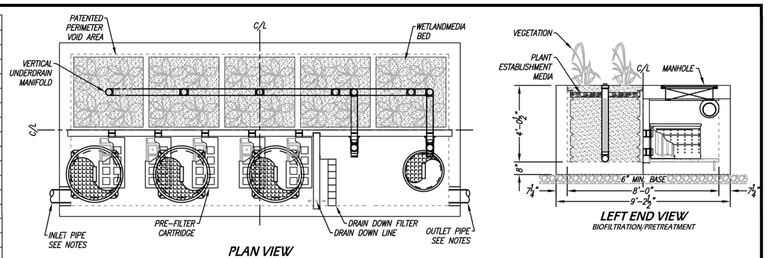
1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.

MWS-L-8-12-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

BMP-2
N.T.S.

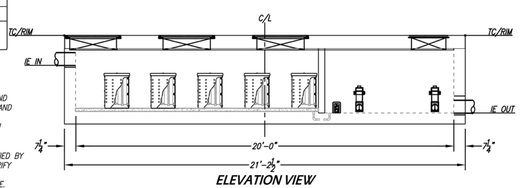
4

SITE SPECIFIC DATA			
PROJECT NAME	CAR PROS KIA		
PROJECT LOCATION	MORENO VALLEY		
STRUCTURE ID	BMP-3		
TREATMENT REQUIRED			
VOLUME BASED (CF)	FLOW BASED (CFS)		
N/A	0.5		
TREATMENT HGL AVAILABLE (FT)			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			8.13
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	1742.5	HDPE	12"
INLET PIPE 2			
OUTLET PIPE	1742.5	HDPE	12"
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION	1746.6	1746.6	1746.6
SURFACE LOAD	PARKWAY	OPEN PLANTER	PARKWAY
FRAME & COVER	ø30"	N/A	ø24"
WETLANDMEDIA VOLUME (CY)			11.85
WETLANDMEDIA DELIVERY METHOD			TBD
ORIFICE SIZE (DIA. INCHES)			ø2.43"
MAXIMUM PICK WEIGHT (LBS)			TBD
NOTES:			

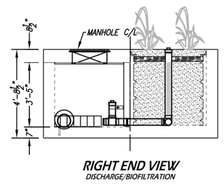


PLAN VIEW

LEFT END VIEW
BIOFILTRATION/PRETREATMENT



ELEVATION VIEW



RIGHT END VIEW
DISCHARGE/BIOFILTRATION

TREATMENT FLOW (CFS)	0.577
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	TBD
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

INSTALLATION NOTES

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3. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL GAPS AROUND PIPES SHALL BE SEALED WATER TIGHT WITH A NON-SHRINK GROUT PER MANUFACTURERS STANDARD CONNECTION DETAIL AND SHALL MEET OR EXCEED REGIONAL PIPE CONNECTION STANDARDS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. DRIP OR SPRAY IRRIGATION REQUIRED ON ALL UNITS WITH VEGETATION.

GENERAL NOTES

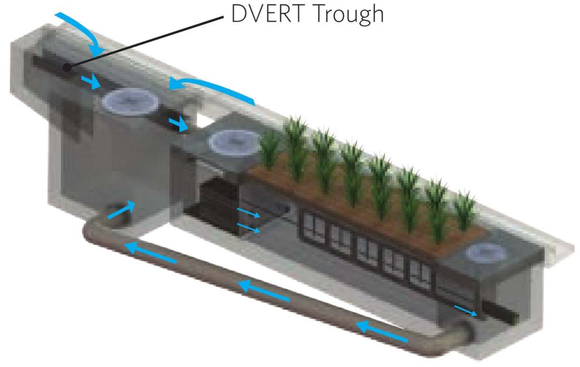
1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT MANUFACTURER.

MWS-L-8-20-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

BMP-3
N.T.S.

5

DVERT LOW FLOW DIVERSION



MODULAR WETLAND BYPASS SYSTEM
N.T.S.

PEN19-0047

DRAWN BY	RS
DESIGN BY	RS
CHECKED BY	BK

Kimley»Horn

3880 LEMON STREET, SUITE 420
RIVERSIDE, CA 92501
PHONE: (951) 543-9868
WWW.KIMLEY-HORN.COM

ROBERT KOHLTARBER No. C68141 CIVIL

CITY OF MORENO VALLEY
PLOT PLAN
FOR
CAR PROS – KIA SALES AND SERVICE FACILITY
DETAILS

SHEET 3 OF 3
CITY I.D. NO. PEN19-0047

3RD REVIEW

\\RIVFP01\CA_RIV\RIV_LDEV\194117001_CCA_KIA_MORENO_VALLEY_\CAD\PLANSHEETS\PRELIMINARY FOR CUP SUBMITTAL\3 DETAIL SHEET CUP.DWG 5/17/2019 10:38:19 AM

APPENDIX A

Existing Hydrology Calculations
10 Year Rainfall Frequency

KMV10E.RES

```
**************************************************************************
  INTEGRATED RATIONAL METHOD/UH 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:
```

```
 ************************** DESCRIPTION OF STUDY **************************
* CAR PROS KIA SALES AND SERVICE FACILITY                                 *
* XO 5/16/19                                                              *
* KMV10E.RES                                                              *
 **************************************************************************

  FILE NAME: KMV10E.DAT
  TIME/DATE OF STUDY: 10:53 05/16/2019
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 1.00
  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 =   10.00   1-HOUR INTENSITY(INCH/HOUR) =   0.828
  SLOPE OF INTENSITY DURATION CURVE = 0.5004
  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.*

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    VALLEY S-GRAPH USED.
    *24-HOUR (15-MINUTE PERIOD) DESIGN STORM USED.
    UNADJUSTED 24-HOUR RAINFALL DEPTH (INCHES) =   0.67
    USER-SPECIFIED DEPTH-AREA REDUCTION FACTOR:
      FOR 24-HOUR RAINFALL DEPTH =  1.00
    LOW LOSS RATE PERCENTAGE =  0.85
    MINIMUM LOSS RATE PERCENTAGE FOR 24-HOUR STORM =  0.05
  *PRECIPITATION ZONE NUMBER (PZN) = 2.0
  *ANTECEDENT MOISTURE CONDITION (AMC) =  0.00 ASSUMED FOR UNIT HYDROGRAPH METHOD*


****************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     11.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   351.00
  UPSTREAM ELEVATION(FEET) =     60.46
  DOWNSTREAM ELEVATION(FEET) =     50.61
  ELEVATION DIFFERENCE(FEET) =      9.85
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.906
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Runoff      SCS   Tc
       LAND USE            GROUP   (ACRES)   Coefficient    CN  (MIN.)
  NATURAL POOR COVER
  "CHAPARRAL,BROADLEAF"      D        2.96     0.7298       85   11.35
  SUBAREA RUNOFF(CFS) =      4.12
  TOTAL AREA(ACRES) =      2.96   TOTAL RUNOFF(CFS) =      4.12

****************************************************************************
  FLOW PROCESS FROM NODE     20.00 TO NODE     21.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
```

KMV10E.RES

```
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   225.00
  UPSTREAM ELEVATION(FEET) =     60.10
  DOWNSTREAM ELEVATION(FEET) =     43.70
  ELEVATION DIFFERENCE(FEET) =     16.40
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.292
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Runoff      SCS   Tc
       LAND USE            GROUP   (ACRES)   Coefficient    CN  (MIN.)
  NATURAL POOR COVER
  "CHAPARRAL,BROADLEAF"      D        3.23     0.7538       85    7.85
  SUBAREA RUNOFF(CFS) =      5.58
  TOTAL AREA(ACRES) =      3.23   TOTAL RUNOFF(CFS) =      5.58
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        3.2  TC(MIN.) =      7.85
  PEAK FLOW RATE(CFS)   =       5.58
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

APPENDIX B

Existing Hydrology Calculations
100 Year Rainfall Frequency

KMV100E.RES

```
******************************************************************************
  INTEGRATED RATIONAL METHOD/UH 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:




 ************************* DESCRIPTION OF STUDY *************************
* CAR PROS KIA SALES AND SERVICE FACILITY                                *
* XO 5/16/19                                                             *
* KMV100E.RES                                                            *
 ************************************************************************

  FILE NAME: KMV100E.DAT
  TIME/DATE OF STUDY: 10:31 05/16/2019
------------------------------------------------------------------------
  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 = 1.00
  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.*

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    VALLEY S-GRAPH USED.
    *24-HOUR (15-MINUTE PERIOD) DESIGN STORM USED.
    UNADJUSTED 24-HOUR RAINFALL DEPTH (INCHES) =   0.67
    USER-SPECIFIED DEPTH-AREA REDUCTION FACTOR:
      FOR 24-HOUR RAINFALL DEPTH =  1.00
    LOW LOSS RATE PERCENTAGE =  0.85
    MINIMUM LOSS RATE PERCENTAGE FOR 24-HOUR STORM =  0.05
  *PRECIPITATION ZONE NUMBER (PZN) = 3.0
  *ANTECEDENT MOISTURE CONDITION (AMC) =  0.00 ASSUMED FOR UNIT HYDROGRAPH METHOD*


****************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     11.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   351.00
  UPSTREAM ELEVATION(FEET) =     60.46
  DOWNSTREAM ELEVATION(FEET) =     50.61
  ELEVATION DIFFERENCE(FEET) =      9.85
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.760
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Runoff      SCS   Tc
       LAND USE            GROUP   (ACRES)   Coefficient    CN  (MIN.)
  NATURAL POOR COVER
  "CHAPARRAL,BROADLEAF"      D        2.96     0.7752       85   11.35
  SUBAREA RUNOFF(CFS) =      6.33
  TOTAL AREA(ACRES) =      2.96   TOTAL RUNOFF(CFS) =      6.33

****************************************************************************
  FLOW PROCESS FROM NODE     20.00 TO NODE     21.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
```

KMV100E.RES

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   225.00
 UPSTREAM ELEVATION(FEET) =     60.08
 DOWNSTREAM ELEVATION(FEET) =     43.70
 ELEVATION DIFFERENCE(FEET) =     16.38
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.318
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Runoff      SCS   Tc
      LAND USE            GROUP   (ACRES)   Coefficient    CN  (MIN.)
 NATURAL POOR COVER
 "CHAPARRAL,BROADLEAF"      D        3.23     0.7937       85    7.85
 SUBAREA RUNOFF(CFS) =      8.51
 TOTAL AREA(ACRES) =      3.23   TOTAL RUNOFF(CFS) =      8.51
================================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)     =        3.2  TC(MIN.) =      7.85
 PEAK FLOW RATE(CFS)   =       8.51
================================================================================
================================================================================
 END OF RATIONAL METHOD ANALYSIS
```

APPENDIX C

Proposed Hydrology Calculations
10 Year Rainfall Frequency

KMV10P.RES

```
******************************************************************************
  INTEGRATED RATIONAL METHOD/UH METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
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         (c) Copyright 1982-2011 Advanced Engineering Software (aes)
                     (Rational Tabling Version 18.0)
                  Release Date: 07/01/2011  License ID 1499

                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* CAR PROS KIA SALES AND SERVICE FACILITY                                 *
* XO 5/16/19                                                              *
* KMV10P.RES                                                              *
 ***************************************************************************

  FILE NAME: KMV10P.DAT
  TIME/DATE OF STUDY: 10:55 05/16/2019
------------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 1.00
  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 =   10.00   1-HOUR INTENSITY(INCH/HOUR) =   0.828
  SLOPE OF INTENSITY DURATION CURVE = 0.5004
  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.*

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    VALLEY S-GRAPH USED.
    *24-HOUR (15-MINUTE PERIOD) DESIGN STORM USED.
    UNADJUSTED 24-HOUR RAINFALL DEPTH (INCHES) =   0.67
    USER-SPECIFIED DEPTH-AREA REDUCTION FACTOR:
      FOR 24-HOUR RAINFALL DEPTH =  1.00
    LOW LOSS RATE PERCENTAGE =  0.85
    MINIMUM LOSS RATE PERCENTAGE FOR 24-HOUR STORM =  0.05
  *PRECIPITATION ZONE NUMBER (PZN) = 2.0
  *ANTECEDENT MOISTURE CONDITION (AMC) =  0.00 ASSUMED FOR UNIT HYDROGRAPH METHOD*


****************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     11.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   324.00
  UPSTREAM ELEVATION(FEET) =     54.30
  DOWNSTREAM ELEVATION(FEET) =     49.80
  ELEVATION DIFFERENCE(FEET) =      4.50
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.393
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Runoff      SCS   Tc
       LAND USE            GROUP   (ACRES)   Coefficient    CN  (MIN.)
  COMMERCIAL                 D        0.64     0.8859       75    7.20
  SUBAREA RUNOFF(CFS) =      1.36
  TOTAL AREA(ACRES) =      0.64   TOTAL RUNOFF(CFS) =      1.36

****************************************************************************
  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) =    45.70  DOWNSTREAM(FEET) =    39.70
  FLOW LENGTH(FEET) =    57.00   MANNING'S N =  0.015
```

```
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   4.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.02
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.36
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =    7.30
  LONGEST FLOWPATH FROM NODE     10.00 TO NODE     12.00 =     381.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     12.00 TO NODE     12.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     21.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   412.00
  UPSTREAM ELEVATION(FEET) =     54.30
  DOWNSTREAM ELEVATION(FEET) =     46.80
  ELEVATION DIFFERENCE(FEET) =      7.50
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.343
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Runoff      SCS   Tc
       LAND USE            GROUP   (ACRES)   Coefficient    CN  (MIN.)
  COMMERCIAL                 D        1.41     0.8857       75    7.51
  SUBAREA RUNOFF(CFS) =      2.93
  TOTAL AREA(ACRES) =      1.41   TOTAL RUNOFF(CFS) =      2.93

****************************************************************************
  FLOW PROCESS FROM NODE     21.00 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) =    44.30  DOWNSTREAM(FEET) =    39.70
  FLOW LENGTH(FEET) =   423.00   MANNING'S N =  0.015
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   9.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.65
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.93
  PIPE TRAVEL TIME(MIN.) =   1.52    Tc(MIN.) =    9.02
  LONGEST FLOWPATH FROM NODE     10.00 TO NODE     12.00 =     835.00 FEET.

****************************************************************************
```

KMV10P.RES

```
 FLOW PROCESS FROM NODE     12.00 TO NODE     12.00 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        2.93     9.02       2.137        1.41
 LONGEST FLOWPATH FROM NODE     10.00 TO NODE     12.00 =     835.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1        1.36     7.30       2.376        0.64
 LONGEST FLOWPATH FROM NODE     10.00 TO NODE     12.00 =     381.00 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       3.73       7.30        2.376
     2       4.15       9.02        2.137

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       4.15   Tc(MIN.) =    9.02
 TOTAL AREA(ACRES) =        2.0

****************************************************************************
 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) =    39.70  DOWNSTREAM(FEET) =    36.50
 FLOW LENGTH(FEET) =    85.00   MANNING'S N =  0.015
 DEPTH OF FLOW IN  12.0 INCH PIPE IS   7.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   8.24
 ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       4.15
 PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =    9.20
 LONGEST FLOWPATH FROM NODE     10.00 TO NODE     13.00 =     920.00 FEET.
```

KMV10P.RES

```
****************************************************************************
  FLOW PROCESS FROM NODE     30.00 TO NODE     31.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   884.00
  UPSTREAM ELEVATION(FEET) =     50.90
  DOWNSTREAM ELEVATION(FEET) =     44.90
  ELEVATION DIFFERENCE(FEET) =      6.00
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.766
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Runoff      SCS   Tc
       LAND USE            GROUP   (ACRES)   Coefficient    CN  (MIN.)
  APARTMENTS                 D        3.64     0.8638       75   13.21
  SUBAREA RUNOFF(CFS) =      5.55
  TOTAL AREA(ACRES) =      3.64   TOTAL RUNOFF(CFS) =      5.55

****************************************************************************
  FLOW PROCESS FROM NODE     31.00 TO NODE     32.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    42.86  DOWNSTREAM(FEET) =    41.60
  FLOW LENGTH(FEET) =   282.00   MANNING'S N =  0.015
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.90
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.55
  PIPE TRAVEL TIME(MIN.) =   1.20    Tc(MIN.) =   14.42
  LONGEST FLOWPATH FROM NODE     30.00 TO NODE     32.00 =    1166.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        3.6  TC(MIN.) =     14.42
  PEAK FLOW RATE(CFS)   =       5.55
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

APPENDIX D

Proposed Hydrology Calculations
100 Year Rainfall Frequency

KMV100P.RES

```
******************************************************************************
  INTEGRATED RATIONAL METHOD/UH 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:
```

```
 ************************** DESCRIPTION OF STUDY **************************
* CAR PROS KIA SALES AND SERVICE FACILITY                                 *
* XO 5/16/19                                                              *
* KMV100P.RES                                                             *
 *************************************************************************

  FILE NAME: KMV100P.DAT
  TIME/DATE OF STUDY: 10:32 05/16/2019
-------------------------------------------------------------------------
  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 = 1.00
  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.*

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    VALLEY S-GRAPH USED.
    *24-HOUR (15-MINUTE PERIOD) DESIGN STORM USED.
    UNADJUSTED 24-HOUR RAINFALL DEPTH (INCHES) =   0.67
    USER-SPECIFIED DEPTH-AREA REDUCTION FACTOR:
      FOR 24-HOUR RAINFALL DEPTH =  1.00
    LOW LOSS RATE PERCENTAGE =  0.85
    MINIMUM LOSS RATE PERCENTAGE FOR 24-HOUR STORM =  0.05
  *PRECIPITATION ZONE NUMBER (PZN) = 3.0
  *ANTECEDENT MOISTURE CONDITION (AMC) =  0.00 ASSUMED FOR UNIT HYDROGRAPH METHOD*


****************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     11.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   324.00
  UPSTREAM ELEVATION(FEET) =     54.30
  DOWNSTREAM ELEVATION(FEET) =     49.80
  ELEVATION DIFFERENCE(FEET) =      4.50
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.465
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Runoff      SCS   Tc
       LAND USE            GROUP   (ACRES)   Coefficient    CN  (MIN.)
  COMMERCIAL                 D        0.64     0.8898       75    7.20
  SUBAREA RUNOFF(CFS) =      1.97
  TOTAL AREA(ACRES) =      0.64   TOTAL RUNOFF(CFS) =      1.97

****************************************************************************
  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) =    45.70  DOWNSTREAM(FEET) =    39.70
  FLOW LENGTH(FEET) =    57.00   MANNING'S N =  0.015
```

```
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.11
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.97
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =    7.29
  LONGEST FLOWPATH FROM NODE     10.00 TO NODE     12.00 =     381.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     12.00 TO NODE     12.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     21.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   412.00
  UPSTREAM ELEVATION(FEET) =     54.30
  DOWNSTREAM ELEVATION(FEET) =     46.80
  ELEVATION DIFFERENCE(FEET) =      7.50
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.393
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Runoff      SCS   Tc
       LAND USE            GROUP   (ACRES)   Coefficient    CN  (MIN.)
  COMMERCIAL                 D        1.41     0.8896       75    7.51
  SUBAREA RUNOFF(CFS) =      4.26
  TOTAL AREA(ACRES) =      1.41   TOTAL RUNOFF(CFS) =      4.26

****************************************************************************
  FLOW PROCESS FROM NODE     21.00 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) =    44.30  DOWNSTREAM(FEET) =    39.70
  FLOW LENGTH(FEET) =   423.00   MANNING'S N =  0.015
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   9.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.19
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.26
  PIPE TRAVEL TIME(MIN.) =   1.36    Tc(MIN.) =    8.87
  LONGEST FLOWPATH FROM NODE     10.00 TO NODE     12.00 =     835.00 FEET.

****************************************************************************
```

KMV100P.RES

```
 FLOW PROCESS FROM NODE     12.00 TO NODE     12.00 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        4.26     8.87       3.122        1.41
 LONGEST FLOWPATH FROM NODE     10.00 TO NODE     12.00 =     835.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1        1.97     7.29       3.443        0.64
 LONGEST FLOWPATH FROM NODE     10.00 TO NODE     12.00 =     381.00 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       5.47       7.29        3.443
     2       6.05       8.87        3.122

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       6.05   Tc(MIN.) =    8.87
 TOTAL AREA(ACRES) =        2.0

****************************************************************************
 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) =    39.70  DOWNSTREAM(FEET) =    36.50
 FLOW LENGTH(FEET) =    85.00   MANNING'S N =  0.015
 DEPTH OF FLOW IN  15.0 INCH PIPE IS   8.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   9.08
 ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       6.05
 PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =    9.02
 LONGEST FLOWPATH FROM NODE     10.00 TO NODE     13.00 =     920.00 FEET.
```

KMV100P.RES

```
****************************************************************************
  FLOW PROCESS FROM NODE     30.00 TO NODE     31.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   884.00
  UPSTREAM ELEVATION(FEET) =     50.90
  DOWNSTREAM ELEVATION(FEET) =     44.90
  ELEVATION DIFFERENCE(FEET) =      6.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.557
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Runoff      SCS   Tc
       LAND USE            GROUP   (ACRES)   Coefficient    CN  (MIN.)
  APARTMENTS                 D        3.64     0.8734       75   13.21
  SUBAREA RUNOFF(CFS) =      8.13
  TOTAL AREA(ACRES) =      3.64   TOTAL RUNOFF(CFS) =      8.13

****************************************************************************
  FLOW PROCESS FROM NODE     31.00 TO NODE     32.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    42.86  DOWNSTREAM(FEET) =    41.60
  FLOW LENGTH(FEET) =   282.00   MANNING'S N =  0.015
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.31
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.13
  PIPE TRAVEL TIME(MIN.) =   1.09    Tc(MIN.) =   14.30
  LONGEST FLOWPATH FROM NODE     30.00 TO NODE     32.00 =    1166.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        3.6  TC(MIN.) =     14.30
  PEAK FLOW RATE(CFS)   =       8.13
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

APPENDIX E

Existing Hydrology Calculations
2 Year Rainfall Frequency

KMV2E.RES

```
**************************************************************************
  INTEGRATED RATIONAL METHOD/UH 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:
```

```
 ************************* DESCRIPTION OF STUDY *************************
* CAR PROS KIA SALES AND SERVICE FACILITY                                *
* XO 5/16/19                                                             *
* KMV2E.RES                                                              *
 **************************************************************************

  FILE NAME: KMV2E.DAT
  TIME/DATE OF STUDY: 10:33 05/16/2019
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 1.00
  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 =    2.00   1-HOUR INTENSITY(INCH/HOUR) =   0.554
  SLOPE OF INTENSITY DURATION CURVE = 0.5004
  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.*

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    VALLEY S-GRAPH USED.
    *24-HOUR (15-MINUTE PERIOD) DESIGN STORM USED.
    UNADJUSTED 24-HOUR RAINFALL DEPTH (INCHES) =   0.67
    USER-SPECIFIED DEPTH-AREA REDUCTION FACTOR:
      FOR 24-HOUR RAINFALL DEPTH =  1.00
    LOW LOSS RATE PERCENTAGE =  0.85
    MINIMUM LOSS RATE PERCENTAGE FOR 24-HOUR STORM =  0.05
  *PRECIPITATION ZONE NUMBER (PZN) = 2.0
  *ANTECEDENT MOISTURE CONDITION (AMC) =  0.00 ASSUMED FOR UNIT HYDROGRAPH METHOD*


****************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     11.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   351.00
  UPSTREAM ELEVATION(FEET) =     60.46
  DOWNSTREAM ELEVATION(FEET) =     50.61
  ELEVATION DIFFERENCE(FEET) =      9.85
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.276
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Runoff      SCS   Tc
       LAND USE            GROUP   (ACRES)   Coefficient    CN  (MIN.)
  NATURAL POOR COVER
  "CHAPARRAL,BROADLEAF"      D        2.96     0.6675       85   11.35
  SUBAREA RUNOFF(CFS) =      2.52
  TOTAL AREA(ACRES) =      2.96   TOTAL RUNOFF(CFS) =      2.52

****************************************************************************
  FLOW PROCESS FROM NODE     20.00 TO NODE     21.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
```

KMV2E.RES

```
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   225.00
  UPSTREAM ELEVATION(FEET) =     60.10
  DOWNSTREAM ELEVATION(FEET) =     43.70
  ELEVATION DIFFERENCE(FEET) =     16.40
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.534
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Runoff      SCS   Tc
       LAND USE            GROUP   (ACRES)   Coefficient    CN  (MIN.)
  NATURAL POOR COVER
  "CHAPARRAL,BROADLEAF"      D        3.23     0.6978       85    7.85
  SUBAREA RUNOFF(CFS) =      3.46
  TOTAL AREA(ACRES) =      3.23   TOTAL RUNOFF(CFS) =      3.46
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        3.2  TC(MIN.) =      7.85
  PEAK FLOW RATE(CFS)   =       3.46
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

KMV2EU.RES

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**************************************************************************

             F L O O D    R O U T I N G    A N A L Y S I S

ACCORDING TO RIVERSIDE COUNTY FLOOD CONTORL AND WATER CONSERVATION DISTRICT
                    (RCFC&WCD) 1978 HYDROLOGY MANUAL
         (c) Copyright 1989-2011 Advanced Engineering Software (aes)
                 (Synthetic Unit Hydrograph Version 18.0)
                 Release Date: 05/01/2011  License ID 1499

                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* CAR PROS KIA SALES AND SERVICE FACILITY                                 *
* XO 5/16/19                                                              *
* KMV2EU.RES                                                              *
 **************************************************************************

  FILE NAME: KMV2EU.DAT
  TIME/DATE OF STUDY: 11:21 05/16/2019


**************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     11.00 IS CODE =   1
--------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
==========================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =       2.960 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
  Warning: Watershed Area is less than 10 acres
         *USER ENTERED "LAG" TIME =    0.151 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY S-GRAPH SELECTED
         UNIFORM MEAN SOIL-LOSS(INCH/HOUR) =  0.050
         LOW SOIL-LOSS RATE PERCENT(DECIMAL) = 0.500
         MINIMUM SOIL-LOSS RATE(INCH/HOUR) =   0.010
```

KMV2EU.RES

USER-ENTERED RAINFALL = 1.70 INCHES
RCFC&WCD 24-Hour Storm (15-Minute period) SELECTED
RCFC&WCD DEPTH-AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 1.0000

UNIT HYDROGRAPH TIME UNIT = 15.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 165.235

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	36.518	4.357
2	82.578	5.496
3	92.837	1.224
4	97.269	0.529
5	98.950	0.201
6	99.520	0.068
7	99.808	0.034
8	99.952	0.017
9	100.000	0.006

UNIT PERIOD (NUMBER)	UNIT RAINFALL (INCHES)	UNIT SOIL-LOSS (INCHES)	EFFECTIVE RAINFALL (INCHES)
1	0.0034	0.0017	0.0017
2	0.0051	0.0025	0.0025
3	0.0051	0.0025	0.0025
4	0.0068	0.0034	0.0034
5	0.0051	0.0025	0.0025
6	0.0051	0.0025	0.0025
7	0.0051	0.0025	0.0025
8	0.0068	0.0034	0.0034
9	0.0068	0.0034	0.0034
10	0.0068	0.0034	0.0034
11	0.0085	0.0042	0.0042
12	0.0085	0.0042	0.0042
13	0.0085	0.0042	0.0042
14	0.0085	0.0042	0.0042

15	0.0085	0.0042	0.0042
16	0.0102	0.0051	0.0051
17	0.0102	0.0051	0.0051
18	0.0119	0.0059	0.0059
19	0.0119	0.0059	0.0059
20	0.0136	0.0068	0.0068
21	0.0102	0.0051	0.0051
22	0.0119	0.0059	0.0059
23	0.0136	0.0068	0.0068
24	0.0136	0.0068	0.0068
25	0.0153	0.0076	0.0076
26	0.0153	0.0076	0.0076
27	0.0170	0.0085	0.0085
28	0.0170	0.0085	0.0085
29	0.0170	0.0085	0.0085
30	0.0187	0.0093	0.0093
31	0.0204	0.0102	0.0102
32	0.0221	0.0110	0.0110
33	0.0255	0.0127	0.0127
34	0.0255	0.0127	0.0127
35	0.0272	0.0136	0.0136
36	0.0289	0.0144	0.0144
37	0.0323	0.0147	0.0176
38	0.0340	0.0143	0.0197
39	0.0357	0.0140	0.0217
40	0.0374	0.0137	0.0237
41	0.0255	0.0127	0.0127
42	0.0255	0.0127	0.0127
43	0.0340	0.0128	0.0212
44	0.0340	0.0125	0.0215
45	0.0323	0.0122	0.0201
46	0.0323	0.0119	0.0204
47	0.0289	0.0116	0.0173
48	0.0306	0.0114	0.0192
49	0.0425	0.0111	0.0314
50	0.0442	0.0108	0.0334
51	0.0476	0.0105	0.0371
52	0.0493	0.0103	0.0390
53	0.0578	0.0100	0.0478
54	0.0578	0.0097	0.0481
55	0.0391	0.0095	0.0296
56	0.0391	0.0092	0.0299
57	0.0459	0.0089	0.0370
58	0.0442	0.0087	0.0355
59	0.0442	0.0084	0.0358
60	0.0425	0.0082	0.0343
61	0.0408	0.0080	0.0328
62	0.0391	0.0077	0.0314

63	0.0323	0.0075	0.0248
64	0.0323	0.0073	0.0250
65	0.0068	0.0034	0.0034
66	0.0068	0.0034	0.0034
67	0.0051	0.0025	0.0025
68	0.0051	0.0025	0.0025
69	0.0085	0.0042	0.0042
70	0.0085	0.0042	0.0042
71	0.0085	0.0042	0.0042
72	0.0068	0.0034	0.0034
73	0.0068	0.0034	0.0034
74	0.0068	0.0034	0.0034
75	0.0051	0.0025	0.0025
76	0.0034	0.0017	0.0017
77	0.0051	0.0025	0.0025
78	0.0068	0.0034	0.0034
79	0.0051	0.0025	0.0025
80	0.0034	0.0017	0.0017
81	0.0051	0.0025	0.0025
82	0.0051	0.0025	0.0025
83	0.0051	0.0025	0.0025
84	0.0034	0.0017	0.0017
85	0.0051	0.0025	0.0025
86	0.0034	0.0017	0.0017
87	0.0051	0.0025	0.0025
88	0.0034	0.0017	0.0017
89	0.0051	0.0025	0.0025
90	0.0034	0.0017	0.0017
91	0.0034	0.0017	0.0017
92	0.0034	0.0017	0.0017
93	0.0034	0.0017	0.0017
94	0.0034	0.0017	0.0017
95	0.0034	0.0017	0.0017
96	0.0034	0.0017	0.0017

TOTAL STORM RAINFALL(INCHES) = 1.70
TOTAL SOIL-LOSS(INCHES) = 0.61
TOTAL EFFECTIVE RAINFALL(INCHES) = 1.09

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 0.1504
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 0.2688

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2 4 - H O U R S T O R M
R U N O F F H Y D R O G R A P H

KMV2EU.RES

HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	2.5	5.0	7.5	10.0
0.083	0.0001	0.01	Q	.	.	.	.
0.167	0.0001	0.01	Q	.	.	.	.
0.250	0.0002	0.01	Q	.	.	.	.
0.333	0.0003	0.02	Q	.	.	.	.
0.417	0.0004	0.02	Q	.	.	.	.
0.500	0.0006	0.02	Q	.	.	.	.
0.583	0.0008	0.03	Q	.	.	.	.
0.667	0.0010	0.03	Q	.	.	.	.
0.750	0.0011	0.03	Q	.	.	.	.
0.833	0.0014	0.03	Q	.	.	.	.
0.917	0.0016	0.03	Q	.	.	.	.
1.000	0.0018	0.03	Q	.	.	.	.
1.083	0.0021	0.03	Q	.	.	.	.
1.167	0.0023	0.03	Q	.	.	.	.
1.250	0.0025	0.03	Q	.	.	.	.
1.333	0.0027	0.03	Q	.	.	.	.
1.417	0.0030	0.03	Q	.	.	.	.
1.500	0.0032	0.03	Q	.	.	.	.
1.583	0.0034	0.03	Q	.	.	.	.
1.667	0.0036	0.03	Q	.	.	.	.
1.750	0.0038	0.03	Q	.	.	.	.
1.833	0.0040	0.03	Q	.	.	.	.
1.917	0.0043	0.03	Q	.	.	.	.
2.000	0.0045	0.03	Q	.	.	.	.
2.083	0.0048	0.04	Q	.	.	.	.
2.167	0.0051	0.04	Q	.	.	.	.
2.250	0.0053	0.04	Q	.	.	.	.
2.333	0.0056	0.04	Q	.	.	.	.
2.417	0.0059	0.04	Q	.	.	.	.
2.500	0.0061	0.04	Q	.	.	.	.
2.583	0.0065	0.04	Q	.	.	.	.
2.667	0.0068	0.04	QV	.	.	.	.
2.750	0.0071	0.04	QV	.	.	.	.
2.833	0.0074	0.05	QV	.	.	.	.
2.917	0.0077	0.05	QV	.	.	.	.
3.000	0.0081	0.05	QV	.	.	.	.
3.083	0.0084	0.05	QV	.	.	.	.
3.167	0.0088	0.05	QV	.	.	.	.
3.250	0.0091	0.05	QV	.	.	.	.
3.333	0.0094	0.05	QV	.	.	.	.
3.417	0.0098	0.05	QV	.	.	.	.

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3.500	0.0101	0.05	QV	.	.	.	.
3.583	0.0105	0.05	QV	.	.	.	.
3.667	0.0108	0.05	QV	.	.	.	.
3.750	0.0112	0.05	QV	.	.	.	.
3.833	0.0116	0.05	QV	.	.	.	.
3.917	0.0119	0.05	QV	.	.	.	.
4.000	0.0123	0.05	QV	.	.	.	.
4.083	0.0127	0.06	QV	.	.	.	.
4.167	0.0131	0.06	QV	.	.	.	.
4.250	0.0135	0.06	Q V	.	.	.	.
4.333	0.0140	0.06	Q V	.	.	.	.
4.417	0.0144	0.06	Q V	.	.	.	.
4.500	0.0148	0.06	Q V	.	.	.	.
4.583	0.0153	0.07	Q V	.	.	.	.
4.667	0.0158	0.07	Q V	.	.	.	.
4.750	0.0163	0.07	Q V	.	.	.	.
4.833	0.0168	0.07	Q V	.	.	.	.
4.917	0.0173	0.07	Q V	.	.	.	.
5.000	0.0178	0.07	Q V	.	.	.	.
5.083	0.0183	0.07	Q V	.	.	.	.
5.167	0.0188	0.07	Q V	.	.	.	.
5.250	0.0193	0.07	Q V	.	.	.	.
5.333	0.0197	0.07	Q V	.	.	.	.
5.417	0.0202	0.07	Q V	.	.	.	.
5.500	0.0207	0.07	Q V	.	.	.	.
5.583	0.0212	0.07	Q V	.	.	.	.
5.667	0.0217	0.07	Q V	.	.	.	.
5.750	0.0222	0.07	Q V	.	.	.	.
5.833	0.0227	0.08	Q V	.	.	.	.
5.917	0.0233	0.08	Q V	.	.	.	.
6.000	0.0238	0.08	Q V	.	.	.	.
6.083	0.0244	0.08	Q V	.	.	.	.
6.167	0.0250	0.08	Q V	.	.	.	.
6.250	0.0256	0.08	Q V	.	.	.	.
6.333	0.0262	0.09	Q V	.	.	.	.
6.417	0.0268	0.09	Q V	.	.	.	.
6.500	0.0274	0.09	Q V	.	.	.	.
6.583	0.0281	0.09	Q V	.	.	.	.
6.667	0.0287	0.09	Q V	.	.	.	.
6.750	0.0294	0.09	Q V	.	.	.	.
6.833	0.0300	0.10	Q V	.	.	.	.
6.917	0.0307	0.10	Q V	.	.	.	.
7.000	0.0314	0.10	Q V	.	.	.	.
7.083	0.0321	0.10	Q V	.	.	.	.
7.167	0.0328	0.10	Q V	.	.	.	.
7.250	0.0335	0.10	Q V	.	.	.	.
7.333	0.0342	0.10	Q V	.	.	.	.
7.417	0.0349	0.10	Q V	.	.	.	.

KMV2EU.RES

```
 7.500      0.0357      0.10  Q    V    .         .         .         .
 7.583      0.0364      0.11  Q    V    .         .         .         .
 7.667      0.0372      0.11  Q    V    .         .         .         .
 7.750      0.0380      0.11  Q    V    .         .         .         .
 7.833      0.0388      0.12  Q    V    .         .         .         .
 7.917      0.0397      0.12  Q    V    .         .         .         .
 8.000      0.0405      0.12  Q     V   .         .         .         .
 8.083      0.0415      0.14  Q     V   .         .         .         .
 8.167      0.0424      0.14  Q     V   .         .         .         .
 8.250      0.0434      0.14  Q     V   .         .         .         .
 8.333      0.0444      0.15  Q     V   .         .         .         .
 8.417      0.0454      0.15  Q     V   .         .         .         .
 8.500      0.0464      0.15  Q     V   .         .         .         .
 8.583      0.0475      0.15  Q      V  .         .         .         .
 8.667      0.0485      0.15  Q      V  .         .         .         .
 8.750      0.0496      0.15  Q      V  .         .         .         .
 8.833      0.0507      0.16  Q      V  .         .         .         .
 8.917      0.0518      0.16  Q      V  .         .         .         .
 9.000      0.0530      0.16  Q      V  .         .         .         .
 9.083      0.0542      0.18  Q       V .         .         .         .
 9.167      0.0555      0.18  Q       V .         .         .         .
 9.250      0.0568      0.18  Q       V .         .         .         .
 9.333      0.0582      0.21  Q       V .         .         .         .
 9.417      0.0597      0.21  Q       V .         .         .         .
 9.500      0.0611      0.21  Q        V.         .         .         .
 9.583      0.0627      0.24  Q        V.         .         .         .
 9.667      0.0644      0.24  Q        V.         .         .         .
 9.750      0.0660      0.24  Q        V.         .         .         .
 9.833      0.0678      0.26  .Q        V         .         .         .
 9.917      0.0696      0.26  .Q        V         .         .         .
10.000      0.0714      0.26  .Q        V         .         .         .
10.083      0.0729      0.23  Q         V         .         .         .
10.167      0.0745      0.23  Q          V        .         .         .
10.250      0.0761      0.23  Q          V        .         .         .
10.333      0.0773      0.17  Q         .V        .         .         .
10.417      0.0785      0.17  Q         .V        .         .         .
10.500      0.0796      0.17  Q         .V        .         .         .
10.583      0.0810      0.20  Q          . V      .         .         .
10.667      0.0824      0.20  Q          . V      .         .         .
10.750      0.0837      0.20  Q          . V      .         .         .
10.833      0.0854      0.24  Q          . V      .         .         .
10.917      0.0870      0.24  Q          . V      .         .         .
11.000      0.0887      0.24  Q          .  V     .         .         .
11.083      0.0903      0.24  Q          .  V     .         .         .
11.167      0.0920      0.24  Q          .  V     .         .         .
11.250      0.0937      0.24  Q          .  V     .         .         .
11.333      0.0954      0.24  Q          .   V    .         .         .
11.417      0.0970      0.24  Q          .   V    .         .         .
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KMV2EU.RES

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	2.5	5.0	7.5	10.0
11.500	0.0987	0.24	Q	. V	.	.	.
11.583	0.1003	0.23	Q	. V	.	.	.
11.667	0.1018	0.23	Q	. V	.	.	.
11.750	0.1034	0.23	Q	. V	.	.	.
11.833	0.1049	0.22	Q	. V	.	.	.
11.917	0.1065	0.22	Q	. V	.	.	.
12.000	0.1080	0.22	Q	. V	.	.	.
12.083	0.1099	0.28	.Q	. V	.	.	.
12.167	0.1118	0.28	.Q	. V	.	.	.
12.250	0.1138	0.28	.Q	. V	.	.	.
12.333	0.1162	0.36	.Q	. V	.	.	.
12.417	0.1187	0.36	.Q	. V	.	.	.
12.500	0.1212	0.36	.Q	. V	.	.	.
12.583	0.1239	0.40	.Q	. V	.	.	.
12.667	0.1267	0.40	.Q	. V	.	.	.
12.750	0.1294	0.40	.Q	. V.	.	.	.
12.833	0.1324	0.44	.Q	. V.	.	.	.
12.917	0.1355	0.44	.Q	. V	.	.	.
13.000	0.1385	0.44	.Q	. V	.	.	.
13.083	0.1419	0.49	.Q	. .V	.	.	.
13.167	0.1453	0.49	.Q	. .V	.	.	.
13.250	0.1487	0.49	.Q	. . V	.	.	.
13.333	0.1525	0.55	. Q	. . V	.	.	.
13.417	0.1563	0.55	. Q	. . V	.	.	.
13.500	0.1601	0.55	. Q	. . V	.	.	.
13.583	0.1634	0.48	.Q	. . V	.	.	.
13.667	0.1667	0.48	.Q	. . V	.	.	.
13.750	0.1700	0.48	.Q	. . V	.	.	.
13.833	0.1727	0.39	.Q	. . V	.	.	.
13.917	0.1754	0.39	.Q	. . V	.	.	.
14.000	0.1781	0.39	.Q	. . V	.	.	.
14.083	0.1809	0.40	.Q	. . V	.	.	.
14.167	0.1836	0.40	.Q	. . V	.	.	.
14.250	0.1864	0.40	.Q	. . V	.	.	.
14.333	0.1893	0.43	.Q	. . V	.	.	.
14.417	0.1922	0.43	.Q	. . V	.	.	.
14.500	0.1952	0.43	.Q	. . V.	.	.	.
14.583	0.1981	0.42	.Q	. . V.	.	.	.
14.667	0.2010	0.42	.Q	. . V.	.	.	.
14.750	0.2039	0.42	.Q	. . V	.	.	.
14.833	0.2068	0.42	.Q	. . V	.	.	.
14.917	0.2097	0.42	.Q	. . V	.	.	.
15.000	0.2126	0.42	.Q	. . V	.	.	.
15.083	0.2154	0.41	.Q	. . V	.	.	.

15.167	0.2182	0.41	.Q	.	.	. V	.
15.250	0.2210	0.41	.Q	.	.	. V	.
15.333	0.2237	0.39	.Q	.	.	. V	.
15.417	0.2264	0.39	.Q	.	.	. V	.
15.500	0.2290	0.39	.Q	.	.	. V	.
15.583	0.2314	0.35	.Q	.	.	. V	.
15.667	0.2339	0.35	.Q	.	.	. V	.
15.750	0.2363	0.35	.Q	.	.	. V	.
15.833	0.2384	0.31	.Q	.	.	. V	.
15.917	0.2406	0.31	.Q	.	.	. V	.
16.000	0.2427	0.31	.Q	.	.	. V	.
16.083	0.2442	0.21	Q	.	.	. V	.
16.167	0.2456	0.21	Q	.	.	. V	.
16.250	0.2471	0.21	Q	.	.	. V	.
16.333	0.2477	0.09	Q	.	.	. V	.
16.417	0.2483	0.09	Q	.	.	. V	.
16.500	0.2489	0.09	Q	.	.	. V	.
16.583	0.2493	0.06	Q	.	.	. V	.
16.667	0.2497	0.06	Q	.	.	. V	.
16.750	0.2501	0.06	Q	.	.	. V	.
16.833	0.2503	0.04	Q	.	.	. V	.
16.917	0.2506	0.04	Q	.	.	. V	.
17.000	0.2509	0.04	Q	.	.	. V	.
17.083	0.2512	0.04	Q	.	.	. V	.
17.167	0.2514	0.04	Q	.	.	. V	.
17.250	0.2517	0.04	Q	.	.	. V	.
17.333	0.2521	0.05	Q	.	.	. V	.
17.417	0.2524	0.05	Q	.	.	. V	.
17.500	0.2527	0.05	Q	.	.	. V	.
17.583	0.2531	0.05	Q	.	.	. V	.
17.667	0.2534	0.05	Q	.	.	. V	.
17.750	0.2538	0.05	Q	.	.	. V	.
17.833	0.2541	0.05	Q	.	.	. V	.
17.917	0.2544	0.05	Q	.	.	. V	.
18.000	0.2547	0.05	Q	.	.	. V	.
18.083	0.2550	0.04	Q	.	.	. V	.
18.167	0.2553	0.04	Q	.	.	. V	.
18.250	0.2556	0.04	Q	.	.	. V	.
18.333	0.2559	0.04	Q	.	.	. V	.
18.417	0.2562	0.04	Q	.	.	. V	.
18.500	0.2564	0.04	Q	.	.	. V	.
18.583	0.2567	0.04	Q	.	.	. V	.
18.667	0.2570	0.04	Q	.	.	. V	.
18.750	0.2572	0.04	Q	.	.	. V	.
18.833	0.2574	0.03	Q	.	.	. V	.
18.917	0.2576	0.03	Q	.	.	. V	.
19.000	0.2578	0.03	Q	.	.	. V	.
19.083	0.2580	0.03	Q	.	.	. V	.

19.167	0.2582	0.03	Q	.	.	.	V .
19.250	0.2584	0.03	Q	.	.	.	V .
19.333	0.2586	0.03	Q	.	.	.	V .
19.417	0.2588	0.03	Q	.	.	.	V .
19.500	0.2590	0.03	Q	.	.	.	V .
19.583	0.2593	0.03	Q	.	.	.	V .
19.667	0.2595	0.03	Q	.	.	.	V .
19.750	0.2598	0.03	Q	.	.	.	V .
19.833	0.2600	0.03	Q	.	.	.	V .
19.917	0.2601	0.03	Q	.	.	.	V .
20.000	0.2603	0.03	Q	.	.	.	V .
20.083	0.2605	0.03	Q	.	.	.	V .
20.167	0.2607	0.03	Q	.	.	.	V .
20.250	0.2609	0.03	Q	.	.	.	V .
20.333	0.2611	0.03	Q	.	.	.	V .
20.417	0.2613	0.03	Q	.	.	.	V .
20.500	0.2615	0.03	Q	.	.	.	V .
20.583	0.2617	0.03	Q	.	.	.	V .
20.667	0.2619	0.03	Q	.	.	.	V .
20.750	0.2621	0.03	Q	.	.	.	V.
20.833	0.2623	0.03	Q	.	.	.	V.
20.917	0.2625	0.03	Q	.	.	.	V.
21.000	0.2627	0.03	Q	.	.	.	V.
21.083	0.2628	0.03	Q	.	.	.	V.
21.167	0.2630	0.03	Q	.	.	.	V.
21.250	0.2632	0.03	Q	.	.	.	V.
21.333	0.2634	0.03	Q	.	.	.	V.
21.417	0.2635	0.03	Q	.	.	.	V.
21.500	0.2637	0.03	Q	.	.	.	V.
21.583	0.2639	0.03	Q	.	.	.	V.
21.667	0.2641	0.03	Q	.	.	.	V.
21.750	0.2642	0.03	Q	.	.	.	V.
21.833	0.2644	0.03	Q	.	.	.	V.
21.917	0.2646	0.03	Q	.	.	.	V.
22.000	0.2648	0.03	Q	.	.	.	V.
22.083	0.2649	0.03	Q	.	.	.	V.
22.167	0.2651	0.03	Q	.	.	.	V.
22.250	0.2653	0.03	Q	.	.	.	V.
22.333	0.2655	0.03	Q	.	.	.	V.
22.417	0.2656	0.03	Q	.	.	.	V.
22.500	0.2658	0.03	Q	.	.	.	V.
22.583	0.2660	0.02	Q	.	.	.	V.
22.667	0.2661	0.02	Q	.	.	.	V.
22.750	0.2663	0.02	Q	.	.	.	V.
22.833	0.2664	0.02	Q	.	.	.	V.
22.917	0.2665	0.02	Q	.	.	.	V.
23.000	0.2667	0.02	Q	.	.	.	V.
23.083	0.2668	0.02	Q	.	.	.	V.

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23.166	0.2670	0.02	Q	.	.	.	V.
23.250	0.2671	0.02	Q	.	.	.	V.
23.333	0.2673	0.02	Q	.	.	.	V.
23.416	0.2674	0.02	Q	.	.	.	V.
23.500	0.2675	0.02	Q	.	.	.	V.
23.583	0.2677	0.02	Q	.	.	.	V.
23.666	0.2678	0.02	Q	.	.	.	V.
23.750	0.2680	0.02	Q	.	.	.	V.
23.833	0.2681	0.02	Q	.	.	.	V.
23.916	0.2682	0.02	Q	.	.	.	V.
24.000	0.2684	0.02	Q	.	.	.	V.

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	2.5	5.0	7.5	10.0
24.083	0.2685	0.01	Q	.	.	.	V.
24.166	0.2685	0.01	Q	.	.	.	V.
24.250	0.2686	0.01	Q	.	.	.	V.
24.333	0.2687	0.00	Q	.	.	.	V.
24.416	0.2687	0.00	Q	.	.	.	V.
24.500	0.2687	0.00	Q	.	.	.	V.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1470.0
10%	765.0
20%	525.0
30%	435.0
40%	360.0
50%	240.0
60%	210.0
70%	180.0
80%	45.0
90%	30.0

****
FLOW PROCESS FROM NODE 20.00 TO NODE 21.00 IS CODE = 1

>>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
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KMV2EU.RES

(UNIT-HYDROGRAPH ADDED TO STREAM #1)

WATERSHED AREA = 3.230 ACRES
BASEFLOW = 0.000 CFS/SQUARE-MILE
Warning: Watershed Area is less than 10 acres
*USER ENTERED "LAG" TIME = 0.105 HOURS
CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
VALLEY S-GRAPH SELECTED
UNIFORM MEAN SOIL-LOSS(INCH/HOUR) = 0.050
LOW SOIL-LOSS RATE PERCENT(DECIMAL) = 0.500
MINIMUM SOIL-LOSS RATE(INCH/HOUR) = 0.010
USER-ENTERED RAINFALL = 1.70 INCHES
RCFC&WCD 24-Hour Storm (15-Minute period) SELECTED
RCFC&WCD DEPTH-AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 1.0000

UNIT HYDROGRAPH TIME UNIT = 15.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 238.777

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	49.304	6.420
2	90.106	5.313
3	97.423	0.953
4	99.347	0.251
5	99.739	0.051
6	99.935	0.026
7	100.000	0.009

UNIT PERIOD (NUMBER)	UNIT RAINFALL (INCHES)	UNIT SOIL-LOSS (INCHES)	EFFECTIVE RAINFALL (INCHES)
1	0.0034	0.0017	0.0017
2	0.0051	0.0025	0.0025
3	0.0051	0.0025	0.0025

4	0.0068	0.0034	0.0034
5	0.0051	0.0025	0.0025
6	0.0051	0.0025	0.0025
7	0.0051	0.0025	0.0025
8	0.0068	0.0034	0.0034
9	0.0068	0.0034	0.0034
10	0.0068	0.0034	0.0034
11	0.0085	0.0042	0.0042
12	0.0085	0.0042	0.0042
13	0.0085	0.0042	0.0042
14	0.0085	0.0042	0.0042
15	0.0085	0.0042	0.0042
16	0.0102	0.0051	0.0051
17	0.0102	0.0051	0.0051
18	0.0119	0.0059	0.0059
19	0.0119	0.0059	0.0059
20	0.0136	0.0068	0.0068
21	0.0102	0.0051	0.0051
22	0.0119	0.0059	0.0059
23	0.0136	0.0068	0.0068
24	0.0136	0.0068	0.0068
25	0.0153	0.0076	0.0076
26	0.0153	0.0076	0.0076
27	0.0170	0.0085	0.0085
28	0.0170	0.0085	0.0085
29	0.0170	0.0085	0.0085
30	0.0187	0.0093	0.0093
31	0.0204	0.0102	0.0102
32	0.0221	0.0110	0.0110
33	0.0255	0.0127	0.0127
34	0.0255	0.0127	0.0127
35	0.0272	0.0136	0.0136
36	0.0289	0.0144	0.0144
37	0.0323	0.0147	0.0176
38	0.0340	0.0143	0.0197
39	0.0357	0.0140	0.0217
40	0.0374	0.0137	0.0237
41	0.0255	0.0127	0.0127
42	0.0255	0.0127	0.0127
43	0.0340	0.0128	0.0212
44	0.0340	0.0125	0.0215
45	0.0323	0.0122	0.0201
46	0.0323	0.0119	0.0204
47	0.0289	0.0116	0.0173
48	0.0306	0.0114	0.0192
49	0.0425	0.0111	0.0314
50	0.0442	0.0108	0.0334
51	0.0476	0.0105	0.0371

52	0.0493	0.0103	0.0390
53	0.0578	0.0100	0.0478
54	0.0578	0.0097	0.0481
55	0.0391	0.0095	0.0296
56	0.0391	0.0092	0.0299
57	0.0459	0.0089	0.0370
58	0.0442	0.0087	0.0355
59	0.0442	0.0084	0.0358
60	0.0425	0.0082	0.0343
61	0.0408	0.0080	0.0328
62	0.0391	0.0077	0.0314
63	0.0323	0.0075	0.0248
64	0.0323	0.0073	0.0250
65	0.0068	0.0034	0.0034
66	0.0068	0.0034	0.0034
67	0.0051	0.0025	0.0025
68	0.0051	0.0025	0.0025
69	0.0085	0.0042	0.0042
70	0.0085	0.0042	0.0042
71	0.0085	0.0042	0.0042
72	0.0068	0.0034	0.0034
73	0.0068	0.0034	0.0034
74	0.0068	0.0034	0.0034
75	0.0051	0.0025	0.0025
76	0.0034	0.0017	0.0017
77	0.0051	0.0025	0.0025
78	0.0068	0.0034	0.0034
79	0.0051	0.0025	0.0025
80	0.0034	0.0017	0.0017
81	0.0051	0.0025	0.0025
82	0.0051	0.0025	0.0025
83	0.0051	0.0025	0.0025
84	0.0034	0.0017	0.0017
85	0.0051	0.0025	0.0025
86	0.0034	0.0017	0.0017
87	0.0051	0.0025	0.0025
88	0.0034	0.0017	0.0017
89	0.0051	0.0025	0.0025
90	0.0034	0.0017	0.0017
91	0.0034	0.0017	0.0017
92	0.0034	0.0017	0.0017
93	0.0034	0.0017	0.0017
94	0.0034	0.0017	0.0017
95	0.0034	0.0017	0.0017
96	0.0034	0.0017	0.0017

TOTAL STORM RAINFALL(INCHES) = 1.70
TOTAL SOIL-LOSS(INCHES) = 0.61

KMV2EU.RES

TOTAL EFFECTIVE RAINFALL(INCHES) = 1.09

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 0.1642
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 0.2933

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2 4 - H O U R S T O R M
R U N O F F H Y D R O G R A P H

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HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	2.5	5.0	7.5	10.0
0.083	0.0001	0.01	Q	.	.	.	.
0.167	0.0002	0.01	Q	.	.	.	.
0.250	0.0002	0.01	Q	.	.	.	.
0.333	0.0004	0.03	Q	.	.	.	.
0.417	0.0006	0.03	Q	.	.	.	.
0.500	0.0008	0.03	Q	.	.	.	.
0.583	0.0010	0.03	Q	.	.	.	.
0.667	0.0012	0.03	Q	.	.	.	.
0.750	0.0014	0.03	Q	.	.	.	.
0.833	0.0017	0.04	Q	.	.	.	.
0.917	0.0019	0.04	Q	.	.	.	.
1.000	0.0022	0.04	Q	.	.	.	.
1.083	0.0025	0.04	Q	.	.	.	.
1.167	0.0027	0.04	Q	.	.	.	.
1.250	0.0030	0.04	Q	.	.	.	.
1.333	0.0032	0.03	Q	.	.	.	.
1.417	0.0034	0.03	Q	.	.	.	.
1.500	0.0037	0.03	Q	.	.	.	.
1.583	0.0039	0.03	Q	.	.	.	.
1.667	0.0041	0.03	Q	.	.	.	.
1.750	0.0044	0.03	Q	.	.	.	.
1.833	0.0046	0.04	Q	.	.	.	.
1.917	0.0049	0.04	Q	.	.	.	.
2.000	0.0052	0.04	Q	.	.	.	.
2.083	0.0055	0.04	Q	.	.	.	.
2.167	0.0058	0.04	Q	.	.	.	.
2.250	0.0061	0.04	Q	.	.	.	.
2.333	0.0064	0.04	Q	.	.	.	.
2.417	0.0067	0.04	Q	.	.	.	.
2.500	0.0070	0.04	Q	.	.	.	.

2.583	0.0073	0.05	Q	.	.	.	.
2.667	0.0076	0.05	QV	.	.	.	.
2.750	0.0080	0.05	QV	.	.	.	.
2.833	0.0084	0.05	QV	.	.	.	.
2.917	0.0087	0.05	QV	.	.	.	.
3.000	0.0091	0.05	QV	.	.	.	.
3.083	0.0095	0.06	QV	.	.	.	.
3.167	0.0099	0.06	QV	.	.	.	.
3.250	0.0102	0.06	QV	.	.	.	.
3.333	0.0106	0.06	QV	.	.	.	.
3.417	0.0110	0.06	QV	.	.	.	.
3.500	0.0114	0.06	QV	.	.	.	.
3.583	0.0118	0.06	QV	.	.	.	.
3.667	0.0121	0.06	QV	.	.	.	.
3.750	0.0125	0.06	QV	.	.	.	.
3.833	0.0129	0.06	QV	.	.	.	.
3.917	0.0134	0.06	QV	.	.	.	.
4.000	0.0138	0.06	QV	.	.	.	.
4.083	0.0142	0.07	QV	.	.	.	.
4.167	0.0147	0.07	Q V	.	.	.	.
4.250	0.0151	0.07	Q V	.	.	.	.
4.333	0.0156	0.07	Q V	.	.	.	.
4.417	0.0161	0.07	Q V	.	.	.	.
4.500	0.0166	0.07	Q V	.	.	.	.
4.583	0.0171	0.08	Q V	.	.	.	.
4.667	0.0177	0.08	Q V	.	.	.	.
4.750	0.0182	0.08	Q V	.	.	.	.
4.833	0.0188	0.08	Q V	.	.	.	.
4.917	0.0193	0.08	Q V	.	.	.	.
5.000	0.0199	0.08	Q V	.	.	.	.
5.083	0.0204	0.08	Q V	.	.	.	.
5.167	0.0210	0.08	Q V	.	.	.	.
5.250	0.0215	0.08	Q V	.	.	.	.
5.333	0.0220	0.07	Q V	.	.	.	.
5.417	0.0225	0.07	Q V	.	.	.	.
5.500	0.0230	0.07	Q V	.	.	.	.
5.583	0.0236	0.08	Q V	.	.	.	.
5.667	0.0241	0.08	Q V	.	.	.	.
5.750	0.0247	0.08	Q V	.	.	.	.
5.833	0.0253	0.09	Q V	.	.	.	.
5.917	0.0259	0.09	Q V	.	.	.	.
6.000	0.0265	0.09	Q V	.	.	.	.
6.083	0.0272	0.09	Q V	.	.	.	.
6.167	0.0278	0.09	Q V	.	.	.	.
6.250	0.0284	0.09	Q V	.	.	.	.
6.333	0.0291	0.10	Q V	.	.	.	.
6.417	0.0298	0.10	Q V	.	.	.	.
6.500	0.0305	0.10	Q V	.	.	.	.

KMV2EU.RES

6.583	0.0312	0.10	Q	V	.	.	.	.
6.667	0.0319	0.10	Q	V	.	.	.	.
6.750	0.0326	0.10	Q	V	.	.	.	.
6.833	0.0334	0.11	Q	V	.	.	.	.
6.917	0.0341	0.11	Q	V	.	.	.	.
7.000	0.0349	0.11	Q	V	.	.	.	.
7.083	0.0357	0.11	Q	V	.	.	.	.
7.167	0.0364	0.11	Q	V	.	.	.	.
7.250	0.0372	0.11	Q	V	.	.	.	.
7.333	0.0380	0.12	Q	V	.	.	.	.
7.417	0.0388	0.12	Q	V	.	.	.	.
7.500	0.0396	0.12	Q	V	.	.	.	.
7.583	0.0404	0.13	Q	V	.	.	.	.
7.667	0.0413	0.13	Q	V	.	.	.	.
7.750	0.0422	0.13	Q	V	.	.	.	.
7.833	0.0431	0.14	Q	V	.	.	.	.
7.917	0.0441	0.14	Q	V	.	.	.	.
8.000	0.0450	0.14	Q	V	.	.	.	.
8.083	0.0461	0.15	Q	V	.	.	.	.
8.167	0.0471	0.15	Q	V	.	.	.	.
8.250	0.0482	0.15	Q	V	.	.	.	.
8.333	0.0493	0.16	Q	V	.	.	.	.
8.417	0.0504	0.16	Q	V	.	.	.	.
8.500	0.0516	0.16	Q	V	.	.	.	.
8.583	0.0527	0.17	Q	V	.	.	.	.
8.667	0.0539	0.17	Q	V	.	.	.	.
8.750	0.0551	0.17	Q	V	.	.	.	.
8.833	0.0563	0.18	Q	V	.	.	.	.
8.917	0.0576	0.18	Q	V	.	.	.	.
9.000	0.0588	0.18	Q	V	.	.	.	.
9.083	0.0603	0.21	Q	V	.	.	.	.
9.167	0.0617	0.21	Q	V	.	.	.	.
9.250	0.0631	0.21	Q	V	.	.	.	.
9.333	0.0648	0.24	Q	V	.	.	.	.
9.417	0.0664	0.24	Q	V	.	.	.	.
9.500	0.0680	0.24	Q	V	.	.	.	.
9.583	0.0699	0.27	.Q	V	.	.	.	.
9.667	0.0717	0.27	.Q	V	.	.	.	.
9.750	0.0735	0.27	.Q	V	.	.	.	.
9.833	0.0755	0.29	.Q	V	.	.	.	.
9.917	0.0775	0.29	.Q	V	.	.	.	.
10.000	0.0795	0.29	.Q	V	.	.	.	.
10.083	0.0811	0.23	Q	.V	.	.	.	.
10.167	0.0828	0.23	Q	.V	.	.	.	.
10.250	0.0844	0.23	Q	.V	.	.	.	.
10.333	0.0856	0.18	Q	.V	.	.	.	.
10.417	0.0868	0.18	Q	.V	.	.	.	.
10.500	0.0881	0.18	Q	. V	.	.	.	.

KMV2EU.RES

10.583	0.0896	0.22	Q	. V . . .
10.667	0.0912	0.22	Q	. V . . .
10.750	0.0927	0.22	Q	. V . . .
10.833	0.0945	0.27	.Q	. V . . .
10.917	0.0964	0.27	.Q	. V . . .
11.000	0.0982	0.27	.Q	. V . . .
11.083	0.1001	0.27	.Q	. V . . .
11.167	0.1019	0.27	.Q	. V . . .
11.250	0.1038	0.27	.Q	. V . . .
11.333	0.1056	0.26	.Q	. V . . .
11.417	0.1074	0.26	.Q	. V . . .
11.500	0.1092	0.26	.Q	. V . . .

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	2.5	5.0	7.5	10.0
11.583	0.1109	0.25	Q	. V .	.	.	
11.667	0.1126	0.25	Q	. V .	.	.	
11.750	0.1143	0.25	Q	. V .	.	.	
11.833	0.1160	0.24	Q	. V .	.	.	
11.917	0.1176	0.24	Q	. V .	.	.	
12.000	0.1193	0.24	Q	. V .	.	.	
12.083	0.1215	0.33	.Q	. V .	.	.	
12.167	0.1238	0.33	.Q	. V .	.	.	
12.250	0.1260	0.33	.Q	. V .	.	.	
12.333	0.1288	0.41	.Q	. V .	.	.	
12.417	0.1316	0.41	.Q	. V .	.	.	
12.500	0.1344	0.41	.Q	. V .	.	.	
12.583	0.1375	0.45	.Q	. V .	.	.	
12.667	0.1406	0.45	.Q	. V.	.	.	
12.750	0.1438	0.45	.Q	. V.	.	.	
12.833	0.1471	0.49	.Q	. V	.	.	
12.917	0.1505	0.49	.Q	. V	.	.	
13.000	0.1539	0.49	.Q	. V	.	.	
13.083	0.1577	0.56	. Q	. .V	.	.	
13.167	0.1616	0.56	. Q	. . V	.	.	
13.250	0.1654	0.56	. Q	. . V	.	.	
13.333	0.1697	0.61	. Q	. . V	.	.	
13.417	0.1739	0.61	. Q	. . V	.	.	
13.500	0.1781	0.61	. Q	. . V	.	.	
13.583	0.1816	0.50	. Q	. . V	.	.	
13.667	0.1850	0.50	. Q	. . V	.	.	
13.750	0.1885	0.50	. Q	. . V	.	.	
13.833	0.1913	0.41	.Q	. . V	.	.	
13.917	0.1942	0.41	.Q	. . V	.	.	
14.000	0.1970	0.41	.Q	. . V	.	.	
14.083	0.2000	0.44	.Q	. . V	.	.	
14.167	0.2030	0.44	.Q	. . V	.	.	

```
14.250      0.2061      0.44  .Q          .          .       V .          .
14.333      0.2093      0.46  .Q          .          .       V .          .
14.417      0.2125      0.46  .Q          .          .       V .          .
14.500      0.2157      0.46  .Q          .          .        V.          .
14.583      0.2189      0.46  .Q          .          .        V.          .
14.667      0.2221      0.46  .Q          .          .         V          .
14.750      0.2253      0.46  .Q          .          .         V          .
14.833      0.2284      0.46  .Q          .          .         .V         .
14.917      0.2315      0.46  .Q          .          .         .V         .
15.000      0.2347      0.46  .Q          .          .         . V        .
15.083      0.2377      0.44  .Q          .          .         . V        .
15.167      0.2407      0.44  .Q          .          .         . V        .
15.250      0.2437      0.44  .Q          .          .         .  V       .
15.333      0.2466      0.42  .Q          .          .         .  V       .
15.417      0.2495      0.42  .Q          .          .         .   V      .
15.500      0.2524      0.42  .Q          .          .         .   V      .
15.583      0.2550      0.37  .Q          .          .         .   V      .
15.667      0.2575      0.37  .Q          .          .         .    V     .
15.750      0.2600      0.37  .Q          .          .         .    V     .
15.833      0.2623      0.33  .Q          .          .         .    V     .
15.917      0.2646      0.33  .Q          .          .         .     V    .
16.000      0.2669      0.33  .Q          .          .         .     V    .
16.083      0.2682      0.19  Q           .          .         .     V    .
16.167      0.2695      0.19  Q           .          .         .     V    .
16.250      0.2709      0.19  Q           .          .         .     V    .
16.333      0.2714      0.07  Q           .          .         .      V   .
16.417      0.2719      0.07  Q           .          .         .      V   .
16.500      0.2724      0.07  Q           .          .         .      V   .
16.583      0.2727      0.05  Q           .          .         .      V   .
16.667      0.2730      0.05  Q           .          .         .      V   .
16.750      0.2733      0.05  Q           .          .         .      V   .
16.833      0.2736      0.04  Q           .          .         .      V   .
16.917      0.2738      0.04  Q           .          .         .      V   .
17.000      0.2741      0.04  Q           .          .         .      V   .
17.083      0.2744      0.05  Q           .          .         .      V   .
17.167      0.2747      0.05  Q           .          .         .      V   .
17.250      0.2750      0.05  Q           .          .         .      V   .
17.333      0.2754      0.05  Q           .          .         .      V   .
17.417      0.2757      0.05  Q           .          .         .      V   .
17.500      0.2761      0.05  Q           .          .         .      V   .
17.583      0.2765      0.05  Q           .          .         .      V   .
17.667      0.2768      0.05  Q           .          .         .      V   .
17.750      0.2772      0.05  Q           .          .         .      V   .
17.833      0.2776      0.05  Q           .          .         .      V   .
17.917      0.2779      0.05  Q           .          .         .      V   .
18.000      0.2783      0.05  Q           .          .         .      V   .
18.083      0.2786      0.05  Q           .          .         .      V   .
18.167      0.2789      0.05  Q           .          .         .       V  .
```

18.250	0.2792	0.05	Q	.	.	.	V .
18.333	0.2795	0.04	Q	.	.	.	V .
18.417	0.2798	0.04	Q	.	.	.	V .
18.500	0.2801	0.04	Q	.	.	.	V .
18.583	0.2804	0.04	Q	.	.	.	V .
18.667	0.2806	0.04	Q	.	.	.	V .
18.750	0.2809	0.04	Q	.	.	.	V .
18.833	0.2811	0.03	Q	.	.	.	V .
18.917	0.2813	0.03	Q	.	.	.	V .
19.000	0.2815	0.03	Q	.	.	.	V .
19.083	0.2817	0.03	Q	.	.	.	V .
19.167	0.2819	0.03	Q	.	.	.	V .
19.250	0.2821	0.03	Q	.	.	.	V .
19.333	0.2824	0.04	Q	.	.	.	V .
19.417	0.2826	0.04	Q	.	.	.	V .
19.500	0.2829	0.04	Q	.	.	.	V .
19.583	0.2831	0.04	Q	.	.	.	V .
19.667	0.2834	0.04	Q	.	.	.	V .
19.750	0.2837	0.04	Q	.	.	.	V .
19.833	0.2839	0.03	Q	.	.	.	V .
19.917	0.2841	0.03	Q	.	.	.	V .
20.000	0.2843	0.03	Q	.	.	.	V .
20.083	0.2845	0.03	Q	.	.	.	V .
20.167	0.2847	0.03	Q	.	.	.	V .
20.250	0.2849	0.03	Q	.	.	.	V .
20.333	0.2851	0.03	Q	.	.	.	V .
20.417	0.2853	0.03	Q	.	.	.	V .
20.500	0.2855	0.03	Q	.	.	.	V .
20.583	0.2858	0.03	Q	.	.	.	V .
20.667	0.2860	0.03	Q	.	.	.	V.
20.750	0.2862	0.03	Q	.	.	.	V.
20.833	0.2864	0.03	Q	.	.	.	V.
20.917	0.2866	0.03	Q	.	.	.	V.
21.000	0.2868	0.03	Q	.	.	.	V.
21.083	0.2870	0.03	Q	.	.	.	V.
21.167	0.2872	0.03	Q	.	.	.	V.
21.250	0.2874	0.03	Q	.	.	.	V.
21.333	0.2876	0.03	Q	.	.	.	V.
21.417	0.2877	0.03	Q	.	.	.	V.
21.500	0.2879	0.03	Q	.	.	.	V.
21.583	0.2881	0.03	Q	.	.	.	V.
21.667	0.2883	0.03	Q	.	.	.	V.
21.750	0.2885	0.03	Q	.	.	.	V.
21.833	0.2887	0.03	Q	.	.	.	V.
21.917	0.2889	0.03	Q	.	.	.	V.
22.000	0.2891	0.03	Q	.	.	.	V.
22.083	0.2893	0.03	Q	.	.	.	V.
22.167	0.2895	0.03	Q	.	.	.	V.

22.250	0.2897	0.03	Q	.	.	.	V.
22.333	0.2898	0.03	Q	.	.	.	V.
22.417	0.2900	0.03	Q	.	.	.	V.
22.500	0.2902	0.03	Q	.	.	.	V.
22.583	0.2904	0.02	Q	.	.	.	V.
22.667	0.2905	0.02	Q	.	.	.	V.
22.750	0.2907	0.02	Q	.	.	.	V.
22.833	0.2908	0.02	Q	.	.	.	V.
22.917	0.2910	0.02	Q	.	.	.	V.
23.000	0.2912	0.02	Q	.	.	.	V.
23.083	0.2913	0.02	Q	.	.	.	V.
23.166	0.2915	0.02	Q	.	.	.	V.
23.250	0.2916	0.02	Q	.	.	.	V.
23.333	0.2918	0.02	Q	.	.	.	V.
23.416	0.2919	0.02	Q	.	.	.	V.
23.500	0.2921	0.02	Q	.	.	.	V.
23.583	0.2922	0.02	Q	.	.	.	V.
23.666	0.2924	0.02	Q	.	.	.	V.
23.750	0.2925	0.02	Q	.	.	.	V.
23.833	0.2927	0.02	Q	.	.	.	V.
23.916	0.2928	0.02	Q	.	.	.	V.
24.000	0.2930	0.02	Q	.	.	.	V.

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	2.5	5.0	7.5	10.0
24.083	0.2931	0.01	Q	.	.	.	V.
24.166	0.2931	0.01	Q	.	.	.	V.
24.250	0.2932	0.01	Q	.	.	.	V.
24.333	0.2932	0.00	Q	.	.	.	V.
24.416	0.2932	0.00	Q	.	.	.	V.
24.500	0.2933	0.00	Q	.	.	.	V.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1470.0
10%	750.0
20%	525.0
30%	420.0
40%	330.0
50%	240.0
60%	210.0
70%	150.0

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80%	45.0
90%	30.0

==========

END OF FLOODSCx ROUTING ANALYSIS

APPENDIX F

Proposed Hydrology Calculations
2 Year Rainfall Frequency

KMV2P.RES

```
************************************************************************
  INTEGRATED RATIONAL METHOD/UH 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:




 ************************** DESCRIPTION OF STUDY **************************
* CAR PROS KIA SALES AND SERVICE FACILITY                                 *
* XO 5/16/19                                                              *
* KMV2P.RES                                                               *
 ************************************************************************

  FILE NAME: KMV2P.DAT
  TIME/DATE OF STUDY: 09:52 05/16/2019
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 1.00
  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 =    2.00   1-HOUR INTENSITY(INCH/HOUR) =   0.554
  SLOPE OF INTENSITY DURATION CURVE = 0.5004
  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.*

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    VALLEY S-GRAPH USED.
    *24-HOUR (15-MINUTE PERIOD) DESIGN STORM USED.
    UNADJUSTED 24-HOUR RAINFALL DEPTH (INCHES) =   0.67
    USER-SPECIFIED DEPTH-AREA REDUCTION FACTOR:
      FOR 24-HOUR RAINFALL DEPTH =  1.00
    LOW LOSS RATE PERCENTAGE =  0.85
    MINIMUM LOSS RATE PERCENTAGE FOR 24-HOUR STORM =  0.05
  *PRECIPITATION ZONE NUMBER (PZN) = 2.0
  *ANTECEDENT MOISTURE CONDITION (AMC) =  0.00 ASSUMED FOR UNIT HYDROGRAPH METHOD*


****************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     11.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   324.00
  UPSTREAM ELEVATION(FEET) =     54.30
  DOWNSTREAM ELEVATION(FEET) =     49.80
  ELEVATION DIFFERENCE(FEET) =      4.50
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.602
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Runoff      SCS   Tc
       LAND USE            GROUP   (ACRES)   Coefficient    CN  (MIN.)
  COMMERCIAL                 D        0.64     0.8805       75    7.20
  SUBAREA RUNOFF(CFS) =      0.90
  TOTAL AREA(ACRES) =      0.64   TOTAL RUNOFF(CFS) =      0.90

****************************************************************************
  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) =    45.70  DOWNSTREAM(FEET) =    39.70
  FLOW LENGTH(FEET) =    57.00   MANNING'S N =  0.015
```

```
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   3.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.31
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.90
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =    7.31
  LONGEST FLOWPATH FROM NODE     10.00 TO NODE     12.00 =     381.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     12.00 TO NODE     12.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     21.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   412.00
  UPSTREAM ELEVATION(FEET) =     54.30
  DOWNSTREAM ELEVATION(FEET) =     46.80
  ELEVATION DIFFERENCE(FEET) =      7.50
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.569
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Runoff      SCS   Tc
       LAND USE            GROUP   (ACRES)   Coefficient    CN  (MIN.)
  COMMERCIAL                 D        1.41     0.8801       75    7.51
  SUBAREA RUNOFF(CFS) =      1.95
  TOTAL AREA(ACRES) =      1.41   TOTAL RUNOFF(CFS) =      1.95

****************************************************************************
  FLOW PROCESS FROM NODE     21.00 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) =    44.30  DOWNSTREAM(FEET) =    39.70
  FLOW LENGTH(FEET) =   423.00   MANNING'S N =  0.015
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.29
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.95
  PIPE TRAVEL TIME(MIN.) =   1.64    Tc(MIN.) =    9.15
  LONGEST FLOWPATH FROM NODE     10.00 TO NODE     12.00 =     835.00 FEET.

****************************************************************************
```

```
 FLOW PROCESS FROM NODE     12.00 TO NODE     12.00 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        1.95     9.15       1.421        1.41
 LONGEST FLOWPATH FROM NODE     10.00 TO NODE     12.00 =     835.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1        0.90     7.31       1.589        0.64
 LONGEST FLOWPATH FROM NODE     10.00 TO NODE     12.00 =     381.00 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       2.46       7.31        1.589
     2       2.75       9.15        1.421

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       2.75   Tc(MIN.) =    9.15
 TOTAL AREA(ACRES) =        2.0

****************************************************************************
 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) =    39.70  DOWNSTREAM(FEET) =    36.50
 FLOW LENGTH(FEET) =    85.00   MANNING'S N =  0.015
 DEPTH OF FLOW IN   9.0 INCH PIPE IS   7.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.19
 ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       2.75
 PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =    9.35
 LONGEST FLOWPATH FROM NODE     10.00 TO NODE     13.00 =     920.00 FEET.
```

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```
**************************************************************************
  FLOW PROCESS FROM NODE     30.00 TO NODE     31.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   884.00
  UPSTREAM ELEVATION(FEET) =     50.90
  DOWNSTREAM ELEVATION(FEET) =     44.90
  ELEVATION DIFFERENCE(FEET) =      6.00
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.182
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Runoff      SCS   Tc
       LAND USE            GROUP   (ACRES)   Coefficient    CN  (MIN.)
  APARTMENTS                 D        3.64     0.8508       75   13.21
  SUBAREA RUNOFF(CFS) =      3.66
  TOTAL AREA(ACRES) =      3.64   TOTAL RUNOFF(CFS) =      3.66

**************************************************************************
  FLOW PROCESS FROM NODE     31.00 TO NODE     32.00 IS CODE =  31
--------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    42.86  DOWNSTREAM(FEET) =    41.60
  FLOW LENGTH(FEET) =   282.00   MANNING'S N =  0.015
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  12.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.48
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.66
  PIPE TRAVEL TIME(MIN.) =   1.35    Tc(MIN.) =   14.57
  LONGEST FLOWPATH FROM NODE     30.00 TO NODE     32.00 =    1166.00 FEET.
==========================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        3.6  TC(MIN.) =     14.57
  PEAK FLOW RATE(CFS)   =       3.66
==========================================================================
==========================================================================
  END OF RATIONAL METHOD ANALYSIS
```

KMV2PU.RES

```
**************************************************************************

              F L O O D    R O U T I N G    A N A L Y S I S

ACCORDING TO RIVERSIDE COUNTY FLOOD CONTORL AND WATER CONSERVATION DISTRICT
                    (RCFC&WCD) 1978 HYDROLOGY MANUAL
         (c) Copyright 1989-2011 Advanced Engineering Software (aes)
                 (Synthetic Unit Hydrograph Version 18.0)
                 Release Date: 05/01/2011  License ID 1499

                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* CAR PROS KIA SALES AND SERVICE FACILITY                                 *
* XO 5/16/19                                                              *
* KMV2PU.RES                                                              *
 **************************************************************************

  FILE NAME: KMV2PU.DAT
  TIME/DATE OF STUDY: 11:24 05/16/2019


**************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     13.00 IS CODE =   1
--------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
==========================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =       2.050 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
  Warning: Watershed Area is less than 10 acres
         *USER ENTERED "LAG" TIME =    0.125 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY S-GRAPH SELECTED
         UNIFORM MEAN SOIL-LOSS(INCH/HOUR) =  0.050
         LOW SOIL-LOSS RATE PERCENT(DECIMAL) = 0.500
         MINIMUM SOIL-LOSS RATE(INCH/HOUR) =   0.010
```

KMV2PU.RES

USER-ENTERED RAINFALL = 1.70 INCHES
RCFC&WCD 24-Hour Storm (15-Minute period) SELECTED
RCFC&WCD DEPTH-AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 1.0000

UNIT HYDROGRAPH TIME UNIT = 15.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 200.481

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	43.361	3.583
2	86.804	3.590
3	95.553	0.723
4	98.648	0.256
5	99.513	0.071
6	99.805	0.024
7	99.951	0.012
8	100.000	0.004

UNIT PERIOD (NUMBER)	UNIT RAINFALL (INCHES)	UNIT SOIL-LOSS (INCHES)	EFFECTIVE RAINFALL (INCHES)
1	0.0034	0.0017	0.0017
2	0.0051	0.0025	0.0025
3	0.0051	0.0025	0.0025
4	0.0068	0.0034	0.0034
5	0.0051	0.0025	0.0025
6	0.0051	0.0025	0.0025
7	0.0051	0.0025	0.0025
8	0.0068	0.0034	0.0034
9	0.0068	0.0034	0.0034
10	0.0068	0.0034	0.0034
11	0.0085	0.0042	0.0042
12	0.0085	0.0042	0.0042
13	0.0085	0.0042	0.0042
14	0.0085	0.0042	0.0042
15	0.0085	0.0042	0.0042

16	0.0102	0.0051	0.0051
17	0.0102	0.0051	0.0051
18	0.0119	0.0059	0.0059
19	0.0119	0.0059	0.0059
20	0.0136	0.0068	0.0068
21	0.0102	0.0051	0.0051
22	0.0119	0.0059	0.0059
23	0.0136	0.0068	0.0068
24	0.0136	0.0068	0.0068
25	0.0153	0.0076	0.0076
26	0.0153	0.0076	0.0076
27	0.0170	0.0085	0.0085
28	0.0170	0.0085	0.0085
29	0.0170	0.0085	0.0085
30	0.0187	0.0093	0.0093
31	0.0204	0.0102	0.0102
32	0.0221	0.0110	0.0110
33	0.0255	0.0127	0.0127
34	0.0255	0.0127	0.0127
35	0.0272	0.0136	0.0136
36	0.0289	0.0144	0.0144
37	0.0323	0.0147	0.0176
38	0.0340	0.0143	0.0197
39	0.0357	0.0140	0.0217
40	0.0374	0.0137	0.0237
41	0.0255	0.0127	0.0127
42	0.0255	0.0127	0.0127
43	0.0340	0.0128	0.0212
44	0.0340	0.0125	0.0215
45	0.0323	0.0122	0.0201
46	0.0323	0.0119	0.0204
47	0.0289	0.0116	0.0173
48	0.0306	0.0114	0.0192
49	0.0425	0.0111	0.0314
50	0.0442	0.0108	0.0334
51	0.0476	0.0105	0.0371
52	0.0493	0.0103	0.0390
53	0.0578	0.0100	0.0478
54	0.0578	0.0097	0.0481
55	0.0391	0.0095	0.0296
56	0.0391	0.0092	0.0299
57	0.0459	0.0089	0.0370
58	0.0442	0.0087	0.0355
59	0.0442	0.0084	0.0358
60	0.0425	0.0082	0.0343
61	0.0408	0.0080	0.0328
62	0.0391	0.0077	0.0314
63	0.0323	0.0075	0.0248

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64	0.0323	0.0073	0.0250
65	0.0068	0.0034	0.0034
66	0.0068	0.0034	0.0034
67	0.0051	0.0025	0.0025
68	0.0051	0.0025	0.0025
69	0.0085	0.0042	0.0042
70	0.0085	0.0042	0.0042
71	0.0085	0.0042	0.0042
72	0.0068	0.0034	0.0034
73	0.0068	0.0034	0.0034
74	0.0068	0.0034	0.0034
75	0.0051	0.0025	0.0025
76	0.0034	0.0017	0.0017
77	0.0051	0.0025	0.0025
78	0.0068	0.0034	0.0034
79	0.0051	0.0025	0.0025
80	0.0034	0.0017	0.0017
81	0.0051	0.0025	0.0025
82	0.0051	0.0025	0.0025
83	0.0051	0.0025	0.0025
84	0.0034	0.0017	0.0017
85	0.0051	0.0025	0.0025
86	0.0034	0.0017	0.0017
87	0.0051	0.0025	0.0025
88	0.0034	0.0017	0.0017
89	0.0051	0.0025	0.0025
90	0.0034	0.0017	0.0017
91	0.0034	0.0017	0.0017
92	0.0034	0.0017	0.0017
93	0.0034	0.0017	0.0017
94	0.0034	0.0017	0.0017
95	0.0034	0.0017	0.0017
96	0.0034	0.0017	0.0017

TOTAL STORM RAINFALL(INCHES) = 1.70
TOTAL SOIL-LOSS(INCHES) = 0.61
TOTAL EFFECTIVE RAINFALL(INCHES) = 1.09

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 0.1042
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 0.1861

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2 4 - H O U R S T O R M
R U N O F F H Y D R O G R A P H

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HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	2.5	5.0	7.5	10.0
0.083	0.0000	0.01	Q	.	.	.	.
0.167	0.0001	0.01	Q	.	.	.	.
0.250	0.0001	0.01	Q	.	.	.	.
0.333	0.0002	0.02	Q	.	.	.	.
0.417	0.0003	0.02	Q	.	.	.	.
0.500	0.0004	0.02	Q	.	.	.	.
0.583	0.0006	0.02	Q	.	.	.	.
0.667	0.0007	0.02	Q	.	.	.	.
0.750	0.0008	0.02	Q	.	.	.	.
0.833	0.0010	0.02	Q	.	.	.	.
0.917	0.0012	0.02	Q	.	.	.	.
1.000	0.0013	0.02	Q	.	.	.	.
1.083	0.0015	0.02	Q	.	.	.	.
1.167	0.0017	0.02	Q	.	.	.	.
1.250	0.0018	0.02	Q	.	.	.	.
1.333	0.0020	0.02	Q	.	.	.	.
1.417	0.0021	0.02	Q	.	.	.	.
1.500	0.0023	0.02	Q	.	.	.	.
1.583	0.0024	0.02	Q	.	.	.	.
1.667	0.0026	0.02	Q	.	.	.	.
1.750	0.0027	0.02	Q	.	.	.	.
1.833	0.0029	0.02	Q	.	.	.	.
1.917	0.0030	0.02	Q	.	.	.	.
2.000	0.0032	0.02	Q	.	.	.	.
2.083	0.0034	0.03	Q	.	.	.	.
2.167	0.0036	0.03	Q	.	.	.	.
2.250	0.0038	0.03	Q	.	.	.	.
2.333	0.0040	0.03	Q	.	.	.	.
2.417	0.0042	0.03	Q	.	.	.	.
2.500	0.0043	0.03	Q	.	.	.	.
2.583	0.0046	0.03	Q	.	.	.	.
2.667	0.0048	0.03	QV	.	.	.	.
2.750	0.0050	0.03	QV	.	.	.	.
2.833	0.0052	0.03	QV	.	.	.	.
2.917	0.0055	0.03	QV	.	.	.	.
3.000	0.0057	0.03	QV	.	.	.	.
3.083	0.0059	0.03	QV	.	.	.	.
3.167	0.0062	0.03	QV	.	.	.	.
3.250	0.0064	0.03	QV	.	.	.	.
3.333	0.0067	0.04	QV	.	.	.	.
3.417	0.0069	0.04	QV	.	.	.	.
3.500	0.0071	0.04	QV	.	.	.	.

3.583	0.0074	0.04	QV	.	.	.	.
3.667	0.0076	0.04	QV	.	.	.	.
3.750	0.0079	0.04	QV	.	.	.	.
3.833	0.0081	0.04	QV	.	.	.	.
3.917	0.0084	0.04	QV	.	.	.	.
4.000	0.0087	0.04	QV	.	.	.	.
4.083	0.0089	0.04	QV	.	.	.	.
4.167	0.0092	0.04	QV	.	.	.	.
4.250	0.0095	0.04	Q V	.	.	.	.
4.333	0.0098	0.04	Q V	.	.	.	.
4.417	0.0101	0.04	Q V	.	.	.	.
4.500	0.0104	0.04	Q V	.	.	.	.
4.583	0.0108	0.05	Q V	.	.	.	.
4.667	0.0111	0.05	Q V	.	.	.	.
4.750	0.0114	0.05	Q V	.	.	.	.
4.833	0.0118	0.05	Q V	.	.	.	.
4.917	0.0121	0.05	Q V	.	.	.	.
5.000	0.0125	0.05	Q V	.	.	.	.
5.083	0.0128	0.05	Q V	.	.	.	.
5.167	0.0132	0.05	Q V	.	.	.	.
5.250	0.0135	0.05	Q V	.	.	.	.
5.333	0.0138	0.05	Q V	.	.	.	.
5.417	0.0142	0.05	Q V	.	.	.	.
5.500	0.0145	0.05	Q V	.	.	.	.
5.583	0.0148	0.05	Q V	.	.	.	.
5.667	0.0152	0.05	Q V	.	.	.	.
5.750	0.0155	0.05	Q V	.	.	.	.
5.833	0.0159	0.06	Q V	.	.	.	.
5.917	0.0163	0.06	Q V	.	.	.	.
6.000	0.0167	0.06	Q V	.	.	.	.
6.083	0.0171	0.06	Q V	.	.	.	.
6.167	0.0175	0.06	Q V	.	.	.	.
6.250	0.0179	0.06	Q V	.	.	.	.
6.333	0.0183	0.06	Q V	.	.	.	.
6.417	0.0188	0.06	Q V	.	.	.	.
6.500	0.0192	0.06	Q V	.	.	.	.
6.583	0.0196	0.07	Q V	.	.	.	.
6.667	0.0201	0.07	Q V	.	.	.	.
6.750	0.0205	0.07	Q V	.	.	.	.
6.833	0.0210	0.07	Q V	.	.	.	.
6.917	0.0215	0.07	Q V	.	.	.	.
7.000	0.0220	0.07	Q V	.	.	.	.
7.083	0.0225	0.07	Q V	.	.	.	.
7.167	0.0229	0.07	Q V	.	.	.	.
7.250	0.0234	0.07	Q V	.	.	.	.
7.333	0.0239	0.07	Q V	.	.	.	.
7.417	0.0244	0.07	Q V	.	.	.	.
7.500	0.0249	0.07	Q V	.	.	.	.

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```
 7.583      0.0255      0.08  Q    V    .         .         .         .
 7.667      0.0260      0.08  Q    V    .         .         .         .
 7.750      0.0266      0.08  Q    V    .         .         .         .
 7.833      0.0272      0.09  Q    V    .         .         .         .
 7.917      0.0278      0.09  Q    V    .         .         .         .
 8.000      0.0284      0.09  Q     V   .         .         .         .
 8.083      0.0290      0.10  Q     V   .         .         .         .
 8.167      0.0297      0.10  Q     V   .         .         .         .
 8.250      0.0303      0.10  Q     V   .         .         .         .
 8.333      0.0310      0.10  Q     V   .         .         .         .
 8.417      0.0318      0.10  Q     V   .         .         .         .
 8.500      0.0325      0.10  Q     V   .         .         .         .
 8.583      0.0332      0.11  Q      V  .         .         .         .
 8.667      0.0339      0.11  Q      V  .         .         .         .
 8.750      0.0347      0.11  Q      V  .         .         .         .
 8.833      0.0355      0.11  Q      V  .         .         .         .
 8.917      0.0363      0.11  Q      V  .         .         .         .
 9.000      0.0371      0.11  Q      V  .         .         .         .
 9.083      0.0379      0.13  Q       V .         .         .         .
 9.167      0.0388      0.13  Q       V .         .         .         .
 9.250      0.0397      0.13  Q       V .         .         .         .
 9.333      0.0408      0.15  Q       V .         .         .         .
 9.417      0.0418      0.15  Q       V .         .         .         .
 9.500      0.0428      0.15  Q        V.         .         .         .
 9.583      0.0440      0.17  Q        V.         .         .         .
 9.667      0.0451      0.17  Q        V.         .         .         .
 9.750      0.0462      0.17  Q        V.         .         .         .
 9.833      0.0475      0.18  Q         V         .         .         .
 9.917      0.0488      0.18  Q         V         .         .         .
10.000      0.0500      0.18  Q         V         .         .         .
10.083      0.0511      0.15  Q         V         .         .         .
10.167      0.0521      0.15  Q          V        .         .         .
10.250      0.0532      0.15  Q          V        .         .         .
10.333      0.0540      0.12  Q         .V        .         .         .
10.417      0.0548      0.12  Q         .V        .         .         .
10.500      0.0556      0.12  Q         .V        .         .         .
10.583      0.0565      0.14  Q         . V       .         .         .
10.667      0.0575      0.14  Q         . V       .         .         .
10.750      0.0585      0.14  Q         . V       .         .         .
10.833      0.0596      0.17  Q         . V       .         .         .
10.917      0.0608      0.17  Q         .  V      .         .         .
11.000      0.0619      0.17  Q         .  V      .         .         .
11.083      0.0631      0.17  Q         .  V      .         .         .
11.167      0.0643      0.17  Q         .  V      .         .         .
11.250      0.0654      0.17  Q         .   V     .         .         .
11.333      0.0666      0.17  Q         .   V     .         .         .
11.417      0.0677      0.17  Q         .   V     .         .         .
11.500      0.0689      0.17  Q         .   V     .         .         .
```

KMV2PU.RES

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	2.5	5.0	7.5	10.0
11.583	0.0700	0.16	Q	.	V .	.	.
11.667	0.0711	0.16	Q	.	V .	.	.
11.750	0.0721	0.16	Q	.	V .	.	.
11.833	0.0732	0.15	Q	.	V .	.	.
11.917	0.0743	0.15	Q	.	V .	.	.
12.000	0.0753	0.15	Q	.	V .	.	.
12.083	0.0767	0.20	Q	.	V .	.	.
12.167	0.0781	0.20	Q	.	V .	.	.
12.250	0.0795	0.20	Q	.	V .	.	.
12.333	0.0812	0.25	.Q	.	V .	.	.
12.417	0.0830	0.25	.Q	.	V .	.	.
12.500	0.0847	0.25	.Q	.	V .	.	.
12.583	0.0866	0.28	.Q	.	V .	.	.
12.667	0.0886	0.28	.Q	.	V.	.	.
12.750	0.0905	0.28	.Q	.	V.	.	.
12.833	0.0927	0.31	.Q	.	V.	.	.
12.917	0.0948	0.31	.Q	.	V	.	.
13.000	0.0969	0.31	.Q	.	V	.	.
13.083	0.0993	0.35	.Q	.	.V	.	.
13.167	0.1017	0.35	.Q	.	.V	.	.
13.250	0.1041	0.35	.Q	.	. V	.	.
13.333	0.1068	0.39	.Q	.	. V	.	.
13.417	0.1094	0.39	.Q	.	. V	.	.
13.500	0.1121	0.39	.Q	.	. V	.	.
13.583	0.1143	0.33	.Q	.	. V	.	.
13.667	0.1166	0.33	.Q	.	. V	.	.
13.750	0.1188	0.33	.Q	.	. V	.	.
13.833	0.1207	0.26	.Q	.	. V	.	.
13.917	0.1225	0.26	.Q	.	. V	.	.
14.000	0.1243	0.26	.Q	.	. V	.	.
14.083	0.1262	0.28	.Q	.	. V	.	.
14.167	0.1281	0.28	.Q	.	. V	.	.
14.250	0.1301	0.28	.Q	.	. V	.	.
14.333	0.1321	0.29	.Q	.	. V	.	.
14.417	0.1341	0.29	.Q	.	. V	.	.
14.500	0.1361	0.29	.Q	.	. V.	.	.
14.583	0.1382	0.29	.Q	.	. V.	.	.
14.667	0.1402	0.29	.Q	.	. V	.	.
14.750	0.1422	0.29	.Q	.	. V	.	.
14.833	0.1442	0.29	.Q	.	. V	.	.
14.917	0.1462	0.29	.Q	.	. V	.	.
15.000	0.1482	0.29	.Q	.	. V	.	.
15.083	0.1501	0.28	.Q	.	. . V	.	.
15.167	0.1521	0.28	.Q	.	. . V	.	.

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15.250      0.1540      0.28  .Q        .         .         .  V       .
15.333      0.1558      0.27  .Q        .         .         .  V       .
15.417      0.1577      0.27  .Q        .         .         .  V       .
15.500      0.1595      0.27  .Q        .         .         .   V      .
15.583      0.1612      0.24  Q         .         .         .   V      .
15.667      0.1628      0.24  Q         .         .         .   V      .
15.750      0.1644      0.24  Q         .         .         .    V     .
15.833      0.1659      0.21  Q         .         .         .    V     .
15.917      0.1674      0.21  Q         .         .         .    V     .
16.000      0.1689      0.21  Q         .         .         .     V    .
16.083      0.1698      0.13  Q         .         .         .     V    .
16.167      0.1707      0.13  Q         .         .         .     V    .
16.250      0.1716      0.13  Q         .         .         .     V    .
16.333      0.1719      0.05  Q         .         .         .     V    .
16.417      0.1723      0.05  Q         .         .         .      V   .
16.500      0.1727      0.05  Q         .         .         .      V   .
16.583      0.1729      0.03  Q         .         .         .      V   .
16.667      0.1731      0.03  Q         .         .         .      V   .
16.750      0.1734      0.03  Q         .         .         .      V   .
16.833      0.1735      0.02  Q         .         .         .      V   .
16.917      0.1737      0.02  Q         .         .         .      V   .
17.000      0.1739      0.02  Q         .         .         .      V   .
17.083      0.1741      0.03  Q         .         .         .      V   .
17.167      0.1743      0.03  Q         .         .         .      V   .
17.250      0.1745      0.03  Q         .         .         .      V   .
17.333      0.1747      0.03  Q         .         .         .      V   .
17.417      0.1749      0.03  Q         .         .         .      V   .
17.500      0.1751      0.03  Q         .         .         .      V   .
17.583      0.1754      0.03  Q         .         .         .      V   .
17.667      0.1756      0.03  Q         .         .         .      V   .
17.750      0.1759      0.03  Q         .         .         .      V   .
17.833      0.1761      0.03  Q         .         .         .      V   .
17.917      0.1763      0.03  Q         .         .         .      V   .
18.000      0.1765      0.03  Q         .         .         .      V   .
18.083      0.1767      0.03  Q         .         .         .      V   .
18.167      0.1769      0.03  Q         .         .         .       V  .
18.250      0.1771      0.03  Q         .         .         .       V  .
18.333      0.1773      0.03  Q         .         .         .       V  .
18.417      0.1775      0.03  Q         .         .         .       V  .
18.500      0.1777      0.03  Q         .         .         .       V  .
18.583      0.1779      0.03  Q         .         .         .       V  .
18.667      0.1781      0.03  Q         .         .         .       V  .
18.750      0.1782      0.03  Q         .         .         .       V  .
18.833      0.1784      0.02  Q         .         .         .       V  .
18.917      0.1785      0.02  Q         .         .         .       V  .
19.000      0.1786      0.02  Q         .         .         .       V  .
19.083      0.1787      0.02  Q         .         .         .       V  .
19.167      0.1789      0.02  Q         .         .         .       V  .
```

19.250	0.1790	0.02	Q	.	.	.	V .
19.333	0.1792	0.02	Q	.	.	.	V .
19.417	0.1793	0.02	Q	.	.	.	V .
19.500	0.1795	0.02	Q	.	.	.	V .
19.583	0.1796	0.02	Q	.	.	.	V .
19.667	0.1798	0.02	Q	.	.	.	V .
19.750	0.1800	0.02	Q	.	.	.	V .
19.833	0.1801	0.02	Q	.	.	.	V .
19.917	0.1802	0.02	Q	.	.	.	V .
20.000	0.1804	0.02	Q	.	.	.	V .
20.083	0.1805	0.02	Q	.	.	.	V .
20.167	0.1806	0.02	Q	.	.	.	V .
20.250	0.1807	0.02	Q	.	.	.	V .
20.333	0.1809	0.02	Q	.	.	.	V .
20.417	0.1810	0.02	Q	.	.	.	V .
20.500	0.1812	0.02	Q	.	.	.	V .
20.583	0.1813	0.02	Q	.	.	.	V .
20.667	0.1815	0.02	Q	.	.	.	V .
20.750	0.1816	0.02	Q	.	.	.	V.
20.833	0.1817	0.02	Q	.	.	.	V.
20.917	0.1818	0.02	Q	.	.	.	V.
21.000	0.1820	0.02	Q	.	.	.	V.
21.083	0.1821	0.02	Q	.	.	.	V.
21.167	0.1822	0.02	Q	.	.	.	V.
21.250	0.1823	0.02	Q	.	.	.	V.
21.333	0.1825	0.02	Q	.	.	.	V.
21.417	0.1826	0.02	Q	.	.	.	V.
21.500	0.1827	0.02	Q	.	.	.	V.
21.583	0.1828	0.02	Q	.	.	.	V.
21.667	0.1829	0.02	Q	.	.	.	V.
21.750	0.1831	0.02	Q	.	.	.	V.
21.833	0.1832	0.02	Q	.	.	.	V.
21.917	0.1833	0.02	Q	.	.	.	V.
22.000	0.1834	0.02	Q	.	.	.	V.
22.083	0.1835	0.02	Q	.	.	.	V.
22.167	0.1837	0.02	Q	.	.	.	V.
22.250	0.1838	0.02	Q	.	.	.	V.
22.333	0.1839	0.02	Q	.	.	.	V.
22.417	0.1840	0.02	Q	.	.	.	V.
22.500	0.1842	0.02	Q	.	.	.	V.
22.583	0.1843	0.01	Q	.	.	.	V.
22.667	0.1844	0.01	Q	.	.	.	V.
22.750	0.1845	0.01	Q	.	.	.	V.
22.833	0.1846	0.01	Q	.	.	.	V.
22.917	0.1847	0.01	Q	.	.	.	V.
23.000	0.1847	0.01	Q	.	.	.	V.
23.083	0.1848	0.01	Q	.	.	.	V.
23.166	0.1849	0.01	Q	.	.	.	V.

KMV2PU.RES

23.250	0.1850	0.01	Q	.	.	.	V.
23.333	0.1851	0.01	Q	.	.	.	V.
23.416	0.1852	0.01	Q	.	.	.	V.
23.500	0.1853	0.01	Q	.	.	.	V.
23.583	0.1854	0.01	Q	.	.	.	V.
23.666	0.1855	0.01	Q	.	.	.	V.
23.750	0.1856	0.01	Q	.	.	.	V.
23.833	0.1857	0.01	Q	.	.	.	V.
23.916	0.1858	0.01	Q	.	.	.	V.
24.000	0.1859	0.01	Q	.	.	.	V.

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	2.5	5.0	7.5	10.0
24.083	0.1860	0.01	Q	.	.	.	V.
24.166	0.1860	0.01	Q	.	.	.	V.
24.250	0.1861	0.01	Q	.	.	.	V.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1455.0
10%	750.0
20%	525.0
30%	435.0
40%	330.0
50%	240.0
60%	210.0
70%	150.0
80%	45.0
90%	30.0

FLOW PROCESS FROM NODE 30.00 TO NODE 32.00 IS CODE = 1

>>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<

(UNIT-HYDROGRAPH ADDED TO STREAM #1)

WATERSHED AREA = 3.640 ACRES
BASEFLOW = 0.000 CFS/SQUARE-MILE

KMV2PU.RES

Warning: Watershed Area is less than 10 acres
*USER ENTERED "LAG" TIME = 0.194 HOURS
CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
VALLEY S-GRAPH SELECTED
UNIFORM MEAN SOIL-LOSS(INCH/HOUR) = 0.050
LOW SOIL-LOSS RATE PERCENT(DECIMAL) = 0.500
MINIMUM SOIL-LOSS RATE(INCH/HOUR) = 0.010
USER-ENTERED RAINFALL = 1.70 INCHES
RCFC&WCD 24-Hour Storm (15-Minute period) SELECTED
RCFC&WCD DEPTH-AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 1.0000

UNIT HYDROGRAPH TIME UNIT = 15.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 128.667

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	27.527	4.039
2	75.994	7.112
3	88.565	1.845
4	94.216	0.829
5	97.329	0.457
6	98.694	0.200
7	99.441	0.110
8	99.777	0.049
9	99.944	0.025
10	100.000	0.008

UNIT PERIOD (NUMBER)	UNIT RAINFALL (INCHES)	UNIT SOIL-LOSS (INCHES)	EFFECTIVE RAINFALL (INCHES)
1	0.0034	0.0017	0.0017
2	0.0051	0.0025	0.0025
3	0.0051	0.0025	0.0025
4	0.0068	0.0034	0.0034

5	0.0051	0.0025	0.0025
6	0.0051	0.0025	0.0025
7	0.0051	0.0025	0.0025
8	0.0068	0.0034	0.0034
9	0.0068	0.0034	0.0034
10	0.0068	0.0034	0.0034
11	0.0085	0.0042	0.0042
12	0.0085	0.0042	0.0042
13	0.0085	0.0042	0.0042
14	0.0085	0.0042	0.0042
15	0.0085	0.0042	0.0042
16	0.0102	0.0051	0.0051
17	0.0102	0.0051	0.0051
18	0.0119	0.0059	0.0059
19	0.0119	0.0059	0.0059
20	0.0136	0.0068	0.0068
21	0.0102	0.0051	0.0051
22	0.0119	0.0059	0.0059
23	0.0136	0.0068	0.0068
24	0.0136	0.0068	0.0068
25	0.0153	0.0076	0.0076
26	0.0153	0.0076	0.0076
27	0.0170	0.0085	0.0085
28	0.0170	0.0085	0.0085
29	0.0170	0.0085	0.0085
30	0.0187	0.0093	0.0093
31	0.0204	0.0102	0.0102
32	0.0221	0.0110	0.0110
33	0.0255	0.0127	0.0127
34	0.0255	0.0127	0.0127
35	0.0272	0.0136	0.0136
36	0.0289	0.0144	0.0144
37	0.0323	0.0147	0.0176
38	0.0340	0.0143	0.0197
39	0.0357	0.0140	0.0217
40	0.0374	0.0137	0.0237
41	0.0255	0.0127	0.0127
42	0.0255	0.0127	0.0127
43	0.0340	0.0128	0.0212
44	0.0340	0.0125	0.0215
45	0.0323	0.0122	0.0201
46	0.0323	0.0119	0.0204
47	0.0289	0.0116	0.0173
48	0.0306	0.0114	0.0192
49	0.0425	0.0111	0.0314
50	0.0442	0.0108	0.0334
51	0.0476	0.0105	0.0371
52	0.0493	0.0103	0.0390

53	0.0578	0.0100	0.0478
54	0.0578	0.0097	0.0481
55	0.0391	0.0095	0.0296
56	0.0391	0.0092	0.0299
57	0.0459	0.0089	0.0370
58	0.0442	0.0087	0.0355
59	0.0442	0.0084	0.0358
60	0.0425	0.0082	0.0343
61	0.0408	0.0080	0.0328
62	0.0391	0.0077	0.0314
63	0.0323	0.0075	0.0248
64	0.0323	0.0073	0.0250
65	0.0068	0.0034	0.0034
66	0.0068	0.0034	0.0034
67	0.0051	0.0025	0.0025
68	0.0051	0.0025	0.0025
69	0.0085	0.0042	0.0042
70	0.0085	0.0042	0.0042
71	0.0085	0.0042	0.0042
72	0.0068	0.0034	0.0034
73	0.0068	0.0034	0.0034
74	0.0068	0.0034	0.0034
75	0.0051	0.0025	0.0025
76	0.0034	0.0017	0.0017
77	0.0051	0.0025	0.0025
78	0.0068	0.0034	0.0034
79	0.0051	0.0025	0.0025
80	0.0034	0.0017	0.0017
81	0.0051	0.0025	0.0025
82	0.0051	0.0025	0.0025
83	0.0051	0.0025	0.0025
84	0.0034	0.0017	0.0017
85	0.0051	0.0025	0.0025
86	0.0034	0.0017	0.0017
87	0.0051	0.0025	0.0025
88	0.0034	0.0017	0.0017
89	0.0051	0.0025	0.0025
90	0.0034	0.0017	0.0017
91	0.0034	0.0017	0.0017
92	0.0034	0.0017	0.0017
93	0.0034	0.0017	0.0017
94	0.0034	0.0017	0.0017
95	0.0034	0.0017	0.0017
96	0.0034	0.0017	0.0017

TOTAL STORM RAINFALL(INCHES) = 1.70
TOTAL SOIL-LOSS(INCHES) = 0.61
TOTAL EFFECTIVE RAINFALL(INCHES) = 1.09

KMV2PU.RES

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------------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =       0.1850
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =       0.3305
------------------------------------------------------------------------------
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2 4 - H O U R S T O R M
R U N O F F H Y D R O G R A P H

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HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

```
------------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.        2.5       5.0       7.5      10.0
------------------------------------------------------------------------------
   0.083      0.0000      0.01  Q         .         .         .         .
   0.167      0.0001      0.01  Q         .         .         .         .
   0.250      0.0001      0.01  Q         .         .         .         .
   0.333      0.0003      0.02  Q         .         .         .         .
   0.417      0.0005      0.02  Q         .         .         .         .
   0.500      0.0006      0.02  Q         .         .         .         .
   0.583      0.0008      0.03  Q         .         .         .         .
   0.667      0.0010      0.03  Q         .         .         .         .
   0.750      0.0013      0.03  Q         .         .         .         .
   0.833      0.0015      0.04  Q         .         .         .         .
   0.917      0.0018      0.04  Q         .         .         .         .
   1.000      0.0020      0.04  Q         .         .         .         .
   1.083      0.0023      0.04  Q         .         .         .         .
   1.167      0.0026      0.04  Q         .         .         .         .
   1.250      0.0029      0.04  Q         .         .         .         .
   1.333      0.0032      0.04  Q         .         .         .         .
   1.417      0.0034      0.04  Q         .         .         .         .
   1.500      0.0037      0.04  Q         .         .         .         .
   1.583      0.0040      0.04  Q         .         .         .         .
   1.667      0.0042      0.04  Q         .         .         .         .
   1.750      0.0045      0.04  Q         .         .         .         .
   1.833      0.0048      0.04  Q         .         .         .         .
   1.917      0.0051      0.04  Q         .         .         .         .
   2.000      0.0053      0.04  Q         .         .         .         .
   2.083      0.0057      0.05  Q         .         .         .         .
   2.167      0.0060      0.05  Q         .         .         .         .
   2.250      0.0063      0.05  Q         .         .         .         .
   2.333      0.0066      0.05  Q         .         .         .         .
   2.417      0.0070      0.05  Q         .         .         .         .
   2.500      0.0073      0.05  Q         .         .         .         .
   2.583      0.0077      0.05  Q         .         .         .         .
```

2.667	0.0080	0.05	Q	.	.	.	.
2.750	0.0084	0.05	QV	.	.	.	.
2.833	0.0088	0.06	QV	.	.	.	.
2.917	0.0092	0.06	QV	.	.	.	.
3.000	0.0096	0.06	QV	.	.	.	.
3.083	0.0100	0.06	QV	.	.	.	.
3.167	0.0105	0.06	QV	.	.	.	.
3.250	0.0109	0.06	QV	.	.	.	.
3.333	0.0113	0.06	QV	.	.	.	.
3.417	0.0117	0.06	QV	.	.	.	.
3.500	0.0121	0.06	QV	.	.	.	.
3.583	0.0126	0.06	QV	.	.	.	.
3.667	0.0130	0.06	QV	.	.	.	.
3.750	0.0134	0.06	QV	.	.	.	.
3.833	0.0139	0.07	QV	.	.	.	.
3.917	0.0143	0.07	QV	.	.	.	.
4.000	0.0148	0.07	QV	.	.	.	.
4.083	0.0153	0.07	QV	.	.	.	.
4.167	0.0158	0.07	QV	.	.	.	.
4.250	0.0163	0.07	QV	.	.	.	.
4.333	0.0168	0.08	Q V	.	.	.	.
4.417	0.0173	0.08	Q V	.	.	.	.
4.500	0.0179	0.08	Q V	.	.	.	.
4.583	0.0184	0.08	Q V	.	.	.	.
4.667	0.0190	0.08	Q V	.	.	.	.
4.750	0.0196	0.08	Q V	.	.	.	.
4.833	0.0202	0.09	Q V	.	.	.	.
4.917	0.0208	0.09	Q V	.	.	.	.
5.000	0.0214	0.09	Q V	.	.	.	.
5.083	0.0220	0.09	Q V	.	.	.	.
5.167	0.0226	0.09	Q V	.	.	.	.
5.250	0.0233	0.09	Q V	.	.	.	.
5.333	0.0238	0.08	Q V	.	.	.	.
5.417	0.0244	0.08	Q V	.	.	.	.
5.500	0.0250	0.08	Q V	.	.	.	.
5.583	0.0256	0.09	Q V	.	.	.	.
5.667	0.0262	0.09	Q V	.	.	.	.
5.750	0.0268	0.09	Q V	.	.	.	.
5.833	0.0275	0.10	Q V	.	.	.	.
5.917	0.0281	0.10	Q V	.	.	.	.
6.000	0.0288	0.10	Q V	.	.	.	.
6.083	0.0295	0.10	Q V	.	.	.	.
6.167	0.0302	0.10	Q V	.	.	.	.
6.250	0.0309	0.10	Q V	.	.	.	.
6.333	0.0316	0.11	Q V	.	.	.	.
6.417	0.0324	0.11	Q V	.	.	.	.
6.500	0.0331	0.11	Q V	.	.	.	.
6.583	0.0339	0.11	Q V	.	.	.	.

KMV2PU.RES

6.667	0.0347	0.11	Q	V	.	.	.	.
6.750	0.0355	0.11	Q	V	.	.	.	.
6.833	0.0363	0.12	Q	V	.	.	.	.
6.917	0.0372	0.12	Q	V	.	.	.	.
7.000	0.0380	0.12	Q	V	.	.	.	.
7.083	0.0388	0.12	Q	V	.	.	.	.
7.167	0.0397	0.12	Q	V	.	.	.	.
7.250	0.0405	0.12	Q	V	.	.	.	.
7.333	0.0414	0.13	Q	V	.	.	.	.
7.417	0.0423	0.13	Q	V	.	.	.	.
7.500	0.0432	0.13	Q	V	.	.	.	.
7.583	0.0441	0.14	Q	V	.	.	.	.
7.667	0.0450	0.14	Q	V	.	.	.	.
7.750	0.0460	0.14	Q	V	.	.	.	.
7.833	0.0470	0.15	Q	V	.	.	.	.
7.917	0.0480	0.15	Q	V	.	.	.	.
8.000	0.0491	0.15	Q	V	.	.	.	.
8.083	0.0502	0.16	Q	V	.	.	.	.
8.167	0.0513	0.16	Q	V	.	.	.	.
8.250	0.0524	0.16	Q	V	.	.	.	.
8.333	0.0537	0.18	Q	V	.	.	.	.
8.417	0.0549	0.18	Q	V	.	.	.	.
8.500	0.0561	0.18	Q	V	.	.	.	.
8.583	0.0574	0.19	Q	V	.	.	.	.
8.667	0.0587	0.19	Q	V	.	.	.	.
8.750	0.0600	0.19	Q	V	.	.	.	.
8.833	0.0614	0.20	Q	V	.	.	.	.
8.917	0.0627	0.20	Q	V	.	.	.	.
9.000	0.0641	0.20	Q	V	.	.	.	.
9.083	0.0656	0.22	Q	V	.	.	.	.
9.167	0.0671	0.22	Q	V	.	.	.	.
9.250	0.0686	0.22	Q	V	.	.	.	.
9.333	0.0704	0.25	.Q	V	.	.	.	.
9.417	0.0721	0.25	.Q	V	.	.	.	.
9.500	0.0738	0.25	.Q	V	.	.	.	.
9.583	0.0758	0.28	.Q	V.	.	.	.	.
9.667	0.0777	0.28	.Q	V.	.	.	.	.
9.750	0.0797	0.28	.Q	V.	.	.	.	.
9.833	0.0818	0.31	.Q	V.	.	.	.	.
9.917	0.0840	0.31	.Q	V	.	.	.	.
10.000	0.0861	0.31	.Q	V	.	.	.	.
10.083	0.0881	0.29	.Q	V	.	.	.	.
10.167	0.0901	0.29	.Q	V	.	.	.	.
10.250	0.0921	0.29	.Q	V	.	.	.	.
10.333	0.0936	0.22	Q	.V	.	.	.	.
10.417	0.0951	0.22	Q	.V	.	.	.	.
10.500	0.0967	0.22	Q	.V	.	.	.	.
10.583	0.0983	0.24	Q	.V	.	.	.	.

KMV2PU.RES

10.667	0.0999	0.24	Q	. V	.	.	.
10.750	0.1015	0.24	Q	. V	.	.	.
10.833	0.1035	0.29	.Q	. V	.	.	.
10.917	0.1055	0.29	.Q	. V	.	.	.
11.000	0.1075	0.29	.Q	. V	.	.	.
11.083	0.1096	0.30	.Q	. V	.	.	.
11.167	0.1116	0.30	.Q	. V	.	.	.
11.250	0.1137	0.30	.Q	. V	.	.	.
11.333	0.1157	0.29	.Q	. V	.	.	.
11.417	0.1178	0.29	.Q	. V	.	.	.
11.500	0.1198	0.29	.Q	. V	.	.	.

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	2.5	5.0	7.5	10.0
11.583	0.1217	0.28	.Q	. V	.	.	.
11.667	0.1237	0.28	.Q	. V	.	.	.
11.750	0.1257	0.28	.Q	. V	.	.	.
11.833	0.1275	0.27	.Q	. V	.	.	.
11.917	0.1294	0.27	.Q	. V	.	.	.
12.000	0.1313	0.27	.Q	. V	.	.	.
12.083	0.1335	0.33	.Q	. V	.	.	.
12.167	0.1358	0.33	.Q	. V	.	.	.
12.250	0.1381	0.33	.Q	. V	.	.	.
12.333	0.1410	0.43	.Q	. V	.	.	.
12.417	0.1439	0.43	.Q	. V	.	.	.
12.500	0.1469	0.43	.Q	. V	.	.	.
12.583	0.1502	0.48	.Q	. V	.	.	.
12.667	0.1534	0.48	.Q	. V	.	.	.
12.750	0.1567	0.48	.Q	. V	.	.	.
12.833	0.1603	0.53	. Q	. V	.	.	.
12.917	0.1640	0.53	. Q	. V	.	.	.
13.000	0.1676	0.53	. Q	. V	.	.	.
13.083	0.1716	0.59	. Q	. V	.	.	.
13.167	0.1757	0.59	. Q	. V	.	.	.
13.250	0.1797	0.59	. Q	. V	.	.	.
13.333	0.1843	0.66	. Q	. V	.	.	.
13.417	0.1889	0.66	. Q	. V	.	.	.
13.500	0.1934	0.66	. Q	. V	.	.	.
13.583	0.1976	0.61	. Q	. V	.	.	.
13.667	0.2018	0.61	. Q	. V	.	.	.
13.750	0.2061	0.61	. Q	. V	.	.	.
13.833	0.2094	0.49	.Q	. V	.	.	.
13.917	0.2128	0.49	.Q	. V	.	.	.
14.000	0.2162	0.49	.Q	. V	.	.	.
14.083	0.2196	0.49	.Q	. V	.	.	.
14.167	0.2230	0.49	.Q	. V	.	.	.
14.250	0.2264	0.49	.Q	. V	.	.	.

```
14.333      0.2300      0.52  . Q       .         .      V  .         .
14.417      0.2336      0.52  . Q       .         .       V .         .
14.500      0.2372      0.52  . Q       .         .       V .         .
14.583      0.2408      0.52  . Q       .         .        V.         .
14.667      0.2444      0.52  . Q       .         .        V.         .
14.750      0.2480      0.52  . Q       .         .         V         .
14.833      0.2516      0.52  . Q       .         .         V         .
14.917      0.2551      0.52  . Q       .         .         V         .
15.000      0.2587      0.52  . Q       .         .          V        .
15.083      0.2621      0.50  . Q       .         .         .V        .
15.167      0.2656      0.50  . Q       .         .          . V      .
15.250      0.2691      0.50  . Q       .         .          . V      .
15.333      0.2724      0.48  .Q        .         .          . V      .
15.417      0.2757      0.48  .Q        .         .          .  V     .
15.500      0.2790      0.48  .Q        .         .          .  V     .
15.583      0.2821      0.44  .Q        .         .          .   V    .
15.667      0.2851      0.44  .Q        .         .          .   V    .
15.750      0.2882      0.44  .Q        .         .          .   V    .
15.833      0.2909      0.39  .Q        .         .          .    V   .
15.917      0.2936      0.39  .Q        .         .          .    V   .
16.000      0.2963      0.39  .Q        .         .          .    V   .
16.083      0.2983      0.29  .Q        .         .          .     V  .
16.167      0.3003      0.29  .Q        .         .          .     V  .
16.250      0.3023      0.29  .Q        .         .          .     V  .
16.333      0.3032      0.13  Q         .         .          .     V  .
16.417      0.3041      0.13  Q         .         .          .     V  .
16.500      0.3051      0.13  Q         .         .          .     V  .
16.583      0.3056      0.09  Q         .         .          .     V  .
16.667      0.3062      0.09  Q         .         .          .      V .
16.750      0.3068      0.09  Q         .         .          .      V .
16.833      0.3072      0.06  Q         .         .          .      V .
16.917      0.3077      0.06  Q         .         .          .      V .
17.000      0.3081      0.06  Q         .         .          .      V .
17.083      0.3084      0.05  Q         .         .          .      V .
17.167      0.3088      0.05  Q         .         .          .      V .
17.250      0.3092      0.05  Q         .         .          .      V .
17.333      0.3096      0.06  Q         .         .          .      V .
17.417      0.3100      0.06  Q         .         .          .      V .
17.500      0.3105      0.06  Q         .         .          .      V .
17.583      0.3109      0.06  Q         .         .          .      V .
17.667      0.3113      0.06  Q         .         .          .      V .
17.750      0.3117      0.06  Q         .         .          .      V .
17.833      0.3121      0.06  Q         .         .          .      V .
17.917      0.3125      0.06  Q         .         .          .      V .
18.000      0.3129      0.06  Q         .         .          .      V .
18.083      0.3133      0.05  Q         .         .          .      V .
18.167      0.3137      0.05  Q         .         .          .      V .
18.250      0.3140      0.05  Q         .         .          .       V.
```

18.333	0.3144	0.05	Q	.	.	.	V .
18.417	0.3147	0.05	Q	.	.	.	V .
18.500	0.3151	0.05	Q	.	.	.	V .
18.583	0.3154	0.05	Q	.	.	.	V .
18.667	0.3157	0.05	Q	.	.	.	V .
18.750	0.3161	0.05	Q	.	.	.	V .
18.833	0.3163	0.04	Q	.	.	.	V .
18.917	0.3166	0.04	Q	.	.	.	V .
19.000	0.3168	0.04	Q	.	.	.	V .
19.083	0.3171	0.03	Q	.	.	.	V .
19.167	0.3173	0.03	Q	.	.	.	V .
19.250	0.3175	0.03	Q	.	.	.	V .
19.333	0.3178	0.04	Q	.	.	.	V .
19.417	0.3181	0.04	Q	.	.	.	V .
19.500	0.3183	0.04	Q	.	.	.	V .
19.583	0.3186	0.04	Q	.	.	.	V .
19.667	0.3189	0.04	Q	.	.	.	V .
19.750	0.3192	0.04	Q	.	.	.	V .
19.833	0.3195	0.04	Q	.	.	.	V .
19.917	0.3197	0.04	Q	.	.	.	V .
20.000	0.3200	0.04	Q	.	.	.	V .
20.083	0.3202	0.03	Q	.	.	.	V .
20.167	0.3204	0.03	Q	.	.	.	V .
20.250	0.3206	0.03	Q	.	.	.	V .
20.333	0.3209	0.04	Q	.	.	.	V .
20.417	0.3211	0.04	Q	.	.	.	V .
20.500	0.3214	0.04	Q	.	.	.	V .
20.583	0.3216	0.04	Q	.	.	.	V .
20.667	0.3219	0.04	Q	.	.	.	V .
20.750	0.3221	0.04	Q	.	.	.	V .
20.833	0.3224	0.03	Q	.	.	.	V.
20.917	0.3226	0.03	Q	.	.	.	V.
21.000	0.3228	0.03	Q	.	.	.	V.
21.083	0.3230	0.03	Q	.	.	.	V.
21.167	0.3232	0.03	Q	.	.	.	V.
21.250	0.3235	0.03	Q	.	.	.	V.
21.333	0.3237	0.03	Q	.	.	.	V.
21.417	0.3239	0.03	Q	.	.	.	V.
21.500	0.3241	0.03	Q	.	.	.	V.
21.583	0.3243	0.03	Q	.	.	.	V.
21.667	0.3246	0.03	Q	.	.	.	V.
21.750	0.3248	0.03	Q	.	.	.	V.
21.833	0.3250	0.03	Q	.	.	.	V.
21.917	0.3252	0.03	Q	.	.	.	V.
22.000	0.3254	0.03	Q	.	.	.	V.
22.083	0.3256	0.03	Q	.	.	.	V.
22.167	0.3258	0.03	Q	.	.	.	V.
22.250	0.3261	0.03	Q	.	.	.	V.

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22.333	0.3263	0.03	Q	.	.	.	V.
22.417	0.3265	0.03	Q	.	.	.	V.
22.500	0.3267	0.03	Q	.	.	.	V.
22.583	0.3269	0.03	Q	.	.	.	V.
22.667	0.3271	0.03	Q	.	.	.	V.
22.750	0.3273	0.03	Q	.	.	.	V.
22.833	0.3275	0.03	Q	.	.	.	V.
22.917	0.3276	0.03	Q	.	.	.	V.
23.000	0.3278	0.03	Q	.	.	.	V.
23.083	0.3280	0.03	Q	.	.	.	V.
23.166	0.3282	0.03	Q	.	.	.	V.
23.250	0.3283	0.03	Q	.	.	.	V.
23.333	0.3285	0.03	Q	.	.	.	V.
23.416	0.3287	0.03	Q	.	.	.	V.
23.500	0.3289	0.03	Q	.	.	.	V.
23.583	0.3290	0.03	Q	.	.	.	V.
23.666	0.3292	0.03	Q	.	.	.	V.
23.750	0.3294	0.03	Q	.	.	.	V.
23.833	0.3295	0.02	Q	.	.	.	V.
23.916	0.3297	0.02	Q	.	.	.	V.
24.000	0.3299	0.02	Q	.	.	.	V.

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	2.5	5.0	7.5	10.0
24.083	0.3300	0.02	Q	.	.	.	V.
24.166	0.3301	0.02	Q	.	.	.	V.
24.250	0.3303	0.02	Q	.	.	.	V.
24.333	0.3303	0.01	Q	.	.	.	V.
24.416	0.3303	0.01	Q	.	.	.	V.
24.500	0.3304	0.01	Q	.	.	.	V.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1470.0
10%	765.0
20%	525.0
30%	435.0
40%	375.0
50%	225.0
60%	210.0
70%	180.0
80%	45.0

KMV2PU.RES

90% 30.0

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END OF FLOODSCx ROUTING ANALYSIS

APPENDIX G

Geotechnical Investigation and Percolation Test Results

GEOTECHNICAL INVESTIGATION AND PERCOLATION TEST RESULTS

KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE AND AUTO MALL WAY
MORENO VALLEY, CALIFORNIA

GEOCON
WEST, INC.

GEOTECHNICAL
ENVIRONMENTAL
MATERIALS

PREPARED FOR

CAR PROS AUTOMOTIVE GROUP
FEDERAL WAY, WASHINGTON

JANUARY 18, 2019
PROJECT NO. T2844-22-01

GEOCON
WEST, INC.
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

Project No. T2844-22-01
January 18, 2019

Cars Pros Automotive Group
181 S 333rd Street, Building C, Suite 210
Federal Way, Washington 98002

Attention: Mr. Ken Phillips

Subject: GEOTECHNICAL INVESTIGATION
AND PERCOLATION TEST RESULTS
KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

Dear Mr. Phillips:

In accordance with your authorization of Proposal No. IE-2287, Geocon West Inc. (Geocon) herein submits the results of our geotechnical investigation and percolation test results for the subject site. The accompanying report presents the results of our study and conclusions and recommendations pertaining to the geotechnical aspects of the proposed automotive sales lot. The site is considered suitable for development provided the recommendations of this report are followed.

Should you have questions regarding this report, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

GEOCON WEST, INC.

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CERTIFIED ENGINEERING GEOLOGIST
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(e-mail) Addressee

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GEOTECHNICAL INVESTIGATION
AND PERCOLATION TEST RESULTS

1. PURPOSE AND SCOPE

This report presents the results of our geotechnical investigation and percolation tests for the planned automotive sales development located east of the intersection of Moreno Beach Drive and Auto Mall Drive, in the city of Moreno Valley, California (see *Vicinity Map*, Figure 1). The purpose of the geotechnical investigation is to evaluate the surface and subsurface soil conditions and general site geology, and to identify geotechnical constraints that may affect development of the property. Percolation testing was performed to provide information for site storm water infiltration design. This investigation also included a review of readily available published and unpublished geologic literature (see *List of References*).

The scope of this investigation included performing a site reconnaissance, field exploration, engineering analyses, and preparing this report. We performed our field investigation on December 17 and 18, 2018 by drilling ten small-diameter borings to a maximum depth of 51½ feet below the existing ground surface. Four of the borings were used to perform percolation testing. The *Geologic Map*, Figure 2, presents the approximate locations of the borings. *Appendix A* provides a detailed discussion of the field investigation including logs of the borings and percolation test results. Details of the laboratory tests and a summary of the test results are presented in *Appendix B* and on the boring logs in *Appendix A*.

Recommendations presented herein are based on analyses of data obtained from our site investigation and our understanding of proposed site development. References reviewed to prepare this report are provided in the *List of References*. If project details vary significantly from those described herein, Geocon should be contacted to evaluate the necessity for review and possible revision of this report.

2. SITE AND PROJECT DESCRIPTION

The subject site is located southeast of the intersection of Moreno Beach Drive and Auto Mall Drive in the city of Moreno Valley, California. The site is bounded on the west by Auto Mall Drive, the north by Petit Street, the south by Moreno Beach Drive, and on the east by a parcel line. The site is currently vacant and appears to be periodically disked for weed abatement. Periodic use of the site as a parking lot was observed during our site exploration. Access to the property is from Petit Street. The existing grades range from approximate elevation 1,750 feet above Mean Sea Level (MSL) in the north to 1,755 feet above MSL in the south. A stockpile is located in the southern portion of the site, as shown on Figure 2. The maximum height of the stockpile is approximately 5 feet. The site is at latitude 33.93375 and longitude -117.17466.

Based on the *Site Plan,* prepared by Carlile Coatsworth Architects, Inc., we understand that the proposed construction consists of a 24,661-square-foot sales and service facility, car wash, several vehicle display areas, with associated parking and infrastructure. A grading plan has not been provided for our review; however, based on current site conditions, cuts and fills of less than 10 feet are expected at the site.

Based on the preliminary plans, we understand that the proposed building will be constructed of concrete masonry unit (CMU) walls and concrete cast-in-place or tilt-up walls and supported on conventional spread footing foundations with a concrete slab-on-grade floor. We expect column loads will be up to 100 kips and wall loads will be up to 10 kips per linear foot. Preliminary geotechnical recommendations for design of the structure are based on these assumptions and provided herein.

The site descriptions and proposed development are based on a site reconnaissance, review of published geologic literature, our field investigation, a review of the conceptual plans, and discussions with you. If development plans differ from those described herein, Geocon should be contacted for review of the plans and possible revisions to this report.

3. GEOLOGIC SETTING

The site is located within the Perris block of the northern Peninsular Ranges Geomorphic Province (Province), defined as a relatively stable area between the Elsinore and San Jacinto fault zones. In the vicinity of the site, the geomorphology consists of older alluvial fan deposits. The Peninsular Ranges are bounded by the Transverse Ranges (San Gabriel and San Bernardino Mountains) to the north and the Colorado Desert Geomorphic Province to the east. The Peninsular Ranges Geomorphic Province extends westward into the Pacific Ocean and southward to the tip of Baja California. Overall, the Province is characterized by Cretaceous-age granitic rock and a lesser amount of Mesozoic-age metamorphic rock overlain by terrestrial and marine sediments. Faulting within the Province is typically northwest trending and includes the San Andreas, San Jacinto, Elsinore, and Newport-Inglewood faults.

The San Jacinto fault zones is located approximately 1.8 miles to the northeast. Geologic units within the site consist of very old alluvial fan deposits and a stockpile of undocumented fill.

4. SOIL AND GEOLOGIC CONDITIONS

We observed very old alluvial fan deposits with a thin mantle of overlying undocumented fill during our field investigation. The occurrence, distribution and description of the geologic units encountered are shown on the *Geologic Map*, Figure 2 and the boring logs in *Appendix A*. The surficial soils and geologic units are described herein in order of increasing age.

4.1 Undocumented Fill (afu)

Undocumented fill was observed throughout the site in the top 1 to 4 feet of the borings during our geotechnical investigation. The stockpile of undocumented fill in the south-central portion of the site was observed to be approximately 5 feet thick. As observed the undocumented fill consists of loose to medium dense, dry to damp, reddish brown silty sand. A minor amount of clayey sand was also encountered.

4.2 Very Old Alluvial Fan Deposits (Qvof)

Very old alluvium was observed underlying the undocumented fill through the site. As observed, the older alluvium consists predominately of damp to moist, medium dense to very dense silty sand. Lesser amounts of clayey sand, sandy silt, and sandy clay was also encountered.

5. GROUNDWATER

We did not encounter groundwater or seepage during the site investigation. According to the California Department of Water Resources, several wells in the area indicated a depth to groundwater in excess of 190 feet below the existing ground surface. It is not uncommon for seepage conditions to develop where none previously existed. Groundwater and seepage are dependent on seasonal precipitation, irrigation, land use, among other factors, and varies as a result. Proper surface drainage will be important to future performance of the project.

6. GEOLOGIC HAZARDS

6.1 Faulting

The numerous faults in southern California include active, potentially active, and inactive faults. The criteria for these major groups are based on criteria developed by the California Geological Survey (CGS, formerly known as CDMG) for the Alquist-Priolo Earthquake Fault Zone Program (Bryant and Hart, 2007). By definition, an active fault is one that has had surface displacement within Holocene time (about the last 11,000 years). A potentially active fault has demonstrated surface displacement during Quaternary time (approximately the last 1.6 million years) but has had no known Holocene movement. Faults that have not moved in the last 1.6 million years are considered inactive.

The site is not within a currently established State of California Alquist-Priolo Earthquake Fault Zone or a Riverside County Fault Hazard Zone for surface fault rupture hazards. No active or potentially active faults with the potential for surface fault rupture are known to pass directly beneath the site.

According to the *Fault Activity Map of California* (2010), 18 known active faults are located within a search radius of 50 miles from the property. The nearest known active fault is the Claremont fault segment of the San Jacinto fault zone, located approximately 2 miles west of the site, and is the dominant source of potential ground motion. Earthquakes that might occur on these fault zones or other faults within the southern California and northern Baja California area are potential generators of significant ground motion at the site. Table 6.1.1 lists the estimated maximum earthquake magnitude for the most dominant faults in relationship to the site location.

TABLE 6.1.1
KNOWN ACTIVE FAULTS WITHIN 50 MILES OF THE SITE

Fault Name	Maximum Earthquake Magnitude (Mw)	Distance from Site (miles)	Direction from Site
San Jacinto (Claremont)	6.7	2	NE
San Jacinto (Casa Loma)	6.9	2.8	E
San Gorgonio Pass	7.6	8	E
Banning	7.2	10	SE
San Andreas (San Bernardino)	8.2	12	NE
San Jacinto	7.8	13	N
San Jacinto (Glen Helen)	6.7	13	N
Elsinore (Main Street)	6.7	21	W
Chino	6.7	22	W
Elsinore (Glen Ivy North)	6.8	23	WSW
Elsinore (Whittier)	6.9	24	W
Morongo Valley	7.2	28	E
Pinto Mountain	7.3	35	E
San Andreas Fault (South Branch)	8.2	40	SE
Burt Mountain	6.8	41	ENE
San Jacinto (Clark)	6.8	43	N
San Andreas Fault (North Branch)	8.2	47	N
Newport-Inglewood	7.5	50	SW

Historic earthquakes in southern California of magnitude 6.0 and greater, their magnitude, distance, and direction from the site are listed in Table 6.1.2.

TABLE 6.1.2
HISTORIC EARTHQUAKE EVENTS WITH REPECT TO THE SITE

Earthquake (Oldest to Youngest)	Date of Earthquake	Magnitude	Distance to Epicenter (Miles)	Direction to Epicenter
San Jacinto	December 25, 1899	6.7	16	SE
San Jacinto	April 21, 1918	6.8	16	SE
Loma Linda Area	July 22, 1923	6.3	6	NW
Long Beach	March 10, 1933	6.4	50	WSW
Buck Ridge	March 25, 1937	6.0	64	ESE
Imperial Valley	May 18, 1940	6.9	51	E
Desert Hot Springs	December 4, 1948	6.0	45	E
Arroyo Salada	March 19, 1954	6.4	77	E
Borrego Mountain	April 8, 1968	6.5	84	SE
San Fernando	February 9, 1971	6.6	84	WNW
Joshua Tree	April 22, 1992	6.1	54	E
Landers	June 28, 1992	7.3	50	ENE
Big Bear	June 28, 1992	6.4	29	NE
Northridge	January 17, 1994	6.7	88	WNW
Hector Mine	October 16, 1999	7.1	73	NE

6.2 Ground Rupture

Ground surface rupture occurs when movement along a fault is sufficient to cause a gap or rupture where the upper edge of the fault zone intersects the earth surface. The potential for ground rupture is considered to be very low due to the absence of active or potentially active faults at the subject site.

6.3 Liquefaction

Liquefaction typically occurs when a site is located in a zone with seismic activity, onsite soils are cohesionless or silt/clay with low plasticity, groundwater is encountered within 50 feet of the surface, and soil has a relative density less than about 70 percent. If the four previous criteria are met, a seismic event could result in a rapid pore water pressure increase from the earthquake-generated ground accelerations. Due to the lack of a permanent, near-surface groundwater table and the dense to very dense nature of the old alluvial fan deposits, liquefaction potential for the site is negligible and not a design consideration.

6.4 Expansive Soil

The older alluvium generally consists of silty or clayey sands with lesser amounts of sandy silts and sandy clays. Laboratory testing results indicate samples of the near surface soils exhibits a “very low” expansion potential (expansion index [EI] of 20 or less) with test results showing expansion index of 3.

6.5 Hydrocompression

Hydrocompression is the tendency of unsaturated soil structure to collapse upon wetting resulting in the overall settlement of the affected soil and overlying foundations or improvements supported thereon. Potentially compressible soils underlying the site are typically removed and recompacted during remedial site grading. However, if compressible soil is left in-place, a potential for settlement due to hydrocompression of the soil exists.

Soils obtained during our investigation were tested for hydrocompression and exhibited a collapse potential up to 2.2 percent when loaded to the expected post-grading pressures. The test results indicate that the soils are classified as having a "slight" (0.1 to 2.0 percent) to "moderate" (2.1 to 6.0) degree of specimen collapse in accordance with ASTM D5333.

6.6 Seiches and Tsunamis

Seiches are caused by the movement of an inland body of water due to the movement from seismic forces. The site is located approximately 5.1 miles north of Lake Perris. In the unlikely event of a seiche, water is anticipated to be confined to the young alluvial valley channel south of the site.

A tsunami is a series of long-period waves generated in the ocean by a sudden displacement of large volumes of water. Causes of tsunamis include underwater earthquakes, volcanic eruptions, or offshore slope failures. The site is located approximately 36 miles from the Pacific Ocean at an elevation greater than 1,500 feet MSL. Therefore, the risk of tsunamis affecting the site is negligible and not a design consideration.

6.7 Inundation

According to the State of California, Department of Water Resources, *Inundation Map for Perris Dam*, dated April 29, 1975, the site is not within an inundation zone due to dam failure. Therefore, inundation due to dam failure is not a design consideration.

6.8 Landslides

Landslides are not mapped on or near the site. Due to the relatively level topography at the site, the potential for landslides at the property or at a location that could impact the site is negligible and not a design consideration.

6.9 Rock Fall Hazards

Rock falls are not a design consideration due to the lack of natural bedrock slopes above and adjacent to the site.

6.10 Slope Stability

Based on the preliminary site plans and relatively level topography at the site, cut and fill slopes are anticipated to be less than 5 feet in height at inclinations no steeper than 2:1 (h:v). In general, permanent, cut slopes and graded fill slopes constructed with on-site soils inclined no steeper than 2:1 (h:v) with vertical heights of 5 feet or less are anticipated to have adequate factors of safety. Fill keys should be constructed in accordance with the standard grading specifications in *Appendix C*. Grading of fill slopes should be designed in accordance with the requirements of Moreno Valley and the 2016 California Building Code (CBC).

7. SITE INFILTRATION

Percolation testing was performed in accordance with the procedures in *Riverside County Flood Control and Water Conservation District LID BMP, Appendix A.* The percolation test locations are depicted on the *Geologic Map* (see Figures 2 and 3).

A 3-inch diameter perforated PVC pipe in silt filter sock was placed in each percolation test hole and approximately 2 inches of gravel was placed at the bottom of the PVC pipe. The test locations were pre-saturated prior to testing. Percolation testing was begun within 24 hours after the holes were presaturated. Percolation data sheets are presented in *Appendix A* of this report. Calculations to convert the percolation test rate to infiltration test rates are presented in Table 7.0 below. Note that the Handbook requires a factor of safety of 3 be applied to the values below based on the test method used.

TABLE 7.0
INFILTRATION TEST RATES FOR PERCOLATION AREAS

Parameter	P-1	P-2	P-3	P-4
Depth (inches)	91.2	79.0	117.4	120.0
Test Type	Normal	Normal	Normal	Normal
Change in head over time: ΔH (inches)	0.1	1.1	0.1	0.5
Average head: Havg (inches)	41.6	11.9	41.0	24.6
Time Interval (minutes): Δt (minutes)	30	30	30	30
Radius of test hole: r (inches)	4	4	4	4
Tested Infiltration Rate: It (inches/hour)	0.01	0.31	0.01	0.07

8. CONCLUSIONS AND RECOMMENDATIONS

8.1 General

8.1.1 From a geotechnical engineering standpoint, the site is suitable for construction of the proposed auto facility development provided the recommendations presented herein are implemented in design and construction of the project.

8.1.2 Potential geologic hazards at the site include seismic shaking and hydrocompression.

8.1.3 The site is located approximately 2 miles from the nearest active fault. Based on our background research and previous investigation, it is our opinion active, potentially active, or inactive faults do not extend across the site. Risks associated with seismic activity consist of the potential for moderate to strong seismic shaking.

8.1.4 Our field investigation indicates the site is blanketed by undocumented fill over very old alluvium. The undocumented fill and upper portion of the very old alluvium are not considered suitable for the support of compacted fill and settlement-sensitive structures. Remedial grading of the surficial soil will be required as discussed herein. The existing site soils are suitable for re-use as engineered fill provided the recommendations in the *Grading* section of this report are followed.

8.1.5 Soil samples tested for hydrocompression exhibit a collapse potential of up to 2.2 percent for the site. The test results indicate that the degree of specimen collapse would be classified as "moderate" (2.1 to 6.0 percent), in accordance with ASTM D 5333. Remedial grading will assist in reducing the collapse potential of the near-surface soils. However, precautionary measures will be needed to mitigate the potential for hydrocompression of deeper soils. Proper site drainage should be maintained. Landscape planters that saturate the subsurface or storm water infiltration structures should not be used within 20 feet of the proposed building or other on grade improvements. Localized surface settlement should be expected in the vicinity of the storm water infiltration structures or other areas where water is allowed to infiltrate to the subsurface.

8.1.6 Moisture contents in the borings varied and the upper portions were below optimum moisture content. Moisture conditioning of the soils should be expected during construction. Special handling of the soil should be anticipated, particularly if grading occurs during the rainy season.

8.1.7 Although the majority of on-site soils consist of silty and clayey sands, some granular material, having little to no cohesion and subject to caving in unshored excavations, should be expected at the site. It is the responsibility of the contractor to ensure that excavations and trenches are properly shored and maintained in accordance with OSHA rules and regulations to maintain the stability of adjacent existing improvements.

8.1.8 The laboratory tests indicate that the site soils are non-expansive and have a "very low" expansion potential. If medium to highly expansive soils are encountered at the site, they should be exported from the site or selectively graded and placed in the deeper fill areas to allow for the placement of low expansion material at the finish pad grade.

8.1.9 Grading plans were not available for our review, however, cuts and fill of less than 10 feet are anticipated to achieve planned finish grades.

8.1.10 Although not encountered in our exploration, cobbles may be encountered during site grading and may present difficulty for site excavations. The contractor should be prepared to perform site excavations in these conditions.

8.1.11 We did not encounter groundwater during our investigation and do not expect groundwater would impact site improvements. However, wet conditions and seepage could affect proposed construction if grading and improvement operations occur during or shortly after a rain event.

8.1.12 Proper drainage should be maintained in order to preserve the design properties of the fill in the sheet-graded pad and slope areas.

8.1.13 The planned structures can be supported on a shallow foundation system with a slab-on-grade floor system.

8.1.14 Changes in the design, location or elevation of improvements, as outlined in this report, should be reviewed by this office. Once final grading plans become available, they should be reviewed by this office to evaluate the necessity for review and possible revision of this report.

8.1.15 Recommended grading specifications are provided in *Appendix C*.

8.2 Excavation and Soil Characteristics

8.2.1 Excavation of the very old alluvium should be possible with moderate to heavy effort using conventional heavy-duty equipment.

8.2.2 The soil encountered in the field investigation is considered to be "non-expansive" (expansion index [EI] of less than 20) as defined by 2016 California Building Code (CBC) Section 1803.5.3. Table 8.2.2 presents soil classifications based on the expansion index. Based on the laboratory test results, we expect a majority of the soil encountered will possess a "very low" expansion potential (EI between 0 and 20). Medium to highly expansive soils may be encountered at the site and should not be placed within 4 feet of the proposed foundations, flatwork or paving improvements. Additional testing for expansion potential should be performed during grading and once final grades are achieved.

TABLE 8.2.2
EXPANSION CLASSIFICATION BASED ON EXPANSION INDEX

Expansion Index (EI)	ASTM D 4829 Expansion Classification	2016 CBC Expansion Classification
0 – 20	**Very Low**	**Non-Expansive**
21 – 50	Low	Expansive
51 – 90	Medium	
91 – 130	High	
Greater Than 130	Very High	

8.2.3 We performed laboratory tests on samples of the site materials to evaluate the percentage of water-soluble sulfate content. *Appendix B* presents results of the laboratory water-soluble sulfate content tests. The test results indicate the on-site materials at the location tested possess a sulfate content of 0.001 percent (10 parts per million [ppm]) equating to an exposure class of "S0" as defined by 2016 CBC Section 1904.3 and ACI 318. Table 8.2.3 presents a summary of concrete requirements set forth by 2016 CBC Section 1904.3 and ACI 318. The presence of water-soluble sulfates is not a visually discernible characteristic; therefore, other soil samples from the site could yield different concentrations. Additionally, over time landscaping activities (i.e., addition of fertilizers and other soil nutrients) may affect the concentration.

TABLE 8.2.3
REQUIREMENTS FOR CONCRETE EXPOSED TO SULFATE-CONTAINING SOLUTIONS

Exposure Class	Water-Soluble Sulfate (SO_4) Percent by Weight	Cement Type (ASTM C 150)	Maximum Water to Cement Ratio by Weight[1]	Minimum Compressive Strength (psi)
S0	**SO_4<0.10**	**No Type Restriction**	**n/a**	**2,500**
S1	0.10≤SO_4<0.20	II	0.50	4,000
S2	0.20≤SO_4≤2.00	V	0.45	4,500
S3	SO_4>2.00	V+Pozzolan or Slag	0.45	4,500

[1] Maximum water to cement ratio limits do not apply to lightweight concrete

8.2.4 Laboratory testing indicates the site soils have a minimum electrical resistivity of 4,600 ohm-cm, possess 98 ppm chloride, 10 ppm sulfate, and a pH of 8.3. As shown in Table 8.2.4 below, the site would not be classified as "corrosive" to buried improvements, in accordance with the Caltrans Corrosion Guidelines (Caltrans, 2018).

TABLE 8.2.4
CALTRANS CORROSION GUIDELINES

Corrosion Exposure	Resistivity (ohm-cm)	Chloride (ppm)	Sulfate (ppm)	pH
Corrosive	<1,100	500 or greater	1,500 or greater	5.5 or less

8.2.5 Geocon does not practice in the field of corrosion engineering. Therefore, further evaluation by a corrosion engineer may be performed if improvements that could be susceptible to corrosion are planned.

8.3 Seismic Design Criteria

8.3.1 We used the computer program *U.S. Seismic Design Maps*, provided by the California Office of Statewide Health Planning and Development (OSHPD) to evaluate the seismic design criteria. Table 8.3.1 summarizes site-specific design criteria obtained from the 2016 California Building Code (CBC; Based on the 2015 International Building Code [IBC] and ASCE 7-10), Chapter 16 Structural Design, Section 1613 Earthquake Loads. The short spectral response uses a period of 0.2 second. The building structure and improvements as currently proposed should be designed using a Site Class D in accordance with ASCE 7-10 Section 20.3.1. We evaluated the Site Class based on the discussion in Section 1613.3.2 of the 2016 CBC and Table 20.3-1 of ASCE 7-10 using blow count data presented on the boring logs in *Appendix A*. The values presented in Table 8.3.1 are for the risk-targeted maximum considered earthquake (MCE_R).

TABLE 8.3.1
2016 CBC SEISMIC DESIGN PARAMETERS

Parameter	Value	2016 CBC Reference
Site Class	D	Section 1613.3.2
MCE_R Ground Motion Spectral Response Acceleration – Class B (short), S_S	2.146g	Figure 1613.3.1(1)
MCE_R Ground Motion Spectral Response Acceleration – Class B (1 sec), S_1	0.971g	Figure 1613.3.1(2)
Site Coefficient, F_A	1.00	Table 1613.3.3(1)
Site Coefficient, F_V	1.50	Table 1613.3.3(2)
Site Class Modified MCE_R Spectral Response Acceleration (short), S_{MS}	2.146g	Section 1613.3.3 (Eqn 16-37)
Site Class Modified MCE_R Spectral Response Acceleration (1 sec), S_{M1}	1.457g	Section 1613.3.3 (Eqn 16-38)
5% Damped Design Spectral Response Acceleration (short), S_{DS}	1.431g	Section 1613.3.4 (Eqn 16-39)
5% Damped Design Spectral Response Acceleration (1 sec), S_{D1}	0.971g	Section 1613.3.4 (Eqn 16-40)

8.3.2 Table 8.3.2 presents additional seismic design parameters for projects located in Seismic Design Categories of D through F in accordance with ASCE 7-10 for the mapped maximum considered geometric mean (MCE_G).

TABLE 8.3.2
2016 CBC SITE ACCELERATION PARAMETERS

Parameter	Value	ASCE 7-10 Reference
Site Class	D	Section 1613.3.2
Mapped MCE_G Peak Ground Acceleration, PGA	0.83g	Figures 2 through 42-7
Site Coefficient, F_{PGA}	1.00	Table 11.8-1
Site Class Modified MCE_G Peak Ground Acceleration, PGA_M	0.83g	Section 11.8.3 (Eqn 11.8-1)

8.3.3 Conformance to the criteria in Tables 8.3.1 and 8.3.2 for seismic design does not constitute any kind of guarantee or assurance that significant structural damage or ground failure will not occur if a large earthquake occurs. The primary goal of seismic design is to protect life, not to avoid all damage, since such design may be economically prohibitive.

8.4 Temporary Excavations

8.4.1 The recommendations included herein are provided for temporary excavations. It is the responsibility of the contractor to provide a safe excavation during the construction of the proposed project.

8.4.2 Excavations on the order of 5 to 15 feet in vertical height are expected during grading operations and utility installation. The contractor's competent person should evaluate the necessity for lay back of vertical cut areas. Vertical excavations up to 5 feet may be attempted where loose soils or caving sands are not present, and where not surcharged by existing structures or vehicle/construction equipment loads.

8.4.3 Vertical excavations greater than 5 feet will require sloping measures in order to provide a stable excavation. We expect that sufficient space is available to complete the majority of the required earthwork for this project using sloping measures. If necessary, compound excavation, slot-cutting, and or shoring recommendations will be provided in an addendum.

8.4.4 Where sufficient space is available, temporary unsurcharged embankments may be sloped back at a uniform 1.5:1 (h:v) slope gradient or flatter. A uniform slope does not have a vertical portion.

8.4.5 Where sloped embankments are utilized, the top of the slope should be barricaded to prevent vehicles and storage loads at the top of the slope within a horizontal distance equal to the height of the slope. If the temporary construction embankments are to be maintained during the rainy season, berms are suggested along the tops of the slopes where necessary to prevent runoff water from entering the excavation and eroding the slope faces. The contractor's personnel should inspect the soil exposed in the cut slopes during excavation so that modifications of the slopes can be made if variations in the soil conditions occur. Excavations should be stabilized within 30 days of initial excavation.

8.5 Grading

8.5.1 Grading should be performed in accordance with the recommendations provided in this report, the *Recommended Grading Specifications* contained in *Appendix C* and Moreno Valley Standards.

8.5.2 Prior to commencing grading, a pre-construction conference should be held at the site with the owner/developer, city inspector, grading contractor, civil engineer, and geotechnical engineer in attendance. Special soil handling requirements can be discussed at that time.

8.5.3 Site preparation should begin with the removal of deleterious material, debris, buried trash, and vegetation. The depth of removal should be such that material exposed in cut areas or soil to be used as fill is relatively free of organic matter. Material generated during stripping and/or site demolition should be exported from the site.

8.5.4 Undocumented fill and the upper portion of the very old alluvium in the building areas should be removed to expose competent older alluvium. Based on our findings, we expect the existing soils within approximately 5 feet of the existing ground surface will require remedial excavation and proper compaction. Areas of loose, dry, or compressible soils will require additional excavation and processing prior to fill placement. Removals should extend at least 3 feet below the bottom of the planned foundations, and the excavations should be extended laterally a minimum distance of 5 feet beyond the building footprint or for a distance equal to the depth of removal, whichever is greater. Where the lateral over-excavation is not possible, structural setbacks or deepened footings may be required.

8.5.5 Removals in pavement and walkway areas should extend at least 2 feet beneath the pavement or flatwork subgrade elevation.

8.5.6 The actual depth of removal should be evaluated by the engineering geologist during grading operations. Deeper excavations may be required if dry, loose, soft, or porous materials are present at the base of the removals. The bottom of the excavations should be scarified to a depth of at least 1 foot, moisture conditioned as necessary, and properly compacted.

8.5.7 The site should then be brought to final subgrade elevations with fill compacted in layers. In general, soil native to the site is suitable for use as fill if free from vegetation, debris and other deleterious material. Layers of fill should be about 6 to 8 inches in loose thickness and no thicker than will allow for adequate bonding and compaction. Fill, including backfill and scarified ground surfaces, should be compacted to a dry density of at least 90 percent of the laboratory maximum dry density at 0 to 2 percent above optimum moisture content, as determined in accordance with ASTM D 1557. Fill materials placed below optimum moisture content may require additional moisture conditioning prior to placing additional fill. The upper 12 inches of subgrade soil underlying pavement should be compacted to a dry density of at least 95 percent of the laboratory maximum dry density at 0 to 2 percent above optimum moisture content shortly before paving operations.

8.5.8 Import fill soil (if necessary) should consist of granular materials with a “very low” expansion potential (EI of less than 20), free of deleterious material and rock fragments larger than 6 inches and should be compacted as recommended herein. Geocon should be notified of the import soil source and should perform laboratory testing of import soil prior to its arrival at the site to determine its suitability as fill material.

8.5.9 Foundation excavation bottoms must be observed and approved in writing by the Geotechnical Engineer, prior to placing fill, steel, gravel or concrete.

8.6 Utility Trench Backfill

8.6.1 Utility trenches should be properly backfilled in accordance with the requirements of Moreno Valley and the latest edition of the *Standard Specifications for Public Works Construction* (Greenbook). The pipes should be bedded with well graded crushed rock or clean sands (Sand Equivalent greater than 30) to a depth of at least one foot over the pipe. The bedding material must be inspected and approved in writing by the Geotechnical Engineer (a representative of Geocon). The use of well graded crushed rock is only acceptable if used in conjunction with filter fabric to prevent the gravel from having direct contact with soil. The remainder of the trench backfill may be derived from onsite soil or approved import soil, compacted as necessary, until the required compaction is obtained. Backfill of utility trenches should not contain rocks greater than 3 inches in diameter. The use of 2-sack slurry and controlled low strength material (CLSM) are also acceptable as backfill. However, consideration should be given to the possibility of differential settlement where the slurry ends and earthen backfill begins. These transitions should be minimized and additional stabilization should be considered at these transitions.

8.6.2 Trench excavation bottoms must be observed and approved in writing by the Geotechnical Engineer, prior to placing bedding materials, fill, gravel, or concrete.

8.7 Earthwork Grading Factors

8.7.1 Estimates of shrinkage factors are based on empirical judgments comparing the material in its existing or natural state as encountered in the exploratory excavations to a compacted state. Variations in natural soil density and in compacted fill density render shrinkage value estimates very approximate. As an example, the contractor can compact the fill to a dry density of 90 percent or higher of the laboratory maximum dry density. Thus, the contractor has an approximately 10 percent range of control over the fill volume. Based on our experience and the densities measured during our investigation, the shrinkage of undocumented fill and older alluvium soil is expected to be on the order of 0 to 10 percent when compacted to at least 90 percent of the laboratory maximum dry density. This estimate is for preliminary quantity estimates only. Due to the variations in the actual shrinkage/bulking factors, a balance area should be provided to accommodate variations

8.8 Foundation and Concrete Slab-On-Grade Recommendations

8.8.1 The foundation recommendations presented herein are for the proposed buildings subsequent to the recommended grading assuming that the buildings are founded in soils with a low expansion potential. If soils with a medium or high expansion potential are placed within 4 feet of finish grade, then Geocon should be contacted for additional recommendations. The proposed structure can be supported on a shallow foundation system bearing in newly placed compacted fill.

8.8.2 Foundations for the structure should consist of either continuous strip footings and/or isolated spread footings. Continuous footings should be at least 18 inches wide and extend at least 18 inches below lowest adjacent pad grade. Isolated spread footings should have a minimum width of 24 inches and should also extend at least 18 inches below lowest adjacent pad grade. A wall/column footing dimension detail depicting footing embedment is provided on Figure 3.

8.8.3 From a geotechnical engineering standpoint, concrete slabs-on-grade for the structure should be at least 4 inches thick and be reinforced with at least No. 3 steel reinforcing bars placed 24 inches on center in both directions. The concrete slab-on-grade recommendations are based on soil support characteristics only. The project structural engineer should evaluate the structural requirements of the concrete slab for supporting equipment and storage loads. A thicker concrete slab may be required for heavier loading conditions. To reduce the effects of differential settlement on the foundation system, thickened slabs and/or an increase in steel reinforcement can provide a benefit to reduce concrete cracking.

8.8.4 Steel reinforcement for continuous footings should consist of at least two No. 4 steel reinforcing bars placed horizontally in the footings, one near the top and one near the bottom. Steel reinforcement for the spread footings should be designed by the project structural engineer.

8.8.5 The recommendations presented herein are based on soil characteristics only (EI of 20 or less) and are not intended to replace steel reinforcement required for structural considerations.

8.8.6 Foundations may be designed for an allowable soil bearing pressure of 3,500 pounds per square foot (psf) (dead plus live load). The value presented herein is for dead plus live loads and may be increased by one-third when considering transient loads due to wind or seismic forces.

8.8.7 The maximum expected static settlement for the planned structures supported on conventional foundation systems with the above allowable bearing pressure and deriving support in engineered fill is estimated to be 1 inch and to occur below the heaviest loaded structural element. Differential settlement is estimated to be on the order of ½ inch over a horizontal distance of 40 feet. Once the design and foundation loading configuration proceeds to a more finalized plan, the estimated settlements within this report should be reviewed and revised, if necessary

8.8.8 Once the design and foundation loading configuration proceeds to a more finalized plan, the estimated settlements within this report should be reviewed and revised, if necessary.

8.8.9 Slabs-on-grade that may receive moisture-sensitive floor coverings or may be used to store moisture-sensitive materials should be underlain by a vapor retarder placed directly beneath the slab. The vapor retarder and acceptable permeance should be specified by the project architect or developer based on the type of floor covering that will be installed. The vapor retarder design should be consistent with the guidelines presented in Section 9.3 of the American Concrete Institute's (ACI) Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials (ACI 302.2R-06) and should be installed in general conformance with ASTM E1643 (latest edition) and the manufacturer's recommendations. A minimum thickness of 15 mils extruded polyolefin plastic is recommended; vapor retarders which contain recycled content or woven materials are not recommended. The vapor retarder should have a permeance of less than 0.01 perms demonstrated by testing before and after mandatory conditioning. The vapor retarder should be installed in direct contact with the concrete slab with proper perimeter seal. If the California Green Building Code requirements apply to this project, the vapor retarder should be underlain by 4 inches of clean aggregate. It is important that the vapor retarder be puncture resistant since it will be in direct contact with angular gravel. As an alternative to the clean aggregate suggested in the Green Building Code, the concrete slab-on-grade may be underlain by a vapor retarder over 4 inches of clean sand (sand equivalent greater than 30), since the sand will serve as a capillary break and will minimize the potential for punctures and damage to the vapor barrier.

8.8.10 The bedding sand thickness should be evaluated by the project foundation engineer, architect, and/or developer. However, we should be contacted to provide recommendations if the bedding sand is thicker than 4 inches. Placement of 3 inches and 4 inches of sand is common practice in southern California for 5-inch and 4-inch thick slabs, respectively. The foundation engineer should provide appropriate concrete mix design criteria and curing measures that may be utilized to assure proper curing of the slab to reduce the potential for rapid moisture loss and subsequent cracking and/or slab curl.

8.8.11 Special subgrade presaturation is not deemed necessary prior to placing concrete; however, the exposed foundation and slab subgrade soil should be moisturized to maintain a moist condition as would be expected in any such concrete placement.

8.8.12 The recommendations of this report are intended to reduce the potential for cracking of slabs due to expansive soil (if present), differential settlement of existing soil, or soil with varying thicknesses. However, even with the incorporation of the recommendations presented herein, foundations, stucco walls, and slabs-on-grade placed on such conditions may still exhibit some cracking due to soil movement and/or shrinkage. The occurrence of concrete shrinkage cracks is independent of the supporting soil characteristics. Their occurrence may be reduced and/or controlled by limiting the slump of the concrete, proper concrete placement and curing, and by the placement of crack control joints at periodic intervals, in particular, where re-entrant slab corners occur.

8.8.13 Geocon should be consulted to provide additional design parameters as required by the structural engineer.

8.9 Concrete Flatwork

8.9.1 Exterior concrete flatwork not subject to vehicular traffic should be constructed in accordance with the recommendations herein. Slab panels should be a minimum of 4 inches thick and, when in excess of 8 feet square, should be reinforced with No. 3 reinforcing bars spaced 24 inches on center in each direction to reduce the potential for wide cracking. In addition, concrete flatwork should be provided with crack control joints to reduce and/or control shrinkage cracking. Crack control spacing should be determined by the project structural engineer based upon the slab thickness and intended usage. Criteria of the American Concrete Institute (ACI) should be taken into consideration when establishing crack control spacing. Subgrade soil for exterior slabs not subjected to vehicle loads should be compacted in accordance with criteria presented in the grading section prior to concrete placement. Subgrade soil should be properly compacted and the moisture content of subgrade soil should be checked prior to placing concrete.

8.9.2 Even with the incorporation of the recommendations within this report, the exterior concrete flatwork has a likelihood of experiencing some movement due to swelling or settlement; therefore, the steel reinforcement should overlap continuously in flatwork to reduce the potential for vertical offsets within flatwork. Additionally, flatwork should be structurally connected to the curbs, where possible, to reduce the potential for offsets between the curbs and the flatwork.

8.9.3 Where exterior flatwork abuts structures at entrant or exit points, the exterior slab should be dowelled into the structure's foundation stemwall. This recommendation is intended to reduce the potential for differential elevations that could result from differential settlement or minor heave of the flatwork. Dowelling details should be designed by the project structural engineer.

8.9.4 The recommendations presented herein are intended to reduce the potential for cracking as a result of differential movement. However, even with the incorporation of the recommendations presented herein, concrete will still crack. The occurrence of concrete shrinkage cracks is independent of the soil supporting characteristics. Their occurrence may be reduced and/or controlled by limiting the slump of the concrete, the use of crack control joints and proper concrete placement and curing. Crack control joints should be spaced at intervals no greater than 12 feet. Literature provided by the Portland Concrete Association (PCA) and American Concrete Institute (ACI) present recommendations for proper concrete mix, construction, and curing practices, and should be incorporated into project construction.

8.10 Conventional Retaining Walls

8.10.1 The recommendations presented herein are generally applicable to the design of rigid concrete or masonry retaining walls having a maximum height of 10 feet. In the event that walls higher than 10 feet or other types of walls are planned, Geocon should be consulted for additional recommendations.

8.10.2 Retaining walls not restrained at the top and having a level backfill surface should be designed for an active soil pressure equivalent to the pressure exerted by a fluid density of 35 pounds per cubic foot (pcf). Where the backfill will be inclined at no steeper than 2:1 (horizontal to vertical), an active soil pressure of 60 pcf is recommended. These soil pressures assume that the backfill materials within an area bounded by the wall and a 1:1 plane extending upward from the base of the wall possess an EI of 50 or less. For walls where backfill materials do not conform to the criteria herein, Geocon should be consulted for additional recommendations.

8.10.3 Unrestrained walls are those that are allowed to rotate more than 0.001H (where H equals the height of the retaining portion of the wall in feet) at the top of the wall. Where walls are restrained from movement at the top, walls with a level backfill surface should be designed for a soil pressure equivalent to the pressure exerted by a fluid density of 55 pcf.

8.10.4 The structural engineer should determine the seismic design category for the project in accordance with Section 1613 of the CBC. If the project possesses a seismic design category of D, E, or F, proposed retaining walls in excess of 6 feet in height should be designed with seismic lateral pressure (Section 1803.5.12 of the 2016 CBC).

8.10.5 A seismic load of 10 pcf should be used for design of walls that support more than 6 feet of backfill in accordance with Section 1803.5.12 of the 2016 CBC. The seismic load is applied as an equivalent fluid pressure along the height of the wall and the calculated loads result in a maximum load exerted at the base of the wall and zero at the top of the wall. This seismic load should be applied in addition to the active earth pressure. The earth pressure is based on half of two-thirds of PGA_M calculated from ASCE 7-10 Section 11.8.3.

8.10.6 Unrestrained walls will move laterally when backfilled and loading is applied. The amount of lateral deflection is dependent on the wall height, the type of soil used for backfill, and loads acting on the wall. The retaining walls and improvements above the retaining walls should be designed to incorporate an appropriate amount of lateral deflection as determined by the structural engineer.

8.10.7 Retaining walls should be provided with a drainage system adequate to prevent the buildup of hydrostatic forces and waterproofed as required by the project architect. The soil immediately adjacent to the backfilled retaining wall should be composed of free draining material completely wrapped in Mirafi 140N (or equivalent) filter fabric for a lateral distance of 1 foot for the bottom two-thirds of the height of the retaining wall. The upper one-third should be backfilled with less permeable compacted fill to reduce water infiltration. Alternatively, a drainage panel, such as a Miradrain 6000 or equivalent, can be placed along the back of the wall. A typical drain detail for each option is shown on Figure 4. The use of drainage openings through the base of the wall (weep holes) is not recommended where the seepage could be a nuisance or otherwise adversely affect the property adjacent to the base of the wall. The recommendations herein assume a properly compacted backfill (EI of 50 or less) with no hydrostatic forces or imposed surcharge load. If conditions different than those described are expected or if specific drainage details are desired, Geocon should be contacted for additional recommendations.

8.10.8 Wall foundations should be designed in accordance with the above foundation recommendations.

8.11 Lateral Loading

8.11.1 To resist lateral loads, a passive pressure exerted by an equivalent fluid density of 350 pounds per cubic foot (pcf) should be used for the design of footings or shear keys. The allowable passive pressure assumes a horizontal surface extending at least 5 feet, or three times the surface generating the passive pressure, whichever is greater. The upper 12 inches of material in areas not protected by floor slabs or pavement should not be included in design for passive resistance.

8.11.2 If friction is to be used to resist lateral loads, an allowable coefficient of friction between soil and concrete of 0.40 should be used for design. The friction coefficient may be reduced depending on the vapor barrier or waterproofing material used for construction in accordance with the manufacturer's recommendations.

8.11.3 The passive and frictional resistant loads can be combined for design purposes. The lateral passive pressures may be increased by one-third when considering transient loads due to wind or seismic forces.

8.12 Preliminary Pavement Recommendations

8.12.1 We calculated the flexible pavement sections in general conformance with the *Caltrans Method of Flexible Pavement Design* (Highway Design Manual, Section 608.4) and Moreno Valley specifications using a range of Traffic Indices. The project civil engineer and owner should evaluate the final Traffic Index for the pavements and review the pavement designations to determine appropriate locations for pavement thickness. Based on our laboratory testing we have used a preliminary R-value of 30 for the subgrade soils for the purposes of this analysis. The final pavement sections should be based on the R-value of the subgrade soil encountered at final subgrade elevation. Table 8.12.1 presents the preliminary flexible pavement sections.

TABLE 8.12.1
PRELIMINARY FLEXIBLE PAVEMENT SECTION

Location	Assumed Traffic Index	Subgrade R-Value	Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)
Driveways for automobiles and light-duty vehicles	5.5	30	3.0	7.0
Medium truck traffic areas	6.0	30	3.5	8.0
Driveways for heavy truck and fire truck traffic	7.0	30	4.0	10.0
Collector Roadways	8.0	30	5.0	11.0

8.12.2 Prior to placing base materials, the upper 12 inches of the subgrade soil should be scarified, moisture conditioned as necessary, and recompacted to a dry density of at least 95 percent of the laboratory maximum dry density at 0 to 2 percent above optimum moisture content as determined by ASTM D 1557. Similarly, the base material should be compacted to a dry density of at least 95 percent of the laboratory maximum dry density at 0 to 2 percent above optimum moisture content. Asphalt concrete should be compacted to a density of at least 95 percent of the laboratory Hveem density in accordance with ASTM D 2726.

8.12.3 Base materials should conform to Section 26 of the *Standard Specifications for The State of California Department of Transportation (Caltrans)*. The asphalt concrete should conform to Section 203-6 of the *Standard Specifications for Public Works Construction (Greenbook)*.

8.12.4 A rigid Portland cement concrete (PCC) pavement section should be placed in heavy truck areas, driveway aprons, and cross gutters. We calculated the rigid pavement section in general conformance with the procedure recommended by the American Concrete Institute report ACI 330R *Guide for Design and Construction of Concrete Parking Lots* using the parameters presented in Table 8.12.4.

TABLE 8.12.4
RIGID PAVEMENT DESIGN PARAMETERS

Design Parameter	Design Value
Modulus of subgrade reaction, k	150 pci
Modulus of rupture for concrete, M_R	500 psi
Traffic Category, TC	C and D
Average daily truck traffic, ADTT	100 and 700

8.12.5 Based on the criteria presented herein, the PCC pavement sections should have a minimum thickness as presented in Table 8.12.5.

TABLE 8.12.5
RIGID PAVEMENT RECOMMENDATIONS

Location	Portland Cement Concrete (inches)
Automobile Parking Stalls (TC=C)	6.5
Heavy Truck and Fire Lane Areas (TC=D)	7.5

8.12.6 The PCC pavement should be placed over subgrade soil that is compacted to a dry density of at least 95 percent of the laboratory maximum dry density at 0 to 2 percent above optimum moisture content. This pavement section is based on a minimum concrete compressive strength of approximately 3,000 psi (pounds per square inch).

8.12.7 A thickened edge or integral curb should be constructed on the outside of concrete slabs subjected to wheel loads. The thickened edge should be 1.2 times the slab thickness or a minimum thickness of 2 inches, whichever results in a thicker edge, and taper back to the recommended slab thickness 4 feet behind the face of the slab (e.g., 6-inch and 7.5-inch-thick slabs would have an 8- and 9.5-inch-thick edge, respectively). Reinforcing steel will not be necessary within the concrete for geotechnical purposes with the possible exception of dowels at construction joints as discussed herein.

8.12.8 In order to control the location and spread of concrete shrinkage cracks, crack-control joints (weakened plane joints) should be included in the design of the concrete pavement slab in accordance with the referenced ACI report.

8.12.9 The performance of pavements is highly dependent on providing positive surface drainage away from the edge of the pavement. Ponding of water on or adjacent to the pavement surfaces will likely result in pavement distress and subgrade failure. Drainage from landscaped areas should be directed to controlled drainage structures. Landscape areas adjacent to the edge of asphalt pavements are not recommended due to the potential for surface or irrigation water to infiltrate the underlying permeable aggregate base and cause distress. Where such a condition cannot be avoided, consideration should be given to incorporating measures that will significantly reduce the potential for subsurface water migration into the aggregate base. If planter islands are planned, the perimeter curb should extend at least 6 inches below the level of the base materials.

8.13 Temporary Excavations

8.13.1 Excavations on the order of 5 to 15 feet below the existing ground surface are expected for construction of the proposed utility improvements; and we expect that the proposed utilities will be installed with conventional cut-and-cover methods.

8.13.2 The excavations will expose fill and very old alluvial soils which are suitable for vertical excavations up to 5 feet where loose soils or caving sands are not present and where not surcharged by adjacent traffic or structures.

8.13.3 Vertical excavations greater than 5 feet will require sloping measures in order to provide a stable excavation. Where sufficient space is available, temporary unsurcharged embankments should be designed by the contractor's competent person in accordance with OSHA regulations.

8.13.4 Where there is insufficient space for sloped excavations, shoring or trench shields should be used to support excavations. Shoring may also be necessary where sloped excavation could remove vertical or lateral support of existing improvements, including existing utilities and adjacent structures. Recommendations for temporary shoring can be provided in an addendum if needed.

8.13.5 Where sloped embankments are utilized, the top of the slope should be barricaded to prevent vehicles and storage loads at the top of the slope within a horizontal distance equal to the height of the slope. If the temporary construction embankments are to be maintained during the rainy season, berms are suggested along the tops of the slopes where necessary to prevent runoff water from entering the excavation and eroding the slope faces. The contractor's competent person should inspect the soils exposed in the cut slopes during excavation in accordance with OSHA regulations so that modifications of the slopes can be made if variations in the soil conditions occur.

8.14 Site Drainage and Moisture Protection

8.14.1 Adequate site drainage is critical to reduce the potential for differential soil movement, erosion and subsurface seepage. Under no circumstances should water be allowed to pond adjacent to footings. The site should be graded and maintained such that surface drainage is directed away from structures in accordance with 2016 CBC 1804.4 or other applicable standards. In addition, surface drainage should be directed away from the top of slopes into swales or other controlled drainage devices. Roof and pavement drainage should be directed into conduits that carry runoff away from the proposed structure.

8.14.2 Landscape planters that saturate the subsurface should not be used within 20 feet of the proposed structure or other settlement sensitive on grade improvements. Localized surface settlement should be anticipated in areas where water is allowed to infiltrate into the subsurface.

8.14.3 Underground utilities should be leak free. Utility and irrigation lines should be checked periodically for leaks, and detected leaks should be repaired promptly. Detrimental soil movement could occur if water is allowed to infiltrate the soil for prolonged periods of time.

8.14.4 Landscaping planters adjacent to paved areas are not recommended due to the potential for surface or irrigation water to infiltrate the pavement's subgrade and base course. Area drains to collect excess irrigation water and transmit it to drainage structures or impervious above-grade planter boxes can be used. In addition, where landscaping is planned adjacent to the pavement, construction of a cutoff wall along the edge of the pavement that extends at least 6 inches below the bottom of the base material should be considered.

8.14.5 If not properly constructed, there is a potential for distress to improvements and properties located hydrologically down gradient or adjacent to infiltration areas. Factors such as the amount of water to be detained, its residence time, and soil permeability have an important effect on seepage transmission and the potential adverse impacts that may occur if the storm water management features are not properly designed and constructed. We have not performed a hydrogeology study at the site. Down-gradient and adjacent structures may be subjected to seeps, movement of foundations and slabs, or other impacts as a result of water infiltration.

8.15 Grading and Foundation Plan Review

8.15.1 Geocon should review the project grading and foundation plans prior to final design submittal to verify that the plans have been prepared in substantial conformance with the recommendations of this report and to provide additional analyses or recommendations, if necessary.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. The firm that performed the geotechnical investigation for the project should be retained to provide testing and observation services during construction to provide continuity of geotechnical interpretation and to check that the recommendations presented for geotechnical aspects of site development are incorporated during site grading, construction of improvements, and excavation of foundations. If another geotechnical firm is selected to perform the testing and observation services during construction operations, that firm should prepare a letter indicating their intent to assume the responsibilities of project geotechnical engineer of record. A copy of the letter should be provided to the regulatory agency for their records. In addition, that firm should provide revised recommendations concerning the geotechnical aspects of the proposed development, or a written acknowledgement of their concurrence with the recommendations presented in our report. They should also perform additional analyses deemed necessary to assume the role of Geotechnical Engineer of Record.

2. The recommendations of this report pertain only to the site investigated and are based upon the assumption that the soil conditions do not deviate from those disclosed in the investigation. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that anticipated herein, Geocon should be notified so that supplemental recommendations can be given. The evaluation or identification of the potential presence of hazardous or corrosive materials was not part of the scope of services provided by Geocon.

3. This report is issued with the understanding that it is the responsibility of the owner or his representative to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project and incorporated into the plans, and the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.

4. The findings of this report are valid as of the date of this report. However, changes in the conditions of a property can occur with the passage of time, whether they be due to natural processes or 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 partially by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of three years.

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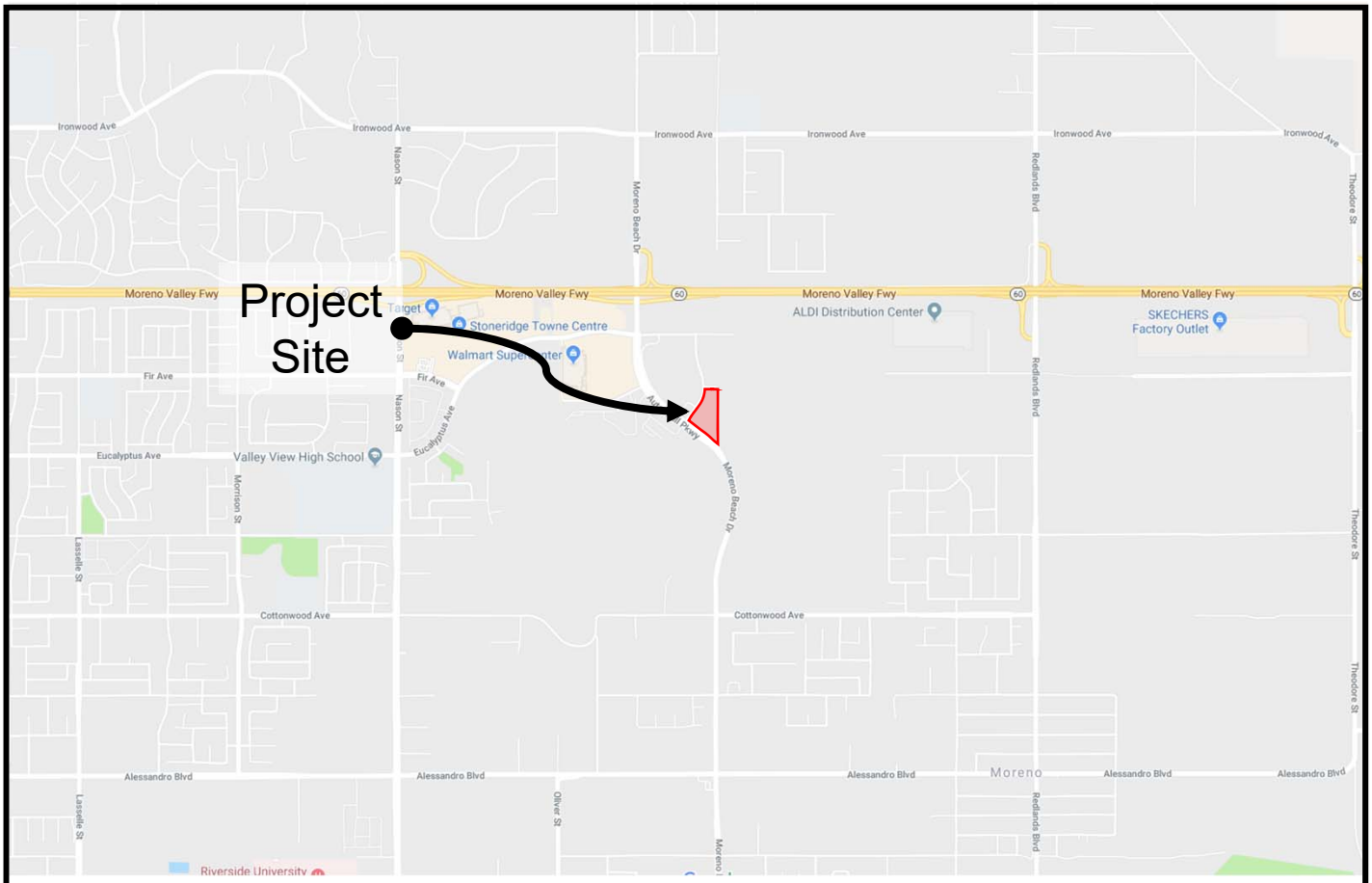


N

1000 ft

SOURCE: Google Maps, 2019

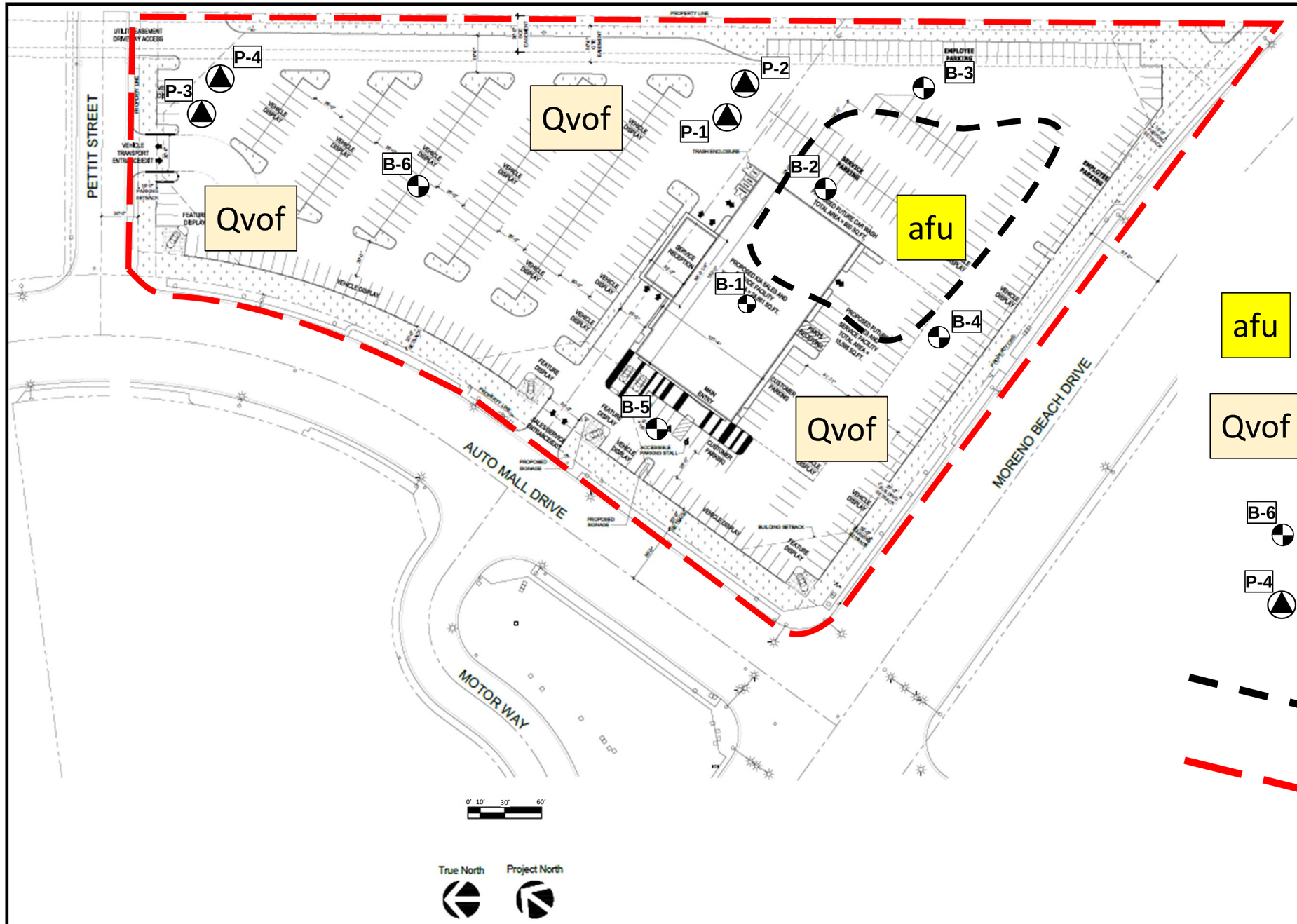
VICINITY MAP

GEOCON
W E S T, I N C.
GEOTECHNICAL ENVIRONMENTAL MATERIALS
41571 CORNING PLACE, SUITE 101, MURRIETA, CA 92562-7065
PHONE 951-304-2300 FAX 951-304-2392

PDT		

KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019	PROJECT NO. T2844-22-01	FIG. 1



GEOCON LEGEND

Locations are approximate

afu ..... UNDOCUMENTED FILL

Qvof ..... VERY OLD ALLUVIAL FAN DEPOSITS

B-6 ..... BORING LOCATION

P-4 ..... PERCOLATION TEST LOCATION

..... GEOLOGIC CONTACT

..... LIMITS OF THIS REPORT

Source: Carlile Coatsworth Architects, Inc., dated January 17, 2019

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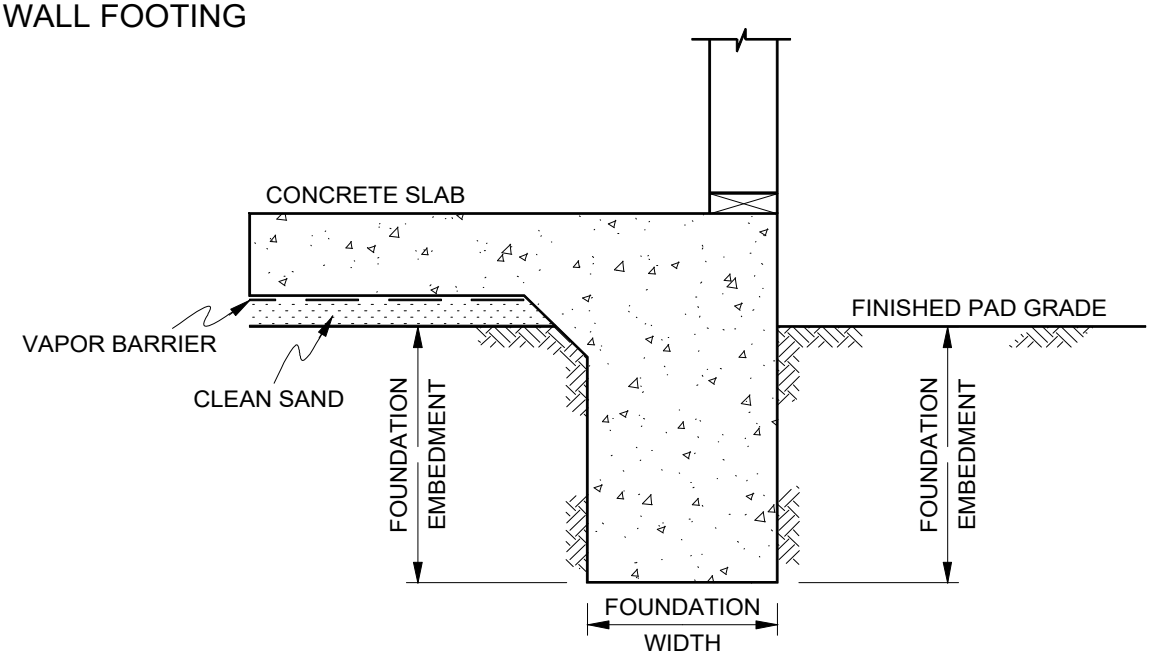
PDT

GEOLOGIC MAP

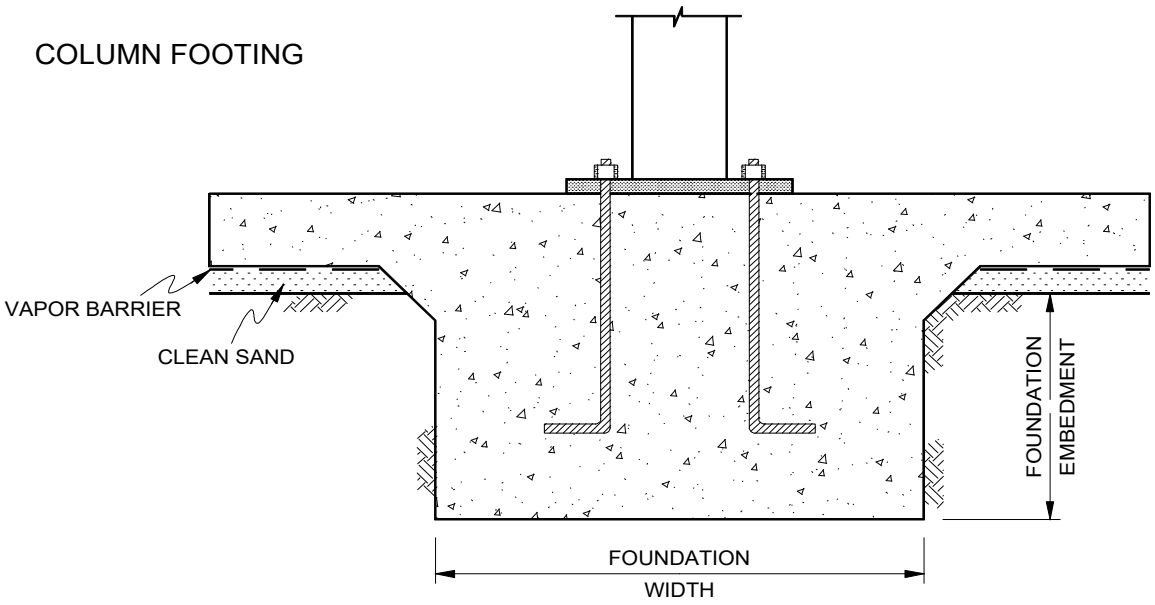
KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019 | PROJECT NO. T2844-22-01 | FIG. 2

WALL FOOTING



COLUMN FOOTING



NOTE: SEE REPORT FOR FOUNDATION WIDTH AND DEPTH RECOMMENDATION

NO SCALE

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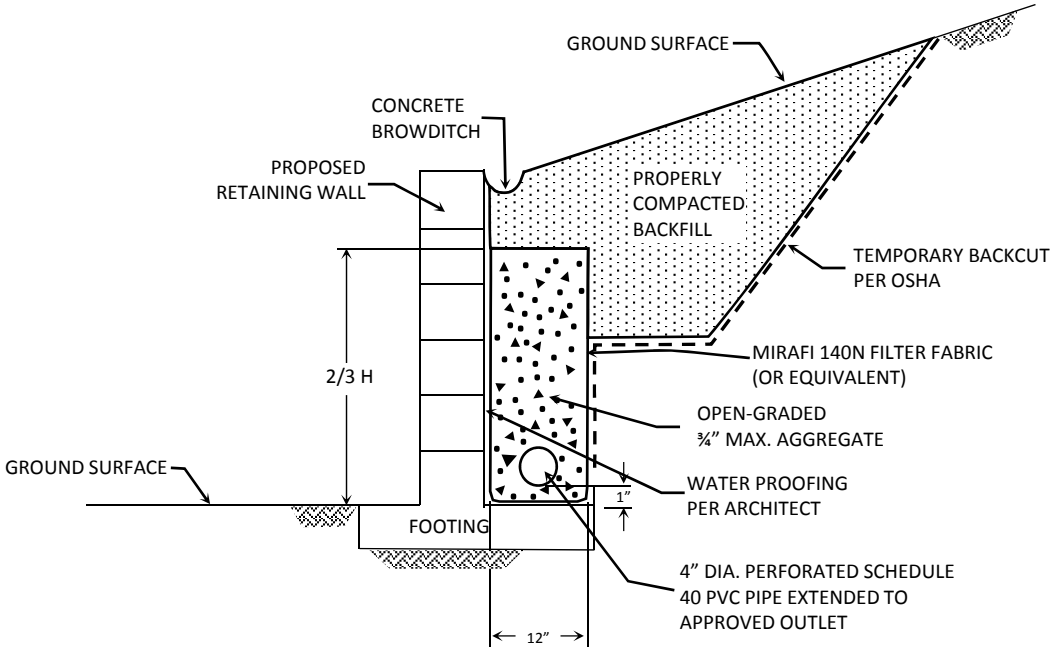
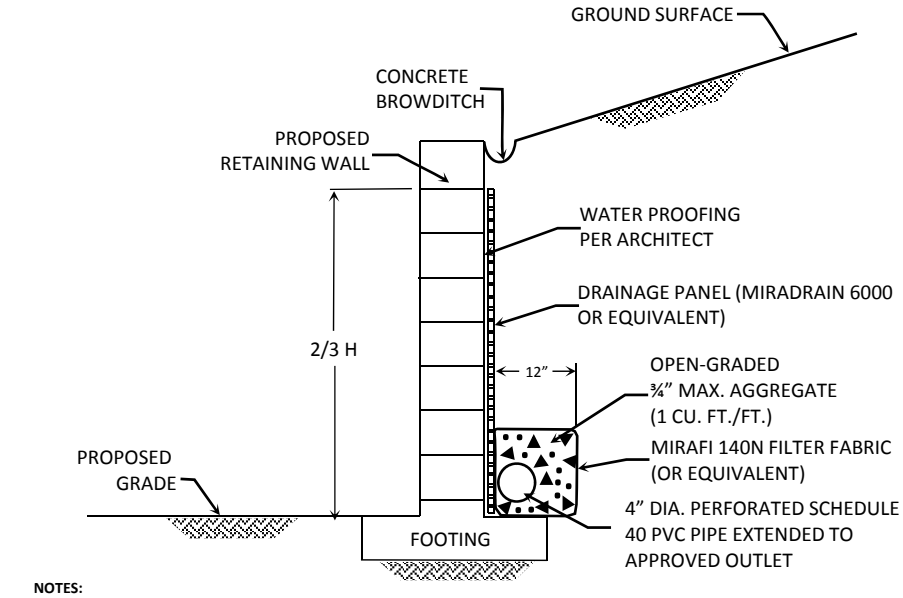
PDT		

WALL / COLUMN FOOTING DETAIL

KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019	PROJECT NO. T2844-22-01	FIG. 3





NOTES:

DRAIN SHOULD BE UNFORMLY SLOPED TO GRAVITY OUTLET OR TO A SUMP WHERE WATER CAN BE REMOVED BY PUMPIMG

CONCRETE BROW DITCH RECOMMENDED FOR SLOPE HEIGHTS GREATER THAN 6 FEET

NO SCALE

TYPICAL RETAINING WALL DRAIN DETAIL

GEOCON
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PDT		

KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019	PROJECT NO. T2367-22-02	FIG. 4

APPENDIX A

APPENDIX A

FIELD INVESTIGATION

Field work for our investigation included a subsurface exploration, soil sampling, and percolation testing. The *Geologic Map*, Figure 2 presents the locations of the exploratory borings. Boring logs and an explanation of the geologic units encountered are presented in figures following the text in this appendix. We located the borings in the field using existing reference points. Therefore, actual boring locations may deviate slightly. We performed a field investigation on December 17, 2018 which consisted of drilling 10 exploratory borings to a maximum depth of approximately 51½ feet below existing grade with a CME 75 drill rig equipped with 8-inch-diameter hollow-stem auger.

We collected bulk and relatively undisturbed samples from the borings by driving a 3-inch O. D., California Modified Sampler into the "undisturbed" soil mass with blows from a 140-pound hammer falling 30 inches on an auto hammer. The California Modified Sampler was equipped with 1-inch high by 2$^{3}/_{8}$-inch inside diameter brass sampler rings to facilitate removal and testing. Relatively undisturbed samples and bulk samples of disturbed soils were transported to our laboratory for testing. The type of sample is noted on the exploratory boring logs.

The samplers were driven 18 inches into the bottom of the excavations. Blow counts are recorded for every 6 inches the sampler is driven. The penetration resistances shown on the boring logs are shown in terms of blows per foot. The values indicated on the boring logs are the sum of the last 12 inches of the sampler if driven 18 inches. If the sampler was not driven for 18 inches, an approximate value is calculated in term of blows per foot or the final 6-inch interval is reported. These values are not to be taken as N-values, adjustments have not been applied. We estimated elevations shown on the boring logs from a topographic map.

We visually examined the soil conditions encountered within the borings, classified, and logged in general accordance with the Unified Soil Classification System (USCS). Logs of the borings are presented on Figures A-1 through A-10. The logs depict the general soil and geologic conditions encountered and the depth at which we obtained the samples.

Percolation testing was performed on December 18, 2018 in accordance with *Riverside County Flood Control and Water Conservation District, LID BMP Manual, Appendix A.* The percolation tests were run in accordance with *Section 2.3., Shallow Percolation Test*. The percolation test data is presented on Figures A-11 and A-14.

PROJECT NO. T2844-22-01

BORING B-1

ELEV. (MSL.) **1756** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **PDT**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B-1@0-5'			SM	**UNDOCUMENTED FILL (afu)** Silty SAND, loose, dry, reddish brown; fine to medium sand; some gravel and cobble; some concrete chunks			
2								
	B-1@2.5'			SM	**VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)** Silty SAND, very dense, damp, light brown; fine to coarse sand	85	124.6	4.6
4								
	B-1@5'				-Becomes dark reddish brown; damp; trace coarse sand; trace gravel; trace carbonate stringers	80	130.4	5.3
6								
	B-1@7.5				-Becomes dense, moist; fine sand; some mica	56	125.4	7.8
8								
10	B-1@10'				-Some medium sand	69	132.9	7.9
				ML	Sandy SILT, hard, moist, dark gray; fine sand; trace medium sand			
12								
14					-Becomes dark brown; some clay			
	B-1@15'			SM	Silty SAND, dense, moist, reddish brown; fine to medium sand; trace mica	60		
16								
18								
20	B-1@20				-Becomes very dense	80	126.0	10.8
22								
24								
	B-1@25'				-Becomes medium dense	44		
26								
28								

Figure A-1,
Log of Boring B-1, Page 1 of 2

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2844-22-01

BORING B-1

ELEV. (MSL.) **1756** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **PDT**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
30	B-1@30'			SM	Silty SAND, medium dense, moist, reddish brown; trace coarse sand; trace gravel; increase in silt	12		
32								
34								
36	B-1@35'				-Becomes brownish red; fine sand; trace medium sand	44		
38								
40	B-1@40'				-Some carbonate stringers	23		
42								
44								
46	B-1@45'				-Becomes dense; strong brown; fine to mediun sand; carbonate stringers; micaceous	62		
48								
50	B-1@50					34		
					Total depth 51.5 feet Groundwater not encountered Penetration resistance for 140-lb hammer falling 30" by auto-hammer Backfilled with cuttings 4/9/2018			

Figure A-1,
Log of Boring B-1, Page 2 of 2

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2844-22-01

BORING B-2

ELEV. (MSL.) **1753** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **PDT**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**UNDOCUMENTED FILL (afu)** Silty SAND, medium dense, dry, reddish brown; fine to medium sand			
2	B-2@2.5'					50/6"	117.3	6.2
4				ML	**VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)** Sandy SILT, stiff, damp, light brown; fine sand			
6	B-2@5-10 B-2@5'					33	96.7	9.6
8	B-2@7.5'				-Becomes moist moist, dark brown; micaceous	21	106.1	11.5
10	B-2@10'					24	102.9	10.3
12								
14				SM	Silty SAND, medium dense, moist, strong brown; fine sand			
16	B-2@15'					40		
18								
20	B-2@20'					42	128.0	4.5
22								
24								
26	B-2@25'				-Becomes dense	63		
					Total depth 26.5 feet Groundwater not encountered Penetration resistance for 140-lb hammer falling 30" by auto-hammer Backfilled with cuttings 4/9/2018			

Figure A-2,
Log of Boring B-2, Page 1 of 1

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2844-22-01

BORING B-3

ELEV. (MSL.) **1751** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **PDT**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**UNDOCUMENTED FILL (afu)** Silty SAND, loose, dry, reddish brown; fine to medium sand; some gravel and cobble			
2				SM	**VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)** Silty SAND, very dense, damp, brownish red; fine to medium sand; carbonate stringers			
	B-3@2.5'					50/6"		
4								
	B-3@5-10				-Becomes moist; strong brown	50/6"	127.9	7.5
6	B-3@5'							
8	B-3@7.5'				-Trace carbonate stringers; micaceous	50/6"		
				ML	Sandy SILT, hard, moist, dark brown; fine sand			
10	B-3@10'					44		
12								
				CL	Sandy CLAY, stiff, moist, dark brown; fine sand			
14								
	B-3@15'					14	117.1	11.1
16								
				SC	Clayey SAND, medium dense, moist, reddish brown, fine to coarse sand; trace carbonate stringers			
18								
20	B-3@20'					44		
					Total depth 21.5 feet Groundwater not encountered Penetration resistance for 140-lb hammer falling 30" by auto-hammer Backfilled with cuttings 12/17/2018			

Figure A-3,
Log of Boring B-3, Page 1 of 1

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2844-22-01

BORING B-4

ELEV. (MSL.) **1756** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **ATS**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**UNDOCUMENTED FILL (afu)** Silty SAND, dense, damp, brown; fine sand; some coarse sand; trace gravel			
2								
4	B-4@2.5' B-4@2.5-7.5'			SM	**VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)** Silty SAND, very dense, damp, light brown; fine sand; some medium and coarse sand; trace mica; root hairs	50/5"		
6	B-4@5'				-Becomes dense, strong brown; trace pinhole porosity; micaceous	63		
8	B-4@7.5'				-Becomes very dense; moist	85	130.9	7.0
10	B-4@10'				-Becomes dense; dark gray; fine sand	53		
12								
14								
16	B-4@15'				-Becomes very dense; brownish gray; some medium and coarse sand	50/5"		
18								
20	B-4@20'			SC	Clayaey SAND, medium dense, damp, reddish brown; fine sand; some coarse sand	42	135.2	6.1
					Total depth 21.5 feet Groundwater not encountered Penetration resistance for 140-lb hammer falling 30" by auto-hammer Backfilled with cuttings 12/17/2018			

Figure A-4,
Log of Boring B-4, Page 1 of 1

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2844-22-01

BORING B-5

ELEV. (MSL.) **1755** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **ATS**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B-5@0-5'			SM	**UNDOCUMENTED FILL (afu)** Silty SAND, dense, damp, brown; fine sand; some coarse sand; trace gravel			
2								
	B-5@2.5'			SM	**VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)** Silty SAND, very dense, moist, light brown; fine sand; some medium and coarse sand; trace mica; root hairs	66	116.6	6.5
4								
	B-5@5'				-Becomes very dense, moist, strong brown; pinhole porosity; micaceous	50/4"	134.1	7.6
6								
	B-5@7.5'			SC	Clayey SAND, very dense, moist, dark brown; fine sand; trace medium and coarse sand; trace gravel; pinhole porosity; trace mica	50/6"	130.7	7.8
8								
10	B-5@10'				-Becomes dense; reddish brown	50		
12								
14								
	B-5@15'				-Becomes brown	57	132.4	6.1
16								
18								
20	B-5@20'			SM	Silty SAND, medium dense, moist, light brown; fine sand; some medium and coarse sand; pinhole porosity	32		
					Total depth 21.5 feet Groundwater not encountered Penetration resistance for 140-lb hammer falling 30" by auto-hammer Backfilled with cuttings 12/17/2018			

Figure A-5,
Log of Boring B-5, Page 1 of 1

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2844-22-01

BORING B-6

ELEV. (MSL.) **1752** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **ATS**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B-6@0-5'			SM	**UNDOCUMENTED FILL (afu)** Silty SAND, dense, damp, brown; fine sand; trace gravel; root hairs			
2								
	B-6@2.5'			SP	Poorly Graded SAND, very dense, moist, light yellowish brown; fine sand; some medium and coarse sand; trace mica	50/5"	129.6	6.0
4								
	B-6@5'			SC	Clayey SAND, very dense, moist, light reddish brown; fine sand; pinhole porosity	50/6"		
6								
	B-6@7.5'			SM	Silty SAND, very dense, moist, grayish brown; fine sane; pinhole porosity	50/6"	131.5	6.0
8								
10	B-6@10'					50/6"		
12								
14								
	B-6@15'			SC	Clayey SAND, dense, moist, gray, fine sand	72		
16								
					Total depth 16.5 feet Groundwater not encountered Penetration resistance for 140-lb hammer falling 30" by auto-hammer Backfilled with cuttings 12/17/2018			

Figure A-6,
Log of Boring B-6, Page 1 of 1

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2844-22-01

BORING P-1

ELEV. (MSL.) **1751** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **ATS**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**UNDOCUMENTED FILL (afu)** Silty SAND, medium dense, dry, medium brown; fine sand; some medium and coarse sand			
2				SM	**VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)** Silty SAND, dense, damp, brown; fine to medium sand; some coarse sand; trace gravel			
4								
6								
	P-1@7-8'							
8					Total depth 8 feet Groundwater not encountered Set as Percolation Test P-1 Backfilled with cuttings 12/18/2018			

Figure A-7,
Log of Boring P-1, Page 1 of 1

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2844-22-01

BORING P-2

ELEV. (MSL.) **1751** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **ATS**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**UNDOCUMENTED FILL (afu)** Silty SAND, medium dense, dry, medium brown; fine sand; some medium and coarse sand			
2				SM	**VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)** Silty SAND, dense, damp, brown; fine to medium sand; some coarse sand; trace gravel			
4								
6	P-2@6-7"							
					Total depth 7 feet Groundwater not encountered Set as Percolation Test P-2 Backfilled with cuttings 12/18/2018			

Figure A-8,
Log of Boring P-2, Page 1 of 1

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2844-22-01

BORING P-3

ELEV. (MSL.) **1751** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **ATS**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SC	**UNDOCUMENTED FILL (afu)** Clayey SAND, medium dense, damp, medium brown; fine sand; some coarse sand			
2				SC	**VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)** Clayey SAND, dense, damp, light olive brown; fine sand; some coarse sand			
4								
6				SM	Silty SAND, dense, damp, medium brown; fine sand			
8								
10	P-3@9-10			ML	Sandy SILT, stiff, moist, dark yellowish brown; fine to medium sand; trace coarse sand			

Total depth 10 feet
Groundwater not encountered
Set as Percolation Test P-3
Backfilled with cuttings 12/18/2018

Figure A-9,
Log of Boring P-3, Page 1 of 1

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2844-22-01

BORING P-4

ELEV. (MSL.) **1752** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **ATS**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SC	**UNDOCUMENTED FILL (afu)** Clayey SAND, medium dense, damp, medium brown; fine sand; some coarse sand			
2				SC	**VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)** Clayey SAND, dense, damp, light olive brown; fine sand; some coarse sand			
4								
6				SM	Silty SAND, dense, damp, medium brown; fine sand			
8								
10	P-4@9-10			ML	Sandy SILT, stiff, moist, dark yellowish brown; fine to medium sand; trace coarse sand			

Total depth 10 feet
Groundwater not encountered
Set as Percolation Test P-4
Backfilled with cuttings 11/27/2018

Figure A-10,
Log of Boring P-4, Page 1 of 1

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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GEOCON

PERCOLATION TEST REPORT

Project Name:		KIA Moreno Valley			**Project No.:**		T2844-22-01
Test Hole No.:		P-1			**Date Excavated:**		12/17/2018
Length of Test Pipe:			108.0	inches	**Soil Classification:**		SM
Height of Pipe above Ground:			16.8	inches	**Presoak Date:**		12/17/2018
Depth of Test Hole:			91.2	inches	**Perc Test Date:**		12/18/2018
Check for Sandy Soil Criteria Tested by:				SP	**Percolation Tested by:**		SP
Water level measured from bottom of hole							

Sandy Soil Criteria Test

Trial No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Level (in)	Final Water Level (in)	Δ in Water Level (inches)	Percolation Rate (min/inch)
1	8:52 AM 9:17 AM	25	25	43.2	43.1	0.1	208
2	9:17 AM 9:42 AM	25	50	43.1	43.0	0.1	208
			Soil Criteria: Normal				

Percolation Test

Reading No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Head (in)	Final Water Head (in)	Δ in Water Level (inches)	Percolation Rate (min/inch)
1	9:42 AM 10:12 AM	30	30	43.1	43.0	0.1	250
2	10:12 AM 10:42 AM	30	60	43.0	42.8	0.1	250
3	10:42 AM 11:12 AM	30	90	42.8	42.6	0.2	125
4	11:12 AM 11:42 AM	30	120	42.6	42.5	0.1	250
5	11:42 AM 12:12 PM	30	150	42.5	42.4	0.1	250
6	12:12 PM 12:42 PM	30	180	42.4	42.2	0.1	250
7	12:42 PM 1:12 PM	30	210	42.2	42.1	0.1	250
8	1:12 PM 1:42 PM	30	240	42.1	42.0	0.1	250
9	1:42 PM 2:12 PM	30	270	42.0	41.9	0.1	250
10	2:12 PM 2:42 PM	30	300	41.9	41.8	0.1	250
11	2:42 PM 3:12 PM	30	330	41.8	41.6	0.1	250
12	3:12 PM 3:42 PM	30	360	41.6	41.5	0.1	250

Infiltration Rate (in/hr):	0.01	
Radius of test hole (in):	4	**Figure A-11**
Average Head (in):	41.6	

PERCOLATION TEST REPORT							
Project Name:		KIA Moreno Valley			**Project No.:**		T2844-22-01
Test Hole No.:		P-2			**Date Excavated:**		12/17/2018
Length of Test Pipe:			95.8	inches	**Soil Classification:**		SM
Height of Pipe above Ground:			16.8	inches	**Presoak Date:**		12/17/2018
Depth of Test Hole:			79.0	inches	**Perc Test Date:**		12/18/2018
Check for Sandy Soil Criteria Tested by:				SP	**Percolation Tested by:**		SP
Water level measured from bottom of hole							
Sandy Soil Criteria Test							
Trial No.	**Time**	**Time Interval (min)**	**Total Elapsed Time (min)**	**Initial Water Level (in)**	**Final Water Level (in)**	**Δ in Water Level (inches)**	**Percolation Rate (min/inch)**
1	8:56 AM 9:21 AM	25	25	23.4	23.0	0.4	69
2	9:21 AM 9:46 AM	25	50	23.0	22.9	0.1	208
			Soil Criteria: Normal				
			Percolation Test				
Reading No.	**Time**	**Time Interval (min)**	**Total Elapsed Time (min)**	**Initial Water Head (in)**	**Final Water Head (in)**	**Δ in Water Level (inches)**	**Percolation Rate (min/inch)**
1	9:46 AM 10:16 AM	30	30	22.9	22.6	0.4	83
2	10:16 AM 10:46 AM	30	60	22.6	22.2	0.4	83
3	10:46 AM 11:16 AM	30	90	22.2	21.4	0.8	36
4	11:16 AM 11:46 AM	30	120	21.4	20.2	1.2	25
5	11:46 AM 12:16 PM	30	150	20.2	19.1	1.1	28
6	12:16 PM 12:46 PM	30	180	19.1	18.0	1.1	28
7	12:46 PM 1:16 PM	30	210	18.0	16.8	1.2	25
8	1:16 PM 1:46 PM	30	240	16.8	15.7	1.1	28
9	1:46 PM 2:16 PM	30	270	15.7	14.6	1.1	28
10	2:16 PM 2:46 PM	30	300	14.6	13.6	1.1	28
11	2:46 PM 3:16 PM	30	330	13.6	12.5	1.1	28
12	3:16 PM 3:46 PM	30	360	12.5	11.4	1.1	28
Infiltration Rate (in/hr):			0.31				
Radius of test hole (in):			4				**Figure A-12**
Average Head (in):			11.9				

PERCOLATION TEST REPORT							
Project Name:		KIA Moreno Valley			**Project No.:**		T2844-22-01
Test Hole No.:		P-3			**Date Excavated:**		12/17/2018
Length of Test Pipe:			119.8	inches	**Soil Classification:**		ML
Height of Pipe above Ground:			2.4	inches	**Presoak Date:**		12/17/2018
Depth of Test Hole:			117.4	inches	**Perc Test Date:**		12/18/2018
Check for Sandy Soil Criteria Tested by:				SP	**Percolation Tested by:**		SP
Water level measured from bottom of hole							
Sandy Soil Criteria Test							
Trial No.	**Time**	**Time Interval (min)**	**Total Elapsed Time (min)**	**Initial Water Level (in)**	**Final Water Level (in)**	**Δ in Water Level (inches)**	**Percolation Rate (min/inch)**
1	9:03 AM 9:28 AM	25	25	42.6	42.5	0.1	208
2	9:28 AM 9:53 AM	25	50	42.5	42.4	0.1	208
			Soil Criteria: Normal				
			Percolation Test				
Reading No.	**Time**	**Time Interval (min)**	**Total Elapsed Time (min)**	**Initial Water Head (in)**	**Final Water Head (in)**	**Δ in Water Level (inches)**	**Percolation Rate (min/inch)**
1	9:53 AM 10:23 AM	30	30	42.4	42.2	0.1	250
2	10:23 AM 10:53 AM	30	60	42.2	42.1	0.1	250
3	10:53 AM 11:23 AM	30	90	42.1	42.0	0.1	250
4	11:23 AM 11:53 AM	30	120	42.0	41.9	0.1	250
5	11:53 AM 12:23 PM	30	150	41.9	41.8	0.1	250
6	12:23 PM 12:53 PM	30	180	41.8	41.6	0.1	250
7	12:53 PM 1:23 PM	30	210	41.6	41.5	0.1	250
8	1:23 PM 1:53 PM	30	240	41.5	41.4	0.1	250
9	1:53 PM 2:23 PM	30	270	41.4	41.3	0.1	250
10	2:23 PM 2:53 PM	30	300	41.3	41.2	0.1	250
11	2:53 PM 3:23 PM	30	330	41.2	41.0	0.1	250
12	3:23 PM 3:53 PM	30	360	41.0	40.9	0.1	250
Infiltration Rate (in/hr):			0.01				
Radius of test hole (in):			4				**Figure A-13**
Average Head (in):			41.0				

PERCOLATION TEST REPORT

Project Name:		KIA Moreno Valley			**Project No.:**		T2844-22-01
Test Hole No.:		P-4			**Date Excavated:**		12/17/2018
Length of Test Pipe:			120.0	inches	**Soil Classification:**		ML
Height of Pipe above Ground:			0.0	inches	**Presoak Date:**		12/17/2018
Depth of Test Hole:			120.0	inches	**Perc Test Date:**		12/18/2018
Check for Sandy Soil Criteria Tested by:				SP	**Percolation Tested by:**		SP
Water level measured from bottom of hole							

Sandy Soil Criteria Test

Trial No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Level (in)	Final Water Level (in)	Δ in Water Level (inches)	Percolation Rate (min/inch)
1	9:06 AM 9:31 AM	25	25	31.3	31.2	0.1	208
2	9:31 AM 9:56 AM	25	50	31.2	30.6	0.6	42
			Soil Criteria: Normal				

Percolation Test

Reading No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Head (in)	Final Water Head (in)	Δ in Water Level (inches)	Percolation Rate (min/inch)
1	9:56 AM 10:26 AM	30	30	30.6	30.5	0.1	250
2	10:26 AM 10:56 AM	30	60	30.5	29.9	0.6	50
3	10:56 AM 11:26 AM	30	90	29.9	29.3	0.6	50
4	11:26 AM 11:56 AM	30	120	29.3	28.7	0.6	50
5	11:56 AM 12:26 PM	30	150	28.7	28.1	0.6	50
6	12:26 PM 12:56 PM	30	180	28.1	27.5	0.6	50
7	12:56 PM 1:26 PM	30	210	27.5	26.9	0.6	50
8	1:26 PM 1:56 PM	30	240	26.9	26.4	0.5	63
9	1:56 PM 2:26 PM	30	270	26.4	25.9	0.5	63
10	2:26 PM 2:56 PM	30	300	25.9	25.3	0.6	50
11	2:56 PM 3:26 PM	30	330	25.3	24.8	0.5	63
12	3:26 PM 3:56 PM	30	360	24.8	24.4	0.5	63

Infiltration Rate (in/hr):			0.07				
Radius of test hole (in):			4				**Figure A-14**
Average Head (in):			24.6				

APPENDIX

APPENDIX B

LABORATORY TESTING

We performed laboratory tests in accordance with current, generally accepted test methods of ASTM International (ASTM) or other suggested procedures. We analyzed selected soil samples for *in-situ* density and moisture content, maximum dry density and optimum moisture content, expansion index, corrosivity, grain size distribution, consolidation characteristics, R-value and direct shear strength. The results of the laboratory tests are presented on Figures B-1 through B-5. The in-place dry density and moisture content of the samples tested are presented on the boring logs in *Appendix A*.

SUMMARY OF LABORATORY MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT TEST RESULTS ASTM D1557

Sample No.	Description	Maximum Dry Density (pcf)	Optimum Moisture Content (% of dry wt.)
B-1 @ 0-5’	Silty SAND (SM), reddish brown to light brown	135.2	6.7

SUMMARY OF LABORATORY EXPANSION INDEX TEST RESULTS ASTM D4829

Sample No.	Moisture Content		After Test Dry Density (pcf)	Expansion Index
	Before Test (%)	After Test (%)		
B-5 @ 0-5’	7.6	12.5	120.0	3

SUMMARY OF CORROSIVITY TEST RESULTS

Sample No.	Chloride Content (ppm)	Sulfate Content (%)	pH	Resistivity (ohm-centimeter)
B-1 @ 0-5’	98	0.001	8.3	4,600

Chloride content determined by California Test 422.
Water-soluble sulfate determined by California Test 417.
Resistivity and pH determined by Caltrans Test 643.

SUMMARY OF LABORATORY R-VALUE TEST RESULTS ASTM D2844

Sample No.	R-Value
B-6 @ 0-5”	33

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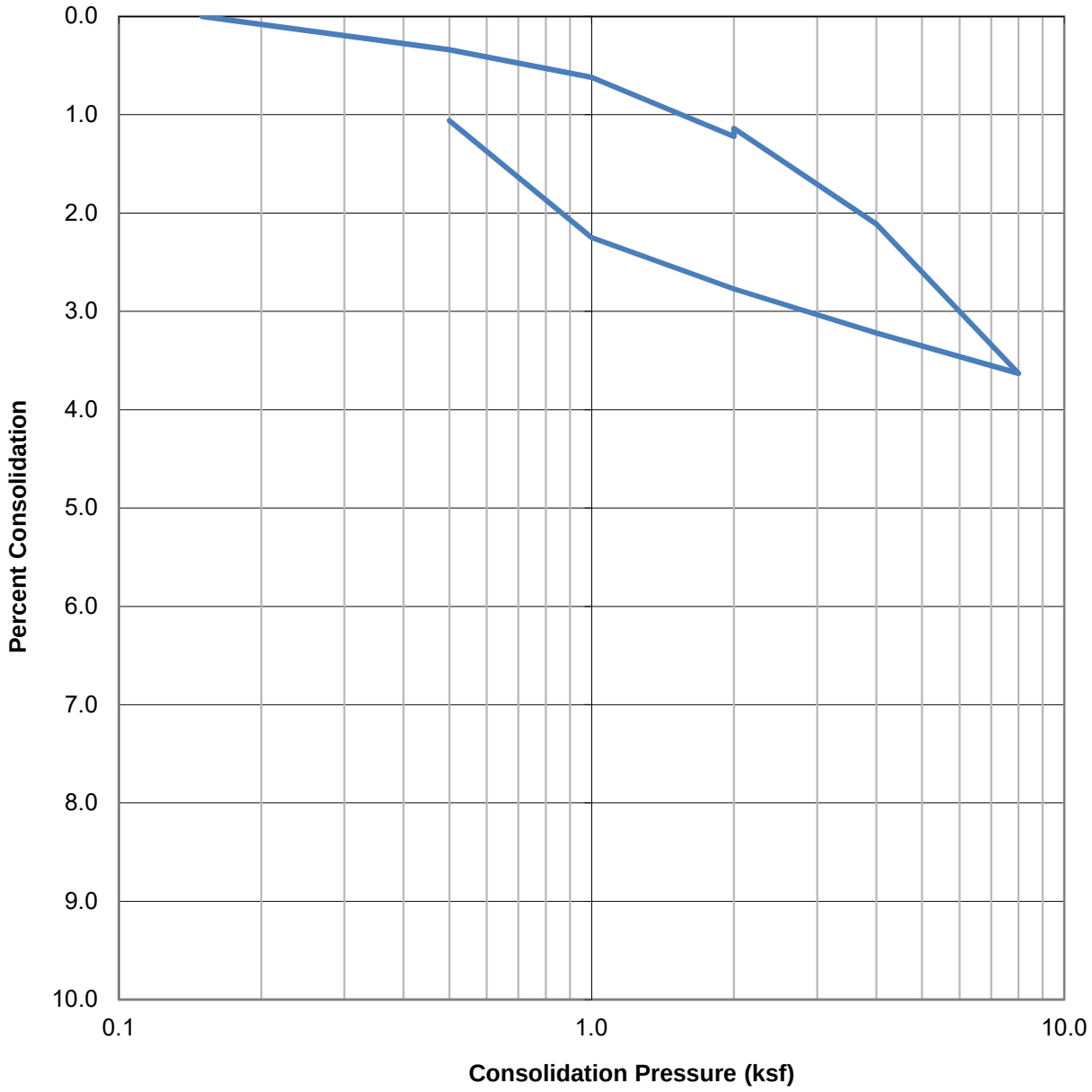
LABORATORY TEST RESULTS

KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019	PROJECT NO. T2844-22-01	FIG B-1

WATER ADDED AT 2 KSF



SAMPLE ID	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B-2 @ 7.5'	ML	106.1	11.5	22.1

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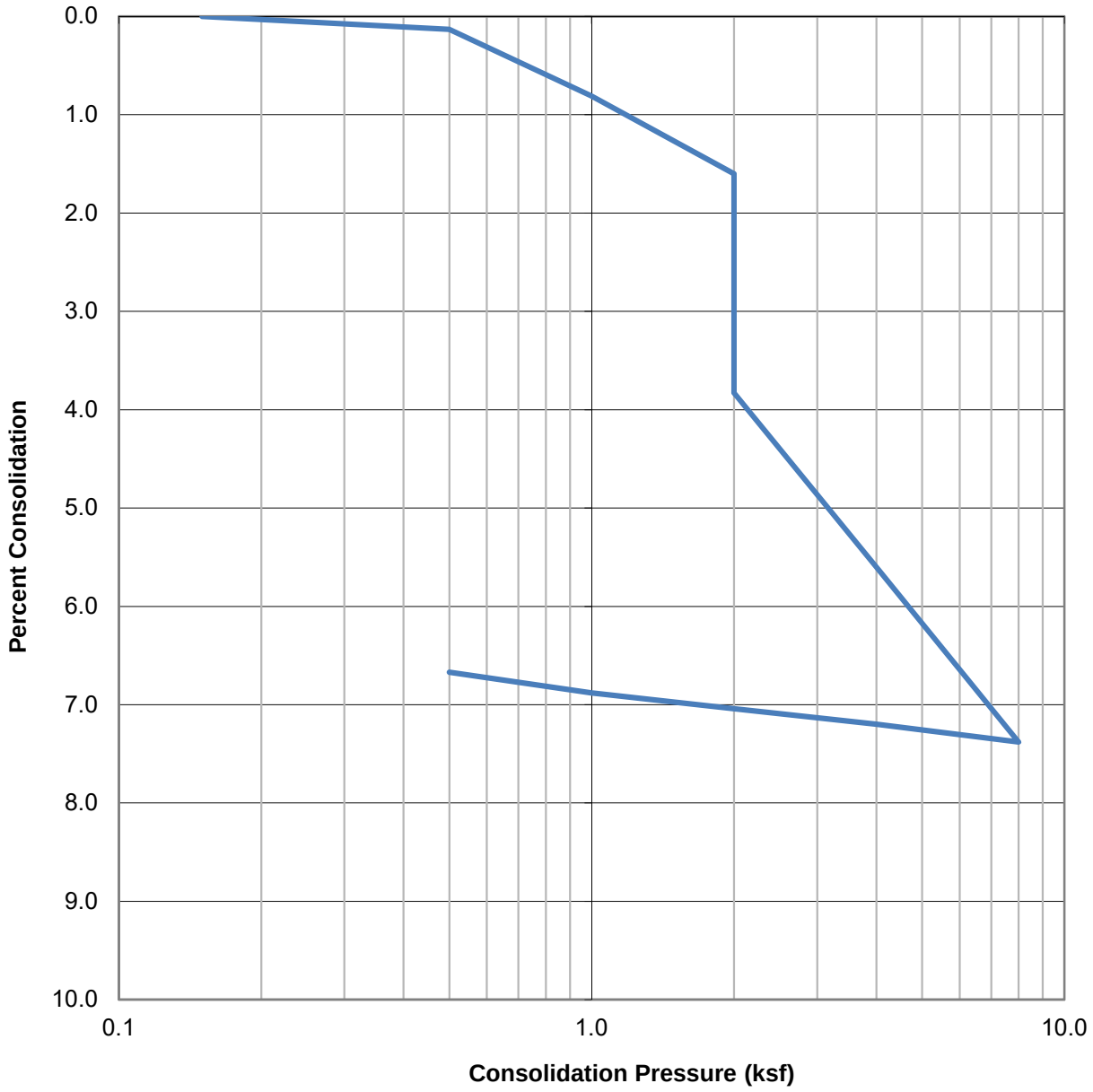
CONSOLIDATION TEST RESULTS

KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019 | PROJECT NO. T2844-22-01 | FIG B-2

WATER ADDED AT 2 KSF



SAMPLE ID	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B-5 @ 2.5'	SM	116.6	6.5	13.1

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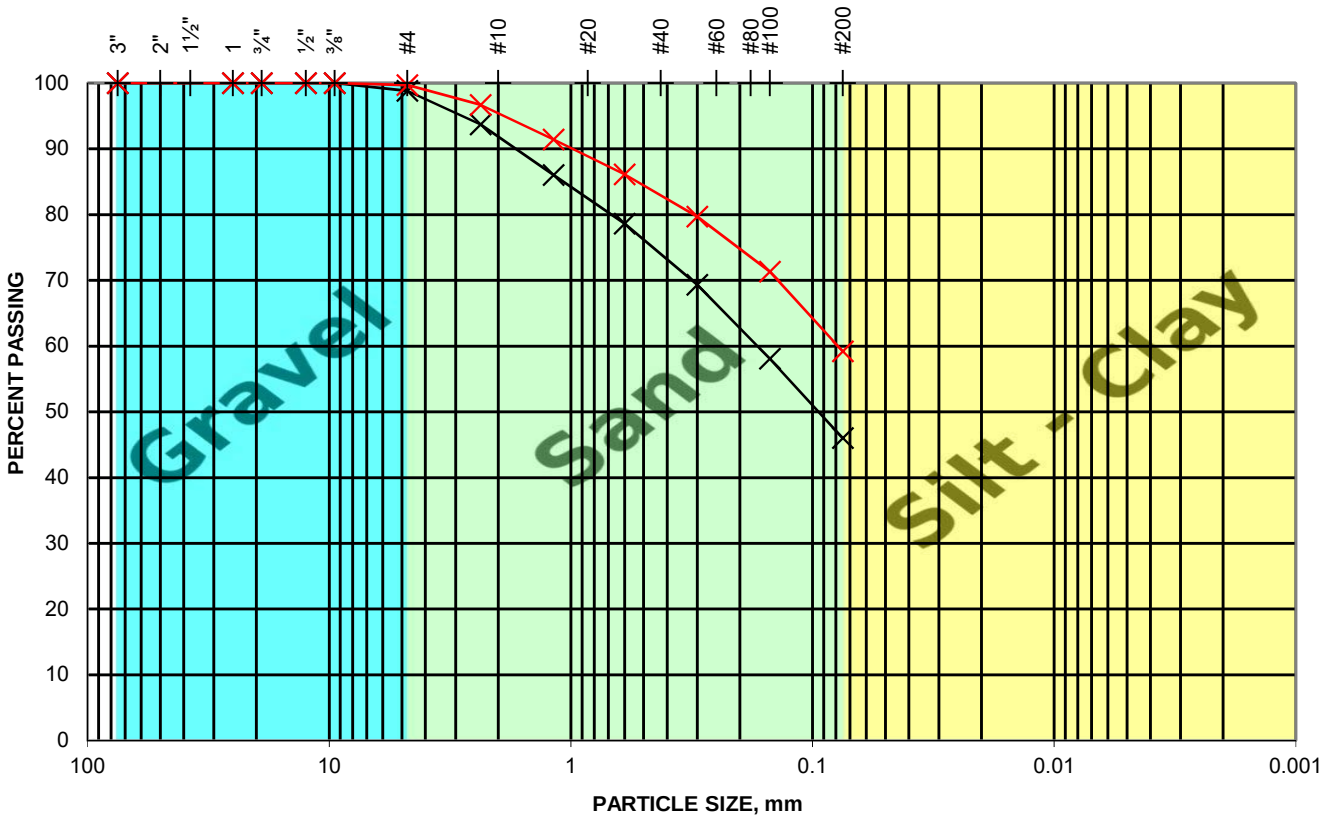
CONSOLIDATION TEST RESULTS

KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019 | PROJECT NO. T2844-22-01 | FIG B-3



SAMPLE ID	SAMPLE DESCRIPTION
P-1/P-2 Blend	SM - Silty Sand, trace gravel
P-3/P-4 Blend	ML - Sandy SILT

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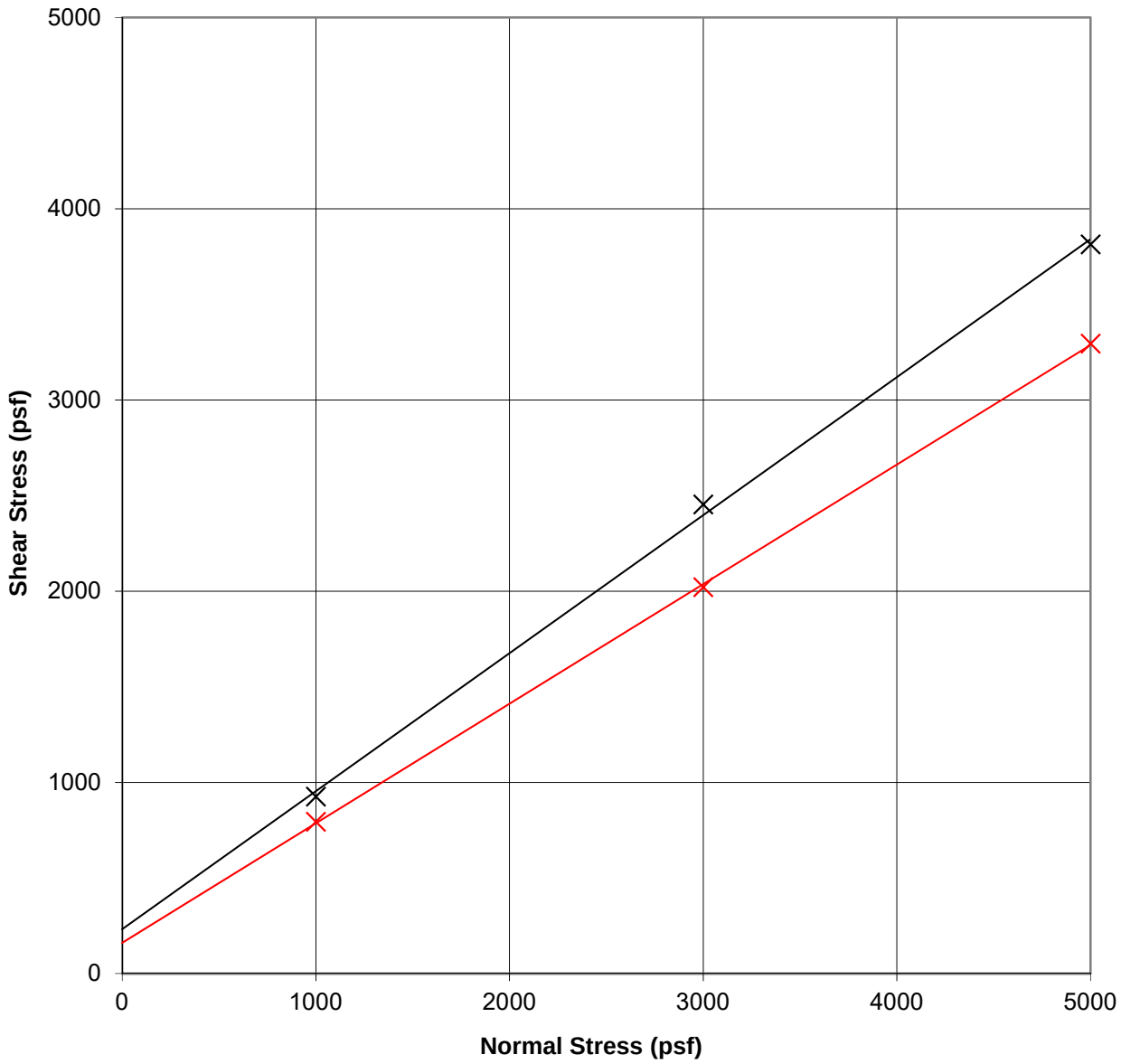
GRAIN SIZE DISTRIBUTION

KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019	PROJECT NO. T2844-22-01	FIG B-4



SAMPLE ID	SOIL TYPE	INITIAL DRY DENSITY (pcf)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)	C (psf)	ϕ (deg)
*B-1 @ 0-5'	SM	121.7	6.7	11.3	230	36
B-2 @ 5'	ML	96.7	9.6	23.3	160	32

*Sample remolded to approximately 90% of the test maximum dry density at optimum moisture content.

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DIRECT SHEAR TEST RESULTS
KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019	PROJECT NO. T2844-22-01	FIG B-5

APPENDIX G

APPENDIX C

RECOMMENDED GRADING SPECIFICATIONS

FOR

KIA MORENO VALLEY
SOUTHEAST OF MORENO BEACH DRIVE
AND AUTO MALL WAY
MORENO VALLEY, CALIFORNIA

PROJECT NO. T2844-22-01

RECOMMENDED GRADING SPECIFICATIONS

1. GENERAL

1.1 These Recommended Grading Specifications shall be used in conjunction with the Geotechnical Report for the project prepared by Geocon. The recommendations contained in the text of the Geotechnical Report are a part of the earthwork and grading specifications and shall supersede the provisions contained hereinafter in the case of conflict.

1.2 Prior to the commencement of grading, a geotechnical consultant (Consultant) shall be employed for the purpose of observing earthwork procedures and testing the fills for substantial conformance with the recommendations of the Geotechnical Report and these specifications. The Consultant should provide adequate testing and observation services so that they may assess whether, in their opinion, the work was performed in substantial conformance with these specifications. It shall be the responsibility of the Contractor to assist the Consultant and keep them apprised of work schedules and changes so that personnel may be scheduled accordingly.

1.3 It shall be the sole responsibility of the Contractor to provide adequate equipment and methods to accomplish the work in accordance with applicable grading codes or agency ordinances, these specifications and the approved grading plans. If, in the opinion of the Consultant, unsatisfactory conditions such as questionable soil materials, poor moisture condition, inadequate compaction, and/or adverse weather result in a quality of work not in conformance with these specifications, the Consultant will be empowered to reject the work and recommend to the Owner that grading be stopped until the unacceptable conditions are corrected.

2. DEFINITIONS

2.1 **Owner** shall refer to the owner of the property or the entity on whose behalf the grading work is being performed and who has contracted with the Contractor to have grading performed.

2.2 **Contractor** shall refer to the Contractor performing the site grading work.

2.3 **Civil Engineer** or **Engineer of Work** shall refer to the California licensed Civil Engineer or consulting firm responsible for preparation of the grading plans, surveying and verifying as-graded topography.

2.4 **Consultant** shall refer to the soil engineering and engineering geology consulting firm retained to provide geotechnical services for the project.

2.5 **Soil Engineer** shall refer to a California licensed Civil Engineer retained by the Owner, who is experienced in the practice of geotechnical engineering. The Soil Engineer shall be responsible for having qualified representatives on-site to observe and test the Contractor's work for conformance with these specifications.

2.6 **Engineering Geologist** shall refer to a California licensed Engineering Geologist retained by the Owner to provide geologic observations and recommendations during the site grading.

2.7 **Geotechnical Report** shall refer to a soil report (including all addenda) which may include a geologic reconnaissance or geologic investigation that was prepared specifically for the development of the project for which these Recommended Grading Specifications are intended to apply.

3. MATERIALS

3.1 Materials for compacted fill shall consist of any soil excavated from the cut areas or imported to the site that, in the opinion of the Consultant, is suitable for use in construction of fills. In general, fill materials can be classified as *soil* fills, *soil-rock* fills or *rock* fills, as defined below.

3.1.1 **Soil fills** are defined as fills containing no rocks or hard lumps greater than 12 inches in maximum dimension and containing at least 40 percent by weight of material smaller than ¾ inch in size.

3.1.2 **Soil-rock fills** are defined as fills containing no rocks or hard lumps larger than 4 feet in maximum dimension and containing a sufficient matrix of soil fill to allow for proper compaction of soil fill around the rock fragments or hard lumps as specified in Paragraph 6.2. **Oversize rock** is defined as material greater than 12 inches.

3.1.3 **Rock fills** are defined as fills containing no rocks or hard lumps larger than 3 feet in maximum dimension and containing little or no fines. Fines are defined as material smaller than ¾ inch in maximum dimension. The quantity of fines shall be less than approximately 20 percent of the rock fill quantity.

3.2 Material of a perishable, spongy, or otherwise unsuitable nature as determined by the Consultant shall not be used in fills.

3.3 Materials used for fill, either imported or on-site, shall not contain hazardous materials as defined by the California Code of Regulations, Title 22, Division 4, Chapter 30, Articles 9

and 10; 40CFR; and any other applicable local, state or federal laws. The Consultant shall not be responsible for the identification or analysis of the potential presence of hazardous materials. However, if observations, odors or soil discoloration cause Consultant to suspect the presence of hazardous materials, the Consultant may request from the Owner the termination of grading operations within the affected area. Prior to resuming grading operations, the Owner shall provide a written report to the Consultant indicating that the suspected materials are not hazardous as defined by applicable laws and regulations.

3.4 The outer 15 feet of *soil-rock* fill slopes, measured horizontally, should be composed of properly compacted *soil* fill materials approved by the Consultant. *Rock* fill may extend to the slope face, provided that the slope is not steeper than 2:1 (horizontal:vertical) and a soil layer no thicker than 12 inches is track-walked onto the face for landscaping purposes. This procedure may be utilized provided it is acceptable to the governing agency, Owner and Consultant.

3.5 Samples of soil materials to be used for fill should be tested in the laboratory by the Consultant to determine the maximum density, optimum moisture content, and, where appropriate, shear strength, expansion, and gradation characteristics of the soil.

3.6 During grading, soil or groundwater conditions other than those identified in the Geotechnical Report may be encountered by the Contractor. The Consultant shall be notified immediately to evaluate the significance of the unanticipated condition

4. CLEARING AND PREPARING AREAS TO BE FILLED

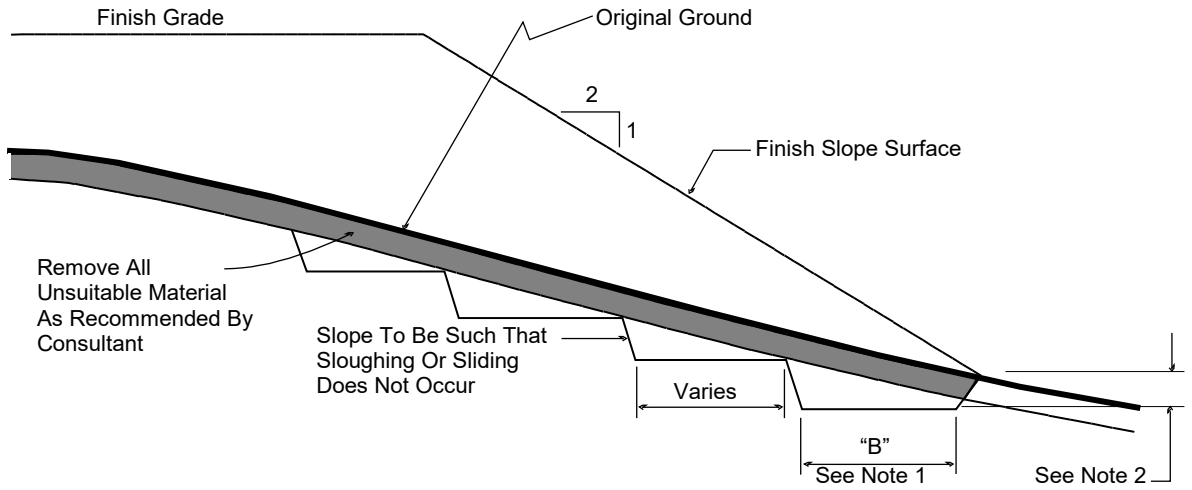
4.1 Areas to be excavated and filled shall be cleared and grubbed. Clearing shall consist of complete removal above the ground surface of trees, stumps, brush, vegetation, man-made structures, and similar debris. Grubbing shall consist of removal of stumps, roots, buried logs and other unsuitable material and shall be performed in areas to be graded. Roots and other projections exceeding 1½ inches in diameter shall be removed to a depth of 3 feet below the surface of the ground. Borrow areas shall be grubbed to the extent necessary to provide suitable fill materials.

4.2 Asphalt pavement material removed during clearing operations should be properly disposed at an approved off-site facility or in an acceptable area of the project evaluated by Geocon and the property owner. Concrete fragments that are free of reinforcing steel may be placed in fills, provided they are placed in accordance with Section 6.2 or 6.3 of this document.

4.3 After clearing and grubbing of organic matter and other unsuitable material, loose or porous soils shall be removed to the depth recommended in the Geotechnical Report. The depth of removal and compaction should be observed and approved by a representative of the Consultant. The exposed surface shall then be plowed or scarified to a minimum depth of 6 inches and until the surface is free from uneven features that would tend to prevent uniform compaction by the equipment to be used.

4.4 Where the slope ratio of the original ground is steeper than 5:1 (horizontal:vertical), or where recommended by the Consultant, the original ground should be benched in accordance with the following illustration.

TYPICAL BENCHING DETAIL



No Scale

DETAIL NOTES: (1) Key width "B" should be a minimum of 10 feet, or sufficiently wide to permit complete coverage with the compaction equipment used. The base of the key should be graded horizontal, or inclined slightly into the natural slope.

(2) The outside of the key should be below the topsoil or unsuitable surficial material and at least 2 feet into dense formational material. Where hard rock is exposed in the bottom of the key, the depth and configuration of the key may be modified as approved by the Consultant.

4.5 After areas to receive fill have been cleared and scarified, the surface should be moisture conditioned to achieve the proper moisture content, and compacted as recommended in Section 6 of these specifications.

5. COMPACTION EQUIPMENT

5.1 Compaction of *soil* or *soil-rock* fill shall be accomplished by sheepsfoot or segmented-steel wheeled rollers, vibratory rollers, multiple-wheel pneumatic-tired rollers, or other types of acceptable compaction equipment. Equipment shall be of such a design that it will be capable of compacting the *soil* or *soil-rock* fill to the specified relative compaction at the specified moisture content.

5.2 Compaction of *rock* fills shall be performed in accordance with Section 6.3.

6. PLACING, SPREADING AND COMPACTION OF FILL MATERIAL

6.1 *Soil* fill, as defined in Paragraph 3.1.1, shall be placed by the Contractor in accordance with the following recommendations:

6.1.1 *Soil* fill shall be placed by the Contractor in layers that, when compacted, should generally not exceed 8 inches. Each layer shall be spread evenly and shall be thoroughly mixed during spreading to obtain uniformity of material and moisture in each layer. The entire fill shall be constructed as a unit in nearly level lifts. Rock materials greater than 12 inches in maximum dimension shall be placed in accordance with Section 6.2 or 6.3 of these specifications.

6.1.2 In general, the *soil* fill shall be compacted at a moisture content at or above the optimum moisture content as determined by ASTM D 1557.

6.1.3 When the moisture content of *soil* fill is below that specified by the Consultant, water shall be added by the Contractor until the moisture content is in the range specified.

6.1.4 When the moisture content of the *soil* fill is above the range specified by the Consultant or too wet to achieve proper compaction, the *soil* fill shall be aerated by the Contractor by blading/mixing, or other satisfactory methods until the moisture content is within the range specified.

6.1.5 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. Relative compaction is defined as the ratio (expressed in percent) of the in-place dry density of the compacted fill to the maximum laboratory dry density as determined in accordance with ASTM D 1557. Compaction shall be continuous over the entire area, and compaction equipment shall make sufficient passes so that the specified minimum relative compaction has been achieved throughout the entire fill.

6.1.6 Where practical, soils having an Expansion Index greater than 50 should be placed at least 3 feet below finish pad grade and should be compacted at a moisture content generally 2 to 4 percent greater than the optimum moisture content for the material.

6.1.7 Properly compacted *soil* fill shall extend to the design surface of fill slopes. To achieve proper compaction, it is recommended that fill slopes be over-built by at least 3 feet and then cut to the design grade. This procedure is considered preferable to track-walking of slopes, as described in the following paragraph.

6.1.8 As an alternative to over-building of slopes, slope faces may be back-rolled with a heavy-duty loaded sheepsfoot or vibratory roller at maximum 4-foot fill height intervals. Upon completion, slopes should then be track-walked with a D-8 dozer or similar equipment, such that a dozer track covers all slope surfaces at least twice.

6.2 *Soil-rock* fill, as defined in Paragraph 3.1.2, shall be placed by the Contractor in accordance with the following recommendations:

6.2.1 Rocks larger than 12 inches but less than 4 feet in maximum dimension may be incorporated into the compacted *soil* fill, but shall be limited to the area measured 15 feet minimum horizontally from the slope face and 5 feet below finish grade or 3 feet below the deepest utility, whichever is deeper.

6.2.2 Rocks or rock fragments up to 4 feet in maximum dimension may either be individually placed or placed in windrows. Under certain conditions, rocks or rock fragments up to 10 feet in maximum dimension may be placed using similar methods. The acceptability of placing rock materials greater than 4 feet in maximum dimension shall be evaluated during grading as specific cases arise and shall be approved by the Consultant prior to placement.

6.2.3 For individual placement, sufficient space shall be provided between rocks to allow for passage of compaction equipment.

6.2.4 For windrow placement, the rocks should be placed in trenches excavated in properly compacted *soil* fill. Trenches should be approximately 5 feet wide and 4 feet deep in maximum dimension. The voids around and beneath rocks should be filled with approved granular soil having a Sand Equivalent of 30 or greater and should be compacted by flooding. Windrows may also be placed utilizing an "open-face" method in lieu of the trench procedure, however, this method should first be approved by the Consultant.

6.2.5 Windrows should generally be parallel to each other and may be placed either parallel to or perpendicular to the face of the slope depending on the site geometry. The minimum horizontal spacing for windrows shall be 12 feet center-to-center with a 5-foot stagger or offset from lower courses to next overlying course. The minimum vertical spacing between windrow courses shall be 2 feet from the top of a lower windrow to the bottom of the next higher windrow.

6.2.6 Rock placement, fill placement and flooding of approved granular soil in the windrows should be continuously observed by the Consultant.

6.3 *Rock* fills, as defined in Section 3.1.3, shall be placed by the Contractor in accordance with the following recommendations:

6.3.1 The base of the *rock* fill shall be placed on a sloping surface (minimum slope of 2 percent). The surface shall slope toward suitable subdrainage outlet facilities. The *rock* fills shall be provided with subdrains during construction so that a hydrostatic pressure buildup does not develop. The subdrains shall be permanently connected to controlled drainage facilities to control post-construction infiltration of water.

6.3.2 *Rock* fills shall be placed in lifts not exceeding 3 feet. Placement shall be by rock trucks traversing previously placed lifts and dumping at the edge of the currently placed lift. Spreading of the *rock* fill shall be by dozer to facilitate *seating* of the rock. The *rock* fill shall be watered heavily during placement. Watering shall consist of water trucks traversing in front of the current rock lift face and spraying water continuously during rock placement. Compaction equipment with compactive energy comparable to or greater than that of a 20-ton steel vibratory roller or other compaction equipment providing suitable energy to achieve the required compaction or deflection as recommended in Paragraph 6.3.3 shall be utilized. The number of passes to be made should be determined as described in Paragraph 6.3.3. Once a *rock* fill lift has been covered with *soil* fill, no additional *rock* fill lifts will be permitted over the *soil* fill.

6.3.3 Plate bearing tests, in accordance with ASTM D 1196, may be performed in both the compacted *soil* fill and in the *rock* fill to aid in determining the required minimum number of passes of the compaction equipment. If performed, a minimum of three plate bearing tests should be performed in the properly compacted *soil* fill (minimum relative compaction of 90 percent). Plate bearing tests shall then be performed on areas of *rock* fill having two passes, four passes and six passes of the compaction equipment, respectively. The number of passes required for the *rock* fill shall be determined by comparing the results of the plate bearing tests for the *soil* fill and the *rock* fill and by evaluating the deflection

variation with number of passes. The required number of passes of the compaction equipment will be performed as necessary until the plate bearing deflections are equal to or less than that determined for the properly compacted *soil* fill. In no case will the required number of passes be less than two.

6.3.4 A representative of the Consultant should be present during *rock* fill operations to observe that the minimum number of "passes" have been obtained, that water is being properly applied and that specified procedures are being followed. The actual number of plate bearing tests will be determined by the Consultant during grading.

6.3.5 Test pits shall be excavated by the Contractor so that the Consultant can state that, in their opinion, sufficient water is present and that voids between large rocks are properly filled with smaller rock material. In-place density testing will not be required in the *rock* fills.

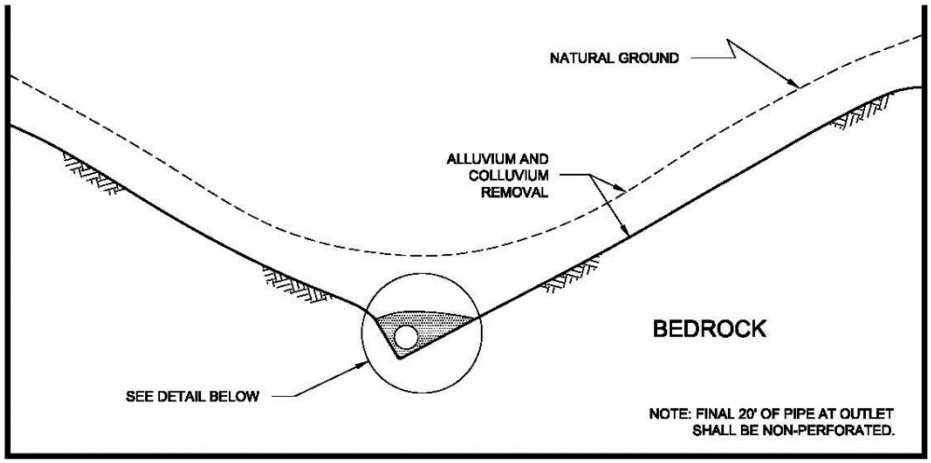
6.3.6 To reduce the potential for "piping" of fines into the *rock* fill from overlying *soil* fill material, a 2-foot layer of graded filter material shall be placed above the uppermost lift of *rock* fill. The need to place graded filter material below the *rock* should be determined by the Consultant prior to commencing grading. The gradation of the graded filter material will be determined at the time the *rock* fill is being excavated. Materials typical of the *rock* fill should be submitted to the Consultant in a timely manner, to allow design of the graded filter prior to the commencement of *rock* fill placement.

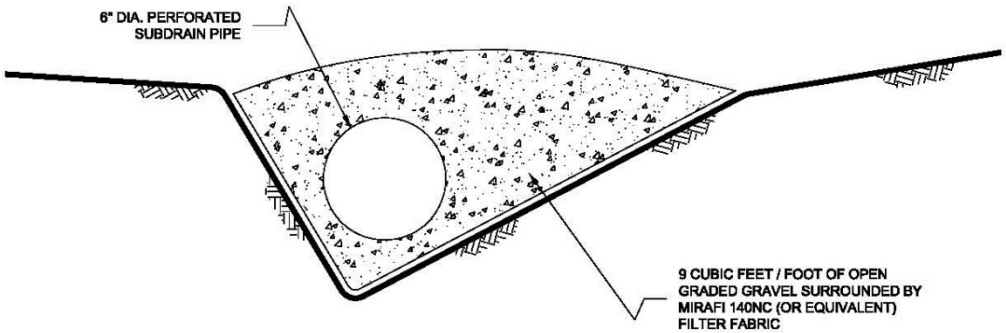
6.3.7 *Rock* fill placement should be continuously observed during placement by the Consultant.

7. SUBDRAINS

7.1 The geologic units on the site may have permeability characteristics and/or fracture systems that could be susceptible under certain conditions to seepage. The use of canyon subdrains may be necessary to mitigate the potential for adverse impacts associated with seepage conditions. Canyon subdrains with lengths in excess of 500 feet or extensions of existing offsite subdrains should use 8-inch-diameter pipes. Canyon subdrains less than 500 feet in length should use 6-inch-diameter pipes.

TYPICAL CANYON DRAIN DETAIL





NOTES:

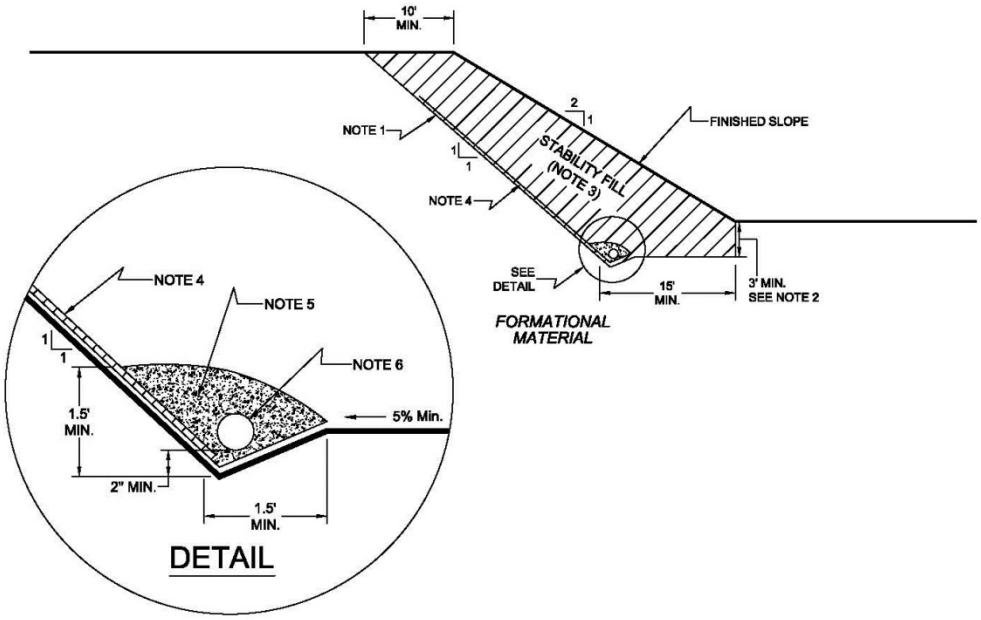
1.....6-INCH DIAMETER, SCHEDULE 80 PVC PERFORATED PIPE FOR FILLS
IN EXCESS OF 100-FEET IN DEPTH OR A PIPE LENGTH OF LONGER THAN 500 FEET.

2.....6-INCH DIAMETER, SCHEDULE 40 PVC PERFORATED PIPE FOR FILLS
LESS THAN 100-FEET IN DEPTH OR A PIPE LENGTH SHORTER THAN 500 FEET.

NO SCALE

7.2 Slope drains within stability fill keyways should use 4-inch-diameter (or larger) pipes.

TYPICAL STABILITY FILL DETAIL



NOTES:

1.....EXCAVATE BACKCUT AT 1:1 INCLINATION (UNLESS OTHERWISE NOTED).

2.....BASE OF STABILITY FILL TO BE 3 FEET INTO FORMATIONAL MATERIAL, SLOPING A MINIMUM 5% INTO SLOPE.

3.....STABILITY FILL TO BE COMPOSED OF PROPERLY COMPACTED GRANULAR SOIL.

4.....CHIMNEY DRAINS TO BE APPROVED PREFABRICATED CHIMNEY DRAIN PANELS (MIRADRAIN G200N OR EQUIVALENT) SPACED APPROXIMATELY 20 FEET CENTER TO CENTER AND 4 FEET WIDE. CLOSER SPACING MAY BE REQUIRED IF SEEPAGE IS ENCOUNTERED.

5.....FILTER MATERIAL TO BE 3/4-INCH, OPEN-GRADED CRUSHED ROCK ENCLOSED IN APPROVED FILTER FABRIC (MIRAFI 140NC).

6.....COLLECTOR PIPE TO BE 4-INCH MINIMUM DIAMETER, PERFORATED, THICK-WALLED PVC SCHEDULE 40 OR EQUIVALENT, AND SLOPED TO DRAIN AT 1 PERCENT MINIMUM TO APPROVED OUTLET.

NO SCALE

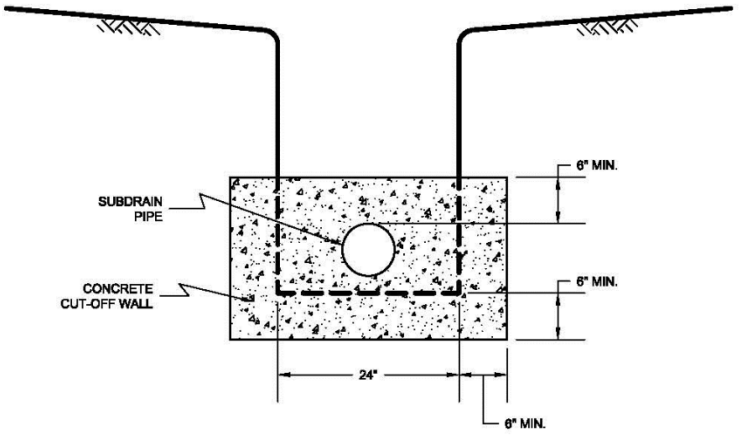
7.3 The actual subdrain locations will be evaluated in the field during the remedial grading operations. Additional drains may be necessary depending on the conditions observed and the requirements of the local regulatory agencies. Appropriate subdrain outlets should be evaluated prior to finalizing 40-scale grading plans.

7.4 *Rock* fill or *soil-rock* fill areas may require subdrains along their down-slope perimeters to mitigate the potential for buildup of water from construction or landscape irrigation. The subdrains should be at least 6-inch-diameter pipes encapsulated in gravel and filter fabric. *Rock* fill drains should be constructed using the same requirements as canyon subdrains.

7.5 Prior to outletting, the final 20-foot segment of a subdrain that will not be extended during future development should consist of non-perforated drainpipe. At the non-perforated/ perforated interface, a seepage cutoff wall should be constructed on the downslope side of the pipe.

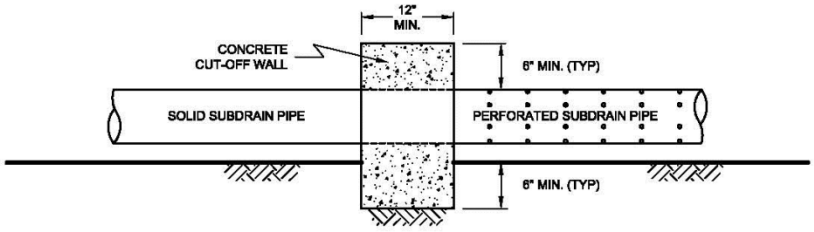
TYPICAL CUT OFF WALL DETAIL

FRONT VIEW



NO SCALE

SIDE VIEW

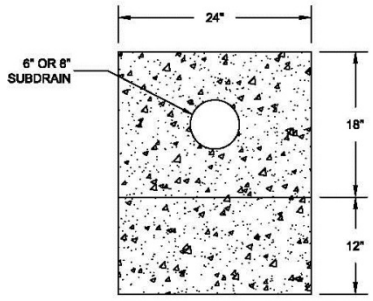


NO SCALE

7.6 Subdrains that discharge into a natural drainage course or open space area should be provided with a permanent headwall structure.

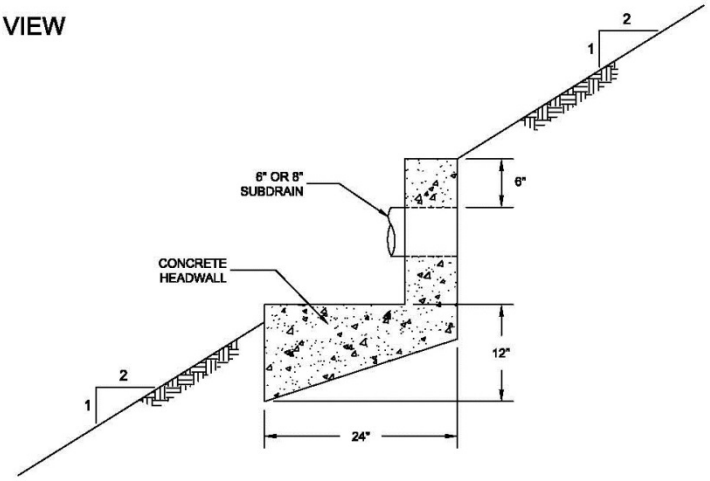
TYPICAL HEADWALL DETAIL

FRONT VIEW



NO SCALE

SIDE VIEW



NOTE: HEADWALL SHOULD OUTLET AT TOE OF FILL SLOPE OR INTO CONTROLLED SURFACE DRAINAGE

NO SCALE

7.7 The final grading plans should show the location of the proposed subdrains. After completion of remedial excavations and subdrain installation, the project civil engineer should survey the drain locations and prepare an "as-built" map showing the drain locations. The final outlet and connection locations should be determined during grading operations. Subdrains that will be extended on adjacent projects after grading can be placed on formational material and a vertical riser should be placed at the end of the subdrain. The grading contractor should consider videoing the subdrains shortly after burial to check proper installation and functionality. The contractor is responsible for the performance of the drains.

8. OBSERVATION AND TESTING

8.1 The Consultant shall be the Owner's representative to observe and perform tests during clearing, grubbing, filling, and compaction operations. In general, no more than 2 feet in vertical elevation of *soil* or *soil-rock* fill should be placed without at least one field density test being performed within that interval. In addition, a minimum of one field density test should be performed for every 2,000 cubic yards of *soil* or *soil-rock* fill placed and compacted.

8.2 The Consultant should perform a sufficient distribution of field density tests of the compacted *soil* or *soil-rock* fill to provide a basis for expressing an opinion whether the fill material is compacted as specified. Density tests shall be performed in the compacted materials below any disturbed surface. When these tests indicate that the density of any layer of fill or portion thereof is below that specified, the particular layer or areas represented by the test shall be reworked until the specified density has been achieved.

8.3 During placement of *rock* fill, the Consultant should observe that the minimum number of passes have been obtained per the criteria discussed in Section 6.3.3. The Consultant should request the excavation of observation pits and may perform plate bearing tests on the placed *rock* fills. The observation pits will be excavated to provide a basis for expressing an opinion as to whether the *rock* fill is properly seated and sufficient moisture has been applied to the material. When observations indicate that a layer of *rock* fill or any portion thereof is below that specified, the affected layer or area shall be reworked until the *rock* fill has been adequately seated and sufficient moisture applied.

8.4 A settlement monitoring program designed by the Consultant may be conducted in areas of *rock* fill placement. The specific design of the monitoring program shall be as recommended in the Conclusions and Recommendations section of the project Geotechnical Report or in the final report of testing and observation services performed during grading.

8.5 We should observe the placement of subdrains, to check that the drainage devices have been placed and constructed in substantial conformance with project specifications.

8.6 Testing procedures shall conform to the following Standards as appropriate:

8.6.1 Soil and Soil-Rock Fills:

8.6.1.1 Field Density Test, ASTM D 1556, *Density of Soil In-Place By the Sand-Cone Method.*

8.6.1.2 Field Density Test, Nuclear Method, ASTM D 6938, *Density of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth).*

8.6.1.3 Laboratory Compaction Test, ASTM D 1557, *Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-Pound Hammer and 18-Inch Drop.*

8.6.1.4. Expansion Index Test, ASTM D 4829, *Expansion Index Test*.

9. PROTECTION OF WORK

9.1 During construction, the Contractor shall properly grade all excavated surfaces to provide positive drainage and prevent ponding of water. Drainage of surface water shall be controlled 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 features have been installed. Areas subjected to erosion or sedimentation shall be properly prepared in accordance with the Specifications prior to placing additional fill or structures.

9.2 After completion of grading as observed and tested by the Consultant, no further excavation or filling shall be conducted except in conjunction with the services of the Consultant.

10. CERTIFICATIONS AND FINAL REPORTS

10.1 Upon completion of the work, Contractor shall furnish Owner a certification by the Civil Engineer stating that the lots and/or building pads are graded to within 0.1 foot vertically of elevations shown on the grading plan and that all tops and toes of slopes are within 0.5 foot horizontally of the positions shown on the grading plans. After installation of a section of subdrain, the project Civil Engineer should survey its location and prepare an *as-built* plan of the subdrain location. The project Civil Engineer should verify the proper outlet for the subdrains and the Contractor should ensure that the drain system is free of obstructions.

10.2 The Owner is responsible for furnishing a final as-graded soil and geologic report satisfactory to the appropriate governing or accepting agencies. The as-graded report should be prepared and signed by a California licensed Civil Engineer experienced in geotechnical engineering and by a California Certified Engineering Geologist, indicating that the geotechnical aspects of the grading were performed in substantial conformance with the Specifications or approved changes to the Specifications.

APPENDIX F

Riverside County Hydrology Reference Material

- **USDA Soils Map and Description**
- **RCRC&WCD Runoff Index Numbers (Plate D-4.1)**

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

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.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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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.

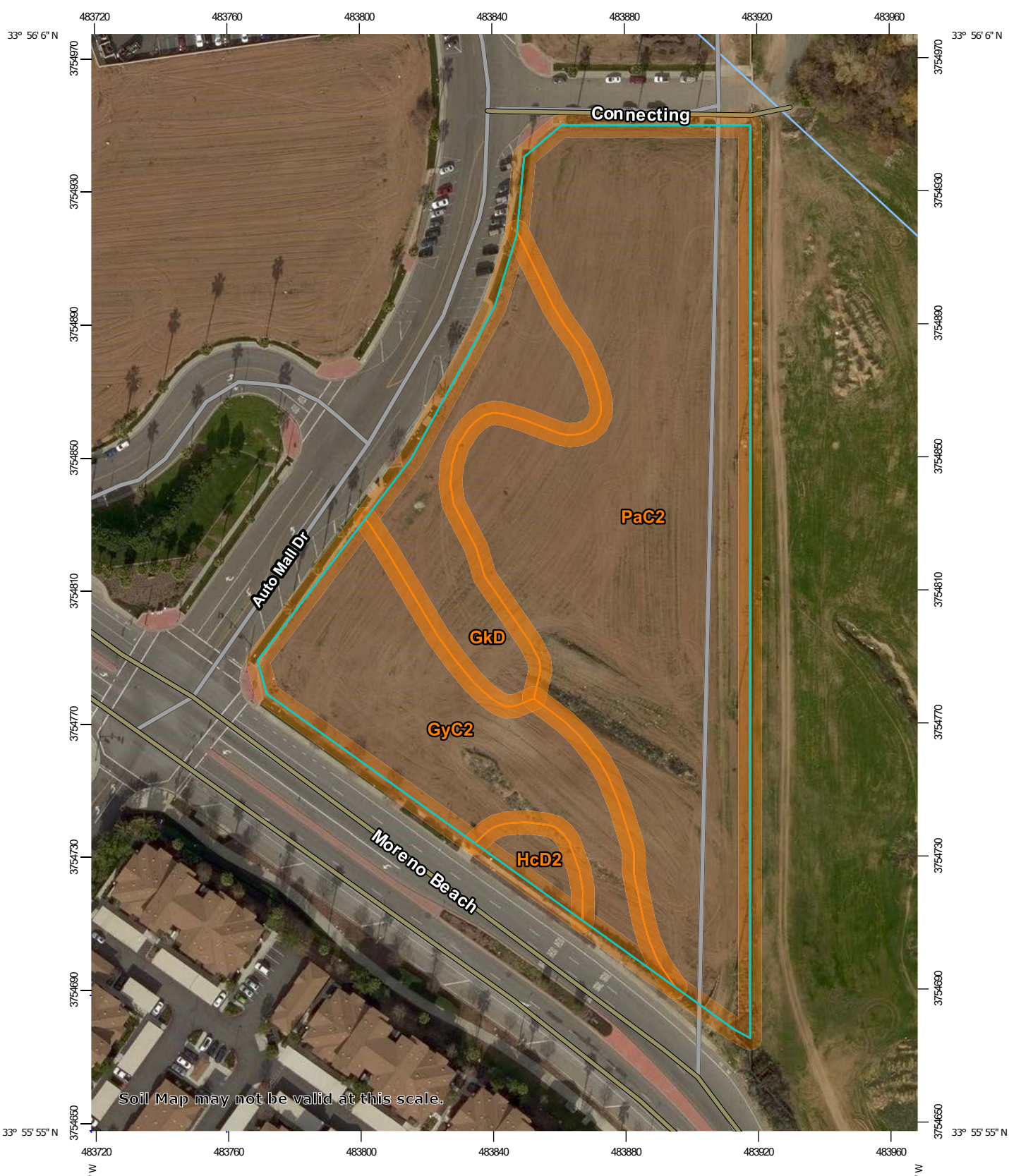
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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: 1:1,610 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

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 11, Sep 12, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 14, 2015—Jan 21, 2015

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
GkD	Gorgonio loamy sand, channeled, 2 to 15 percent slopes	0.8	13.6%
GyC2	Greenfield sandy loam, 2 to 8 percent slopes, eroded	1.3	21.7%
HcD2	Hanford coarse sandy loam, 8 to 15 percent slopes, eroded	0.1	2.0%
PaC2	Pachappa fine sandy loam, 2 to 8 percent slopes, eroded	3.8	62.7%
Totals for Area of Interest		**6.1**	**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

GkD—Gorgonio loamy sand, channeled, 2 to 15 percent slopes

Map Unit Setting

National map unit symbol: hcvd
Elevation: 20 to 3,000 feet
Mean annual precipitation: 8 to 25 inches
Mean annual air temperature: 46 to 63 degrees F
Frost-free period: 110 to 310 days
Farmland classification: Not prime farmland

Map Unit Composition

Gorgonio and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gorgonio

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 15 inches: loamy sand
H2 - 15 to 60 inches: stratified gravelly loamy sand to gravelly loamy fine sand

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water storage in profile: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A
Ecological site: SANDY ALLUVIAL (1975) (R019XD069CA)
Hydric soil rating: No

Minor Components

Riverwash

Percent of map unit: 10 percent
Landform: Drainageways
Hydric soil rating: Yes

Riverwash
Percent of map unit: 4 percent
Landform: Channels
Hydric soil rating: Yes

Soboba
Percent of map unit: 3 percent
Hydric soil rating: No

Tujunga
Percent of map unit: 3 percent
Hydric soil rating: No

GyC2—Greenfield sandy loam, 2 to 8 percent slopes, eroded

Map Unit Setting
National map unit symbol: hcvw
Elevation: 100 to 3,500 feet
Mean annual precipitation: 9 to 20 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 200 to 300 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Greenfield and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Greenfield

Setting
Landform: Alluvial fans, terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile
H1 - 0 to 26 inches: sandy loam
H2 - 26 to 43 inches: fine sandy loam
H3 - 43 to 60 inches: loam
H4 - 60 to 72 inches: stratified loamy sand to sandy loam

Properties and qualities
Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: LOAMY (1975) (R019XD029CA)
Hydric soil rating: No

Minor Components

Hanford

Percent of map unit: 3 percent
Hydric soil rating: No

Pachappa

Percent of map unit: 3 percent
Hydric soil rating: No

Arlington

Percent of map unit: 3 percent
Hydric soil rating: No

Ramona

Percent of map unit: 3 percent
Hydric soil rating: No

Unnamed

Percent of map unit: 3 percent
Hydric soil rating: No

HcD2—Hanford coarse sandy loam, 8 to 15 percent slopes, eroded

Map Unit Setting

National map unit symbol: hcw3
Elevation: 150 to 900 feet
Mean annual precipitation: 9 to 20 inches
Mean annual air temperature: 63 to 64 degrees F
Frost-free period: 250 to 280 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hanford and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hanford

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 8 inches: coarse sandy loam
H2 - 8 to 40 inches: fine sandy loam
H3 - 40 to 60 inches: stratified loamy sand to coarse sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively 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: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: SANDY (R020XD012CA)
Hydric soil rating: No

Minor Components

Tujunga

Percent of map unit: 5 percent
Hydric soil rating: No

Greenfield

Percent of map unit: 5 percent
Hydric soil rating: No

Ramona

Percent of map unit: 5 percent
Hydric soil rating: No

PaC2—Pachappa fine sandy loam, 2 to 8 percent slopes, eroded

Map Unit Setting

National map unit symbol: hcxp

Elevation: 1,000 feet
Mean annual precipitation: 14 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 270 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Pachappa and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pachappa

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 20 inches: fine sandy loam
H2 - 20 to 40 inches: loam
H3 - 40 to 63 inches: fine sandy loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: LOAMY (1975) (R019XD029CA)
Hydric soil rating: No

Minor Components

San emigdio

Percent of map unit: 5 percent
Hydric soil rating: No

Hanford

Percent of map unit: 5 percent
Hydric soil rating: No

Greenfield

Percent of map unit: 5 percent

Hydric soil rating: No

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APPENDIX H

Hydrology Reference Material

- **USDA Soils Map and Description**
- **RCRC&WCD Runoff Index Numbers (Plate D-4.1)**
- **Selected Pages from Moreno Master Drainage Plan**
- **Moreno Master Drainage Plan Hydrology Map**
- **Parcel Map 23244 Storm Drain Improvement Plans**
- **Line "G" Moreno A.D.P. Stage I Dwg. No. 4-526 Plans**

RAINFALL INTENSITY—INCHES PER HOUR

SUNNYMEAD – MORENO			WOODCREST		
DURATION MINUTES	FREQUENCY 10 YEAR	FREQUENCY 100 YEAR	DURATION MINUTES	FREQUENCY 10 YEAR	FREQUENCY 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	1.19	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	

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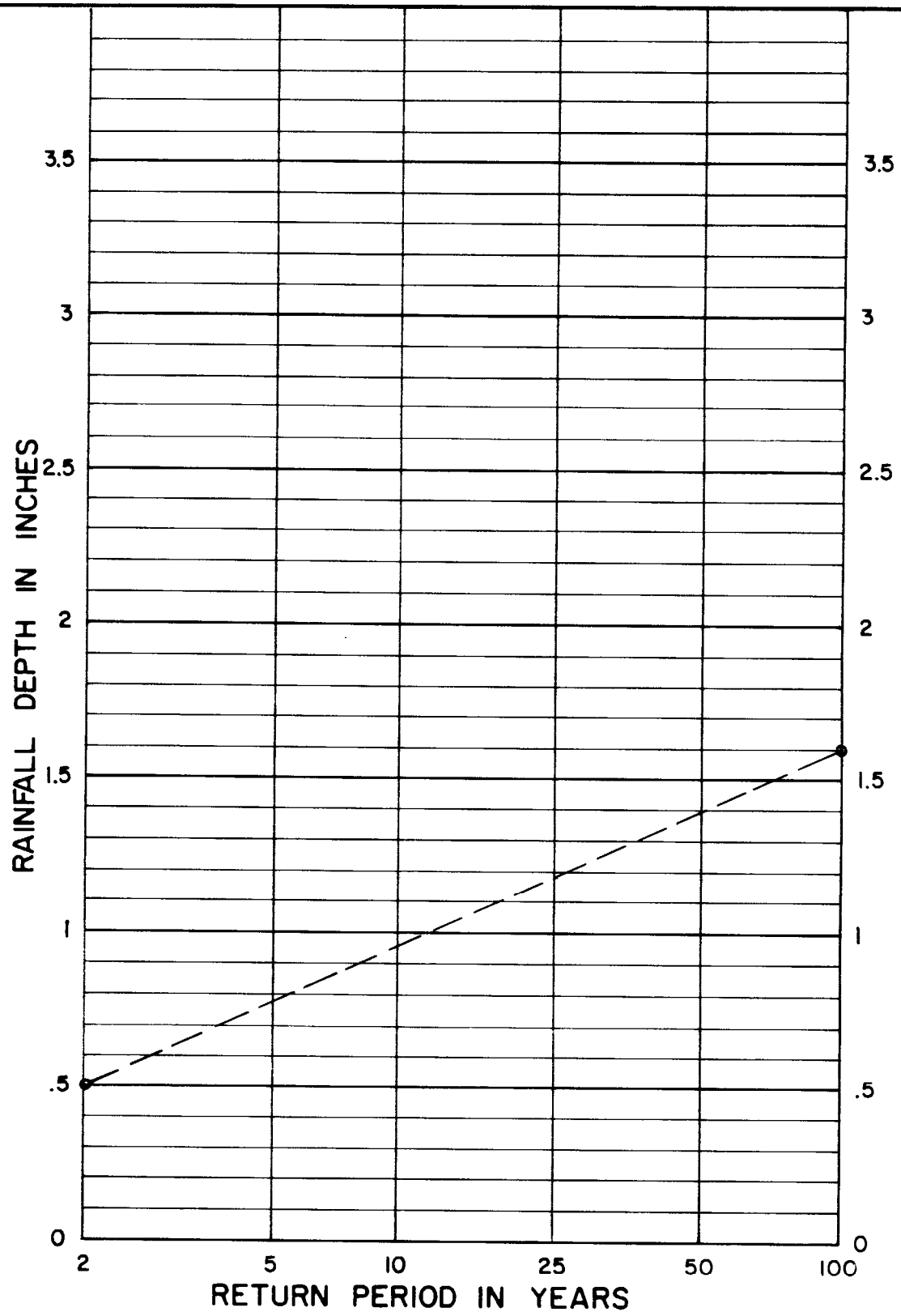
HYDROLOGY MANUAL

STANDARD INTENSITY – DURATION CURVES DATA

PLATE D-4.1 (6 of 6)



NOTE:

1. For intermediate return periods plot 2-year and 100-year one hour values from maps, then connect points and read value for desired return period. For example given 2-year one hour = .50" and 100-year one hour = 1.60", 25-year one hour = 1.18"

Reference: NOAA Atlas 2, Volume XI - California, 1973.

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HYDROLOGY MANUAL

RAINFALL DEPTH VERSUS RETURN PERIOD FOR PARTIAL DURATION SERIES

PLATE D-4.5

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

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RUNOFF INDEX NUMBERS FOR PERVIOUS AREA

PLATE D-5.5 (1 of 2)

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	--

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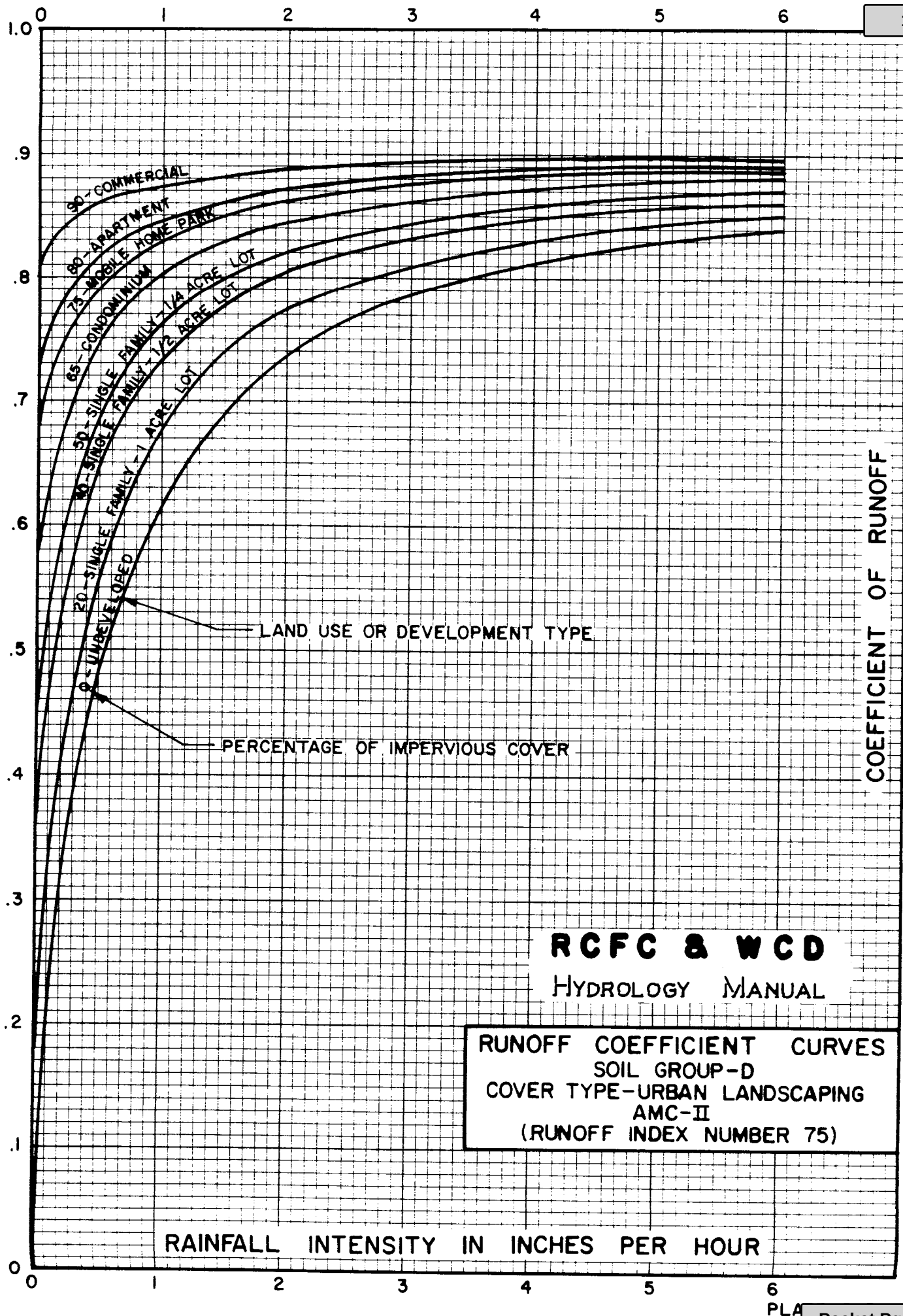
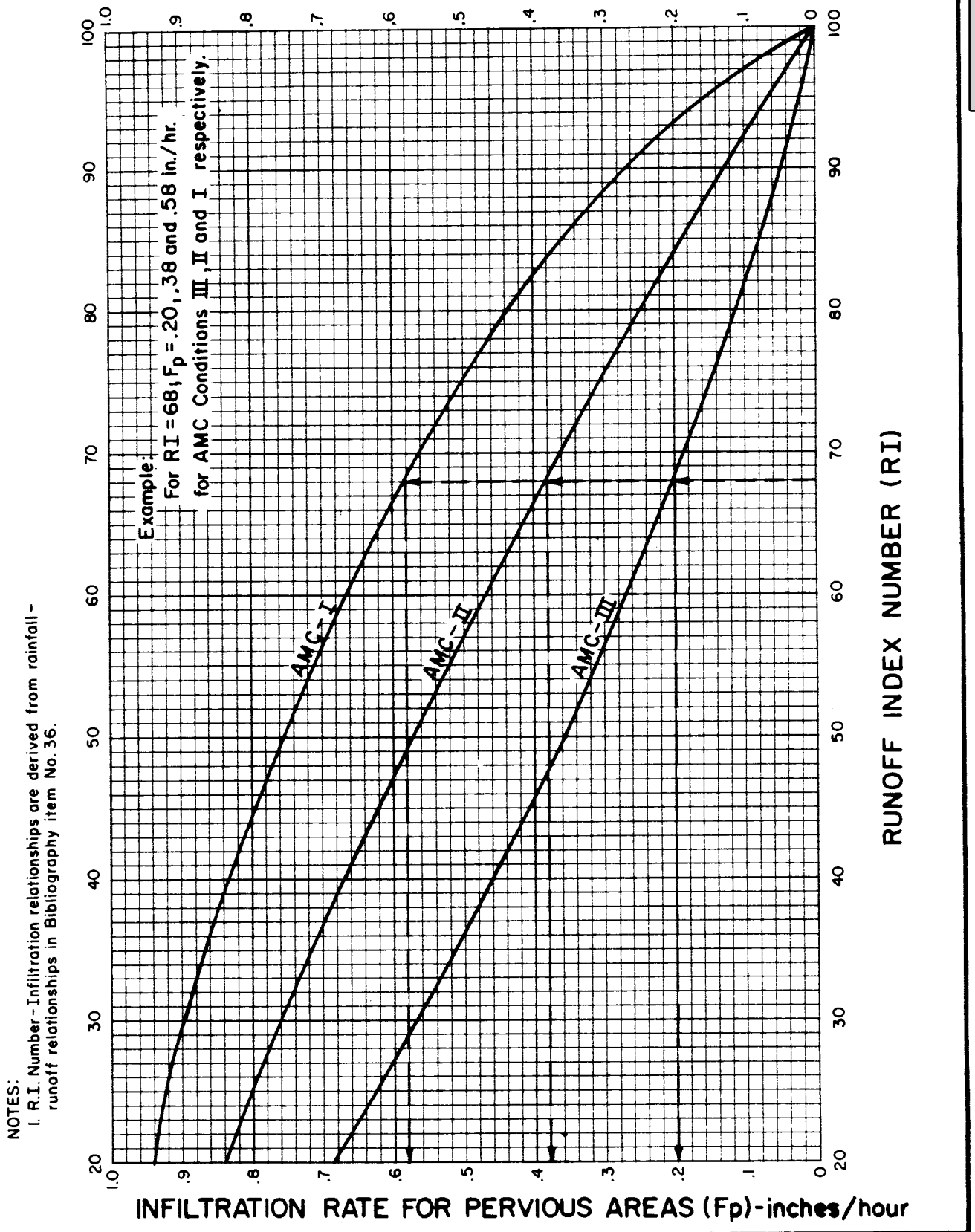
RUNOFF COEFFICIENT CURVE DATA

PLATE D-5.7 (1 of 12)





NOTES:
1. R.I. Number-Infiltration relationships are derived from rainfall-runoff relationships in Bibliography item No. 36.

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HYDROLOGY MANUAL

INFILTRATION RATE FOR PERVIOUS AREAS VERSUS RUNOFF INDEX NUMBERS

PLATE E-6.2

RIVERSIDE COUNTY FLOOD CONTROL
AND WATER CONSERVATION DISTRICT
Riverside, California

MORENO

MASTER DRAINAGE PLAN

ZONE FOUR

Original Plan – September 1980
Revision No. 2 – April 2015

WARREN D. WILLIAMS
General Manager-Chief Engineer

MORENO
MASTER DRAINAGE PLAN
(Revision No. 2)

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MAP

Master Drainage Plan ..... INSIDE BACK COVER

SECTION I - PURPOSE

The purpose of this report is to identify the network of drainage facilities needed to alleviate currently known and anticipated drainage problems within the eastern portion of the City of Moreno Valley. A Master Drainage Plan (MDP) was originally adopted for the Moreno watershed in 1980 and was later revised in 1991 due to the development of the watershed at a higher density than anticipated. Since the 1991 revision, the City of Moreno Valley has updated its general plan, approved zone changes, and continued to grow significantly; prompting the District to once again revise the Moreno MDP to address these changes. In addition, this new revision seeks to address changes in regulation that favor the incorporation of flood control facilities which encourage infiltration.

Readers should bear in mind that the drainage network presented herein is conceptual in nature. Simply stated, the MDP provides a conceptual solution that addresses the known and anticipated drainage problems in the Moreno area based on various engineering, environmental, and economic considerations. By no means does the proposed MDP represent the only feasible solution.

The alignment and location of the facilities proposed in this MDP are approximate. Precise locations will be dictated by site specific conditions and other factors existing at the time of detailed design. Similarly, the facility sizing information shown on the enclosed map is preliminary. More detailed analysis performed at the facility design stage will determine the final facility sizing.

SECTION II - SCOPE

Tasks involved in the development of this master plan include:

1. Determination of the points of concentration and quantity of storm water runoff produced at various locations.

2. Determination of the quantity of debris produced by major canyons in the watershed.

3. Determination of the location and size of the proposed drainage facilities.

4. Investigation of alternative routes and conveyance methods as a basis for selecting the most economical, environmental, and soundly engineered plan.

5. Preparation of a drainage facility map.

6. Preparation of preliminary plan and profile sheets.

7. Preparation of individual facility cost estimates.

SECTION III – GENERAL DISCUSSION

The Moreno MDP encompasses a portion of the City of Moreno Valley and surrounding Riverside County lands. The watershed is generally bounded by Lasselle Street on the west, Theodore Street on the east, the Badlands on the north, and the city boundary on the south.

The proposed drainage plan involves the construction of detention basins, debris basins, open channels, and a network of underground storm drains. The drainage system will collect local urban runoff and transport the flows through this developing community to an outlet at the upper terminus of the Kitching Street Channel.

The revision presented here is a re-evaluation and expansion of the 1991 Moreno MDP Revision (Adopted MDP). The proposed plan shall supersede all past plans and reports. The plan presented herein will provide flood protection from the 100-year flood to the community when implemented, serve as a guide for the long term construction scheduling of the primary drainage facilities, and serve the basis for revising the existing Moreno Area Drainage Plan (ADP). The plan will also act as a planning guide for the location and sizing of local drainage facilities to be constructed by developers and others within the area.

SECTION IV – MASTER DRAINAGE PLAN OBJECTIVES

The following objectives were established for the Moreno Master Drainage Plan Revision:

1. Revise the Moreno MDP to provide a drainage plan which supports the existing and proposed land use as set forth in the "Riverside County General Plan" updated in 2008, "City of Moreno Valley General Plan" updated in July 2006, and any proposed amendments thereto.

2. The fully implemented plan should, in conjunction with ultimate street improvements for the area within the boundaries of the Moreno MDP, contain the 100-year frequency flows and alleviate the primary sources of flooding.

3. Identify preferred facility alignments, sizing, and right-of-way required for the future construction of MDP facilities to protect existing and future development.

4. Identify the most economical combination of facilities considering right-of-way acquisition, construction, and maintenance costs.

5. Develop a plan which, when implemented, will result in the elimination of FEMA designated Special Flood Hazard Areas within the boundaries of the Moreno MDP.

6. Revise the Moreno MDP to minimize major diversions and perpetuate the natural drainage pattern of the area to the maximum extent practicable.

7. Where feasible, incorporate facilities which encourage infiltration.

8. Minimize environmental impacts to the maximum extent practicable.

SECTION V – HYDROLOGY

Revision Studies:

This section outlines methodology, assumptions, and rainfall values used for new studies within the drainage area boundary for this MDP revision. The areas restudied were those tributary to Line F north of Cactus Avenue, areas tributary to Quincy Channel (Line G), and areas north of California State Route 60 (SR 60) not tributary to Nason Basin. New studies for the western portion of the plan (west of the Line G system) were not performed during the revision since many of the facilities here have already been constructed and were designed based on the Adopted MDP flow rates and alignments (see Previous Studies section below for additional information).

Two methods were used to develop the hydrology for this MDP revision: the Rational Method and the Synthetic Unit Hydrograph Method. The Rational Method was used to determine the peak discharges (cubic feet per second) generated from smaller watersheds less than 300 to 500 acres in size. For watersheds larger than 500 acres, the Synthetic Unit Hydrograph Method was used. To account for the attenuating effects of channel and basin storage, the Convex Routing Method and Modified Puls Methods were used, respectively. Methodology and supportive data for both the Rational and Synthetic Unit Hydrograph Methods may be found in the *Riverside County Flood Control and Water Conservation District Hydrology Manual*, dated April 1978 (District Hydrology Manual).

Future land use assumptions were based on the following:

- "The City of Moreno Valley General Plan," updated July 2006
- "The Riverside County General Plan," updated December 2008
- Potential changes to areas currently zoned under the "Moreno Highlands Specific Plan," adopted in 1992.

NOAA Atlas 14 Version 4 rainfall values were used in the hydrology calculations performed for this MDP revision. The rainfall frequencies examined were the 2-year (50% annual chance) and the 100-year (1% annual chance) recurrence intervals with 1, 3, 6 and 24 hour durations. The calculated slope of the intensity-duration curve is 0.577. Table 1 highlights the NOAA Atlas 14 Version 4 area weighted point rainfall values used to develop the revision studies:

TABLE 1 – NOAA Atlas 14 Point Rainfall Values

Storm Frequency and Duration	Area Weighted Point Rainfall (Inches)
2 Year – 1 Hour	0.52
2 Year – 3 Hour	0.90
2 Year – 6 Hour	1.29
2 Year – 24 Hour	2.29
100 Year – 1 Hour	1.57
100 Year – 3 Hour	2.42
100 Year – 6 Hour	3.38
100 Year – 24 Hour	6.43

Previous Studies:

Line K System – The flow rates for the Line K system have remained the same as in the Adopted Plan. No changes were proposed to the alignment and no major changes in land use have occurred. Hydrology backup calculations for this line are from studies performed for the Adopted MDP. Line K was sized in these studies using NOAA Atlas 2 rainfall values.

Line H System – Hydrology for this system comes from the approved hydrology study for Tract 31128 and 31129 performed by PHB & Associates, Inc. This study reflects changes to the Adopted MDP alignment. This study uses NOAA Atlas 2 rainfall values.

SECTION VI – EXISTING FACILITIES

In preparing this master drainage plan revision an inventory of known existing facilities was made and is summarized in Table 2. Those facilities serving as part of revised Moreno MDP drainage system are shown on the updated Moreno MDP map.

TABLE 2 – Existing Facilities

Facility	Drawing Number	Maintenance
Line A	4-473	RCFC
Line D	4-1007	RCFC
Line D-5	4-1007	RCFC
Line D-6	4-1007	RCFC
Line F	4-502,4-5271 4-1007, 4-912(Future RCFC)	RCFC
Line F-2	4-491,4-847	RCFC
Line F-3	4-501, 4-506	RCFC
Line F-4	4-501	RCFC
Line F-5	4-570	RCFC
Line F-6	4-528	RCFC
Line F-7	4-501	RCFC
Line F-8	4-509	RCFC
Line F-9	-	MV
Line F-9	4-1007	RCFC
Line F-11	4-847	RCFC
Line F-12	4-847	RCFC
Line F-14	4-719	RCFC
Line G	4-526, 4-886	RCFC
Line G-5 (Auto Mall Dr Lateral)	4-526	MV
Line G-7	4-879	RCFC
Line H-1	4-885	RCFC
Line H-2	4-875	RCFC
Line H-3	-	MV

Facility	Drawing Number	Maintenance
Line H-6	4-875	RCFC
Line H-7	4-867	RCFC
Line H-8	4-875	RCFC
Line H-9	4-834	RCFC
Line I	4-583, 4-647, 4-738, 7-405, 4-904, 4-905	RCFC
Line J	4-858, (4-955 Future RCFC)	RCFC
Line J-2	4-858	RCFC
Line J-3	4-858	RCFC
Line J-4	4-858	RCFC
Line J-5	4-858	MV
Line J-6	4-858	RCFC
Line J-9	4-1027	(Future RCFC)
Line J-10	4-646, 4-647	RCFC
Line K-1	-	MV
Line K-3	-	MV
Moreno Cold Creek SD - Line A	4-929	RCFC

SECTION VII – FACILITY SIZING CRITERIA

Underground Storm Drains

The underground facilities proposed in this MDP are located within existing or assumed future right-of-way, whenever possible, and consists of reinforced concrete pipe (RCP) ranging in size from 27 inches to 108 inches in diameter and reinforced concrete boxes (RCB) ranging in dimensions from 7'W x 7'D to 10'W x 8'D. Underground storm drain facilities were sized based on their full flow capacity.

Open Channels

The open channel facilities proposed are generally located along existing drainage ditches, washes, and where the proposed construction of the channel would have minimal impacts on adjacent properties. The open channels serve as flow conveyors and provide outlets for underground facilities proposed in the plan. Two types of open channels are proposed in this MDP, concrete lined channels and earthen bottomed channels with rock lined side slopes (unlined). The hydraulic sizing of open channels is based on normal depth calculations. The right-of-way requirements for both lined and unlined facilities include the full channel width, maintenance access roads, as well as a 5 foot buffer on either side for anticipated cut and fill. Channels with top widths of less than 20 feet require one 15 foot maintenance access road; where the top width exceeds 20 feet, two maintenance access roads are necessary.

Detention Basins

The detention basins proposed in this MDP are located upstream existing facilities with limited hydraulic capacity (e.g. freeway culverts, Line F). The purpose of the detention basin is to attenuate peak flow rates to match the capacity of downstream existing facilities through the use of temporary detention storage. It should be noted that the detention basins proposed in this plan are sized for the 1% annual chance ("100-year" storm) event. Flows exceeding the design capacity of the basin would pass over an emergency spillway in flow patterns approximating present conditions.

Debris Basins

Debris basins are proposed in watersheds where significant amount of debris would be expected and are generally located upstream of the proposed facilities to capture the debris before it enters the downstream conveyance system. The proposed debris basins were sized using the Tatum Method by the U.S. Army Corps of Engineers Los Angeles District, dated 1963.

SECTION VIII – PROPOSED IMPROVEMENTS

The improvements proposed in this MDP are shown on the enclosed map found at the back of this report. Supporting data for proposed facilities is available at the Riverside County Flood Control and Water Conservation District's Office.

The design engineer should be aware that a detailed utility search was not completed. This means that, while the major known facilities were considered during the development of this MDP, a more thorough search may reveal additional or newly placed utilities that may necessitate minor alignment and size changes, or utility relocations during final design.

Line A – Line A begins approximately 300 feet west of the intersection of Locust Avenue and Quincy Street as a 4.5 foot deep concrete lined trapezoidal channel with side slopes of 1.5:1 and a base width of 6 feet. The channel extends southerly and connects to an existing section of Line A which continues southerly and southeasterly to a confluence point with the proposed Line A-1 just south of Kalmia Street. At the confluence point Line A transitions into a 8'W x 7'D RCB and continues southerly. The RCB then transitions into a 9'W x 7'D and continues southerly to an outlet into the proposed Sinclair Basin just north of California State Route 60 (SR 60).

Line A-1 – Line A-1 begins at a point approximately 1,315 feet north and 235 feet east of the intersection of Locust Avenue and Quincy Street as a 72-inch RCP. The 72-inch RCP extends westerly to Quincy Street and southerly in Quincy Street. At Kalmia Avenue, the 72-inch RCP transitions into a 78-inch RCP until the confluence with Line A.

Line A-2 – Line A-2 begins approximately 650 feet east of the intersection of Locust Avenue and Quincy Street as a 42-inch RCP. The 42-inch RCP extends westerly until the confluence with the proposed Line A-1.

Line A-3 – Line A-3 begins at the intersection of Edmonson Avenue and Kalmia Avenue as a 42-inch RCP. The 42-inch RCP extends easterly in Kalmia Avenue until the confluence with an existing portion of Line A.

Line A-6 – Line A-6 begins at a point approximately 1,300 feet west and 1,300 feet north of the intersection of Quincy Street and Ironwood Avenue as a 36-inch RCP. The 36-inch RCP extends southerly and transitions into a 42-inch and then a 48-inch RCP. At Hemlock Avenue the 48-inch RCP continues easterly and transitions into a 78-inch RCP, then into a 84-inch RCP, and finally into a 7'W x 7'D RCB until the confluence with Line A.

Line A-7 – The upstream origin of Line A-7 begins approximately 850 feet east of the intersection of Petit Street and Ironwood Avenue as a 42-inch RCP. The 42-inch RCP extends to the westerly until the confluence with line A-6.

Line A-8 – Line A-8 begins approximately at the intersection of Hinson Street and Hemlock Avenue as a 42-inch RCP. The 42-inch RCP extends easterly and transitions into a 54-inch RCP until the confluence with Line A-6.

Line F-2 – Line F-2 begins at the intersection of Ironwood Ave. and Redlands Boulevard as a 54-inch RCP and connects to Line F-15. The 54-inch RCP extends southerly to an existing 60-inch Caltrans culvert which extends the pipe to the south side of the State Route 60 Redlands Boulevard off ramp. Line F-2 resumes from the downstream terminus of the existing culvert as a 66-inch RCP which continues southerly transitioning to a 72-inch RCP, to a 78-inch RCP, to a 84-inch RCP, to a 90-inch RCP, to a 96-inch RCP, and finally into a 108-inch RCP until an outlet into the proposed Cactus Basin.

Line F-5 – Line F-5 begins approximately 100 feet south of the intersection of Oliver Street and John F. Kennedy Drive at the downstream terminus of an existing portion of Line F-5 as a double 8'W x 4'D RCB. The RCB extends westerly for 700 feet to the confluence with existing Line F.

Line F-13 – Line F-13 begins at a point approximately 1,330 feet north of the intersection of Moreno Beach Drive and Cactus Boulevard as a 33-inch RCP. The 33-inch RCP extends southerly and transitions into a 39-inch RCP until the confluence with existing Line F-4.

Line F-15 – Line F-15 begins at a point approximately 1,310 feet south and 1,750 feet west of the intersection of Redlands Boulevard and Ironwood Avenue as a 36-inch RCP. The 36-inch RCP extends easterly and transitions into a 48-inch RCP and then to a 54-inch RCP until the confluence with Line F-2 at Redlands Boulevard.

Line F-16 – Line F-16 begins at a point approximately 1,350 feet south of SR 60 and 2,250 feet west of the Redlands Boulevard as a 42-inich RCP. The 42-inch RCP extends easterly and transitions into a 48-inch RCP, to a 54-inch RCP and finally to a 72-inch RCP until the confluence with Line F-2.

Line F-17 – Line F-17 begins at a point approximately 2,630 feet south of SR 60 and 2,250 feet west of the Redlands Boulevard as a 42-inch RCP. From there the 42-inch RCP extends easterly and transitions into a 48-inch RCP, to a 54-inch RCP, and finally to a 60-inch RCP until the confluence with Line F-2.

Line F-18 – Line F-18 begins at a point approximately 1,000 feet east of the intersection of Redlands Boulevard and Alessandro Boulevard as a 48-inch RCP. The 48-inch RCP extends westerly and transitions into a 60-inch RCP until the confluence with Line F-2.

Line F-19 – Line F-19 begins at a point approximately 500 feet east of the intersection of Redlands Boulevard and Brodiaea Avenue as a 60-inch RCP. The 60-inch RCP extends westerly until the confluence with Line F-2.

Line G – Line G begins approximately 850 feet south and 450 feet east of the intersection of Eucalyptus Avenue and Auto Mall Drive as an earthen bottom trapezoidal channel with rock-lined side slopes. The earthen channel runs southeasterly until a confluence with proposed Line G-7, approximately 400 feet north of the intersection of Cottonwood Avenue and Quincy Street. Line G continues southerly, parallel to Quincy Street, until an outlet into existing Line F. Typical channel sections in this reach have depths of 6 to 8 feet, base widths of 6 to 16 feet, and side slopes of 2:1.

Line G-1 – Line G-1 begins at a point approximately 1,200 feet north of SR 60 and 250 feet east of the Moreno Beach Drive as a 42-inch RCP. The 42-inch RCP extends easterly until the confluence with Line G-4.

Line G-2 – Line G-2 begins at the intersection of Hemlock Avenue and Petit Street as a 42-inch RCP. The 42-inch RCP extends westerly and transitions into a 54-inch RCP until the confluence with Line G-4.

NODE	FLOW D/S	NODE	FLOW D/S	NODE	FLOW D/S	NODE	FLOW D/S
99	315 cfs (3hr)	184	425 cfs (3hr)	359	330 cfs (3hr)		
100	315 cfs (3hr)	209	505 cfs (3hr)	360	1395 cfs (3hr)		
109	490 cfs (3hr)	210	505 cfs (3hr)	369	535 cfs (3hr)		
110	795 cfs (3hr)	219	125 cfs (3hr)	370	3755 cfs (6hr)		
119	410 cfs (3hr)	220 (inflow)	3025 cfs (3hr)				
120	1165 cfs (3hr)	220 (outflow)	2110 cfs (6hr)				
129	540 cfs (3hr)	308	910 cfs (3hr)				
130	540 cfs (3hr)	309	375 cfs (3hr)				
135	1660 (3hr)	310	1260 cfs (3hr)				
140 (inflow)	2525 cfs (3hr)	320 (inflow)	1555 cfs (3hr)				
140 (outflow)	635 cfs (6hr)	320 (outflow)	280 cfs (24hr)				
149	635 cfs (3hr)	339	300 cfs (3hr)				
160	1020 cfs (3hr)	340	300 cfs (3hr)				
170	1605 cfs (3hr)	350	1140 cfs (3hr)				DJC 6/26/2014

RECHE CANYON DEBRIS BASIN

APPROXIMATE R/W = 5.5 ac.

b=10' d=7' ss=1.5:1 Q=1560

14'X7' RCB

SEE APR-1991 MORENO MDP HYDROLOGY

NASON BASIN

SEE TR31128/TR31129 FOR REVISED LINE H SYSTEM HYDROLOGY

SEE APR-1991 MORENO MDP HYDROLOGY

SEE TR33532 FOR REVISED LINE J SYSTEM HYDROLOGY

SEE TR22709/TR33532 FOR REVISED LINE F SYSTEM HYDROLOGY

COLD CREEK COURT STORM DRAIN LINE A

*Note 1: Duplicates of node 140 exist because both hydrographs are being routed through the same basin.

*Note 2: Duplicates of node 220 exist because multiple hydrographs are being routed through the same basin.

CITY LIMITS

RECHE CYN. RD.

LOCUST AVE.

KALMIA AVE.

IRONWOOD AVE.

HEMLOCK AVE.

U.S. HWY 60

FIR ST.

EUCALYPTUS AVE.

COTTONWOOD AVE.

BAY AVE.

ALESSANDRO BLVD.

BRODIAEA AVE.

CACTUS AVE.

DRACAEA AVE.

JUNIPER AVE.

IRIS AVE.

JOHN F. KENNEDY DR.

DAVIS RD.

OLIVER ST.

QUINCY ST.

NASON ST.

MORRISON ST.

LASSELLE ST.

MORENO BEACH DR.

PETIT ST.

REDLANDS BLVD.

SINCLAIR ST.

THEODORE ST.

HIGHLAND BLVD.

LINE K

LINE I

LINE J

LINE H

LINE F

K-1 K-2 K-3 K-4

J-1 J-2 J-3 J-4 J-5 J-6 J-7 J-8 J-9 J-10

H-1 H-1a H-2 H-3 H-4 H-5 H-5a H-6 H-7 H-8 H-9 H-10

F-4 F-5 F-6 F-7 F-8 F-9 F-13 F-14

"LineA310node" A - 14 678.8 ac

"LineA320node" A - 20 263.9 ac

"LineA610node" A - 13 232.3 ac

"LineB110node" A - 2 322.9 ac

"LineB120node" A - 3 246.8 ac

"LineB140node" A - 5 211.4 ac

"LineC130node" A - 4 355.1 ac

"LineD110node" A - 1 190.3 ac

"LineD150node" A - 6 433.8 ac

"LineF2210node" A - 10 283 ac

"LineF220node" A - 9 63.5 ac

"LineF220node" A - 11 224.1 ac

"LineF160node" A - 7 265.3 ac

"LineF170node" A - 8 330.5 ac

"LineF2270node" A - 12 329.1 ac

"LineF370node" A - 19 331.4 ac

"LineG340node" A - 17 160.2 ac

"LineG350node" A - 16 338.4 ac

"LineG7350node" A - 15 75.8 ac

"LineG360node" A - 18 186.0 ac

L=14325' Lca=6870' n=0.026

L=6500' Lca=3780' n=0.023

L=6180' Lca=3100' n=0.032

L=8773' Lca=4450' n=0.030

L=7600' Lca=5200' n=0.035

L=5555' Lca=2025' n=0.030

L=10570' Lca=5550' n=0.016

L=5170' Lca=2664' n=0.015

L=3380' Lca=1490' n=0.015

L=6760' Lca=3772' n=0.018

L=4905' Lca=2932' n=0.015

L=5300' Lca=2500' n=0.015

L=4140' Lca=1630' n=0.015

L=2500' Lca=1505' n=0.017

L=4405' Lca=2120' n=0.017

L=7090' Lca=3925' n=0.015

L=6000' Lca=2735' n=0.015

L=2435' Lca=1135' n=0.015

L=3935' Lca=1975' n=0.015

L=7800' Lca=4850' n=0.029

LEGEND

REVISION #2	NOT A PART OF REVISION #2
SUB AREA BOUNDARY	DRAINAGE BOUNDARY
FLOW PATH	PROPOSED STORM DRAIN
PROPOSED BASIN	PROPOSED OPEN CHANNEL
NODE NUMBER	EXISTING FACILITY
ELEVATION	10 YEAR FLOW IN CFS
SUBAREA NAME	100 YEAR FLOW IN CFS
SUBAREA ACREAGE	

SCALE 1"=800'

NOTES

1. ADOPTED IN OCTOBER 1980
2. REVISION #1 IN APRIL 1991
3. REVISION #2 IN PROGRESS

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

MORENO

MASTER DRAINAGE PLAN REVISION NO. 2 HYDROLOGY MAP

ADOPTED OCTOBER 1980

REVISED APRIL 1991

REVISED JUNE 2014

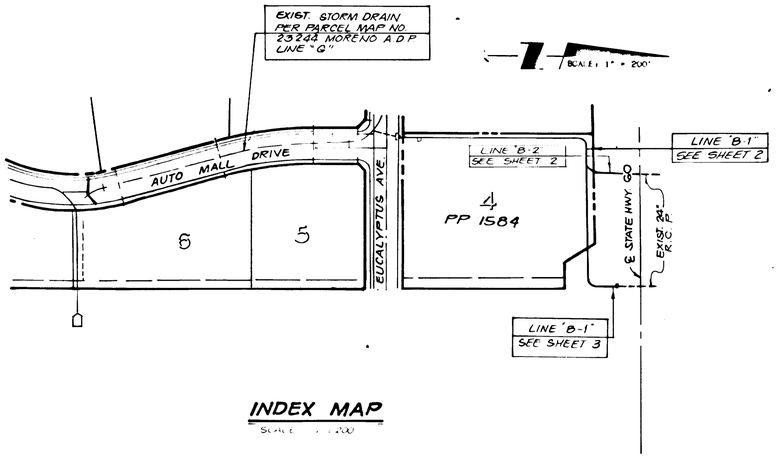
PARCEL MAP 23244
STORM DRAIN PLANS

GENERAL NOTES

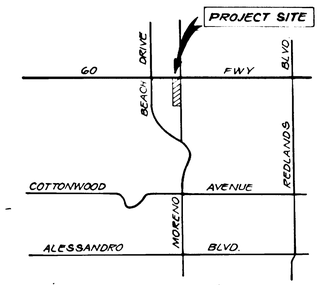
1. THE CONTRACTOR SHALL CONSTRUCT THE FLOOD CONTROL IMPROVEMENTS SHOWN ON THE DRAWINGS IN CONFORMANCE WITH THE REQUIREMENTS OF THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT'S SPECIAL PROVISIONS AND DETAILED SPECIFICATIONS DATED SEPTEMBER, 1989 AND DESIGN MANUAL STANDARD DRAWINGS DATED MAY, 1971.
2. ALL CONSTRUCTION TO BE IN CONFORMANCE WITH THE REGULATION OF CAL-OSHA.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CLEARING OF THE PROPOSE WORK AREA AND RELOCATION COSTS OF ALL EXISTING UTILITIES. PERMITEE MUST INFORM CITY OF CONSTRUCTION AT 714- 243-2120
4. ALL STATIONING REFERS TO CENTERLINE OF CONSTRUCTION UNLESS OTHERWISE NOTED.
5. STATIONING FOR LATERALS AND CONNECTOR PIPE REFER TO THE CENTERLINE-CENTERLINE INTERSECTION.
6. FORTY-EIGHT HOURS BEFORE EXCAVATION, CALL UNDERGROUND SERVICE ALERT 1-800-422-4133.
7. ALL ELEVATIONS ARE IN FEET AND DECIMALS THEREOF BASED ON U.S.C. AND G.S. DATUM.
8. ALL CROSS SECTIONS ARE TAKEN LOOKING DOWNSTREAM.
9. ELEVATIONS OF UTILITIES ARE APPROXIMATE UNLESS OTHERWISE NOTED.
10. NOTICE TO CONTRACTOR: THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO EXISTING UTILITIES EXCEPT FOR THOSE SHOWN ON THESE PLANS. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN AND ANY OTHER LINES NOT SHOWN ON THESE PLANS OR NOT RECORDED.
11. ALL BACKFILL TO BE 90% RELATIVE COMPACTION UNLESS OTHERWISE SPECIFIED AND SHALL BE CERTIFIED BY THE CITY'S SOILS ENGINEER RETESTING SHALL BE AT THE DEVELOPER'S EXPENSE.
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. BEDDING PIPE WITH LESS THAN TWO FEET OF COVER SHALL CONFORM TO LOS ANGELES COUNTY FLOOD CONTROL DISTRICT STANDARD DRAWINGS 2-D213,3 AND 2-D177 FOR CONCRETE BACKFILL IN TRENCHES. ALL OTHER PIPE SHALL CONFORM TO RCFC & WCD STD. DWG. M185.
14. THE CONCRETE COVE ON THE INSIDE OF ALL REINFORCED CONCRETE PIPE MUST BE INCREASED TO PROVIDE A MINIMUM OF 1-1/2" OVER THE REINFORCING OR 2" THICKENED INVERT FOR C.I.P.P. WHEN THE DESIGN VELOCITIES EXCEED 20 FEET PER SECOND. THE CONCRETE DESIGN STRENGTH IN THESE REACHES SHALL BE fc=4,000 PSI FOR VELOCITIES EXCEEDING 20 FEET PER SECOND, fc=5,000 PSI SHALL BE PROVIDED FOR VELOCITIES EXCEEDING 30 FEET PER SECOND.
15. CAST IN PLACE PIPE CAN BE USED AS AN ALTERNATIVE TO R.C.P. ONLY WHERE THERE IS 3 FEET MINIMUM COVER ABOVE THE PIPE.

CAL TRANS GENERAL NOTES

1. An encroachment permit is required before any work may begin in/or near the State right of way.
2. All work within the State right of way shall conform to the latest State Standard Plans and Specifications or as directed by the State's Representative.
3. No equipment or materials may be stored on the State right of way.
4. All disturbed areas in the State right of way must be treated for erosion control (hydroseeding or equivalent, or as directed by the State's Representative.) The responsibility for maintaining erosion control will not be released until the seeding is well established. The contractor will be responsible for the cost of Caltrans cleaning any drainage structures and channels which have become cluttered with debris and/or silt as a result of, or caused by, the construction project.
5. Access control on the freeway will be maintained at all times (work inside State right of way must be fenced off with no access to work area from freeway).
6. No freeway ramps or freeway lanes may be closed or obstructed at anytime, unless specifically allowed per the encroachment permit and/or as directed by the States's Representative.
7. All fence relocated to facilitate construction of this project inside the State right of way shall be replaced with CL-6 fence, as shown in the State's Standard Plans, or block wall in accordance with acceptable local agency standards.
8. Where Type Cl-6 fence does not exist, the right of way fence must be upgraded to Type Cl-6 fence, as shown in the Standard Plans.
9. All State drainage structures must first be completely cleaned of debris, and/or silt, by the contractor prior to making the connection.
10. The contractor shall be responsible for insuring that any State drainage facility which is connected to or directly affected by contractors operation shall be clean and operational prior to final acceptance of permit work by State. Adequate clean out and access openings shall be provided in any construction within the State's right of way for future maintenance and repair work, as needed. This work shall be furnished at no cost to the State.
11. Where survey monuments exist, such monuments shall be protected or shall be referenced and reset, pursuant to Business and Professions Code, Section 8700 to 8500 (Land Surveyor's Act).
12. The exact location of all signs shall be determined in the field by the States' Representative.
13. All signs, roadside markers, electroliers, and etc., shall be protected and/or replaced in kind to the current State Standard Plans and current Traffic Manual, at no cost to the State.



INDEX MAP
SCALE 1" = 200'



VICINITY MAP
N.T.S.

ESTIMATED QUANTITIES

ITEM	QTY	UNITS
24" RCP (CLASS IV)	496	LF
42" RCP (D-1600)	34	LF
36" RCP (D-1250)	256	LF
30" RCP (D-1250)	236	LF
MANHOLE NO. 1 PER RCFCD STD. DWG. NO. MH 251	4	EA
REMOVE AND REPLACE EXISTING CALTRANS FENCE	± 250	LF
CONTOUR GRADE AREA AND BACKFILL EXISTING GROUND	LUMP	SUM
REMOVE EXISTING PIPE ENDWALL	2	EA.
DRAINAGE INLET TYPE GI PER CALTRANS STD. DWG. NO. D73 MODIFIED.	2	EA
MANHOLE NO. 4 PER RCFCD STD. DWG. NO. MH 254	1	EA
CATCH BASIN NO. 1 PER RCFCD STD. DWG. NO. CB100 LD 201 CASE "C" WITH 8" CURB.	1	EA
6" CLASS "B" PIPE CONCRETE BACKFILL	34	LF

PRIVATE ENGINEER'S NOTICE TO CONTRACTOR

CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF DESIGN PROFESSIONAL.

UNDERGROUND SERVICE ALERT
1-800-422-4133
CALL TWO WORKING DAYS BEFORE YOU DIG

REGISTERED PROFESSIONAL ENGINEER
CEAZAR V. AGUILAR
NO. 041679
EXP. 3-31-92
CIVIL
STATE OF CALIFORNIA

BENCH MARK
LOCATION: U.S.C. & G.S. R-375 M-124 CO. DSGN. FD. BRASS DISK STPD. R-375, TOP CONC. POST 250' W. HENDRICKS ALONG IRONWOOD AVE. 65' N.E. OF PP# 271056, 55' N. OF IRONWOOD AVE. 6' HIGHER THAN RD'FS. OF MARKER POST.
ELEVATION: 1845.26

REFERENCE BLOCK

DESIGNED BY	DRAWN BY	CHECKED BY
W.E.M.	R.A.M.	C.V.A

REVISIONS					
MARK	DATE	INITIAL	DESCRIPTION	DATE	APPVD

APPROVED BY: CEAZAR V. AGUILAR
DATE: 10/11/90 REGISTERED CIVIL ENGINEER NO. 41679 REGISTRATION EXP. 3-31-92

APPROVED BY:
DATE: 10/12/90 JOHN K. FEENSTRA R.C.E. 13870 EXP. 3-31-93 DEPUTY CITY ENGINEER OF MORENO VALLEY

THE KEITH COMPANIES

SCALE: AS SHOWN
DATE: SEPT. 1990

CITY OF MORENO VALLEY

STORM DRAIN IMPROVEMENT PLANS
LINE "B-1" & LINE "B-2"
P.M. 23244
TITLE SHEET

SHEET 1 OF 3 SHTS.
FILE NO. C710015

EXIST. GROUND OVER ℄ STORM DRAIN

FS OVER ℄ STORM DRAIN PER PM 23244 R.G.P.

100 YR WATER SURFACE

HGL

1756.58 W.S.E.

1758.42 TW
1758.42 HGL

1756.24 HGL

FUTURE 24" RCP PER PP NO 1584

EXIST. INFO. FROM LINE "G" A.D.P. STAGE I - DWG. NO. 4-526

Q OUT = 50.7 CFS

S = 0.0114

S = 0.00167

S = 0.00972

10' BERM

EXIST. GROUND OVER ℄ STORM DRAIN

FS OVER ℄ SD PER PM 23244 R.G.P.

℄ INT. STA 6+30.66 ~ STA 1+00.00 ~ LINE "B-1"

STA 6+43.93 ℄ SHAFT

IDENTICAL PIPES

1759.00 GLEVIS 24" CMP LAT. @ 1%

1761.29 HGL

1761.29 TW

MATCHLINE

SEE SHEET 3

PROP. GRADE OVER ℄ SD

FS OVER ℄ SD PER PM 23244 R.G.P.

STA 1+19.00 TYP. G1 INLET FIELD ADJUST. & INLET W/6" V DITCH

STA 2+29.04 ℄ MH NO. 1

℄ STATE HWY 60

EXIST. GROUND OVER ℄ SD

LINE "B"

1762.00 TC

S TYPE G1 INLET

S = 0.01200

EXIST. 24" RCP 1766.0 INV.

S = 0.09326

1764.39 FL

1763.39 FL

1764.89 FL

℄ INT. STA 1+00.00 ~ LINE "B-2"

STA 6+30.66

STA 1+07.80
1768.66 GLEVIS 24" CMP

STA 1+41.80
1767.50

117.3 LF ~ 24" RCP (CL. IV)

STA 2+26.79
1774.67 FL

STA 2+31.29 ~ END CONSTRUCTION JOIN EXIST. 24" RCP ~ 1774.46 FL

LINE "B-2"

PROFILE SCALE
HORIZ. 1" = 40'
VERT. 1" = 4'

LINE "B-2" PROFILE
SEE PLAN VIEW BELOW

HYDRAULIC DATA
Q100 = 29.8 CFS
V = 14.0 FPS

EXIST. 24" RCP CONNECTOR PIPE

STA 1+00.00 ~ 1770.67 FL

STA 1+04.08 ~ 1771.17 FL

BEGIN CONSTRUCTION ~ JOIN EXIST. C.B.

STA 1+21.92
1771.22 FL

STA 1+41.58
1771.42 FL

HYDRAULIC DATA
Q100 = 51.4 CFS
V = 8.3 FPS

256.2 LF ~ 36" RCP (D-1250)

HYDRAULIC DATA
Q100 = 45.0 CFS
V = 6.4 FPS

STA 3+97.75 ~ 1764.35 FL

STA 4+02.25 ~ 1764.90 FL

HYDRAULIC DATA
Q100 = 45.0 CFS
V = 12.1 FPS

236.0 LF ~ 30" RCP (D-1250)

STA 6+00.00
1768.20 FL

STA 6+36.21
1768.84 FL

STA 6+44.36
1769.47 FL

HYDRAULIC DATA
Q100 = 23.0 CFS
V = 7.2 FPS

103.7 LF ~ 24" RCP (CLASS IV)

STA 7+50.00

95.8 LF ~ 42" RCP (1600 D) BACKFILL W/G" CLASS "B" CONC.

HYDRAULIC DATA
Q100 = 22.0 CFS
V = 20.0 FPS

1+00 2+00 3+00 4+00 5+00 6+00 7+00

1+00 2+00 3+00

1765 1755 1745 1775 1780 1770 1760

EXIST 84"Ø RCP PER LINE "G" A.D.P. STAGE I - DWG NO 4-526

STA 1+04.08 ~ BEGIN CONSTRUCTION ~ JOIN EXISTING C.B.

STA 1+39.75 ~ ℄ CB NO 1
Q100 = 4.0 V = 4.50
Q = 6.4 CFS
6' CURB OPENING

EXISTING C.B. W=7 V=4.5'

EXIST 24" RCP N06°28'18"E

EXIST 10'B

EXIST 24"W

℄ AUTO MALL DRIVE

6" CURB

FUTURE CURB TO BE CONSTRUCTED PER PLOT PLAN NO. 15494

24" RCP TO BE CONSTRUCTED PER PLOT PLAN NO. 1584

℄ EUCALYPTUS AVE.

38'

12'

LOT 3

LOT 4

N 00°27'47"E

℄ LINE "B-1"

STA 4+00.00 ℄ MH NO 1

STA 5+47.66 BC

STA 5+79.66 EC

STA 1+31.00 BC

STA 1+81.53 EC

R=200'

20%

℄ MH NO 4 ~ ℄ INT STA 6+30.66 ~ STA 1+00.00 ~ LINE "B-2"

PLOT PLAN NO. 1584

G1 G2 G3 G4

1710.5'

15' STORM DRAIN EASEMENT

MATCHLINE - STA. 7+50.00
SEE SHEET 3

Future Caltrans R/W (2)

Prop. Caltrans Layout Line (2)

EXIST. ± 12" WATER

Existing Caltrans R/W (2)

N 83°52'27" W

318'

EXIST. 24" R.C.P.

83.4

83.7

81.7

EAST BOUND LANE

WEST BOUND LANE

℄ STATE HWY 60

73.5' FL. INS

STA 2+18.04 ℄ MH NO 1
JOIN EXIST. 24" R.C.P.

N 01°19'22" W

EXIST. 84"Ø RCP

EXIST. 24" RCP

6" CLASS "B" CONC. (TYP.)

42" RCP

DIA

6" CLASS "B" CONCRETE BACKFILL DETAIL
NOT TO SCALE

CURVE DATA				
	DELTA	RADIUS	LENGTH	TANGENT
(A)	81°28'31"	22.50'	32.00	19.38
(B)	52°16'40"	22.50'	20.53	11.04

16' STORM DRAIN EASEMENT
7.5' 7.5'

6' HIGH BLOCK WALL PER PP# 1584

1.5% 1.5%

27'

PROPOSED ℄ 30"Ø RCP

SECTION "A-A"
SCALE 1" = 10'

LINE "B-1"

℄ CAUTION:
CONTRACTOR SHALL POTHOLE AND VERIFY EXIST. WATER LINE PRIOR TO CONSTRUCTION. RELOCATION OF WATER LINE MAY BE REQUIRED.

CONSTRUCTION NOTES

1. CONSTRUCT 42" R.C.P. (D-1600) BACKFILL WITH G" CLASS "B" CONCRETE PER DETAIL THIS SHEET.
2. CONSTRUCT CATCH BASIN NO. 1 PER RCFCD STD DWG. NO. CB100 W = 4.0' V = 6.0' L.D 201 CASE "C"
3. CONSTRUCT DRAINAGE INLET TYPE G1 PER CALTRANS STD. DWG. NO. D78. MODIFIED H = 5.2' SEE DETAIL ON SHEET NO 3
4. JOIN EXIST. 24" R.C.P WITH MANHOLE NO. 1 PER R.C.F.C.D. STD. DWG. NO. MH 251.
5. REMOVE AND REPLACE ± 105 LF. OF EXISTING CALTRANS FENCE.
6. CONTOUR GRADE AREA AND BACKFILL EXISTING GROUND AS SHOWN.
7. REMOVE EXISTING PIPE ENDWALL
8. CONSTRUCT 36" RCP (D-1250)
9. CONSTRUCT 30" RCP (D-1250)
10. CONSTRUCT MANHOLE NO 4 PER RCFCD STD. DWG. NO. 254
    A = 30° B = 24' C = 7.5' D = 24' D_2 = 30"
    ELEV. "R" = 1759.86 ELEV. "S" = 1759.20
11. CONSTRUCT 24" RCP (CLASS IV)
12. CONSTRUCT MANHOLE NO 1 PER RCFCD STD DWG. NO. MH 251

⚠ NOTE:
THE PROPOSED GRADING & DRAINAGE IMPROVEMENTS DEPICTED ON THIS SHEET SUPERSEDES THE GRADING INDICATED ON P.M. 23244 ROUGH GRADING PLANS

REGISTERED PROFESSIONAL ENGINEER
CEAZAR V. AGUILAR
NO. 041679
EXP. 3-31-92
CIVIL
STATE OF CALIFORNIA

BENCH MARK
LOCATION: U.S.C. AND G.S. R-375 M-124 CO-DSGN.FD. BRASS DISK STPD. R-375 TOP CONC. POST 250' W. HENDRICKS ALONG IRONWOOD AVE. 63' N.E. OF PP# 2710SG.55' N. OF IRONWOOD AVE. 6' HIGHER THAN ROAD 1'S OF MARKER POST.

ELEVATION: 1845.26

REFERENCE BLOCK

DESIGNED BY: W.E.M.
DRAWN BY: R.A.M.
CHECKED BY: C.V.A.

REVISIONS					
MARK	DATE	INITIAL	DESCRIPTION	DATE	APPVD
(1)	1-17-91		ADD NOTE	3/11/91	JMF
(2)	3/22/91	JMF	Added notes to show existing and future Caltrans R/W's and prop. Caltrans layout line	3/22/91	JMF

APPROVED BY: CEAZAR V. AGUILAR
DATE: 10/11/90 REGISTERED CIVIL ENGINEER NO. 41679 REGISTRATION EXP. 3-31-92

APPROVED BY:
DATE: 10/12/90 JOHN K. FEENSTRA R.C.E. 13870 EXP. 3-31-93 DEPUTY CITY ENGINEER OF MORENO VALLEY

THE KEITH COMPANIES
6296 RIVER CREST DRIVE SUITE K RIVERSIDE, CA. 92507 (714) 653 0234

SCALE: SCALE 1" = 40'
DATE: SEPT. 1990

CITY OF MORENO VALLEY

STORM DRAIN IMPROVEMENT PLANS
LINE "B-1" & LINE "B-2"
PARCEL MAP 23244

SHEET: 2 OF 3 SHTS.
FILE NO. C 71001S

INSTALL ONE LENGTH OF PIPE AND PLUG @ STA. 11+92 FOR INTERIM PIPE CONSTRUCTION

PROPOSED FINISHED SURFACE ABOVE E STORMDRAIN

EXISTING GROUND OVER PIPE

PLUG WITH CONC. BULKHEAD PER R.C.F.C. STD. DWG NO. M816

HYDRAULIC DATA
Q_{100} = 46.00 C.F.S.
V = 3.64 F.P.S.

100 YR. WATER SURFACE

HYDRAULIC DATA (INTERIM)
Q_{100} = 46 C.F.S.
V = 9.4 F.P.S.

HYDRAULIC DATA
Q_{100} = 50.00 C.F.S.
V = 7.07 FPS

HYDRAULIC DATA
Q_{100} = 67.00 C.F.S.
V = 6.06 FPS

HYDRAULIC DATA
Q_{100} = 81.00 C.F.S.
V = 6.44 FPS

HYDRAULIC DATA
Q_{100} = 81.00 C.F.S.
V = 6.44 FPS

HYDRAULIC DATA
Q_{100} = 81.0 C.F.S.
V = 6.4 FPS
70.0 LF-48"CMP

HYDRAULIC DATA
Q_{100} = 783.0 C.F.S.
V = 7.0 FPS
S=0.0050

HYDRAULIC DATA
Q_{100} = 22.00 C.F.S.
V = 9.13 FPS

68 L.F. 30" R.C.P. (1000-D) OR C.I.P.P. ALTERNATE

160 S.L.F. ~ 36" R.C.P. (1000-D) OR C.I.P.P. ALTERNATE

211.2 L.F. ~ 42" R.C.P. (1000-D) OR C.I.P.P. ALTERNATE

223.1 L.F. ~ 48" R.C.P. (1000-D) OR C.I.P.P. ALTERNATE

181.3 L.F. ~ 48" R.C.P. (1000-D) OR C.I.P.P. ALTERNATE

44.50 L.F. ~ 24" RCP (CLASS II) OR C.I.P.P. ALTERNATE

AUTO MALL DRIVE LATERAL

C.B. NO. 4 CONNECTOR PIPE

PROFILE SCALE
HORIZ. 1"=40'
VERT. 1"=4'

DETAIL N.T.S.

TYPICAL SECTION
STA. 13+00.00

DO NOT CONSTRUCT PAST STA. 11+92 UNTIL DIRECTED BY ENGINEER

AUTO MALL DRIVE

MORENO BEACH DRIVE

TRIDAR WAY

LOT 8

LOT 7

LOT 9

CURVE DATA

	△	RADIUS	LEN./DIST.	TAN.
(A)	38°07'25"	90.00'	59.88	31.10
(B)	27°54'31"	494.00'	240.63'	122.75'
(C)	82°34'45"	90.00'	129.71'	79.04'

CONSTRUCTION NOTES

1. CONSTRUCT TRANSITION STRUCTURE PER RCFCD STD. DWG. No. T.S 303. A=39°00'42.7" B=24" ; C=6.8 ; D2=48" ; D1=42" ; ELEV. "R"=1741.07 ELEV. "S"=1740.60
2. CONSTRUCT MANHOLE PER RCFCD STD. DWG. No. M.H. 254. A=30°49'05.7" ; B=30" ; C=8.8" D2=42" ; D1=36" ; ELEV."R"=1742.33. ELEV."S"=1742.22
3. CONSTRUCT MANHOLE PER RCFCD STD. DWG. No. M.H. 252.
4. CONSTRUCT CATCH BASIN PER RCFCD STD. DWG. No. CB. 100. SEE R.C.F.C.D. STD. DWG. № CB 109 FOR CORNER CONNECTION.
5. CONSTRUCT LOCAL DEPRESSION PER RCFCD STD. DWG. No. LD 201 ; CASE B.
6. CONSTRUCT LOCAL DEPRESSION PER RCFCD STD. DWG. No. LD 201 ; CASE C.
7. PLACE 1/4 TON RIP-RAP (2½ MAX. SLOPE) AS SHOWN. 2.1' THK.) PER CALTRANS STD. SPEC. 72-2-02.
8. CONSTRUCT 48 R.C.P. (1000-D) OR C.I.P.P. ALTERNATE.
9. CONSTRUCT 42" R.C.P. (1000-D) OR C.I.P.P. ALTERNATE.
10. CONSTRUCT 36" R.C.P (1000-D) OR C.I.P.P. ALTERNATE.
12. CONSTRUCT 24" R.C.P. CLASS II OR C.I.P.P. ALTERNATE
11. CONSTRUCT 30" R.C.P. (1000-D) OR C.I.P.P. ALTERNATE
20. CONSTRUCT TYPE IX INLET PER R.C.F.C.D STD. DWG NO. C.B. 107 (MODIFIED) DETAIL AS SHOWN ON SHEET 3 W=35 FT
17. CONSTRUCT WIRE MESH FENCE PER R.C.F.C.D. STD. DWG. № M 818 H=6'-6" W/ 6" SPACINGS
18. CONSTRUCT 14 FT. DOUBLE DRIVE GATE PER R.C.F.C.D. STD. DWG. № M 801
19. CONSTRUCT CATCH BASIN PER CITY OF RIVERSIDE STD. DWG. NO. 407.
21. CONSTRUCT CONC. COLLAR PER R.C.F.C.D. STD. DWG. NO. M 803.
24. CONSTRUCT TYPE "C" END WALL PER CALTRANS STD. DWG NO. D90
25. CONSTRUCT 1½ TON RIPRAP PER CALTRANS STD. SPEC. 72-2.02 AS SHOWN T=3.4 FT. MIN
14. CONSTRUCT 48" C.M.P. (14 GAUGE)

REGISTERED PROFESSIONAL ENGINEER CHRIS D. CUMMINS NO. 041983 Exp. 3/31/92 CIVIL STATE OF CALIFORNIA

BENCH MARK

LOCATION: U.S.C. & G.S. R-375 M-124 CO. DSGN. FC. BRASS DISK STPD. R-375, TOP CONC. POST 250' W. HENDRICKS ALONG IRONWOOD AVE. 63' N.E. OF PP# 271056, 53' N. OF IRONWOOD AVE. 6' HIGHER THAN RD I'S. OF MARKER POST.

ELEVATION: 1845.26'

REFERENCE BLOCK:

DESIGNED BY: C.V.A.
DRAWN BY: J.S.
CHECKED BY: C.V.A.

MARK	DATE	INITIAL	DESCRIPTION	DATE	APP'VD
1	4-26-90	WA	SEE SHEET 2B FOR REVISIONS	5/8/90	JKF
2	4-26-90	WA	THESE ITEMS DELETED PER REVISIONS ON SHEET 2B	5/8/90	JKF

APPROVED BY: CHRIS D. CUMMINS — REGISTERED CIVIL ENGINEER NO. 041983
DATE: 1-6-89

APPROVED BY: JOHN K. FEENSTRA R.C.E. 13870 EXP. 3-31-93 — DEPUTY CITY ENGINEER OF MORENO VALLEY
DATE: 11-8-89

THE KEITH COMPANIES

SCALE: 1" = 40'

DATE: DEC. 1988

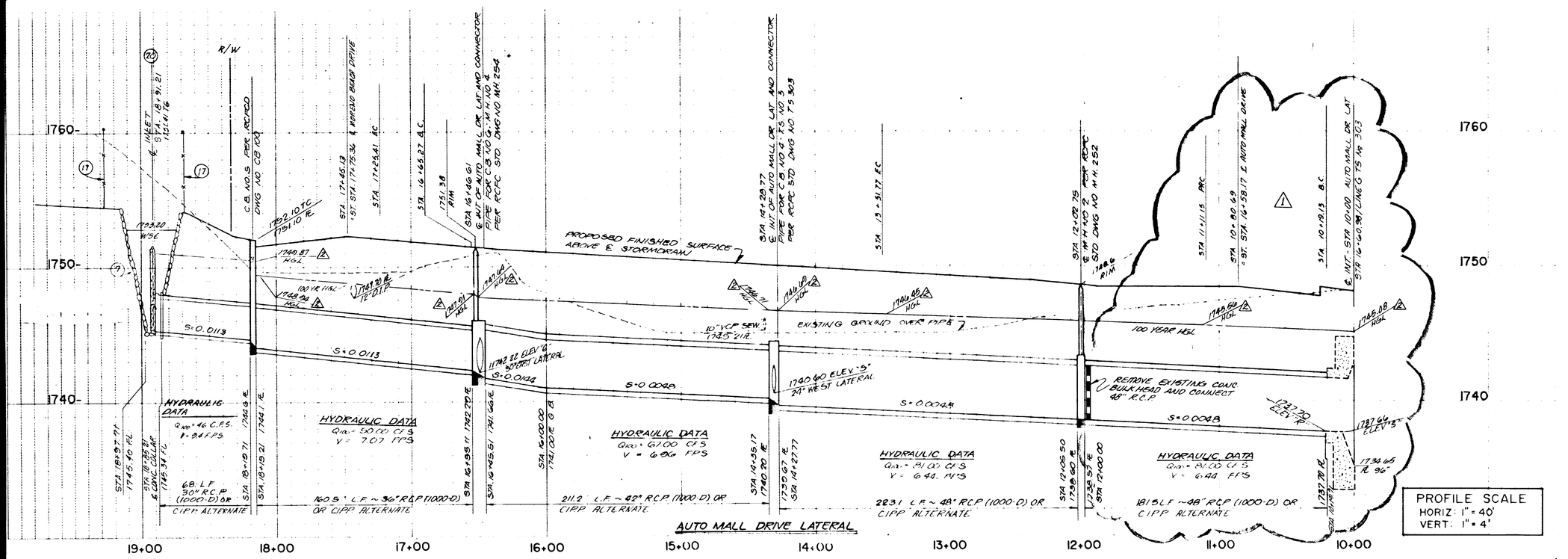
CITY OF MORENO VALLEY

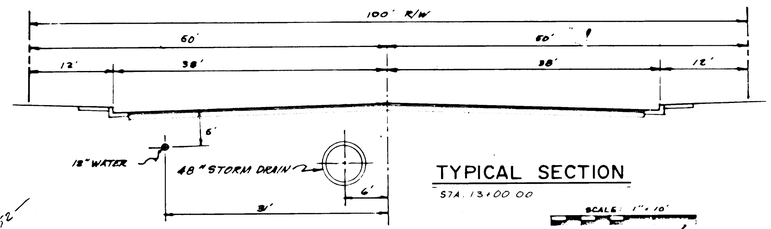
INTERIM

STORM DRAIN IMPROVEMENT PLANS
AUTO MALL DRIVE (INTERIM OUTLET)
P. M. 23244
MORENO VALLEY AUTO MALL

SHEET: 2A OF 3 SHTS.

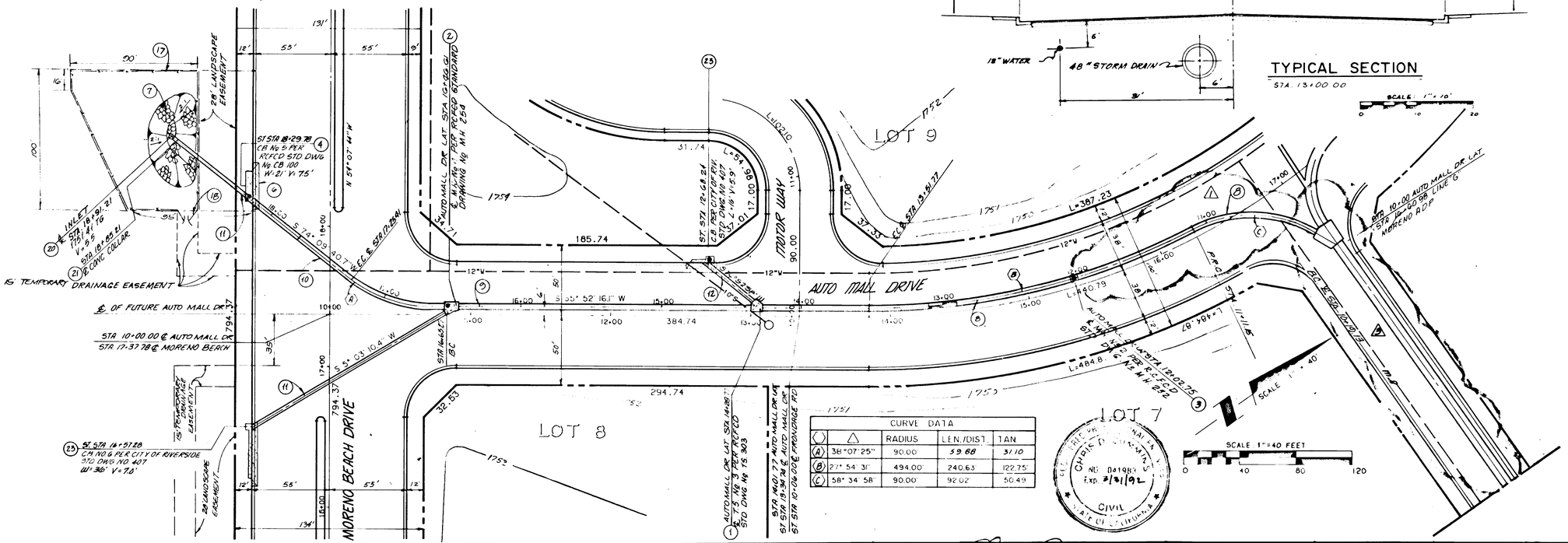
FILE NO. 710-015





TYPICAL SECTION

STA. 13+00.00



CURVE DATA				
	△	RADIUS	LEN./DIST.	TAN
(A)	38°07'25"	90.00'	59.88	31.10
(B)	27°54'31"	494.00'	240.63	122.75'
(C)	58°34'58"	90.00'	92.02	50.49

CONSTRUCTION NOTES

1. CONSTRUCT TRANSITION STRUCTURE PER RCFCD STD. DWG. No. T.S. 505, A=39°00'42.7", B=24", C=6.8, D2=48", D1=42", ELEV. "R"=1741.07 ELEV. "S"=1740.60
2. CONSTRUCT MANHOLE PER RCFCD STD. DWG. No. M.H. 254, A=30°49'05.7", B=30", C=8.8', D2=42", D1=36", ELEV."R"=1742.33, ELEV."S"=1742.22
3. CONSTRUCT MANHOLE PER RCFCD STD. DWG. No. M.H. 252.
4. CONSTRUCT CATCH BASIN PER RCFCD STD. DWG. No. CB 100, SEE R.C.F.C.D. STD DWG. № CB 109 FOR CORNER CONNECTION.
5. CONSTRUCT LOCAL DEPRESSION PER RCFCD STD. DWG. No. LD 201, CASE B.
6. CONSTRUCT LOCAL DEPRESSION PER RCFCD STD. DWG. No. LD 201, CASE C.
7. PLACE 1/4 TON RIP-RAP (2) MAX. SLOPE) AS SHOWN. (2' THK.) PER CALTRANS STD SPEC 72-2.02.
8. CONSTRUCT 48" R.C.P. (1000-D) OR C.I.P.P. ALTERNATE.
9. CONSTRUCT 42" R.C.P. (1000-D) OR C.I.P.P. ALTERNATE.
10. CONSTRUCT 36" R.C.P (1000-D) OR C.I.P.P. ALTERNATE.
12. CONSTRUCT 24" R.C.P. CLASS IV OR C.I.P.P. ALTERNATE
11. CONSTRUCT 30" R.C.P. (1000-D) OR C.I.P.P. ALTERNATE
22. CONSTRUCT TYPE IX INLET PER R.C.F.C.D STD. DWG NO CB 107 (MODIFIED) DETAIL AS SHOWN ON SHEET 3 V=3.9 FT
17. CONSTRUCT WIRE MESH FENCE PER R.C.F.C.D. STD. DWG. № M 818 H=6'-6" W/ 6" SPACINGS
18. CONSTRUCT 14 FT. DOUBLE DRIVE GATE PER R.C.F.C.D. STD. DWG. № M 801
25. CONSTRUCT CATCH BASIN PER CITY OF RIVERSIDE STD. DWG. NO. 407.
21. CONSTRUCT CONC. COLLAR PER R.C.F.C.D. STD. DWG. NO. M 803

BENCH MARK

LOCATION: U.S.C. & G.S. R-375 M-124 CO. DSGN. FC. BRASS DISK STPD. R-375, TOP CONC. POST 250' W. HENDRICKS ALONG IRONWOOD AVE. 63' N.E. OF PP# 271056, 53' N. OF IRONWOOD AVE. 6' HIGHER THAN RD. 1'S. OF MARKER POST.

ELEVATION: 1845.26'

REFERENCE BLOCK

DESIGNED BY	C.V.A.
DRAWN BY	V.S.
CHECKED BY	C.V.A.

REVISIONS					
MARK	DATE	INITIAL	DESCRIPTION	DATE	APP'VD
1	4-26-90	CVA	UPDATE PLANS TO REMOVE CONC. BULKHEAD, CONST. 48" RCP, AND JOIN INTO PROPOSED LINE "G"		
2	4-26-90	CVA	REVISE H.G.L.		
3	4-26-90	CVA	REVISE PER LINE "G" MORENO A.D.P. PARCEL MAP 23244, DWG. NO. 4-526		

APPROVED BY: CHRIS D. CUMMINS — REGISTERED CIVIL ENGINEER NO. 041989
DATE 4-24-90

APPROVED BY: JOHN E. FLEENOR, RCE. 18870 EXP. 3-31-92 — DEPUTY CITY ENGINEER, OF MORENO VALLEY
DATE: 5/8/90

THE KEITH COcompanies

SCALE: 1" = 40'

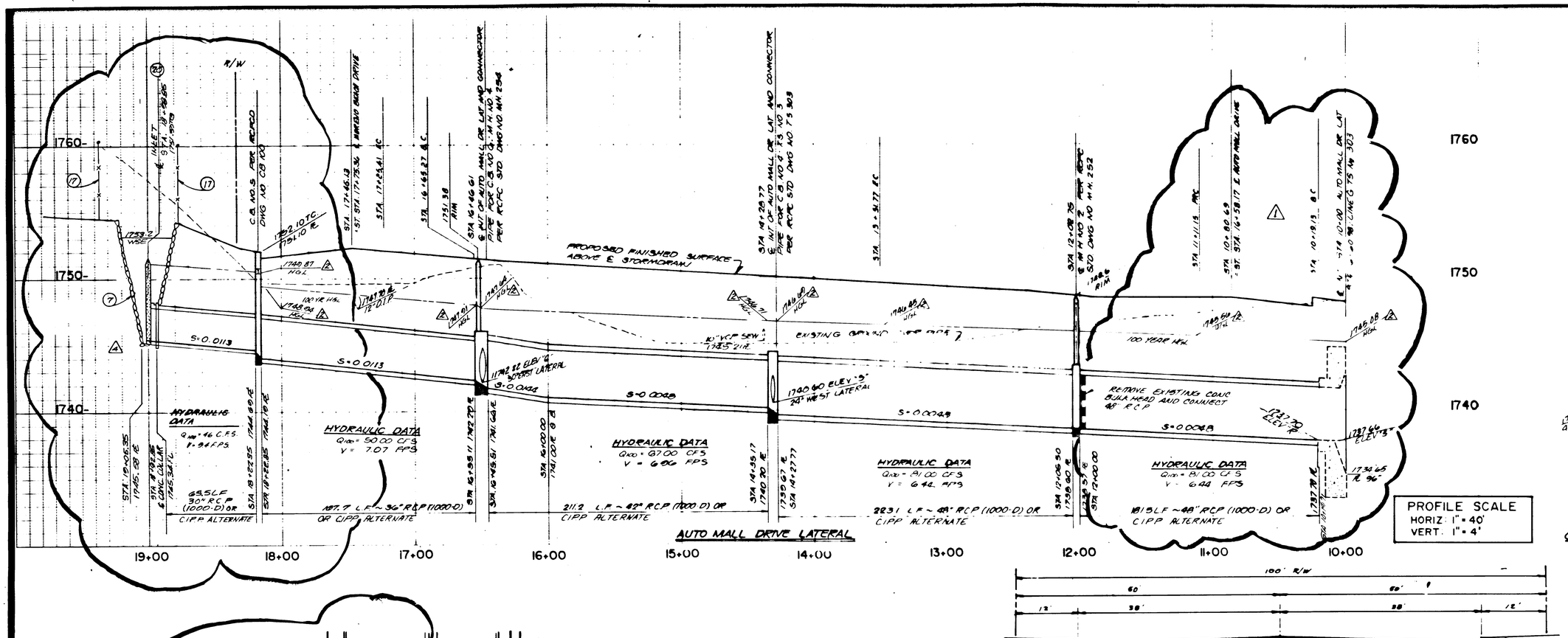
DATE: DEC. 1988

CITY OF MORENO VALLEY

STORM DRAIN IMPROVEMENT PLANS
AUTO MALL DRIVE LATERAL
P. M. 23244
MORENO VALLEY AUTO MALL

SHEET: 28 OF 3 SHTS.

FILE NO. 710-015



CURVE DATA				
⬡	△	RADIUS	LEN./DIST.	TAN.
Ⓐ	38°07'25"	90.00'	60.15	31.24
Ⓑ	27° 54' 31"	494.00'	240.63'	122.75'
Ⓒ	58° 34' 58"	90.00'	92.02'	50.49'

CONSTRUCTION NOTES

① CONSTRUCT TRANSITION STRUCTURE PER RCFCD STD. DWG. No. T.S. 303. A=39°00'42.7" B=24", C=6.8, D2=48", D1=42", ELEV. "R"=1741.07 ELEV. "S"=1740.60

② CONSTRUCT MANHOLE PER RCFCD STD. DWG. No. M.H. 254. A=30°49'05.7", B=30", C=8.8' D2=42", D1=36", ELEV. "R"=1742.33. ELEV. "S"=1742.22

③ CONSTRUCT MANHOLE PER RCFCD STD. DWG. No. M.H. 252.

④ CONSTRUCT CATCH BASIN PER RCFCD STD. DWG. No. CB. 100. SEE R.C.F.C.D. STD DWG. Nº CB 109 FOR CORNER CONNECTION.

⑤ CONSTRUCT LOCAL DEPRESSION PER RCFCD STD. DWG. No. LD 201, CASE B.

⑥ CONSTRUCT LOCAL DEPRESSION PER RCFCD STD. DWG. No. LD 201, CASE C.

⑦ PLACE 1/4 TON RIP-RAP (2:1 MAX. SLOPE) AS SHOWN. (2' THK) PER CALTRANS STD. SPEC. 72-2-02.

⑧ CONSTRUCT 48" R.C.P. (1000-D) OR C.I.P.P. ALTERNATE.

⑨ CONSTRUCT 42" R.C.P. (1000-D) OR C.I.P.P. ALTERNATE.

⑩ CONSTRUCT 36" R.C.P (1000-D) OR C.I.P.P. ALTERNATE.

⑫ CONSTRUCT 24" R.C.P. CLASS IV OR C.I.P.P. ALTERNATE

⑪ CONSTRUCT 30" R.C.P. (1000-D) OR C.I.P.P. ALTERNATE

⒇ CONSTRUCT TYPE IX INLET PER R.C.F.C.D STD DWG NO CB 107 (MODIFIED) DETAIL AS SHOWN ON SHEET 3 V=5.5 FT

⑰ CONSTRUCT WIRE MESH FENCE PER R.C.F.C.D. STD DWG Nº M818 H=6'-6" W/ 6" SPACINGS

⑱ CONSTRUCT 14 FT. DOUBLE DRIVE GATE PER R.C.F.C.D. STD DWG Nº M 801

㉓ CONSTRUCT CATCH BASIN PER CITY OF RIVERSIDE STD. DWG. NO. 407.

㉑ CONSTRUCT CONC. COLLAR PER R.C.F.C.D. STD DWG NO. M 803

BENCH MARK

LOCATION: U.S.C. & G.S. R-375 M-124 CO. DSGN. FC. BRASS DISK STPD. R-375. TOP CONC. POST 250' W. HENDRICKS ALONG IRONWOOD AVE. 63' N.E. OF PP# 271056, 53' N. OF IRONWOOD AVE. 6' HIGHER THAN RD'S. OF MARKER POST.

ELEVATION: 1845.26'

REFERENCE BLOCK

DESIGNED BY: C.V.A.
DRAWN BY: J.S.
CHECKED BY: C.V.A.

REVISIONS					
MARK	DATE	INITIAL	DESCRIPTION	DATE	APP'VD
⚠1	4-26-90	CVA	UPDATE PLANS TO REMOVE CONC. BULKHEAD, CONST. 48" RCP AND JOIN INTO PROPOSED LINE "G"	9/12/90	JKF
⚠2	4-26-90	CVA	REVISE H.G.L.	9/12/90	JKF
⚠3	4-26-90	CVA	REVISE PER LINE "G" MORENO A.D.P. PARCEL MAP 23244, DWG. NO. 4-526	9/12/90	JKF
⚠4			ENLARGED MORENO BEACH DR. 6' SOUTH OF ℄. MOVED C.B.	9/21/90	JKF

APPROVED BY:
CHRIS D. CUMMINS
REGISTERED CIVIL ENGINEER NO. 041983
DATE: 4-24-90

APPROVED BY:
DATE: 5/8/90
JOHN E. FEENSTRA RCE 13870 EXP 3-31-90
DEPUTY CITY ENGINEER OF MORENO VALLEY

THE KEITH COMPANIES

SCALE: 1" = 40'

DATE: DEC. 1988

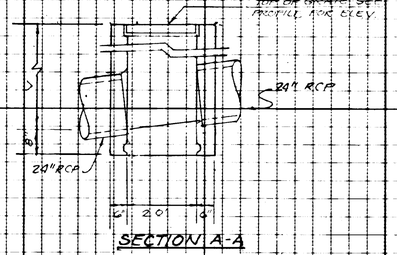
CITY OF MORENO VALLEY

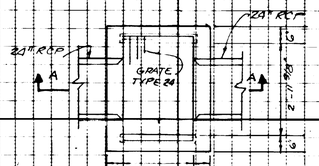
STORM DRAIN IMPROVEMENT PLANS
AUTO MALL DRIVE LATERAL
P. M. 23244
MORENO VALLEY AUTO MALL

SHEET: 2C OF 3 SHTS.

FILE NO. 710-015

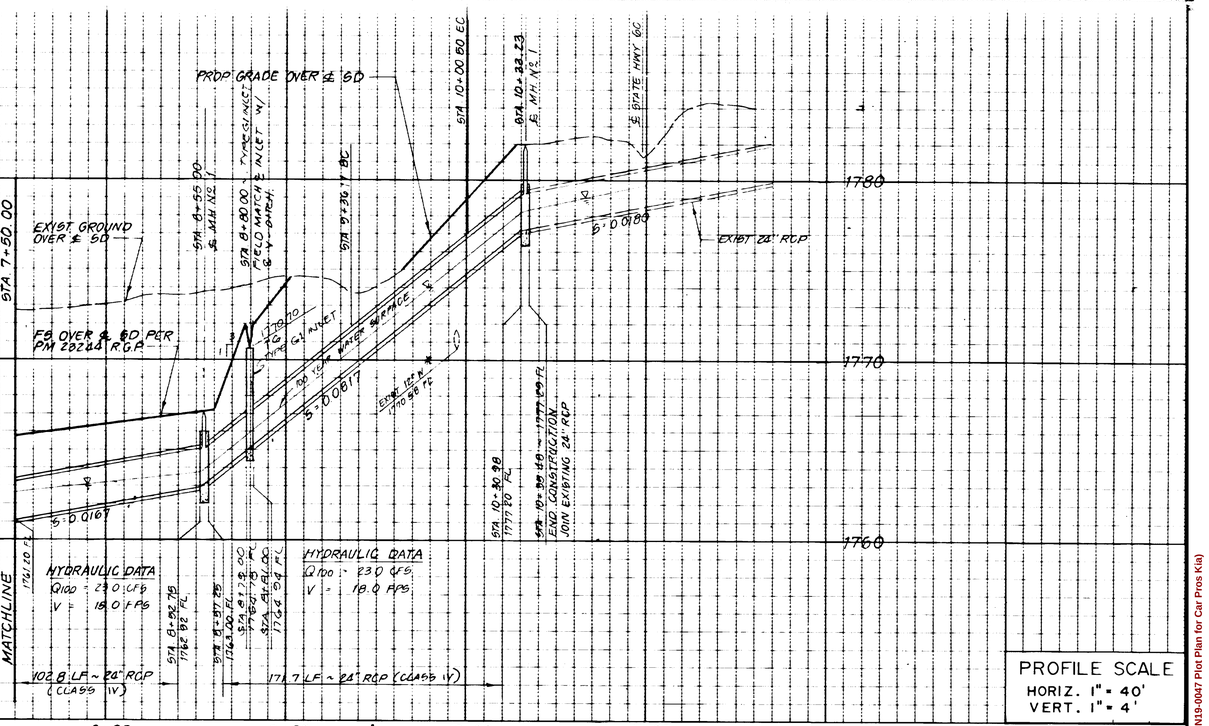
Attachment: Appendix G Drainage to Exhibit A (3665 : PEN19-0102 Initial Study and PEN19-0047 Plot Plan for Car Pros Kia)





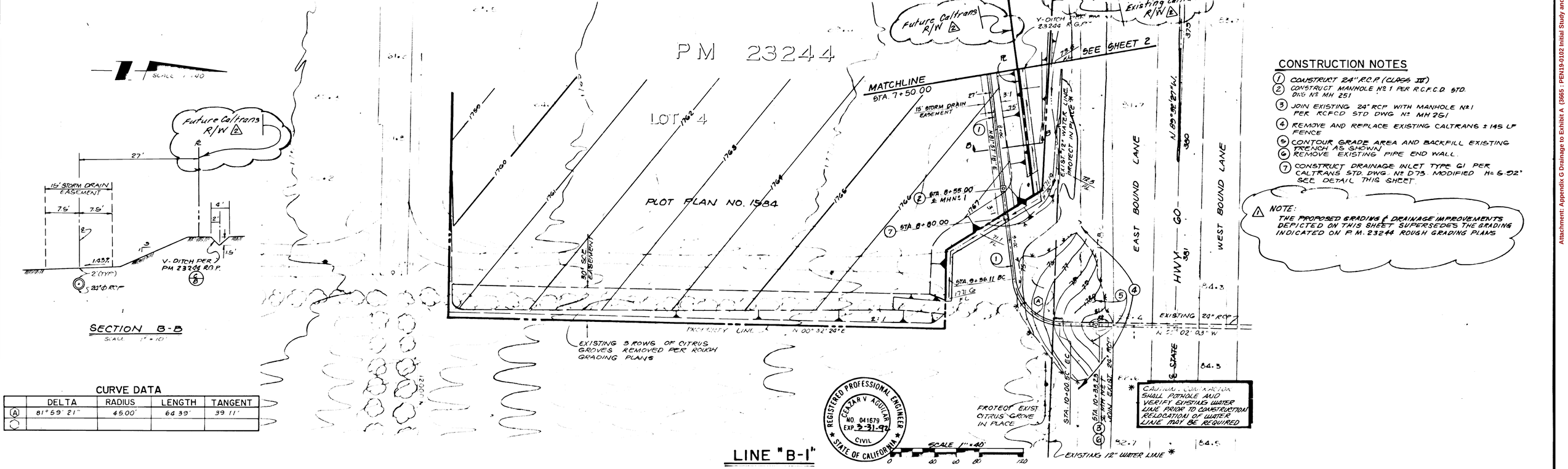
TYPE G1 INLET DETAIL (MODIFIED)

NOT TO SCALE



PROFILE SCALE
HORIZ. 1" = 40'
VERT. 1" = 4'

SCALE 1" = 40'



CONSTRUCTION NOTES

1. CONSTRUCT 24" R.C.P. (CLASS III)
2. CONSTRUCT MANHOLE No. 1 PER R.C.F.C.D. STD. DWG No. MH 251
3. JOIN EXISTING 24" RCP WITH MANHOLE No. 1 PER RCFCD STD DWG No. MH 251
4. REMOVE AND REPLACE EXISTING CALTRANS ± 145 LF FENCE
5. CONTOUR GRADE AREA AND BACKFILL EXISTING TRENCH AS SHOWN
6. REMOVE EXISTING PIPE END WALL.
7. CONSTRUCT DRAINAGE INLET TYPE G1 PER CALTRANS STD. DWG. No. D73. MODIFIED H= 6.02' SEE DETAIL THIS SHEET.

⚠ NOTE:
THE PROPOSED GRADING & DRAINAGE IMPROVEMENTS DEPICTED ON THIS SHEET SUPERSEDES THE GRADING INDICATED ON P.M. 23244 ROUGH GRADING PLANS

SECTION B-B

SCALE 1" = 10'

CURVE DATA

	DELTA	RADIUS	LENGTH	TANGENT
Ⓐ	81° 59' 21"	45.00'	64.39'	39.11'
⬡				

LINE "B-1"

REGISTERED PROFESSIONAL ENGINEER
CEZAR V. AGUILAR
NO. 041679
EXP. 3-31-92
CIVIL
STATE OF CALIFORNIA

BENCH MARK

LOCATION U.S.C. & G.S. R-375 M-124 CO. DSGN. FD. BRASS DISK STPD. R-375, TOP CONC. POST 250' WEST HENDRICKS ALONG IRONWOOD AVE. 63' N.E. OF PP#271056, 53' N. OF IRONWOOD AVE. 6' HIGHER THAN RD' I'S. OF MARKER POST."

ELEV. 1845.26

REFERENCE BLOCK:

DESIGNED BY: W.E.M.
DRAWN BY: R.A.M.
CHECKED BY: C.V.A.

MARK	DATE	INITIAL	DESCRIPTION	DATE	APP'VD
⚠1	1-17-91		ADD NOTE	3/11/91	JVF
⚠2	3/22/91	J.M.F.	Added notes to show existing and future Caltrans R/W	5/22/91	JEF

APPROVED BY: CEAZAR V. AGUILAR
DATE: 10/11/90
REGISTERED CIVIL ENGINEER NO. 41679
REGISTRATION EXP. 3-31-92

APPROVED BY: JOHN K. FEENSTRA
DATE: 10/12/90
REGISTERED CIVIL ENGINEER NO. 13870
DEPUTY CITY ENGINEER EXP. 3-31-93

THE KEITH COMPANIES
6296 RIVER CREST DRIVE
SUITE K
RIVERSIDE, CA. 92507
(714) 653-0234

SCALE: 1" = 40'
DATE: SEPT. 1990

CITY OF MORENO VALLEY

STORM DRAIN IMPROVEMENT PLANS
LINE "B-1"
PARCEL MAP 23244

SHEET: 3 OF 3 SHTS.
FILE NO. C 710015

PROPOSED FINISHED SURFACE OVER ℄ STORM DRAIN
EXISTING GROUND @ ℄ STORM DRAIN
HEADWALL
S=0.04ft
S=0.08ft
HYDRAULIC DATA
Q100=8.7 CFS
V=8.41 FPS
105 L.F. OF 18" RCP (CLASS IV)
STA 2+00.00
STA 1+90.00
DRAINAGE INLET CONNECTOR PIPE
PER CALTRANS STD. DWG. D73 TYPE GG
PROPOSED FINISHED SURFACE OVER ℄ STORM DRAIN
EXISTING GROUND @ ℄ STORM DRAIN
℄ INT STA 1+88.88 MORENO BEACH DR LAT = STA 10+63.75 MORENO BEACH DRIVE
℄ TYPE IX INLET STA 1+87.00 TW=1745.11
LANDSCAPE EASEMENT
1755.74 W.S.E
1750.74 FL
1755
1750
1745
1740
S=0.0413
HYDRAULIC DATA
Q100=36.3 CFS
V=10.13 FPS
±230 L.F. - 24" RCP (CLASS IV) OR ALTERNATE C.I.P.P.
STA 3+12.00 ℄ CONC. COLLAR
MORENO BEACH DRIVE LATERAL
1+00
2+00
3+00
PROPOSED FINISHED SURFACE OVER ℄ STORM DRAIN
EXISTING GROUND @ ℄ STORM DRAIN
℄ INT STA 10+00.00 CB NOG CONNECTOR PIPE
CB NOG PER RCFCD STD DWG NO CB 107
1752.08 TC
1751.08 FL
1749.74 W.S.E
1748.78 W.S.E
1742.22 ELEV. 'S'
1742.33 ELEV. 'R'
S=0.0178
1741.08 FL
HYDRAULIC DATA
Q=200 CFS
V=4.07 FPS
167.50 OF 30" RCP (1000-D) OR ALTERNATE C.I.P.P.
STA 10+00.00
STA 11+75.83
1742.22 FL
CB NOG CONNECTOR PIPE
SEE SHEET 2 FOR PLAN VIEW
0+00
1+00
2+00
TYPE IX INLET (MODIFIED) PER R.C.F.C.D. STD DWG NO CB 107
WELD
REBAR
1/4 x 2" STEEL STRAP WITH 3/8" BOLT
OPENING (TYP.)
6" TYP
3" TYP
"V" (MEDIED ON PLANS)
36" CMP THICKNESS=0.105"
ENDING STATION OF MAIN LINE AND ℄ OF CONCRETE COLLAR PER R.C.F.C.D. STD DWG NO CB 107 FOR REBAR REQUIREMENTS
CLASS 'B' CONCRETE
12"
18"
8"
12" 3"
1/4
18" CMP THICKNESS=0.064"
S=0.01
MAIN LINE PIPE
CLASS 'B' CONCRETE
6"
3"
44 L.F. OF 18" RCP (CLASS IV) OR CMP (16 GAUGE)
TYPE IX INLET (MODIFIED) DETAIL
SCALE: HORIZ 1" = 2'
VERT 1" = 2'

PROFILE SCALE
HORIZ: 1" = 40'
VERT: 1" = 4'

CONSTRUCTION NOTES:

(20) CONSTRUCT DRAINAGE INLET PER CALTRANS STD. PLANS NO D73, TYPE GG SEE DETAIL THIS SHEET.
(13) CONSTRUCT 105 L.F. - 18" RCP (CLASS IV)
(12) CONSTRUCT 221.00 L.F. - 24" RCP (CLASS IV) OR C.I.P.P. ALTERNATE.
(16) CONSTRUCT TYPE IX INLET PER R.C.F.C.D. STD. DWG NO. CB 107 (MODIFIED) DETAIL AS SHOWN ON THIS SHEET. V=5.6 F.F.
(7) CONSTRUCT RIPRAP SLOPE PROTECTION (1/4 TON) AS SHOWN PER CALTRANS STD. SPECS. 72-202 ON 2:1 MAX SLOPE. (2' THICK)
(21) CONSTRUCT CONCRETE COLLAR PER R.C.F.C.D. STD. DWG. NO. M803.
(19) CONSTRUCT 1/2 TON GROUTED RIPRAP AS SHOWN MIN. DEPTH = 3'
(17) CONSTRUCT WIRE MESH FENCE PER RCFCD STD. DWG. NO. M81B H=6'-0" W/6" SPACING
(18) CONSTRUCT 16' DBL DRIVE GATE PER RCFCD STD DWG NO. M801.
(22) CONSTRUCT SPECIAL ENDWALL PER DETAIL SHOWN ON THIS SHEET.

SCALE: 1" = 40'
SCALE: 1" = 40 FEET
0 40 80 120
PROPOSED 9.C.E. EASEMENT
V-DITCH @ 6.5% MIN.
CALTRANS DRAINAGE INLET
GRADE BREAK
HINGE LINE
2:1 SLOPE
10%
8.0%
MORENO BEACH DRIVE
STA 1+88.88 ℄ STORM DRAIN STA STA 10+63.75 ℄ STREET STA
N 15° 6' 37" E
30' SCE EASEMENT
GUNITE CHANNEL PER ROUGH GRADING PLAN
RIPRAP PER ROUGH GRADING PLAN
17615 FL
R=90'
30' LANDSCAPE EASEMENT
15' TEMPORARY DRAINAGE EASEMENT
3:1 MAX.
8.0%
1760
1765
1770
1775
1780

CONCRETE MASONRY WALL
H=8'-0" MAX.
FUTURE 6' SCREEN WALL (MAX.)
GROUT SOLID
24" MAX
16"
3" TYP
6" HOOK
(2) #3
6" HOOK TYP
2" FOOTING
8"
#4 BAR
#3 BAR
9" TYP
#4 BAR CONT TO TOP OF MASONRY WALL
SECTION A-A
SECTION B-B
SPECIAL ENDWALL DETAIL
1845.9 TW
1844.5 TG
1%
DRAINAGE INLET
18" CMP
INVERT
1840.0' 1%
FUTURE 6' SCREEN WALL (MAX.)
1746 ELEV. (NTS)
18" RCP
15'
A RETAINING WALL SECTION
DESIGN DETAIL SEE GRADING PLAN SHEET NO 7
B DRAINAGE INLET DETAIL SECTION
SCALE: 1" = 4'
18" DRAINAGE CONNECTOR PIPE
MASONRY BLOCK WALL
WALL FOOTING
GRADED SLOPE
1.0%
GRATE TYPE 18 PER CALTRANS STD DWG D73
1736.50 FL TOP OF GRATE
18' TRANSITION FROM V-DITCH TO FLAT BOTTOM
℄ V-DITCH PER ROUGH GRADING PLAN
CALTRANS INLET D73 TYPE GG (MODIFIED)

5/31/92

BENCH MARK
LOCATION: U.S.C. & G.S. R-375 M-124 CO. DSGN. FD. BRASS DISC STPD. R-375, TOP CONC. POST 250' W. HENDRICKS ALONG IRONWOOD AVE. 63' N.E. OF PP# 271056, 53' N. OF IRONWOOD AVE. 6' HIGHER THAN RD. I'S. OF MARKER POST.
ELEVATION: 1845.26'

REFERENCE BLOCK:

DESIGNED BY: CVA
DRAWN BY: RR
CHECKED BY: CVA

REVISIONS				
MARK	DATE	INITIAL	DESCRIPTION	APPVD CITY ENGR
1			ENLARGED MORENO BEACH DR & SOUTH OF ℄ & MOVED C.B.	

APPROVED BY: CHRIS D. CUMMINS
DATE: 10-5-89
REGISTERED CIVIL ENGINEER NO. 041985
APPROVED BY: JOHN K. FEENSTRA R.C.E. 13870 EXP. 3-31-93
DEPUTY CITY ENGINEER OF MORENO VALLEY
DATE: 11-8-89

SCALE: 1" = 40'
DATE: DEC. 1988.

CITY OF MORENO VALLEY

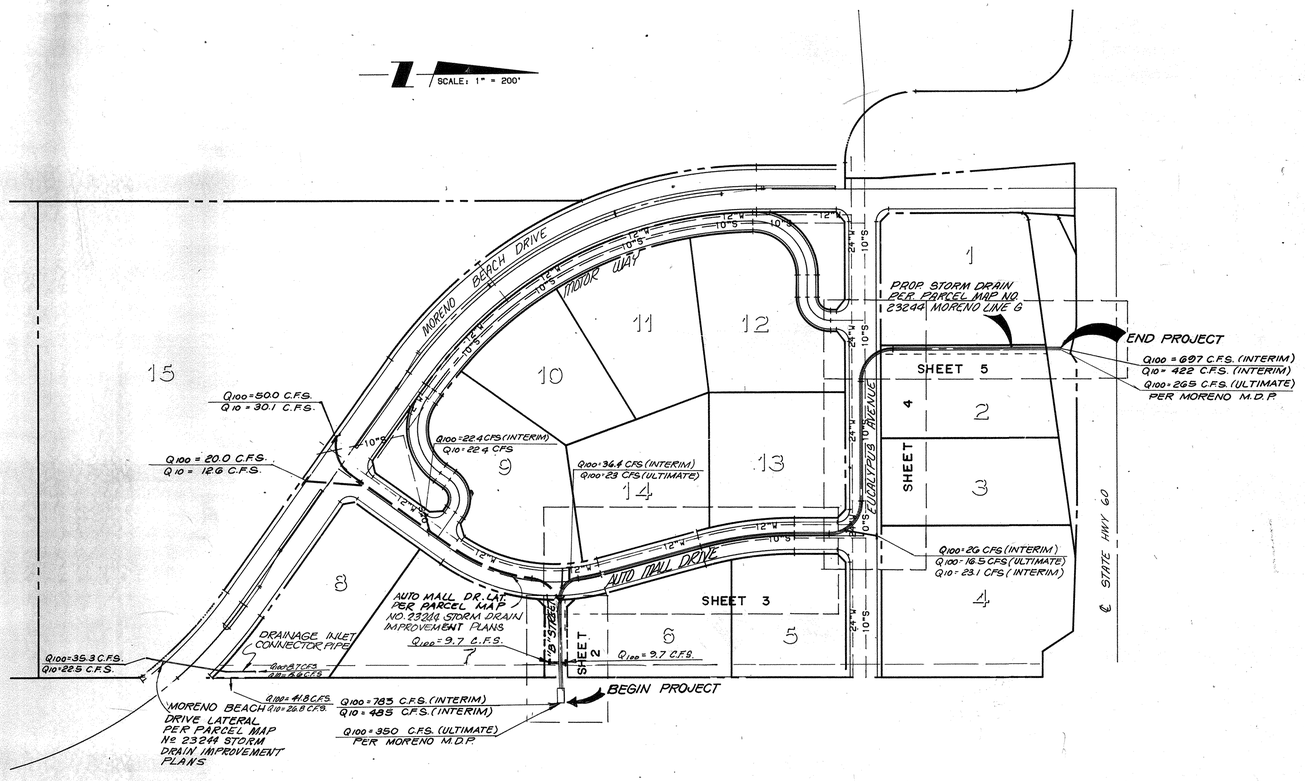
STORM DRAIN IMPROVEMENT PLANS.
MORENO BEACH DRIVE LATERAL
P. M. 23244
MORENO VALLEY AUTO MALL

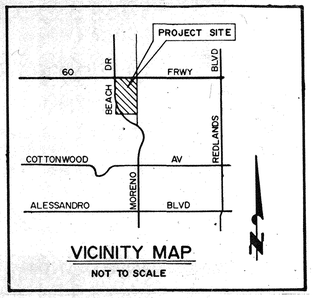
SHEET: 34 OF 3 SHTS.
FILE NO. 710-015

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

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 DISTRICT'S SPECIAL PROVISIONS AND DETAILED SPECIFICATIONS DATED SEPTEMBER 1984, AND DESIGN MANUAL STANDARD DRAWINGS DATED MAY 1971.
2. ALL CONSTRUCTION TO BE IN CONFORMANCE WITH THE REGULATION OF CAL-OSHA.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CLEARING OF THE PROPOSED WORK AREA AND RELOCATION COSTS OF ALL EXISTING UTILITIES. PERMITTEE MUST INFORM CITY OF CONSTRUCTION AT (714) 242-3120
4. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER OR CONTRACTOR TO APPLY TO THE CITY OF MORENO VALLEY ENGINEERING DEPARTMENT, PERMIT SECTION, FOR ENCROACHMENT PERMIT FOR ALL WORK ON EXISTING CITY MAINTAINED ROADS, AND FOR UTILITY WORK WITHIN OFFERS OF DEDICATION FOR PUBLIC USE.
5. CONSTRUCTION INSPECTION WILL BE PERFORMED BY RIVERSIDE COUNTY FLOOD CONTROL. CONTACT LEONARD DUNN AT (714) 787-1263. THE DISTRICT MUST BE NOTIFIED TWO WEEKS PRIOR TO CONSTRUCTION.
6. ALL STATIONING REFERS TO CENTERLINE OF CONSTRUCTION UNLESS OTHERWISE NOTED.
7. STATIONING FOR LATERALS AND CONNECTOR PIPE REFER TO THE CENTERLINE-CENTERLINE INTERSECTION.
8. FORTY-EIGHT HOURS BEFORE EXCAVATION, CALL UNDERGROUND SERVICE ALERT 1-800-422-4133.
9. ALL ELEVATIONS ARE IN FEET AND DECIMALS THEREOF BASED ON U.S.C. AND G.S. DATUM.
10. ALL CROSS SECTIONS ARE TAKEN LOOKING DOWNSTREAM.
11. ELEVATIONS OF UTILITIES ARE APPROXIMATE UNLESS OTHERWISE NOTED.
12. NOTICE TO THE CONTRACTOR: THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO EXISTING UTILITIES EXCEPT FOR THOSE SHOWN ON THESE PLANS. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN AND ANY OTHER LINES NOT SHOWN ON THESE PLANS OR NOT RECORDED.
13. ALL BACKFILL TO BE 90% RELATIVE COMPACTION UNLESS OTHERWISE SPECIFIED, AND SHALL BE CERTIFIED BY THE CITY'S SOILS ENGINEER PRIOR TO PAVING. RETESTING SHALL BE AT THE DEVELOPER'S EXPENSE.
14. 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.
15. BEDDING PIPE WITH LESS THAN TWO FEET OF COVER SHALL CONFORM TO LOS ANGELES COUNTY FLOOD CONTROL DISTRICT STANDARD DRAWINGS 2-D213.3 AND 2-D177 FOR CONCRETE BACKFILL IN TRENCHES. ALL OTHER PIPE SHALL CONFORM TO RCFCD&WCD STD. DWG. M 815
16. "V" IS THE DEPTH OF INLET OF CATCH BASINS MEASURED FROM THE TOP OF CURB TO INVERT OF CONNECTOR PIPE.
17. CATCH BASINS SHALL BE LOCATED SO THAT THE LOCAL DEPRESSION SHALL BEGIN AT EXISTING CURB RETURN JOINT, UNLESS OTHERWISE SPECIFIED.
18. ALL CURB, 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. THE CONCRETE COVER OF THE INSIDE OF ALL REINFORCED CONCRETE PIPE MUST BE INCREASED TO PROVIDE A MINIMUM OF 1-1/2" OVER THE REINFORCING WHEN THE DESIGN VELOCITIES EXCEED 20 FEET PER SECOND. THE CONCRETE DESIGN STRENGTH IN THESE REACHES SHALL BE fc=5,000 PSI FOR VELOCITIES EXCEEDING 20 FEET PER SECOND
20. CAST IN PLACE PIPE CAN BE USED AS AN ALTERNATIVE TO R.C.P. ONLY WHERE THERE IS 3 FEET MINIMUM COVER ABOVE THE PIPE.





VICINITY MAP
NOT TO SCALE

NOTICE- THE CONTRACTOR SHALL NOTIFY THE DISTRICT IN WRITING A MINIMUM OF TWO WEEKS BEFORE BEGINNING CONSTRUCTION AND SHALL NOT BEGIN CONSTRUCTION BEFORE OBTAINING AUTHORIZATION TO PROCEED.

INDEX MAP

200 100 0 200

AS BUILT
APPROVED BY: [illegible]
DATE 10/22/91

REGISTERED PROFESSIONAL ENGINEER
FRANK J. PEARS
Exp. 9-30-93
No. 21809
CIVIL
STATE OF CALIFORNIA

INDEX

TITLE SHEET	SHEET 1 TO 1A
PLAN AND PROFILE	SHEET 2 TO 5
OUTLET STRUCTURE DETAIL	SHEET 6
CHANNEL DETAIL	SHEET 7

R. C. F. C. D. STANDARD DRAWINGS

CB 100 CATCH BASIN NO. 1
JS 227 JUNCTION STRUCTURE NO. 2
JS 229 JUNCTION STRUCTURE NO. 4
MH 252 MANHOLE NO. 2
TS 303 TRANSITION STRUCTURE NO. 3
CH 326 TRAPAZOIDAL CHANNEL DETAILS
M 815 BEDDING AND PAYLINES
M 801 CHAIN LINK FENCE AND 14' DOUBLE DRIVE GATE DETAILS

RIVERSIDE CO. STANDARD DRAWINGS

210 6-FT CONCRETE CROSS GUTTER

CALTRANS STANDARD DRAWINGS

D-90-A PIPE CULVERT HEADWALLS AND WINGWALLS

CAST-IN-PLACE PIPE RECOMMENDATIONS

1. FOR QUALITY CONTROL DURING PLACEMENT, EMPLOY AN EXPERIENCED R.C.E. OR TECHNICIAN HAVING SUITABLE C.I.P.P. EXPERIENCE.
2. CONTROL CONCRETE BY MEANS OF 6" X 12" TEST CYLINDERS-MIN. OR 1 SET OF FOUR (4) CYLINDERS/100 C.Y. AND NOT LESS THAN TWO (2) SETS CYLINDERS PER EACH DAYS POUR.
3. SUPPLYING BATCH PLANT SHALL BE INSPECTED AT THE START OF CONSTRUCTION AND NOT LESS THAN ONCE EACH WEEK THEREAFTER TO OBSERVE PLANT OPERATIONS, BATCH WEIGHTS, AND OTHER CONCRETE CONTROL MEASURES.
4. CONCRETE MIXES SHALL NOT HAVE LESS THAN SIX (6) SACKS OF PORTLAND CEMENT/CU. YD.
5. CONCRETE MIX DESIGNS SHALL BE SUBMITTED BY CONTRACTOR FOR APPROVAL PRIOR TO START OF CONSTRUCTION.
6. IF AND WHEN FLOW VELOCITY EXCEEDS 20 F.P.S. A 140° SEGMENT OF THE C.I.P.P. INVERT SHALL BE THICKENED 2 INCHES IN WALL THICKNESS AS "SACRIFICIAL CONCRETE" TO RESIST ABRASION. COMPRESSIVE STRENGTH OF CONCRETE FOR DESIGN VELOCITIES ≥ 20.0 F.P.S. SHALL BE fc=5,000 P.S.I.
7. MAXIMUM PERMISSIBLE CONCRETE SLUMP SHALL BE -1/2", MIN. TO 2-1/2" MAX.
8. CONTRACTOR SHALL ALLOW INSPECTOR INTO PIPE WHILE UNDER CONSTRUCTION AND "ROD" FOR WALL THICKNESS AT A MIN. OF EVERY 25 C.Y. OF THE POUR.
9. AT THE END OF ALL POURS AND AT THE END OF EACH WORKING DAY THE CONTRACTOR SHALL INSTALL #4 DOWELS 24" LONG 12" INTO THE LAST POUR AT 12" CENTERS AROUND THE CIRCUMFERENCE OF CAST-IN-PLACE PIPE.

THE FOLLOWING ITEMS ARE TO BE INSPECTED AND MAINTAINED BY THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

96" R.C.P. OR C.I.P.P. ALTERNATE FROM STA. 14+54.49 TO STA. 25+20.66
84" R.C.P. OR C.I.P.P. ALTERNATE FROM STA. 25+20.66 TO STA. 31+30.00
72" R.C.P. OR C.I.P.P. ALTERNATE FROM STA. 31+30.00 TO STA. 34+54.50
84" R.C.P. OR C.I.P.P. ALTERNATE FROM STA. 34+54.50 TO STA. 34+67.00

ALL MANHOLES AND OTHER STRUCTURES REQUIRED TO COMPLETE THE CONSTRUCTION OF THE ABOVE MENTIONED FACILITIES EXCLUDING CATCH BASINS AND CONNECTOR PIPES AND INLET AND OUTLET STRUCTURES. THE INLET AND OUTLET STRUCTURES THE 96" RCP OR C.I.P.P. ALTERNATE FROM STA. 13+93.49 TO STA. 14+54.49 AND 84" RCP OR C.I.P.P. ALTERNATE FROM STA. 34+67.00 TO STA. 35+55.60 INCLUDING THE CONCRETE LINED OPEN CHANNEL FROM STA. 35+69.40 TO STA. 36+00.74 ARE TO BE MAINTAINED BY THE CITY OF MORENO VALLEY.

REGISTERED PROFESSIONAL ENGINEER
CHRIS D. CUMMINS
NO: 041983
Exp. 3/31/92
CIVIL
STATE OF CALIFORNIA

PLANS PREPARED UNDER SUPERVISION OF
CHRIS D. CUMMINS
DATE: 1-6-89
REGISTERED CIVIL ENGINEER NO. 041983
REGISTRATION EXPIRES 3-31-92

THE KEITH COMPANIES
Inland Empire
• Planning • Civil Engineering • Architecture • Landscape Architecture • Land Surveying • Construction Management
6296 River Crest Drive, Suite K, Riverside, CA 92507 (714) 653-0234

BENCH MARK U.S.C.& G.S. R-375 M-124 CO. DSGN. FD. BRASS DISK STPD. R-375. TOP CONC. POST 250' W. HENDRICKS ALONG IRONWOOD AVE. 63 N.E. OF PP # 271056, 53' N. OF IRONWOOD AVE. 6' HIGHER THAN RD'I'S.OF MARKER POST.
ELEV. = 1845.26

REVISIONS			
REF.	DESCRIPTION	APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: Frank J. Pears
PLANNING ENGINEER R.E. NO. 21809
DATE: 4/18/90
APPROVED BY: Kenneth R. Edwards
CHIEF ENGINEER R.E. NO. 12400
DATE: 4-19-90

CITY OF MORENO VALLEY
APPROVED BY: John K. Peenstra
JOHN K. PEENSTRA
DEPUTY CITY ENGINEER
CITY OF MORENO VALLEY
RIVERSIDE COUNTY, CA.
R.C.E. 13870
(EXP. 3/31/93)
DATE: 4/5/90

LINE "G" MORENO A.D.P. STAGE I PARCEL MAP 23244 TITLE SHEET

PROJECT NO. 4-0-761
DRAWING NO. 4-526
SHEET NO. 1 OF 7

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

CALTRANS GENERAL NOTES:

1. AN ENCROACHMENT PERMIT IS REQUIRED BEFORE ANY WORK MAY BEGIN IN/OR NEAR THE STATE RIGHT-OF-WAY.

2. ALL WORK WITHIN THE STATE RIGHT-OF-WAY SHALL CONFORM TO THE LATEST STATE STANDARD PLANS AND SPECIFICATIONS OR AS DIRECTED BY THE STATE'S REPRESENTATIVE.

3. NO EQUIPMENT OR MATERIALS MAY BE STORED ON THE STATE RIGHT-OF-WAY.

4. ALL DISTURBED AREAS IN THE STATE RIGHT-OF-WAY MUST BE TREATED FOR EROSION CONTROL (HYDROSEEDING OR EQUIVALENT, OR AS DIRECTED BY THE STATE'S REPRESENTATIVE). THE RESPONSIBILITY FOR MAINTAINING EROSION CONTROL WILL NOT BE RELEASED UNTIL THE SEEDING IS WELL ESTABLISHED. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE COST OF CALTRANS CLEANING ANY DRAINAGE STRUCTURES AND CHANNELS WHICH HAVE BECOME CLUTTERED WITH DEBRIS AND/OR SILT AS A RESULT OF, OR CAUSED BY, CONSTRUCTION PROJECT.

5. ACCESS CONTROL ON THE FREEWAY WILL BE MAINTAINED AT ALL TIMES (WORK INSIDE STATE RIGHT-OF-WAY MUST BE FENCED OFF WITH NO ACCESS TO WORK AREA FROM FREEWAY).

6. NO FREEWAY RAMPS OR FREEWAY LANES WILL BE MAINTAINED AT ANYTIME, UNLESS SPECIFICALLY ALLOWED PER THE ENCROACHMENT PERMIT AND/OR AS DIRECTED BY THE STATE'S REPRESENTATIVE.

7. ALL FENCE RELOCATED TO FACILITATE CONSTRUCTION OF THIS PROJECT INSIDE STATE RIGHT-OF-WAY SHALL BE REPLACED WITH CL-6 FENCE AS SHOWN IN THE STATE'S STANDARD PLANS, OR BLOCK WALL IN ACCORDANCE WITH ACCEPTABLE LOCAL AGENCY STANDARDS.

8. ALL STATE DRAINAGE STRUCTURES MUST FIRST BE COMPLETELY CLEANED OF DEBRIS, AND/OR SILT BY THE CONTRACTOR PRIOR TO MAKING THE CONNECTION.

9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSURING THAT ANY STATE DRAINAGE FACILITY WHICH IS CONNECTED TO OR DIRECTLY AFFECTED BY CONTRACTORS OPERATION SHALL BE CLEAN AND OPERATIONAL PRIOR TO FINAL ACCEPTANCE OF PERMIT WORK BY STATE. ADEQUATE CLEAN OUTS AND ACCESS OPENINGS SHALL BE PROVIDED IN ANY CONSTRUCTION WITHIN THE STATE'S RIGHT-OF-WAY FOR FUTURE MAINTENANCE AND REPAIR WORK, AS NEEDED. THIS SHALL BE FURNISHED AT NO COST TO THE STATE.

10. WHERE SURVEY MONUMENTS EXIST, SUCH MONUMENTS SHALL BE PROTECTED OR SHALL BE REFERENCED AND RESET, PURSUANT TO BUSINESS AND PROFESSION CODE, SECTION 8700 TO 8805 (LAND SURVEYORS ACT).

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURE 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 IMPROVEMENT. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT ANY UTILITY LINES SHOWN AND ANY OTHER LINES NOT OF RECORD OR NOT SHOWN ON THESE PLANS.

AS BUILT
APPROVED BY: [illegible]
DATE 10/22/91

REGISTERED PROFESSIONAL ENGINEER
CHRIS D. CUMMINS
NO. 041983
Exp. 3/31/92
CIVIL
STATE OF CALIFORNIA

PLANS PREPARED UNDER THE SUPERVISION OF
CHRIS D. CUMMINS
DATE: 2/13/90
REGISTERED CIVIL ENGINEER NO. 041983
REGISTRATION EXPIRES 3-31-92

THE KEITH COMPANIES
INLAND EMPIRE
6296 RIVER CREST DRIVE, SUIT K, CA.92507 (714)6530234

BENCH MARK U.S.C. & G.S. R-375
M-124 CO. DSGN. FD. BRASS DISK STPD. R-375 TOP CONC. POST 250' W. HENDRICKS ALONG IRONWOOD AVE. 63' N.E. OF PP# 271056,53 N. OF IRONWOOD AVE. 6' HIGHER THAN R' I'S. OF MARKER POST.

ELEV. = 1845.26'

REVISIONS			
REF.	DESCRIPTION	APPR	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY:
PLANNING ENGINEER R.E. NO. 21809
DATE:

APPROVED BY:
CHIEF ENGINEER R.E. NO. 12400
DATE:

County of Riverside
APPROVED BY:
JOHN K. FEENSTRA
DEPUTY CITY ENGINEER
CITY OF MORENO VALLEY
RIVERSIDE COUNTY, CA.
R.C.E. 13870
(EXP. 3/31/92)
DATE: 1/3/90

LINE "G" MORENO A.D.P.
STAGE I
PARCEL MAP 23244
TITLE SHEET

PROJECT NO. 4-0-761
DRAWING NO. 4-526
SHEET NO. 1A OF 7

•P• LINE G A.D.P. SHT.2/7 - 63[0.43]PF; 710015 10123 12-Feb-90 01:15 PM

FACILITY MAINTAINED BY THE CITY OF MORENO VALLEY

R.C.F.C.W.C.D. MAINTAINED FACILITY

PROP. FS ABOVE ℄ PIPE

EXIST. GROUND ABOVE ℄ PIPE

STA. 13+57.82

STA. 14+57.49

STA. 14+96.00 ℄ C.B. NO. 4

STA. 16+00.03

SEE SHEET 3

MATCHLINE

TOP OF ACCESS ROAD

1743.78 TOP

1742.78 HGL

1743.58 HGL

1748.13 HGL

1736.40

1734.40

1737.16 ELEV. "S" 24" NORTH LAT.

1731.76 ELEV. "S" 24" SOUTH LAT.

EXISTING FLOW LINE

1728.84 IE

1729.73

1720.73 F.L.

1738.53 F.L.

S=0.0184

S=0.0063

LOW FLOW OUTLET CHANNEL FLOWLINE

S=0.0023

1725.13 IE

1725.48 F.L.

HYDRAULIC DATA
Q100 = 783 CFS
V = 6.0 FPS
dn = 5.98 FT.

3' CUTOFF WALL

HYDRAULIC DATA
Q100 = 643 CFS
V = 13.2 FPS

HYDRAULIC DATA
Q100 = 649 CFS
V = 12.8 FPS

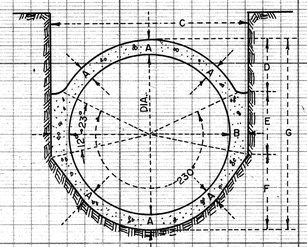
206.5 LF ~ 96" RCP (800-D) OR CIPP ALTERNATE ✳✳

BROW DITCH CHANNEL

1750 — 1740 — 1730

12+00 13+00 14+00 15+00 16+00

CAST-IN-PLACE PIPE
TYPICAL SECTIONS



I.D.	A	B	C	D	E	F	G
72"	7"	8 1/2"	89"	25"	27 1/2"	33 1/2"	86"
84"	8"	9 1/2"	103"	29"	32"	39"	100"
96"	9"	10 1/2"	117"	33"	36"	45"	114"

✳ IF R.C.P. IS USED, PROVIDE 1-1/2" MINIMUM CONCRETE COVER OF THE INSIDE OF THE PIPE OVER REINFORCEMENT IN ORDER TO ACCOUNT FOR NON-BACKWATER CONDITION

✳✳ IF C.I.P.P. IS USED, PROVIDE "SACRIFICIAL CONCRETE" AS NOTED ON ITEM 6 (SHEET 1) CAST-IN-PLACE RECOMMENDATIONS IN ORDER TO ACCOUNT NON-BACKWATER CONDITION.

STA 1+10.00 ℄ 8" ST.

1745.67 I.E.

1745.67 I.E.

1743.81 W.S.E.

1748.58 HGL

1743.81 W.S.E.

S=0.698

8" WATER LINE

STA 0+80.25

1739.82 I.E.

STA 1+30.25

EL. 1741.67 F.L.

96" S.D.

HYDRAULIC DATA
Q100 = 9.7 CFS
V = 3.1 FPS

26.9 LF ~ 24" RCP (CLASS III)

HYDRAULIC DATA
Q100 = 9.7 FPS
V = 3.1 FPS

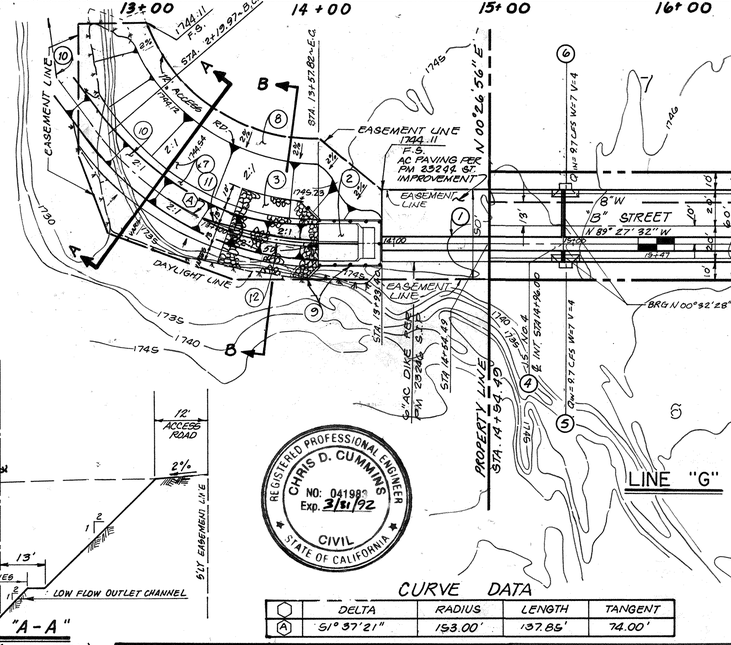
6.3 LF ~ 24" RCP (CLASS III)

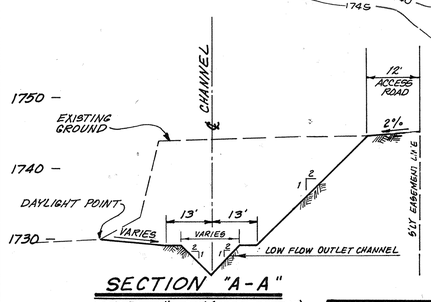
0+00 1+00 2+00

1750 — 1740 — 1730

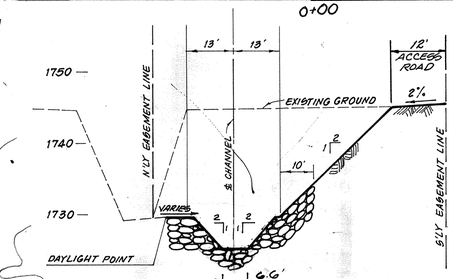
CATCH BASIN CONNECTOR PIPE PROFILE
SEE PLAN VIEW THIS SHEET
STA. 14+96.00

PROFILE SCALE
HORZ: 1" = 40'
VERT: 1" = 4'

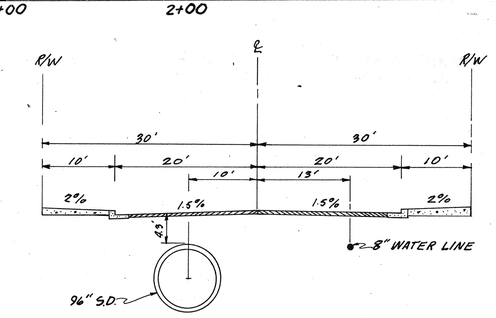




SECTION "A-A"
SCALE: 1" = 20' (HORIZONTAL)
1" = 10' (VERTICAL)



SECTION B-B
SCALE: HORIZ. 1" = 20'
VERT. 1" = 10'



TYPICAL SECTION
STA 15+47.00
SCALE: 1"=10'

AS BUILT
APPROVED BY: [illegible]
DATE 10/21/91

CONSTRUCTION NOTES

1. CONST. 96" R.C.P. (800-D) OR CIPP ALTERNATE
2. CONST. OUTLET STRUCTURE PER DETAIL SHOWN ON SHEET 6
3. CONST. 1-TON RIPRAP, T=4.3 FEET PER CALTRANS STD. SPECS. 72-2.02
4. CONST. JUNCTION STRUCTURE NO. 4 PER R.C.F.C.D.& W.C.D. STD. DWG. NO. JS 229 CASE 1
5. CONST. CATCH BASIN PER R.C.F.C.D. & W.C.D. STD. DWG. NO. CB 100 W=7' V=4.0 "LD" 201 CASE "B" 6.3 ~ 24" R.C.P. (CLASS IV)
6. CONST. CATCH BASIN PER R.C.F.C.D. & W.C.D. STD. DWG. NO. CB 100 W=7 V=4.0 L D 201 CASE "B" 26.3' ~ 24" R.C.P. (CLASS IV).
7. CONST. DIRT CHANNEL AT S=0.006 B=26' (DETAIL THIS SHT.)
8. CONST. 12 FT ACCESS ROAD
9. CONST. 4-FT CHAIN LINK FENCE PER R C F C D WCD. STD. DWG. NO. M801.
10. CONST. ± 400 LF LOW FLOW OUTLET CHANNEL AT S=0.0023 SEE DETAIL THIS SHEET. GRADE TO DRAIN
11. CONST. BOTTOM WIDTH TRANSITION FROM b=3' TO b=0' L=15'
12. CONST. BOTTOM WIDTH TRANSITION FROM b=10' TO b=3' L=50'

REGISTERED PROFESSIONAL ENGINEER
CHRIS D. CUMMINS
NO. 041983
Exp. 3/31/92
CIVIL
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
FRANK J. PEARS
Exp. 9-30-93
No. 21809
CIVIL
STATE OF CALIFORNIA

CURVE DATA

	DELTA	RADIUS	LENGTH	TANGENT
⬡				
Ⓐ	51° 37' 21"	193.00'	197.85'	74.00'

PLANS PREPARED UNDER SUPERVISION OF
CHRIS D. CUMMINS
REGISTERED CIVIL ENGINEER NO. 041983
DATE 1-6-89 REGISTRATION EXPIRES 3-31-92

THE KEITH COMPANIES
Inland Empire
• Planning • Civil Engineering • Architecture • Landscape Architecture • Land Surveying • Construction Management
6296 River Crest Drive, Suite K, Riverside, CA 92507 (714) 653-0234

BENCH MARK U.S.C. & G.S. R 375
M 124 CO. DSGN FD. BRASS DISK STPD. R 375, TOP CONC. POST 250 W. HENDRICKS ALONG IRONWOOD AVE. 63' N.E. OF PP# 271056, 53 N. OF IRONWOOD AVE. 6' HIGHER THAN RD. IS OF MARKER POST ELEV.= 1845.26

REVISIONS

REF.	DESCRIPTION	APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

RECOMMENDED FOR APPROVAL BY: Frank J. Pears
PLANNING ENGINEER R.E. NO. 21809
DATE: 4/18/90

APPROVED BY: Kenneth L. Edwards
CHIEF ENGINEER R.E. NO. 12400
DATE: 4-19-90

CITY OF MORENO VALLEY

APPROVED BY: John K. Feenstra
JOHN K. FEENSTRA
DEPUTY CITY ENGINEER
CITY OF MORENO VALLEY
RIVERSIDE COUNTY, CA.
R.C.E.13870
(EXP. 3-31-93)
DATE: 4/5/90

LINE "G" MORENO A.D.P.
STAGE 1
PARCEL MAP 23244
STA. 13+57.82 TO STA. 16+06.03

PROJECT NO. 4-0-761
DRAWING NO. 4-526
SHEET NO. 2 OF 7

»P« ST. P & P "B" STREET - 98(0.43)PF: 710015 10134 21-Nov-89 01:35 PM /

R.C.F.C.W.C.D. MAINTAINED FACILITY

SEE SHEET NO 2

MATCHLINE STA. 16+00.03

SEE SHEET NO 4

MATCHLINE STA. 24+78.16

SCALE: 1"= 40'
0 40 80

PROFILE SCALES
HORIZ: 1"= 40'
VERT: 1"= 4'

HYDRAULIC DATA
Q=644 CFS
V=12.0 FPS

STA. 16+60.93 M.H. NO. 4

STA. 17+28.11 = STA. 17+39.75 & AUTO MALL DR.

STA. 17+53.42 PRC

STA. 18+25.52 E.C.

STA. 18+90.00 Ø M.H. NO. 2

STA. 21+15.71 B.C.

STA. 23+80.39 E.C.

STA. 23+90.02 Ø M.H. NO. 2

STA. 24+80.39 Ø M.H. NO. 2

EXISTING GROUND & Ø OVER STORM DRAIN

PROPOSED FINISHED SURFACE OVER PIPE

H.G.L.

1744.40 H.G.L.

1744.44 H.G.L.

1745.37 H.G.L.

1745.78 H.G.L.

1744.67 H.G.L.

1744.08 H.G.L.

1743.85 H.G.L.

1743.04 H.G.L.

1719.78 H.G.L.

1729.80 H.G.L.

1739.23 ELEV'S 30" WEST ONT.

1737.66 ELEV'S 42" AUTO MALL DRIVE LATERAL

1733.29 S=0.0103

S=0.0048

HYDRAULIC DATA
Q = 601 CFS
V = 12.0 FPS

HYDRAULIC DATA
Q=565.0 CFS
V= 11.2 FPS
207.2 L.F. ~ 96" RCP (800-D) OR C.I.P.P. ALTERNATE

HYDRAULIC DATA
Q =565.0 CFS
V = 11.2 FPS
403.3 L.F. ~ 96" RCP (800-D) OR C.I.P.P. ALTERNATE

S=0.0023

HYDRAULIC DATA
Q =565.0 CFS
V = 11.2 FPS
89.91 L.F. 96" RCP (800-D) OR C.I.P.P. ALTERNATE

64.94 L.F. ~ 96" R.C.P. (800-D) OR C.I.P.P. ALTERNATE

18+57.67 1735.00 F.L.

18+92.34 1736.02 F.L.

23+57.67 1735.98 F.L.

23+92.25 1736.40 F.L.

1735.60

1735.60

1735.02

STA. 16+00 STA. 17+00 STA. 18+00 STA. 19+00 STA. 20+00 STA. 21+00 STA. 22+00 STA. 23+00 STA. 24+00 STA. 25+00 STA. 0+00 STA. 1+00

1755 1750 1740 1730

F.S. OVER STORM DRAIN

STA. 17+10.26 Ø E.W.S. NO. 2

1741.25 N.G.E.

1748.78 H.G.L.

1744.21 H.G.L.

C.B. N°. 2 V= 4.5

S=0.0048

1739.23 ELEV'S 30" WEST ONT.

1735.51 E. 96"

HYDRAULIC DATA
Q = 36 C.F.S.
V = 7.33 F.P.S.

1725.51

STA. 0+19.29

STA. 0+50.00

42.81 L.F. 30" R.C.P. (1250-D)

CATCH BASIN CONNECTOR PIPE PROFILE

SEE PLAN VIEW - THIS SHEET
STA. 17+04.26

CONSTRUCTION NOTES

1. CONSTRUCT 96" R.C.P. (800-D) OR C.I.P.P. ALTERNATE
2. CONSTRUCT MANHOLE NO. 4 PER R.C.F.C.D. STD. DWG. NO. MH. 254 SEE SHT. 7 FOR PLAN DETAIL.
   LINE "G"
   A=24°, B=48", C=19.71, D =D =96",
   ELEV. "R"=1737.70, ELEV. "S"=1737.66
3. CONSTRUCT JUNCTION STRUCTURE NO. 2 PER R.C.F.C.D. STD. DWG. NO. JS 227
   A=25°, B=30", C=13.70', D=96", E=10.80', F=4.40', G=3.70', L=8.20', ELEV."R"=1739.59
   ELEV."S"=1739.23 SEE CB NO. 2 CONNECTOR PIPE PROFILE THIS SHEET
   SEE SHT. 7 FOR PLAN DETAIL
4. CONSTRUCT MH NO. 2 PER R.C.F.C.D STD. DWG. NO. MH 252
5. CONSTRUCT CATCH BASIN NO. 1 PER R.C.F.C.D. STD. DWG. NO. CB 100 LD 201 CASE "C" 43' ~ 30" R.C.P. (1200-D) OR C.I.P.P. ALTERNATE.

* IF R.C.P. IS USED, PROVIDE 1-1/2" MINIMUM CONCRETE COVER OF THE INSIDE OF THE PIPE OVER REINFORCEMENT IN ORDER TO ACCOUNT FOR NON-BACKWATER CONDITION

** IF C.I.P.P. IS USED, PROVIDE "SACRIFICIAL CONCRETE" AS NOTED ON ITEM 6 (SHEET 1) CAST-IN-PLACE RECOMMENDATIONS IN ORDER TO ACCOUNT FOR NON-BACKWATER CONDITION.

REGISTERED PROFESSIONAL ENGINEER CHRIS D. CUMMINS NO: 041983 Exp. 3/31/92 CIVIL STATE OF CALIFORNIA

PLANS PREPARED UNDER SUPERVISION OF
CHRIS D. CUMMINS
REGISTERED CIVIL ENGINEER NO. 041983
DATE: 1-6-89 REGISTRATION EXPIRES 3-31-92

AUTO MALL DRIVE LATERAL

PM 23244 STREET IMPVMT. PLANS SEE SHEET 5 & 6

STA. 16+97.60 & AUTO MALL DR. = STA. 10+00.00 & "B" STREET

STA. 16+80.81 B.C.

STA. 16+60.98 LINE "G" = STA. 10+00.00 AUTO MALL DRIVE LATERAL & "B" STREET M.H. NO. 4

STA. 16+10.03 SEE SHEET 2

STA. 14+54.50

1808.39

LOT 7

LOT 14

LOT 6

LOT 13

LOT 5

AUTO MALL DRIVE

"B" STREET

CURVE DATA				
	Δ	RADIUS	LEN./DIST.	TANGENT
(A)	83°11'01"	50.00	72.59	44.38
(B)	08°21'53"	494.00	72.12	36.12
(C)	15°06'11"	1006.00'	265.18'	133.36'

LINE "G"

TYPICAL SECTION
STA. 20+00.00
SCALE: 1"=10'

100' 50' 12' 38' 50' 38' 12' 6' 12" WATER 6' 96" STORM DRAIN 31'

REGISTERED PROFESSIONAL ENGINEER FRANK J. PEARS Exp. 9-30-93 No. 21809 CIVIL STATE OF CALIFORNIA

AS BUILT
APPROVED BY: JDS
DATE 10/22/91

THE KEITH COMPANIES
Inland Empire
• Planning • Civil Engineering • Architecture • Landscape Architecture • Land Surveying • Construction Management
6296 River Crest Drive, Suite K, Riverside, CA 92507 (714) 653-0254

BENCH MARK U.S.C. & G.S. R-375 M-124 CO. DSGN. FD. BRASS DISK STPD. R-375, TOP CONC. POST 250' W. HENDRICKS ALONG IRONWOOD AVE. 63' N.E. OF PM 271056, 53' N. OF IRONWOOD AVE. 6' HIGHER THAN RD' I'S. OF MARKER POST. ELEV. = 1845.26'

REVISIONS			
REF.	DESCRIPTION	APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: Frank J. Pears, PLANNING ENGINEER R.E. NO. 21809, DATE: 4/18/90
APPROVED BY: Kenneth R. Edwards, CHIEF ENGINEER R.E. NO. 12400, DATE: 4-19-90

CITY OF MORENO VALLEY
APPROVED BY: John K. Feenstra, DEPUTY CITY ENGINEER, CITY OF MORENO VALLEY, RIVERSIDE COUNTY, CA. R.C.E. 13870 (EXP. 3/31/93) DATE: 4/5/90

LINE "G" MORENO A.D.P.
STAGE I
PARCEL MAP 23244
STA. 16+00.00 TO 24+78.16

PROJECT NO. 4-0-761
DRAWING NO. 4-526
SHEET NO. 3 OF 7

•P• STORM DRAIN "A" ST. SH. 2 - 99(0.43)PF; 710015 122 21-Dec-88 11:05 AM / 710015.DIG

Packet Pg. 896

R.C.F.C.W.C.D. MAINTAINED FACILITY

EXISTING GROUND & ℄ OF STORM DRAIN

PROPOSED F.S. OVER STORM DRAIN

℄ STA. 25+13.66 INT. LINE "G" AND C.B. # 1 CONNECTOR PIPE T.S. 303

STA. 24+78.16 B.C. SEE SHEET NO. 3

STA. 25+18.66 ℄ INT. T.S. NO. 3

STA. 26+18.63 E.C.

STA. 28+90.00 ℄ M.H. NO. 2 PER RCFCD STD. DWG. M.H. 252

STA. 29+63.63 B.C.

STA. 29+89.63 R.C.F.C.W.C.D. MAINTAINED FACILITY = 91 STA. 25+03.66 RECORDED AT PERRIS AVE.

MATCHLINE STA. 30+94.90 E.C. SEE SHEET NO. 5

1750

1740

1748.54 F.G. 24" D.I.P.

1749.84 H.G.L.

1748.64 H.G.L.

1742.58

1740.53 H.G.L.

1751.65 H.G.L.

1752.10 H.G.L.

1753.79 H.G.L.

HYDRAULIC DATA
Q100 = 665.0 CFS
V = 16.2 FPS
1742.0 ELEV. "S"
24" "NORTH LAT."
S = 0.0023

S = 0.0100

S = 0.0023

S = 0.0100

1741.61 10" VCP SS.

HYDRAULIC DATA
Q100 = 530.0 CFS
V = 14.0 FPS

HYDRAULIC DATA
Q100 = 535.0 CFS
V = 14.0 FPS

1742.60 F.L.

1742.65 F.L.

1742.93 F.L.

1743.07 F.L.

STA. 28+87.06

STA. 28+92.38

STA. 30+94.90 (1746.97 F.L.)

STA. 25+13.66 1738.53 F.L.

STA. 25+21.07 1738.70 I.E.

STA. 25+30.65 1738.78 I.E.

12.91 L.F. 96" RCP (800-D) C.I.P.P. ALTERNATE

3570 L.F. ~ 84" RCP (800-D) OR C.I.P.P. ALTERNATE

202.6 L.F. ~ 84" RCP (800-D) OR C.I.P.P. ALTERNATE

25+00 26+00 27+00 28+00 29+00 30+00 31+00

℄ WKR. T.S. NO. 3 STA. 25+13.66 LINE "G" = STA. 0+00.00 CONNECTOR PIPE

EXISTING GROUND & ℄ OF STORM DRAIN

F.S. OVER ℄ OF STORM DRAIN

1755.17 T.C.

CATCH BASIN NO. 1

1754.62 HGL

PROP. 24" D.I.P. WATER

1750.67 ℄

1749.86 H.G.L.

S=0.0374

PROP. 10" VCP SEWER

1742.65 ELEV. "R"

1742.00 ELEV. "S"

1739.00 ℄ 96"/84"

HYDRAULIC DATA
Q100 = 26 CFS
V = 11.5 FPS

STA. 0+10.58

82.2 LF 24" RCP CLASS III

STA. 0+92.78

CATCH BASIN CONNECTOR PIPE PROFILE
SEE PLAN VIEW THIS SHEET - STA. 25+13.66

SCALE 1" = 40'
0 40 80

PROFILE SCALE
HORIZ: 1" = 40'
VERT: 1" = 4'

LOT 5 LOT 13 LOT 12 LOT 4 LOT 3 LOT 2 LOT 1

AUTO MALL DRIVE

EUCALYPTUS AVENUE

MATCHLINE STA. 24+78.16 B.C. SEE SHEET NO. 3

MATCHLINE STA. 30+94.90 E.C. SEE SHEET NO. 5

N 89° 27' 47" E 100'

N 89° 32' 13" W 395.05

N 0° 27' 47" E

N 89° 32' 13" W

Δ=90° 00' 00" R=65.00 L=102.10 T=65.00

Δ=90° 00' 00" R=65.00 L=102.10 T=65.00

L=54.98

458.35

90.00

17.00

37.01

12' 38' 38' 12'

24"W

10"S

27+00 28+00 29+00 26+00 25+00 24+00

ST. STA. 25+12.59 ℄ AUTO MALL DRIVE = ST. STA. 29+65.35 ℄ EUCALYPTUS AVE. Q100=26 CFS, V=20.1 FPS

ST. STA. 29+37.85 ℄ C.B. Q100=26 CFS, V=20.1 FPS

ST. STA. 26+18.63 E.C.

ST. STA. 29+89.63 B.C.

ST. STA. 23+65.00 ℄ EUCALYPTUS AVE = ST. STA. 30+28.66 MOTOR WAY

	CURVE DATA			
	Δ	RADIUS	LEN. / DIST.	TANGENT
(A)	90° 00' 00"	90.00'	141.37'	90.00'

CONSTRUCTION NOTES

1. CONSTRUCT 96" R.C.P. (800-D) OR C.I.P.P. ALTERNATE
2. CONSTRUCT TRANSITION STRUCTURE NO. 3 PER RCFCD STD. DWG. NO. T. S. 303 A=15.7° B= 24" C= 18.2', D2= 96" ELEV. "R"= 1742.66, ELEV. "S"= 1742.00 SEE NO. 1 CONNECTOR PIPE PROFILE THIS SHEET SEE SHT. 7 FOR PLAN DETAIL
3. CONSTRUCT MANHOLE NO. 2 PER RCFCD STD. DWG. NO. MH 252
4. CONSTRUCT CATCH BASIN NO. 1 PER RCFCD STD. DWG. NO. C. B. 100 L. D. 201 CASE C 82 LF- 24" RCP (CLASS IV) OR C. I. P. P. ALTERNATE
5. CONSTRUCT 84" R.C.P. (800-D) OR C.I.P.P. ALTERNATE
6. CONSTRUCT 6 FT CROSS GUTTER PER COUNTY OF RIVERSIDE STD. DWG. NO. 210

SCALE 1" = 40 FEET
0 10 20 30 40 80 120 160

100' R/W
50' 12' 38' ℄ 38' 12' 50'
12' 84" STORM DRAIN 5' 24" WATER
10" SEWER 6' 6' 31'

TYPICAL SECTION
STA. 27+00.00

SCALE: 1" = 10'
0 10 20

REGISTERED PROFESSIONAL ENGINEER CHRIS D. CUMMINS No: 041983 Exp. 3/31/92 CIVIL STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER FRANK J. PEARS Exp. 9-30-93 No. 21809 CIVIL STATE OF CALIFORNIA

AS BUILT
APPROVED BY: JHK
DATE 10/22/91

PLANS PREPARED UNDER SUPERVISION OF
CHRIS D. CUMMINS
REGISTERED CIVIL ENGINEER NO. 041983
DATE: 1-6-89 REGISTRATION EXPIRES 3-31-92

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6296 River Crest Drive, Suite K, Riverside, CA 92507 (714) 653-0234

BENCH MARK U.S.C. & G.S. R-375 M-124 CO. DSGN. FD. BRASS DISK STPD. R-375, TOP CONC. POST 250' W. HENDRICKS ALONG IRONWOOD AVE. 63' N.E. OF PP# 271056, 53' N. OF IRONWOOD AVE. 6' HIGHER THAN RD' I'S. OF MARKER POST. ELEV. = 1845.26'

REVISIONS			
REF.	DESCRIPTION	APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: Frank J. Pears
PLANNING ENGINEER R.E. NO. 21809
DATE: 4/18/90
APPROVED BY: Kenneth Edwards
CHIEF ENGINEER R.E. NO. 12400
DATE: 4-18-90

CITY OF MORENO VALLEY
APPROVED BY: John K. Feenstra
JOHN K. FEENSTRA
DEPUTY CITY ENGINEER
CITY OF MORENO VALLEY
RIVERSIDE COUNTY, CA.
R.C.E. 13870 (EXP. 3/31/93)
DATE: 7/5/90

LINE "G" MORENO A.D.P.
STAGE I
PARCEL MAP 23244
STA. 24+78.16 TO STA. 30+94.90

PROJECT NO. 4-0-761
DRAWING NO. 4-526
SHEET NO. 4 OF 7

•Pe STORM DRAIN HICKORY ST. SH. 2 - 99(0.43)PF: 710015 123 21-Dec-88 02:14 PM / 710015-520

PROFILE SCALE
HORIZ: 1" = 40'
VERT.: 1" = 4'

HYDRAULIC DATA
Q_{100} = 697 C.F.S. (INTERIM COND.)
Q_{PIPE} = 539 C.F.S.
$Q_{OVERLAND}$ = 158 C.F.S.
Q_{100} = 265 C.F.S. (ULTIMATE COND. PER MORENO ADP)

SECTION A-A

SCALE 1" = 5'

REINFORCED CONCRETE WINGWALL			
H	8.9	13.9'	3.9
W	5'-8"	8'	3'-2"
C	1'-10"	2'-8"	1'-0"
B	3'-10"	5'-4"	2'-2"
F	1'-2"	1'-2"	1'-2"
BATTER	NONE	½:12'	NONE
S	1'-0"	1'-7"	1'-0"
"b" bars	NONE	#5 @ 15	NONE
"C" bars	#5 @ 7"	#10 @ 15	#4 @ 24
"d" bars	#6 @ 14"	#9 @ 15	#4 @ 24
CONC. CY/LF	0.61	1.10	@.32
REINF. LBS/LF	37	90	13

CALTRANS STD. DWG No D-90B HEADWALL AND WINGWALL STRUCTURE

✳ IF R.C.P. IS USED, PROVIDE 1-1/2" MINIMUM CONCRETE COVER OF THE INSIDE OF THE PIPE OVER REINFORCEMENT.

✳✳ IF C.I.P.P. IS USED, PROVIDE "SACRIFICIAL CONCRETE" AS NOTED ON ITEM 6 (SHEET 1) CAST-IN-PLACE RECOMMENDATIONS.

SPECIAL CONCRETE COLLAR DETAIL
84" RCP
N.T.S.

TYPICAL SECTION
STA. 34+00.00

CONSTRUCTION NOTES

① CONSTRUCT TRANSITION STRUCTURE NO. 3 PER RCFCD STD. DWG. NO. TS 303 SEE SHEET 7 FOR PLAN DETAIL
STA. 31+32.75:
D1 = 72"± D2 = 84"
STA. 34+51.25:
D1 = 84", D2 = 72"

② CONSTRUCT CONCRETE COLLAR. SEE SPECIAL COLLAR DETAIL THIS SHEET- SEE RCFCD STD DWG NO. 803 FOR NOTES

③ CONSTRUCT HEADWALL AND WINGWALL PER CALTRANS STD. PLANS D-90B. SEE HEADWALL DETAIL THIS SHEET

④ CONSTRUCT CONCRETE WALLS PER RCFCD STD. DWG. NO. CH 326 WITH 2' CUTOFF WALL (SEE DETAIL B). SEE SHEET 7 FOR PLAN DETAIL

⑤ CONSTRUCT 6 FT. CHAIN LINK FENCE. PER R.C.F.C.D. STD. DWG. NO. M801. PROVIDE 1 FT. OF CLEARANCE AT THE BOTTOM.

⑥ CONSTRUCT 6 FT CROSS GUTTER PER COUNTY OF RIVERSIDE STD. DWG. NO. 210

⑦ CONSTRUCT 72" R.C.P. (800-D) OR C.I.P.P. ALTERNATE

⑧ CONSTRUCT 84" R.C.P. (800-D) OR C.I.P.P. ALTERNATE

⑨ CONSTRUCT TRAPEZOIDAL CHANNEL PER RCFCD STD. DWG. NO. CH 326. b=10.5', d=2', z=1.5:1. SEE SHEET NO. 7 FOR CHANNEL DETAILS.

AS BUILT
APPROVED BY: LBA
DATE 10/22/91

CHRIS D. CUMMINS
NO: 041983
Exp. 3/31/92

FRANK J. PEAIRS
Exp. 9-30-93
No. 21609

PLANS PREPARED UNDER SUPERVISION OF
CHRIS D. CUMMINS
REGISTERED CIVIL ENGINEER NO. 041983
DATE: 1-6-89 REGISTRATION EXPIRES 3-31-92

THE KEITH COMPANIES
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BENCH MARK U.S.C. & G.S. R-375
M-124 CO. DSGN. FD. BRASS DISK
STPD. R-375. TOP CONC. POST 250'
W. HENDRICKS ALONG IRONWOOD
AVE. 63' N.E. OF PP# 271056, 53'
N. OF IRONWOOD AVE. 6' HIGHER
THAN RD' I'S. OF MARKER POST.
ELEV. = 1845.26'

REVISIONS			
REF.	DESCRIPTION	APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

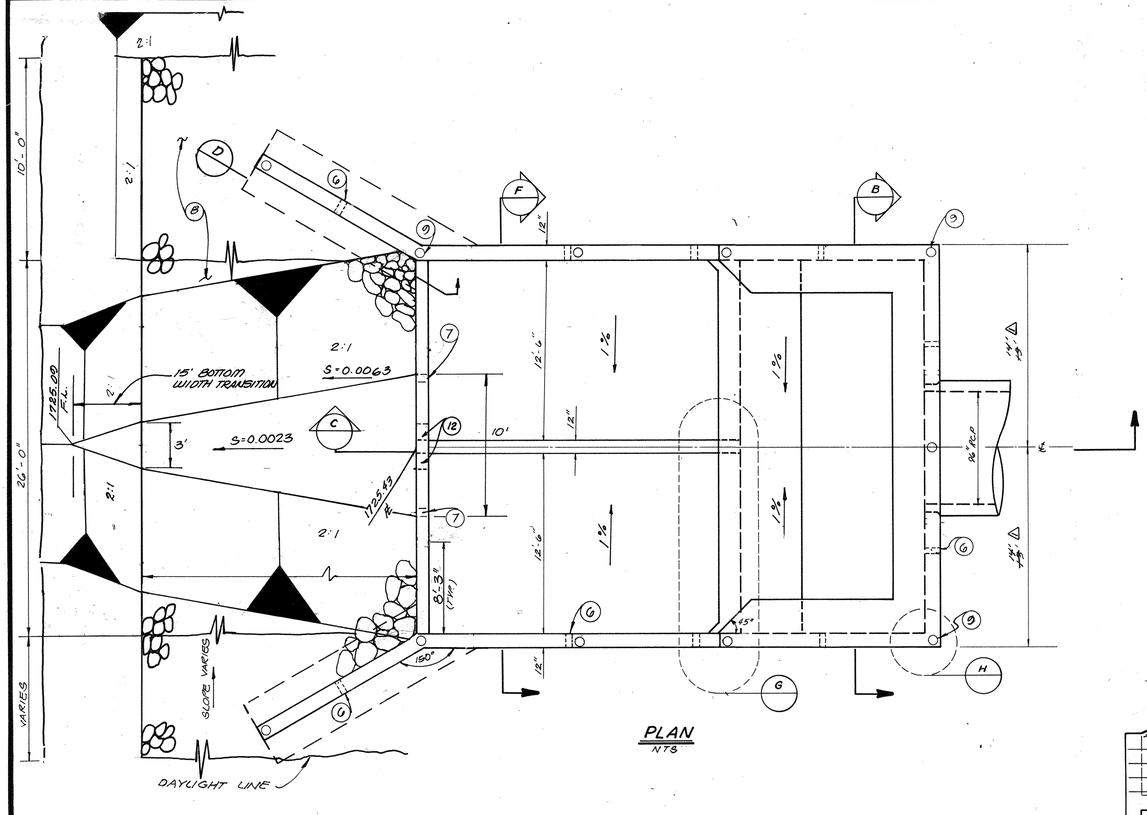
RECOMMENDED FOR APPROVAL BY: Frank J. Peairs
PLANNING ENGINEER R.E. NO. 21809
DATE: 4/18/90

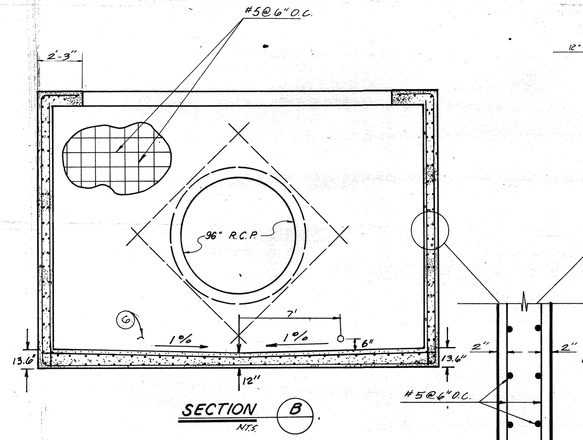
APPROVED BY: Kenneth L Edwards
CHIEF ENGINEER R.E. NO. 12400
DATE: 4-19-90

CITY OF MORENO VALLEY
APPROVED BY: John K Feenstra
JOHN K. FEENSTRA
DEPUTY CITY ENGINEER
CITY OF MORENO VALLEY
RIVERSIDE COUNTY, CA.
R.C.E. 13870
(EXP. 3/31/93)
DATE: 4/5/90

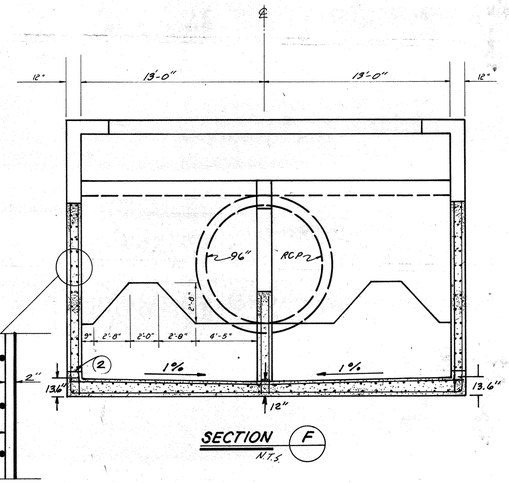
LINE "G" MORENO A.D.P.
STAGE I
PARCEL MAP 23244
STA. 34+94.90 TO STA. 35+55.60

PROJECT NO. 4-0-761
DRAWING NO. 4-526
SHEET NO. 5 OF 7

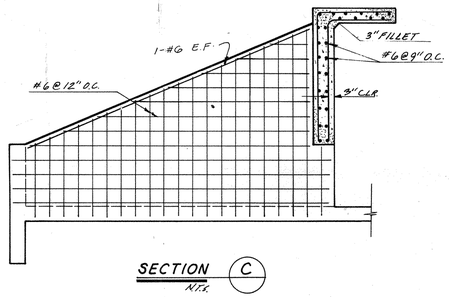




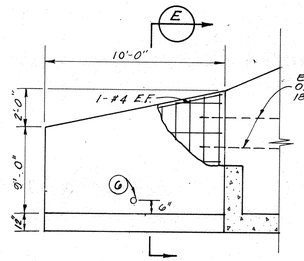
SECTION B
NTS



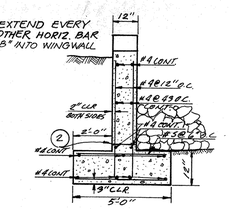
SECTION F
N.T.S.



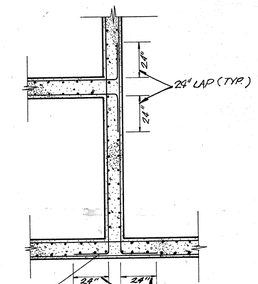
SECTION C
N.T.S.



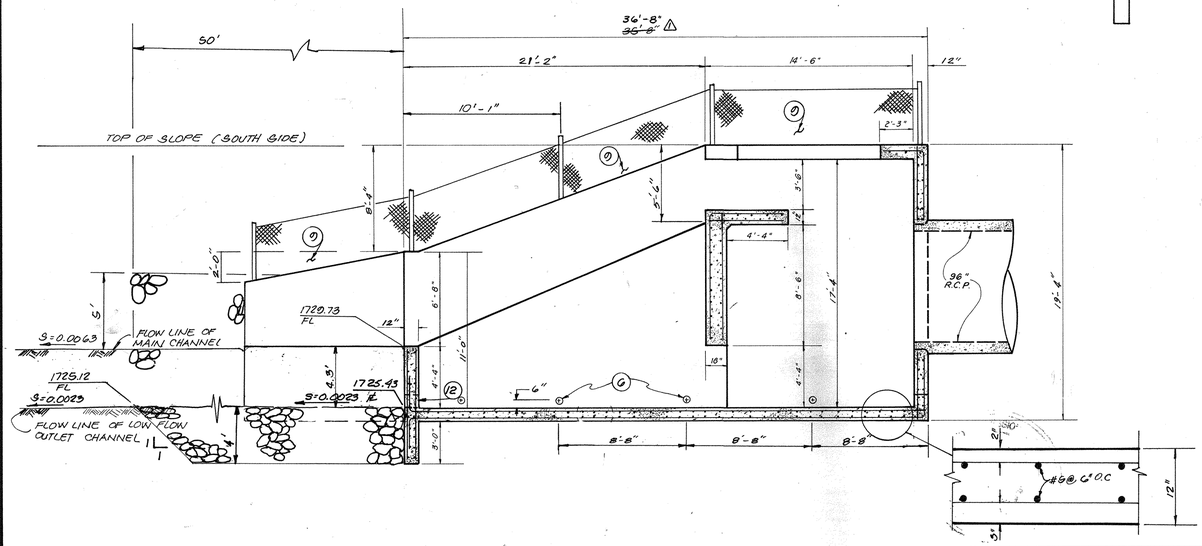
SECTION D
N.T.S.



SECTION E
N.T.S.



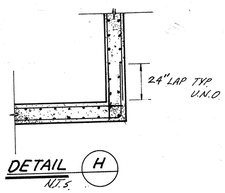
DETAIL G
N.T.S.



NOTES

1. ALL STEEL HAVE 2" COVER UNLESS OTHERWISE NOTED.
2. 6" STARTER WALL WITH CONST. JOINT TO BE USED ALL CASES.
3. ALL BARS BENDS AND HOOKS SHALL CONFIRM TO THE AMERICAN CONCRETE INSTITUTE'S BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, 1971 EDITION, SECTION 7.5.
4. PLACING OF REINFORCEMENT SHALL CONFORM TO THE AMERICAN CONCRETE INSTITUTE'S BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, 1971 EDITION, SECTION 7.5.
5. TRANSVERSE CONSTRUCTION JOINTS SHALL NOT BE PLACED WITHIN 30 INCHES OF INLETS.
6. CONST. 1 1/2" DIAM. WEEPHOLES WITH RODENT SCREENS AND 1 CU. FOOT OF FILTER MTERIAL AT EACH HOLE.
7. 6" DIAM. HOLE.
8. CONSTRUCT 1 TON RIPRAP PER CALTRANS STD. SPECS. 72-2.02. T=4.3'
9. CONSTRUCT 4 FT. CHAIN LINK FENCE PER RCFCD & WCD STD. DWG. NO. M801.
10. ALL EXPOSED CONCRETE EDGE SHALL HAVE 3/4 CHAMFER
11. LOW FLOW OUTLET CHANNEL.
12. PROVIDE 12" SQUARE OPENING

OUTLET STRUCTURE
TO BE MAINTAINED BY THE CITY OF MORENO VALLEY



DETAIL H
N.T.S.

REGISTERED PROFESSIONAL ENGINEER
CHRIS D. CUMMINS
NO: 041983
Exp. 3/31/92
CIVIL
STATE OF CALIFORNIA

AS BUILT
APPROVED BY: [signature]
DATE 10/22/91

PLANS PREPARED UNDER SUPERVISION OF:
[signature]
CHRIS D. CUMMINS
REGISTERED CIVIL ENGINEER NO. 041983
DATE 1-6-80 REGISTRATION EXPIRES 3-31-92

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BENCH MARK U.S.C. & G.S. R 375 M 124 CO. DSGN FD BRASS DISK STPD. R375, TOP CONC. POST 250 W. HENDRICKS ALONG IRONWOOD AVE. 63' N.E. OF PP# 271056, 53 N. OF IRONWOOD AVE. 6' HIGHER THAN RD. IS OF MARKER POST ELEV. = 1845.26

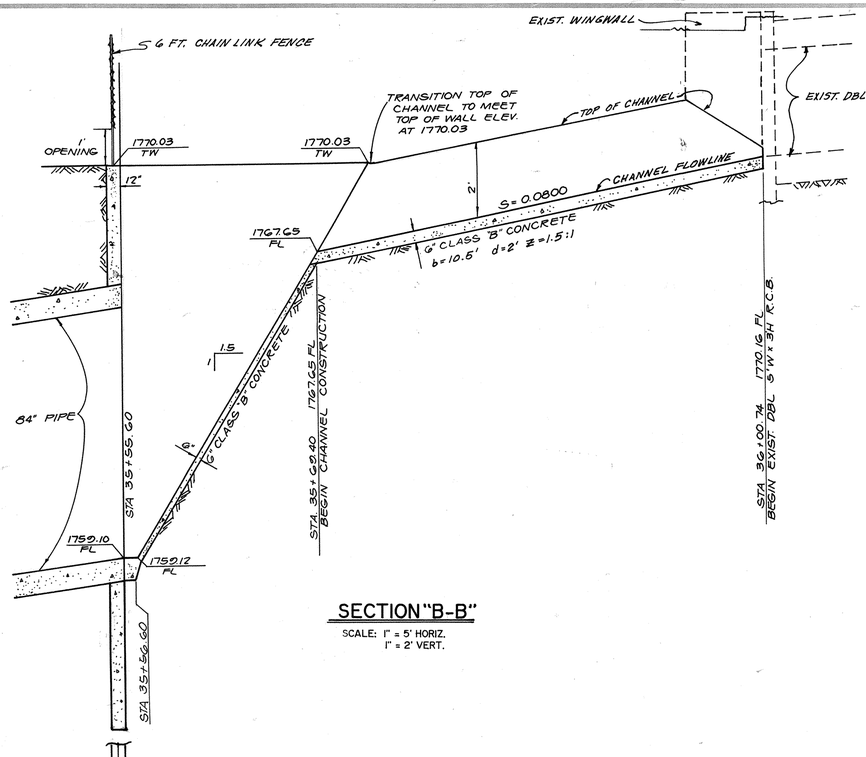
REVISIONS			
REF.	DESCRIPTION	APPR.	DATE
1	REVISED DIMENSIONS		

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY:
PLANNING ENGINEER R.E. NO. 21809
DATE:
APPROVED BY:
CHIEF ENGINEER R.E. NO. 12400
DATE:

CITY OF MORENO VALLEY
APPROVED BY: [signature]
JOHN K. FEENSTRA
DEPUTY CITY ENGINEER
CITY OF MORENO VALLEY
RIVERSIDE COUNTY, CA
R.C.E. 13870 (EXP. 3-31-92)
DATE: 4/3/90

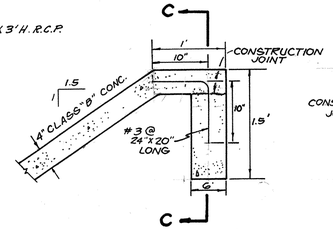
LINE "G" MORENO A.D.P.
DETAIL SHEET
PARCEL MAP 23244

PROJECT NO. 4-0-761
DRAWING NO. 4-526
SHEET NO. 6 OF 7



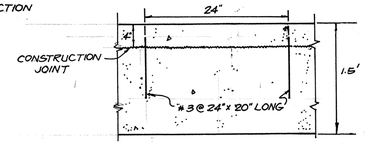
SECTION "B-B"

SCALE: 1" = 5' HORIZ.
1" = 2' VERT.



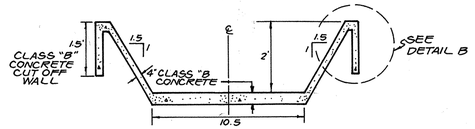
DETAIL "B"

SCALE: 1" = 1'



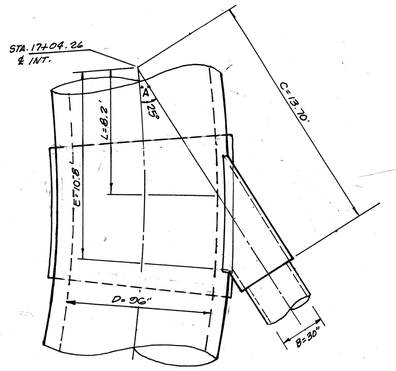
SECTION "C-C"

SCALE: 1" = 1'



SECTION "A-A"

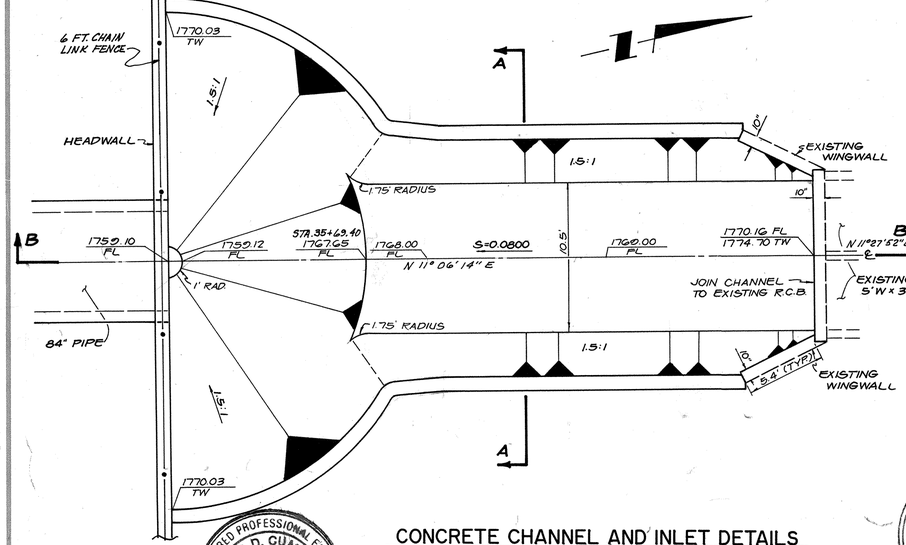
SCALE: 1" = 5' HORIZ.
1" = 2' VERT.



J.S. NO. 2 - ℄ INTERSECTION STA. 17+04.26

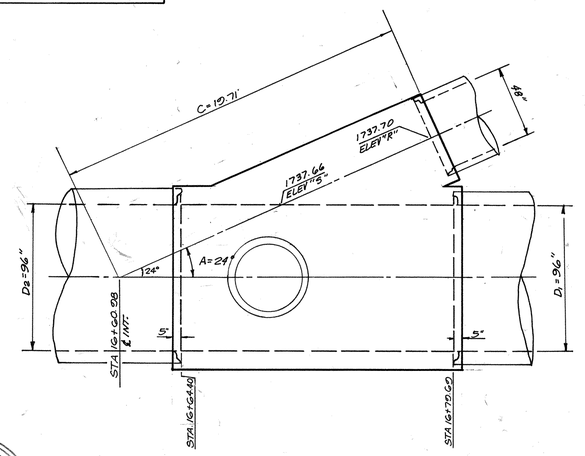
SCALE: 1" = 4'

INLET STRUCTURE
TO BE MAINTAINED BY THE CITY OF MORENO VALLEY



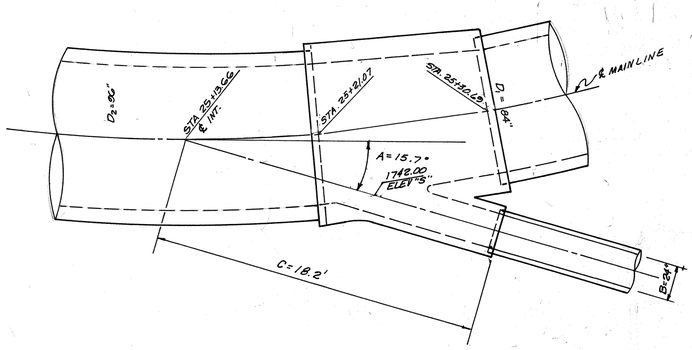
CONCRETE CHANNEL AND INLET DETAILS

SCALE: 1" = 5'



M.H. NO. 4-℄ INTERSECTION STA. 16+60.98

SCALE: 1" = 4'



T.S. 303-℄ INTERSECTION STA. 25+13.66

SCALE: 1" = 4'

AS BUILT

APPROVED BY: [signature]
DATE 10/22/91

M.H. NO. 4, T.S. 303 AND J.S. NO. 2 TO BE MAINTAINED BY RC.F.C.D.

REGISTERED PROFESSIONAL ENGINEER — CHRIS D. CUMMINS — NO: 041983 Exp. 3/31/92 — CIVIL — STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER — FRANK J. PEARS — Exp. 9-30-93 No. 21809 CIVIL — STATE OF CALIFORNIA

PLANS PREPARED UNDER THE SUPERVISION OF
CHRIS D. CUMMINS
DATE: 2/13/90
REGISTERED CIVIL ENGINEER NO. 041983
REGISTRATION EXPIRES 3-31-92

THE KEITH COMPANIES
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• Planning • Civil Engineering • Architecture • Landscape Architecture • Land Surveying • Construction Management
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BENCH MARK
U.S.C. & G.S. R-375 M-124 CO.
DSGN. FD. BRASS DISK STPD. R-375
TOP CONC. POST 250' W. HENDRICKS ALONG IRONWOOD AVE. 63' N.E. OF PP# 271056, 53' N. OF IRONWOOD AVE. 6' HIGHER THAN RD' TS. OF MARKER POST.
ELEV.= 1845.26'

REVISIONS

REF.	DESCRIPTION	APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: Frank J Pears, PLANNING ENGINEER R.E. NO. 21809, DATE: 4/18/90
APPROVED BY: Kenneth R Edwards, CHIEF ENGINEER R.E. NO. 12400, DATE: 4-18-90

CITY OF MORENO VALLEY
APPROVED BY: [signature]
JOHN K. FEENSTRA R.C.E. 13870 (EXP. 3/31/93)
DEPUTY CITY ENGINEER
CITY OF MORENO VALLEY
DATE: 4/5/90

LINE "G" MORENO A.D.P.
DETAIL SHEET
PARCEL MAP 23244

PROJECT NO. 4-0-761
DRAWING NO. 4-526
SHEET NO. 7 OF 7

APPENDIX H: PRELIMINARY PROJECT SPECIFIC WATER QUALITY MANAGEMENT PLAN

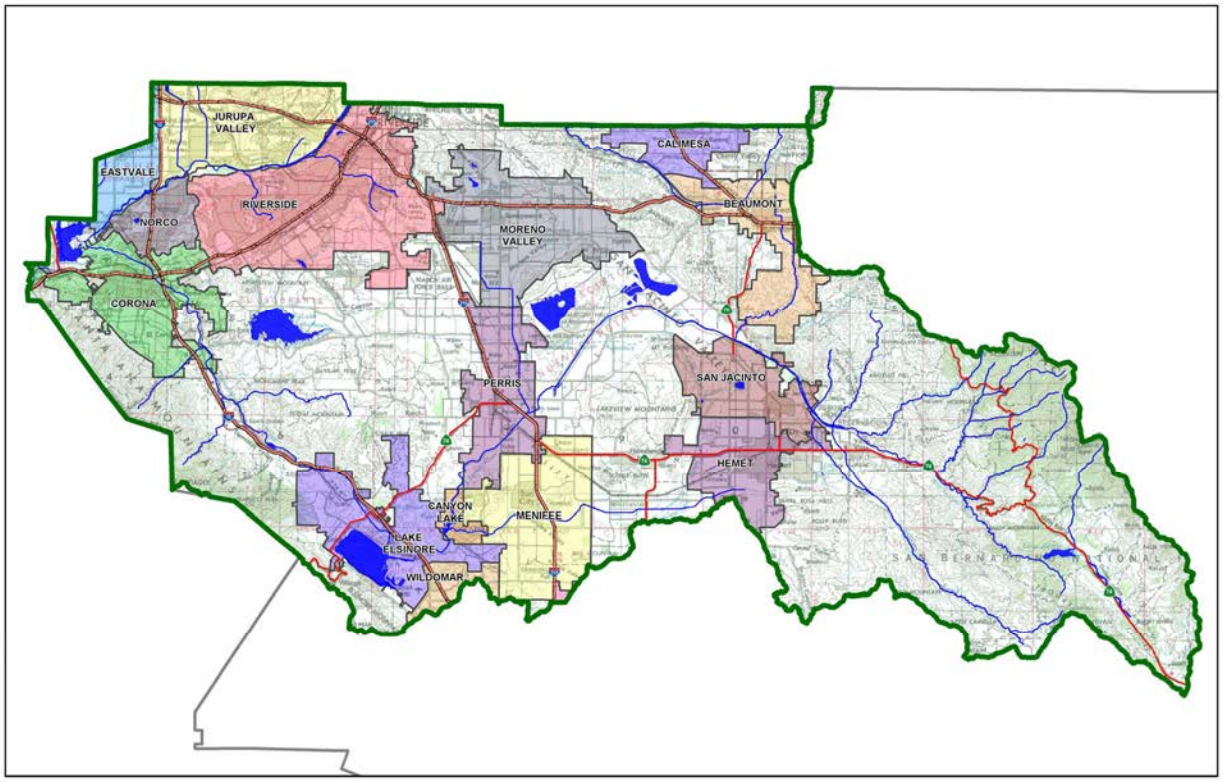
Project Specific Water Quality Management Plan

*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: Car Pros KIA Sales and Service Center

Development No: PEN19-0047

Design Review/Case No: LWQ19-008



☒ **Preliminary**
☐ **Final**

Original Date Prepared: February 2019

Revision Date(s): May 2019

Prepared for Compliance with
Regional Board Order No. **R8-2010-0033**
Template revised June 30, 2016

Contact Information:

Prepared for:
Car Pros Automotive Group
181 S. 333rd Street Building C, Suite 210
Federal Way, WA 98002

Prepared by:
Kimley-Horn and Associates
3880 Lemon Street, Suite 420
Riverside, CA 92501

OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared for **Car Pros Automotive Group** by **Kimley-Horn and Associates** for the Car Pros KIA Sales and Service Center project.

This WQMP is intended to comply with the requirements of **Moreno Valley** for Ordinance 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 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."

TO BE PROVIDED ON FINAL WQMP

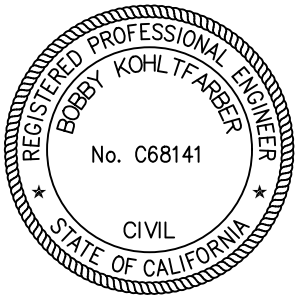
Owner's Signature	Date
Owner's Printed Name	Owner's Title/Position

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	05/17/2019 Date
Bobby Kohltfarber Preparer's Printed Name	Senior Project Manager Preparer's Title/Position

Preparer's Licensure: PE C68141



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Section A: Project and Site Information

PROJECT INFORMATION	
Type of Project:	**Commercial**
Planning Area:	**SP 209 C**
Community Name:	**N/A**
Development Name:	**Car Pros KIA Sales and Service Center**
PROJECT LOCATION	
Latitude & Longitude (DMS): **Lat: 33°56'0.61"N Long:117°10'28.72"W**	
Project Watershed and Sub-Watershed: **Santa Ana Watershed**	
Gross Acres: 6.19 acres	
APN(s): **488-390-016 & 488-390-015**	
Map Book and Page No.: **PM 161/16**	
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	**Car Dealership**
Proposed or Potential SIC Code(s)	**5511**
Area of Impervious Project Footprint (SF)	**209,019 SF**
Total Area of proposed Impervious Surfaces within the Project Footprint (SF)/or Replacement	**209,019 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 Footprint (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)	**N/A See Appendix 3**
What is the Water Quality Design Storm Depth for the project?	**0.669" ~ 0.67" (See Appendix 1)**

A.1 Maps and Site Plans

The site is currently undeveloped. The project is located at the northeast corner of Moreno Beach Drive and Auto Mall Drive in Moreno Valley, CA. The project is bounded by a vacant lot to the east, Pettit Street to the north, Auto Mall Drive to the west, and Moreno Beach Drive to the south. See Appendix 2, Exhibit 1, Location Map.

The proposed development consists of the construction of an approximately 24,700 square foot building and associated improvements. The associated improvements include but are not limited to the following: site grading, domestic water service, sanitary sewer service, concrete and asphalt pavement, landscaping and irrigation, underground storm drain system, and modular wetland systems. The proposed development also includes a future car wash, and sales and service facility, which will be part of a later phase and do not alter the imperviousness proposed for the site. The lot area is approximately 6.19 acres. All grading, drainage, landscape/plant palette and other pertinent construction plans are found in Appendix 2.

See Appendix 1 for WQMP Site Plan. The WQMP Site Plan 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
- BMP Locations (Lat/Long)

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
Moreno Master Drainage Plan – Line G STG 1	NOT LISTED.	NOT LISTED.	N/A
Moreno Master Drainage Plan – Line G	NOT LISTED.	NOT LISTED.	N/A
Quincy Street Channel	NOT LISTED.	NOT LISTED.	N/A
Moreno Master Drainage Plan – Line F	NOT LISTED.	NOT LISTED.	N/A
Moreno - Line F Bybass	NOT LISTED.	NOT LISTED.	N/A
Sunnymead Master Drainage Plan – Line N	NOT LISTED.	NOT LISTED.	N/A
KITCHING CHANNEL, PART OF AN MS4 OPERATED BY THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT (RCFCWCD).	NOT LISTED.	NOT LISTED.	N/A
PERRIS VALLEY STORMDRAIN, PART OF AN MS4 OPERATED BY THE RCFCWCD.	NOT LISTED.	NOT LISTED.	N/A
SAN JACINTO RIVER (REACH 3)	NOT LISTED.	AGR, GWR, REC1, REC2, WARM, WILD	N/A
CANYON LAKE (RAILROAD CORRIDOR RESERVOIR)	NUTRIENTS, PATHOGENS	MUN, AGR, GWR, REC1, REC2, WARM, WILD	N/A
SAN JACINTO RIVER (REACH 1)	NOT LISTED.	MUN, AGR, GWR, REC1, REC2, WARM, WILD	N/A
LAKE ELSINORE	NUTRIENTS, ORGANIC ENRIGHMENT/LOW DISSOLVED OXYGEN, PCB'S, SEDIMENT TOXICITY, UNKNOWN TOXICITY	REC1, REC2, WARM, WILD	N/A

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	☒ 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	☐ 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.

Consideration of "highest and best use" of the discharge should also be considered. For example, Lake Elsinore is evaporating faster than runoff from natural precipitation can recharge it. Requiring infiltration of 85% of runoff events for projects tributary to Lake Elsinore would only exacerbate current water quality problems associated with Pollutant concentration due to lake water evaporation. In cases where rainfall events have low potential to recharge Lake Elsinore (i.e. no hydraulic connection between groundwater to Lake Elsinore, or other factors), requiring infiltration of Urban Runoff from projects is counterproductive to the overall watershed goals. Project proponents, in these cases, would be allowed to discharge Urban Runoff, provided they used equally effective filtration-based BMPs.

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.

Did you identify and preserve existing drainage patterns? If so, how? If not, why?

The site is currently undeveloped. The existing site has varying topography. Approximately half of the site currently drains west and is captured by a 96" RCP along Pettit Street, while the other half drains east and is captured by an existing 18" RCP that discharges through an existing headwall at the south-east corner of the site. Under both scenarios, storm water continues east via surface flow until it eventually reaches the Quincy Street Channel.

The proposed development includes the construction of a car sales and service facility accompanied by asphalt pavement, concrete hardscape, and landscaping. The proposed site grading intends to maintain the existing natural flow pattern by having about half of the site drain into the existing 96" RCP, while the other half drains to the existing headwall at the south-east corner. Appendix 1 includes an exhibit for reference.

Did you identify and protect existing vegetation? If so, how? If not, why?

The proposed project site is currently 100% pervious. All existing vegetation will be removed. The proposed landscape will enhance the project site.

Did you identify and preserve natural infiltration capacity? If so, how? If not, why?

Per Riverside County Stormwater and Water Conservation Tracking Tool, the site consists of Type A and B soil which has a low potential for runoff and a high infiltration capacity. (See Appendix 3) However, based on the Geotechnical Investigation and Percolation Test Results Report prepared by Geocon West, Inc on January 18, 2019 it was concluded that infiltration is between the ranges of 0.01 to 0.31 in/hr. Due to the low infiltration rates infiltration is infeasible. (See Appendix 3) Onsite soils will be classified as D for all calculations.

Did you identify and minimize impervious area? If so, how? If not, why?

The preliminary 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.

Did you identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

Yes, where feasible.

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)[1][2]	Area (Sq. Ft.)	DMA Type
DMA-1	**Concrete / Asphalt / Landscape Areas**	**27,742**	**Type "D" – Area that drains to BMP**
DMA-2	**Concrete / Asphalt / Landscape Areas**	**61,584**	**Type "D" – Area that drains to BMP**
DMA -3	**Mixed Surface Type**	**158,355**	**Type "D" – Area that drains to BMP**

[1]Reference Table 2-1 in the WQMP Guidance Document to populate this column
[2]If multi-surface provide back-up

Table C.2 Type 'A', Self-Treating Areas

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
DA A	**39,629**	**Proposed Landscaping**	**Drip Irrigation**
DA B	**12,157**	**Proposed Landscaping**	**Drip Irrigation**

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) [A]	Storm Depth (inches) [B]	DMA Name / ID	[C] from Table C.4 = [C]	Required Retention Depth (inches) [D]
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	Impervious fraction	Product		Area (square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]	DMA name /ID	[D]	[C]/[D]
N/A							

Table C.5 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID
DMA-1	**Modular Wetland**
DMA-2	**Modular Wetland**
DMA-3	**Modular Wetland**

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; proceed to section D.3

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: (Based on the Geotechnical Investigation and Percolation Test Results Report prepared by Geocon West, Inc on January 18, 2019 it was concluded that infiltration is between the ranges of 0.01 to 0.31 in/hr)	All DMA's	
…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 identifies 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 and you should proceed to the assessment for Harvest and Use below.
Infiltration is infeasible for the project site.

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 none 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: **60,680 Square feet (1.39 ac)**

Type of Landscaping (Conservation Design or Active Turf): **Conservative 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: **209,019 Square Feet (4.80 ac)**

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).

Enter your EIATIA factor: **1.16 ac/ac**

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: **242,462 Square Feet (5.57 ac)**

Step 5: Determine if harvesting storm water 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)
5.57 ac	**1.39 ac**

Therefore, harvesting storm water runoff for irrigation is not feasible for the project site.

Toilet Use Feasibility

Complete the following steps to determine the feasibility of harvesting storm water 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 shut downs or other lapses in occupancy:

Projected Number of Daily Toilet Users: ***less than 100 users a day***

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: **209,019 Square Feet (4.80 ac)**

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).

Enter your TUTIA factor: ***145 tu/ac***

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: ***696 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)
696 toilet users	Less than 100 toilet users a day

Therefore, harvesting storm water runoff for toilet flushing use is not feasible for the project site.

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 2-4 in Chapter 2 to determine the minimum demand for non-potable uses per tributary impervious acre.

Enter the factor from Table 2-4: **N/A**

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 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 projected average daily use (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 per Section 3.4.2 of the WQMP Guidance Document.

In conclusion irrigation, toilet and other non-potable use is less than the applicable minimum values, harvest and use BMPs are not required for this project site.

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	☐	☐	☐	☒	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

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.

N/A

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 your 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 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*BMP-1 (MWS-L-4-8)*		
	[A]		[B]	[C]	[A] x [C]			
DMA-1	**27,742**	***Concrete, Asphalt, & Landscape***	***1.0***	***0.89***	***24,746***	*Design Rainfall Intensity (in/hr)*	*Design Flowrate, Q_{BMP} (cubic feet/sec)*	*Proposed Flowrate (cubic feet/sec)*
	A_T=**27,742**				***Σ= 24,746***	***0.2***	***0.1***	***0.115***

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*BMP-2 (MWS-L-8-12)*		
	[A]		[B]	[C]	[A] x [C]			
DMA-2	**61,584**	***Concrete, Asphalt, & Landscape***	***1.0***	***0.89***	***54,933***	*Design Rainfall Intensity (in/hr)*	*Design Flowrate, Q_{BMP} (cubic feet/sec)*	*Proposed Flowrate (cubic feet/sec)*
	A_T=**61,584**				***Σ= 54,933***	***0.2***	***0.3***	***0.346***

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*BMP-3 (MWS-L-8-20)*		
	[A]		[B]	[C]	[A] x [C]			
DMA-3A	**126,015**	***Concrete, Asphalt, & Landscape***	***1.0***	***0.89***	***112,405***	*Design Rainfall Intensity (in/hr)*	*Design Flowrate, Q_{BMP} (cubic feet/sec)*	*Proposed Flowrate (cubic feet/sec)*
DMA-3B	**32,340**	***Ornamental Landscaping***	***0.1***	***0.11***	***3,572***			
	A_T=**158,355**				***Σ= 115,978***	***0.2***	***0.5***	***0.577***

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and 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 Co-Permittee 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 following 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.

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]
N/A	**N/A**
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)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Area x Runoff Factor		*Enter BMP Name / Identifier Here*		
	[A]		[B]	[C]	[A] x [C]				
See Table D.3						*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 for Flow-Based Treatment Control BMPs [E] = .2, for Volume-Based Control Treatment BMPs, [E] 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]
BMP-1: Modular Wetland		80% of TSS and 90% hydrocarbons
BMP-2: Modular Wetland		80% of TSS and 90% hydrocarbons
BMP-3: Modular Wetland		80% of TSS and 90% hydrocarbons

[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 Copermittee 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 Co-Permittee

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
DMA-1 & 2 Time of Concentration (min)	11.35	9.35	17.6
DMA-3 Time of Concentration (min)	7.85	14.57	85.6
DMA-1 & 2 Volume (Cubic Feet)	11,709	8,107	30.8
DMA-2 Volume (Cubic Feet)	12,776	14,397	12.7
DMA-1 & 2 Flowrate (cfs)	2.52	2.75	9.1
DMA-2 Flowrate (cfs)	3.46	3.66	5.8

[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 (for example, Prado Dam, Lake Elsinore, Canyon Lake, Santa Ana River, or other lake, reservoir or naturally erosion resistant feature) 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 Susceptibility 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:

N/A

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.

Hydromodification will be mitigated limiting the discharge from the site to a flow rate no greater than 110% of the pre-development 2-year peak flow. Summary of peak flowrates are shown on Table F.1. See Appendix 7 for all calculations.

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
Modular Wetlands	Mark all modular wetlands with the words "Only Rain Down the Storm Drain" or similar. Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify stenciling. **(CASQQ BMP SD-13, "Storm Drain Signage")**	Maintain and periodically repaint or replace stencil markings; Provide stormwater pollution prevention information to new site owners, lessees, or operators; See applicable operational BMPs in Fact Sheet SC-74 "Drainage System Maintenance" provided in Appendix 8 of this report.
Landscape/ Outdoor pesticide use	Final landscape plans will accomplish all 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 storm water pollution. Where landscaped areas are used to retain or detain storm water, 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. (CASQA BMP SD-10, "Site Design and Landscape Planning" and SD-12, "Efficient Irrigation")	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/Downloads/LandscapeGardenBrochure.pdf. Provide IPM information to new owners, lessees and operators. Applicable operational BMPS in "What you should know for…. Landscape and Gardening": • Never apply pesticides or fertilizers when rain is predicted within the next 48 hours. • Do not overwater. Do not rake or blow leaves, clippings or pruning waste into the street, gutter or storm drain. Dispose of green waste by composting, hauling it to a permitted landfill, or recycling it through city's program.
Plazas, sidewalks, and parking lots.	None	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 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	Corresponding Plan Sheet(s)	BMP Location (Lat/Long)
To be submitted with Final WQMP			

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. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the Stormwater BMPs you have 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. Geo-locating the BMPs using a coordinate system of latitude and longitude is recommended to help facilitate a future statewide database system.
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: Car Pros Automotive Group shall be responsible for maintenance.

Will the proposed BMPs be maintained by a Home Owners' Association (HOA) or Property Owners Association (POA)?

☐ Y ☒ N

Include your Operation and Maintenance Plan and Maintenance Mechanism in Appendix 9. Additionally, include all pertinent forms of educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP in Appendix 10.

BMP Name and BMP Implementation, Maintenance, and Inspection Procedures	*Implementation, Maintenance, and Inspection Frequency and Schedule*	*Inspection / Maintenance Activities Required*	*Person or Entity with Operation & Maintenance Responsibility*	*BMP Start-up Schedule*
Non-Structural Source Control BMPs				
Education for Property Owners, Tenants and Occupants	Within 30 days of tenant occupancy and annually thereafter.	Educational material shall be provided to all employees and tenants.	Car Pros Automotive Group	At conclusion of construction. Date to be determined after final engineering is complete.
Activity Restriction	Ongoing; Yearly for all employees and within 30 days of hire date for new employees.	The owner shall develop activity restrictions to minimize the threat of hazardous waste or contamination into the storm drainage system. Car washing is not allowed on-site at any time.	Car Pros Automotive Group	At conclusion of construction. Date to be determined after final engineering is complete.

BMP Name and BMP Implementation, Maintenance, and Inspection Procedures	***Implementation, Maintenance, and Inspection Frequency and Schedule***	***Inspection / Maintenance Activities Required***	***Person or Entity with Operation & Maintenance Responsibility***	***BMP Start-up Schedule***
Common Area Landscape Management	Weekly	Training on landscape management consistent with County Water Conservation Resolution or City equivalent, plus Management Guidelines for Fertilizers (DAMP Section 5.5) shall be conducted for all new field landscape maintenance personnel.	Car Pros Automotive Group	At conclusion of construction. Date to be determined after final engineering is complete.
BMP Maintenance	Weekly	Maintenance of BMPs implemented at the project site shall be performed at the frequency prescribed in this WQMP.	Car Pros Automotive Group	At conclusion of construction. Date to be determined after final engineering is complete.
Common Area Litter Control	Weekly	Litter patrol, violations investigation, reporting and other litter control activities shall be performed in conjunction with maintenance activities.	Car Pros Automotive Group	At conclusion of construction. Date to be determined after final engineering is complete.

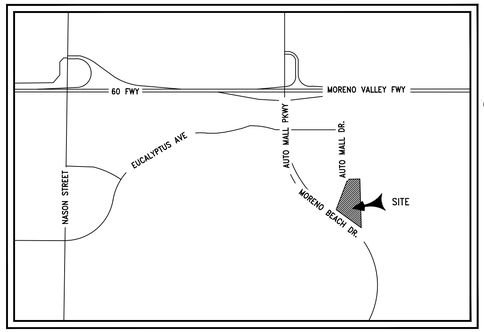
BMP Name and BMP Implementation, Maintenance, and Inspection Procedures	*Implementation, Maintenance, and Inspection Frequency and Schedule*	*Inspection / Maintenance Activities Required*	*Person or Entity with Operation & Maintenance Responsibility*	*BMP Start-up Schedule*
Training	Ongoing; Yearly for all employees and within 30 days of hire date for new employees.	Education programs shall be implemented as they apply to future employees and training of current employees.	Car Pros Automotive Group	At conclusion of construction. Date to be determined after final engineering is complete.
Common Area Catch Basin Inspection	Twice a month to remove debris and after every major storm event	Litter and debris removal, illicit discharge violations investigation and reporting shall be performed in conjunction with maintenance activities.	Car Pros Automotive Group	At conclusion of construction. Date to be determined after final engineering is complete.
Street Sweeping Private Streets and Parking Lots	Monthly	Private streets and parking area within the project shall be swept at a minimum frequency of once a month.	Car Pros Automotive Group	At conclusion of construction. Date to be determined after final engineering is complete.
Structural Source Control BMPs				

BMP Name and BMP Implementation, Maintenance, and Inspection Procedures	*Implementation, Maintenance, and Inspection Frequency and Schedule*	*Inspection / Maintenance Activities Required*	*Person or Entity with Operation & Maintenance Responsibility*	*BMP Start-up Schedule*
Provide Storm Drain System Stenciling and Signage	Yearly	All proposed inlets shall be marked with the appropriate "No Dumping. Drains to Ocean." Stencil. The stencils must be repainted when they become illegible, but at a minimum once every five years.	Car Pros Automotive Group	At conclusion of construction. Date to be determined after final engineering is complete.
Use Efficient Irrigation Systems & Landscape Design	Monthly	Verify that landscape design continues to function properly by correctly adjusting to eliminate overspray to hardscape areas, and to verify that irrigation timing and cycle lengths are adjusted in accordance with water demands, given time of year, and day or night time temperatures.	Car Pros Automotive Group	At conclusion of construction. Date to be determined after final engineering is complete.
Low Impact Development (LID) and Treatment Control BMPs				

BMP Name and BMP Implementation, Maintenance, and Inspection Procedures	*Implementation, Maintenance, and Inspection Frequency and Schedule*	*Inspection / Maintenance Activities Required*	*Person or Entity with Operation & Maintenance Responsibility*	*BMP Start-up Schedule*
Catch Basins and Modular Wetland (See Appendix 10)	Bi- annual	Inspect and remove trash and debris from chamber twice a year.	Car Pros Automotive Group	At conclusion of construction. Date to be determined after final engineering is complete.

Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map



VICINITY MAP
NTS

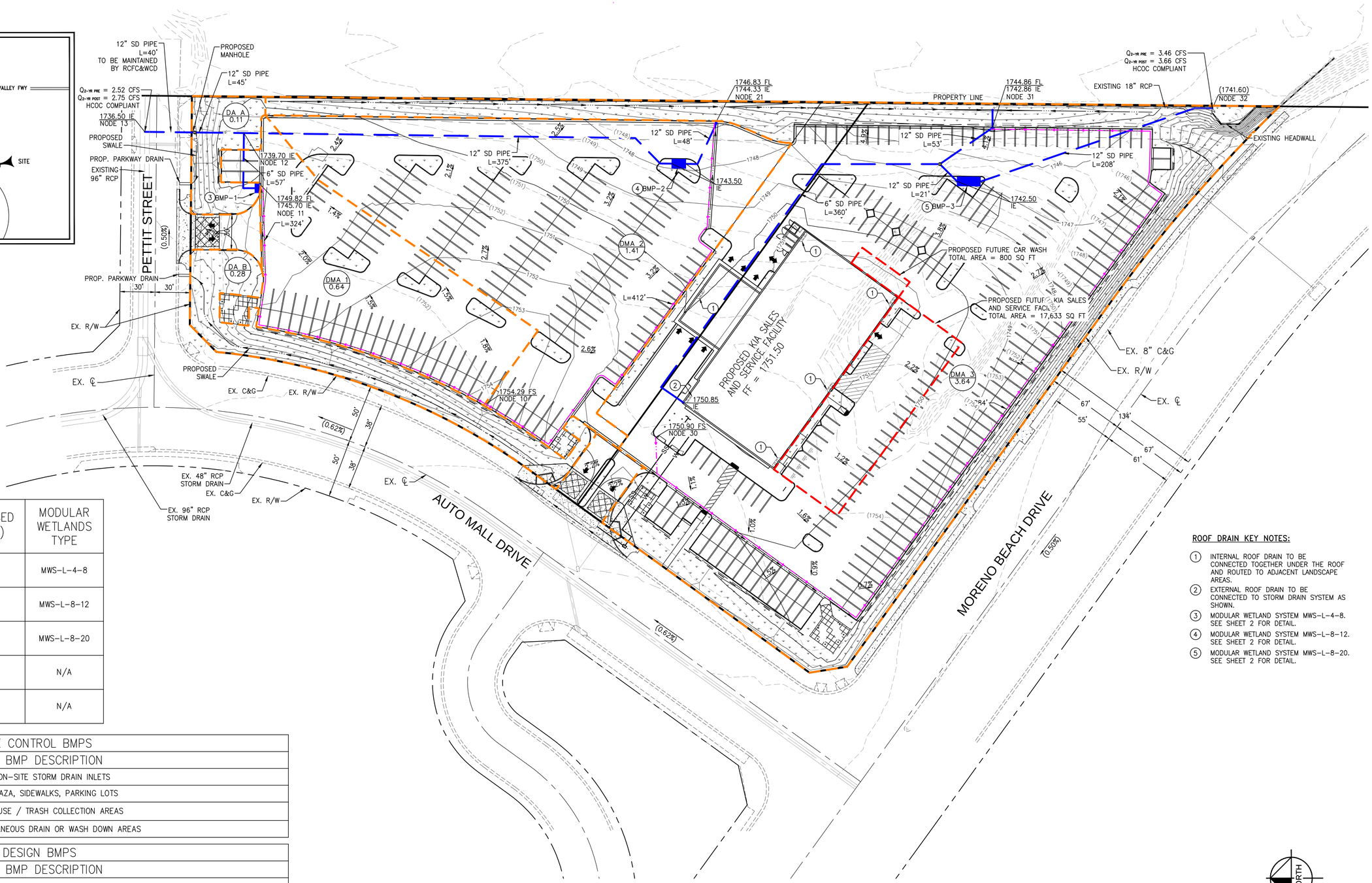
LEGEND

- PROPOSED CONTOUR (575)
- EXISTING CONTOUR ((575))
- PROPERTY LINE
- DMA BOUNDARY
- FUTURE EXPANSION AREAS
- PROPOSED STORM DRAIN
- FLOW PATH
- DMA NAME (X)
- DMA AREA (IN ACRES) (XX)
- RIGHT OF WAY
- PROPOSED LANDSCAPE

DMA	AREA (AC)	BMP ID	MINIMUM QBMP(CFS)	PROPOSED Q(CFS)	MODULAR WETLANDS TYPE
DMA-1	0.64	BMP-1	0.1	0.115	MWS-L-4-8
DMA-2	1.41	BMP-2	0.3	0.346	MWS-L-8-12
DMA-3	3.64	BMP-3	0.5	0.577	MWS-L-8-20
DA-A	0.11	SELF TREATING	N/A	N/A	N/A
DA-B	0.28	SELF TREATING	N/A	N/A	N/A

SOURCE CONTROL BMPS	
BMP ID	BMP DESCRIPTION
SC-74	ON-SITE STORM DRAIN INLETS
SC-41	PLAZA, SIDEWALKS, PARKING LOTS
SC-34	REFUSE / TRASH COLLECTION AREAS
SC-10	MISCELLANEOUS DRAIN OR WASH DOWN AREAS

SITE DESIGN BMPS	
BMP ID	BMP DESCRIPTION
SD-10, SD-12	LANDSCAPE / OUTDOOR PESTICIDE USE
SD-11	ROOF RUNOFF
SD-13	STORM DRAIN STENCILING AND SIGNAGE → ALL SD GRATED INLETS, CURB CUTS (TYP.)
SD-32	REFUSE / TRASH COLLECTION AREAS



ROOF DRAIN KEY NOTES:

1. INTERNAL ROOF DRAIN TO BE CONNECTED TOGETHER UNDER THE ROOF AND ROUTED TO ADJACENT LANDSCAPE AREAS.
2. EXTERNAL ROOF DRAIN TO BE CONNECTED TO STORM DRAIN SYSTEM AS SHOWN.
3. MODULAR WETLAND SYSTEM MWS-L-4-8. SEE SHEET 2 FOR DETAIL.
4. MODULAR WETLAND SYSTEM MWS-L-8-12. SEE SHEET 2 FOR DETAIL.
5. MODULAR WETLAND SYSTEM MWS-L-8-20. SEE SHEET 2 FOR DETAIL.

NORTH

GRAPHIC SCALE IN FEET
0 20 40 80
SCALE 1" = 40'

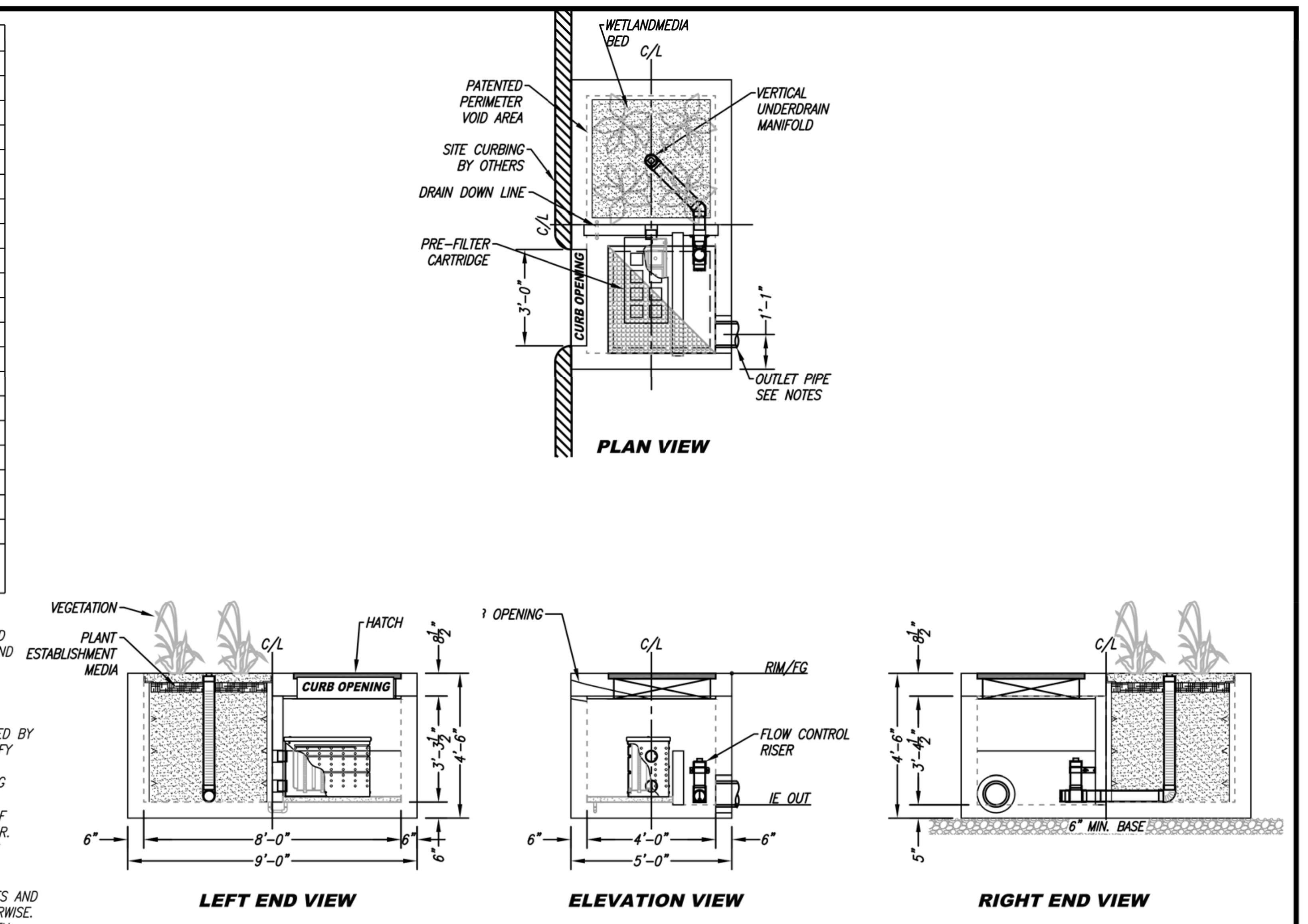
PEN 19-0047/LST19-0008

Kimley»Horn

PRELIMINARY WQMP EXHIBIT DETAILS
CAR PROS KIA SALES AND SERVICE FACILITY
SHEET 1 OF 2 5/17/2019

SITE SPECIFIC DATA

PROJECT NUMBER	194117001		
ORDER NUMBER			
PROJECT NAME	CAR PROS KIA		
PROJECT LOCATION	MORENO VALLEY		
STRUCTURE ID	BMP-1		
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
N/A		0.1	
TREATMENT HGL AVAILABLE (FT)			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			1.97
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	1745.7	HDPE	6"
INLET PIPE 2			
OUTLET PIPE	1745.7	HDPE	6"
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION	1749.8	1749.8	1749.8
SURFACE LOAD	PEDESTRIAN	OPEN PLANTER	PEDESTRIAN
FRAME & COVER	36" X 36"	N/A	N/A
WETLANDMEDIA VOLUME (CY)			TBD
ORIFICE SIZE (DIA. INCHES)			TBD
NOTES: PRELIMINARY NOT FOR CONSTRUCTION.			



WETLANDMEDIA BED
C/L
PATENTED PERIMETER VOID AREA
VERTICAL UNDERDRAIN MANIFOLD
SITE CURBING BY OTHERS
DRAIN DOWN LINE
PRE-FILTER CARTRIDGE
CURB OPENING
3'-0"
1'-1"
OUTLET PIPE SEE NOTES
PLAN VIEW
VEGETATION
PLANT ESTABLISHMENT MEDIA
HATCH
CURB OPENING
8½"
3'-3½"
4'-6"
6"
8'-0"
9'-0"
LEFT END VIEW
RIM/FG
FLOW CONTROL RISER
IE OUT
4'-0"
5'-0"
ELEVATION VIEW
4'-6"
3'-4½"
6" MIN. BASE
5"
RIGHT END VIEW

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATER TIGHT PER MANUFACTURERS STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURERS WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.

TREATMENT FLOW (CFS)	0.115
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	2.0
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

MODULAR WETLANDS — THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING US PATENTS: 7,425,262; 7,470,362; 7,674,378; 8,303,816; RELATED FOREIGN PATENTS OR OTHER PATENTS PENDING

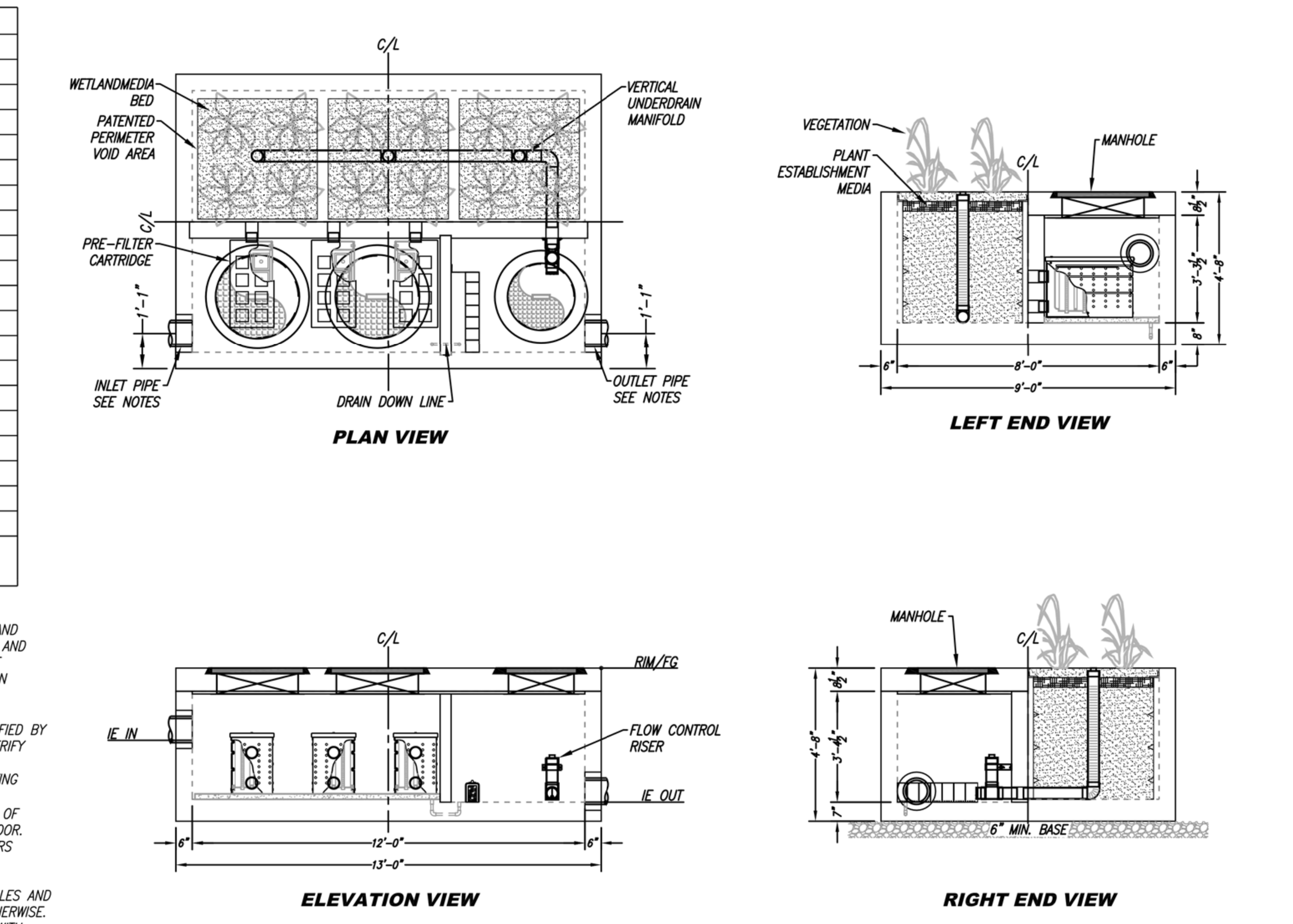
Bio Clean — A Forterra Company

MWS-L-4-8-C
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

BMP-1
N.T.S.
(3)

SITE SPECIFIC DATA

PROJECT NUMBER	194117001		
ORDER NUMBER			
PROJECT NAME	CAR PROS KIA		
PROJECT LOCATION	MORENO VALLEY		
STRUCTURE ID	BMP-2		
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
N/A		0.3	
TREATMENT HGL AVAILABLE (FT)			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			4.26
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	1743.5	HDPE	12"
INLET PIPE 2			
OUTLET PIPE	1743.5	HDPE	12"
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION	1747.6	1747.6	1747.6
SURFACE LOAD	PEDESTRIAN	OPEN PLANTER	PEDESTRIAN
FRAME & COVER	2EA ø30"	N/A	ø24"
WETLANDMEDIA VOLUME (CY)			TBD
ORIFICE SIZE (DIA. INCHES)			TBD
NOTES: PRELIMINARY NOT FOR CONSTRUCTION.			



C/L
WETLANDMEDIA BED
PATENTED PERIMETER VOID AREA
VERTICAL UNDERDRAIN MANIFOLD
PRE-FILTER CARTRIDGE
1'-1"
INLET PIPE SEE NOTES
DRAIN DOWN LINE
OUTLET PIPE SEE NOTES
PLAN VIEW
VEGETATION
PLANT ESTABLISHMENT MEDIA
MANHOLE
8½"
3'-3½"
4'-8"
8"
6"
8'-0"
9'-0"
LEFT END VIEW
RIM/FG
IE IN
FLOW CONTROL RISER
IE OUT
12'-0"
13'-0"
ELEVATION VIEW
4'-8"
3'-4½"
7"
6" MIN. BASE
RIGHT END VIEW

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATER TIGHT PER MANUFACTURERS STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURERS WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.

TREATMENT FLOW (CFS)	0.346
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	2.0
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

MODULAR WETLANDS — THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING US PATENTS: 7,425,262; 7,470,362; 7,674,378; 8,303,816; RELATED FOREIGN PATENTS OR OTHER PATENTS PENDING

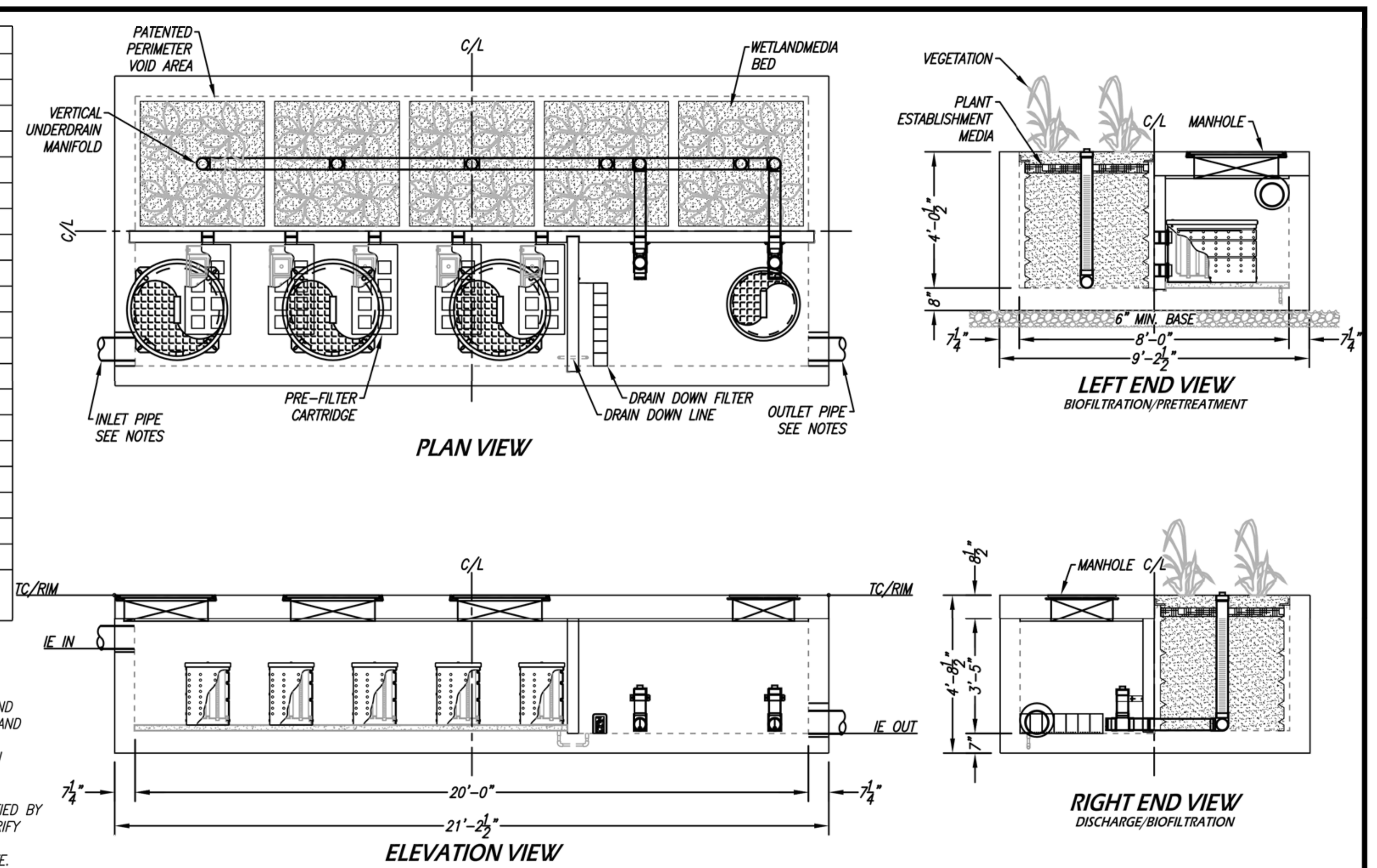
Bio Clean — A Forterra Company

MWS-L-8-12-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

BMP-2
N.T.S.
(4)

SITE SPECIFIC DATA

PROJECT NAME	CAR PROS KIA		
PROJECT LOCATION	MORENO VALLEY		
STRUCTURE ID	BMP-3		
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
N/A		0.5	
TREATMENT HGL AVAILABLE (FT)			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			8.13
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	1742.5	HDPE	12"
INLET PIPE 2			
OUTLET PIPE	1742.5	HDPE	12"
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION	1746.6	1746.6	1746.6
SURFACE LOAD	PARKWAY	OPEN PLANTER	PARKWAY
FRAME & COVER	ø30"	N/A	ø24"
WETLANDMEDIA VOLUME (CY)			11.85
WETLANDMEDIA DELIVERY METHOD			TBD
ORIFICE SIZE (DIA. INCHES)			ø2.43"
MAXIMUM PICK WEIGHT (LBS)			TBD
NOTES:			



PATENTED PERIMETER VOID AREA
C/L
WETLANDMEDIA BED
VERTICAL UNDERDRAIN MANIFOLD
INLET PIPE SEE NOTES
PRE-FILTER CARTRIDGE
DRAIN DOWN FILTER
DRAIN DOWN LINE
OUTLET PIPE SEE NOTES
PLAN VIEW
TC/RIM
IE IN
IE OUT
7¼"
20'-0"
21'-2½"
ELEVATION VIEW
VEGETATION
PLANT ESTABLISHMENT MEDIA
MANHOLE
4'-0½"
8"
6" MIN. BASE
8'-0"
9'-2½"
LEFT END VIEW
BIOFILTRATION/PRETREATMENT
8½"
4'-8½"
3'-5"
7"
RIGHT END VIEW
DISCHARGE/BIOFILTRATION

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
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3. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL GAPS AROUND PIPES SHALL BE SEALED WATER TIGHT WITH A NON-SHRINK GROUT PER MANUFACTURERS STANDARD CONNECTION DETAIL AND SHALL MEET OR EXCEED REGIONAL PIPE CONNECTION STANDARDS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. DRIP OR SPRAY IRRIGATION REQUIRED ON ALL UNITS WITH VEGETATION.

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT MANUFACTURER.

6/2/15/OHN

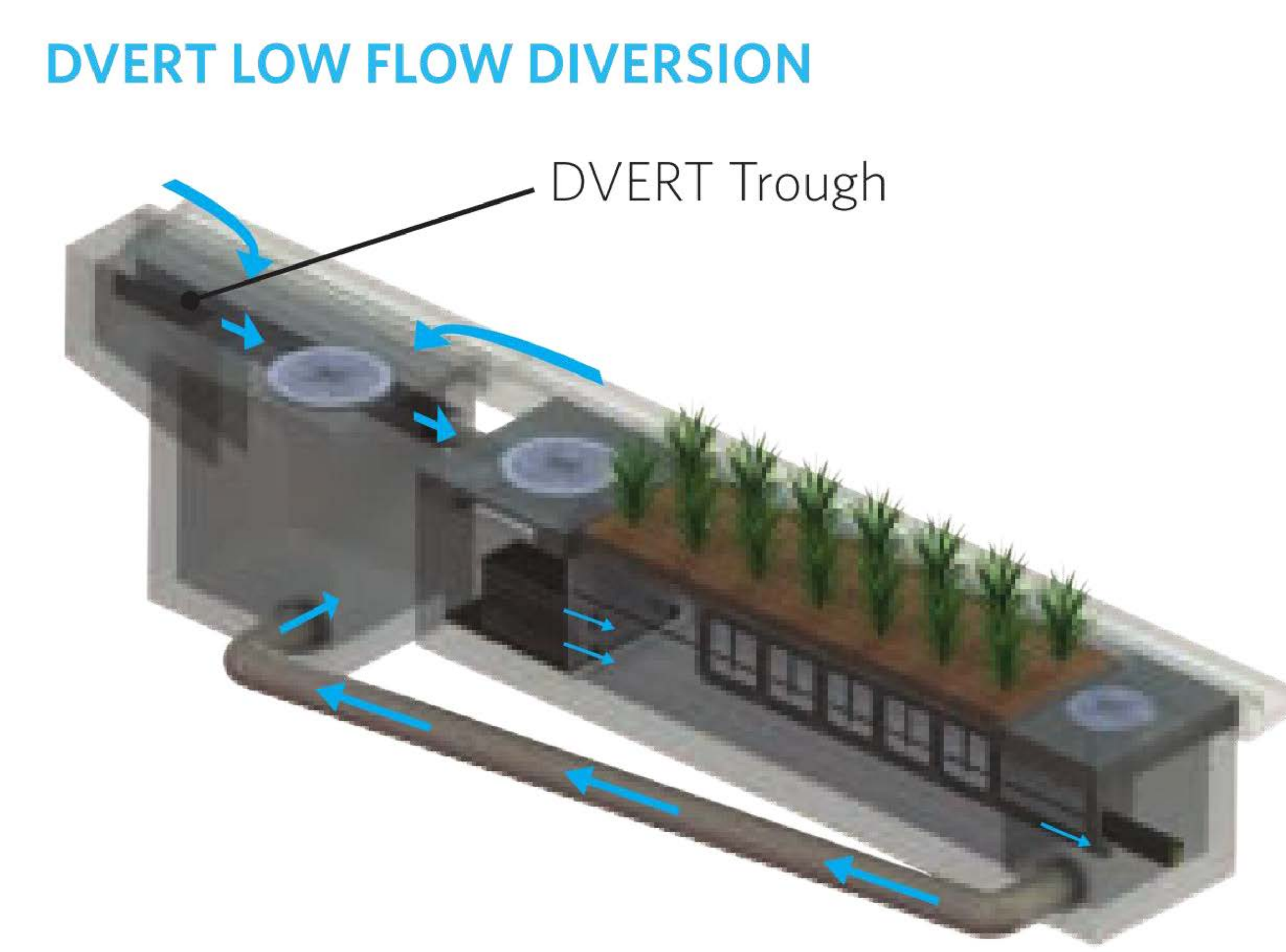
TREATMENT FLOW (CFS)	0.577
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	TBD
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

THE PRODUCT DESCRIBED MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING US PATENTS: 7,425,262; 7,470,362; 7,674,378; 8,303,816; RELATED FOREIGN PATENTS OR OTHER PATENTS PENDING

MODULAR WETLANDS — www.ModularWetlands.com | (855) 5MOD-WET

MWS-L-8-20-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

BMP-3
N.T.S.
(5)



MODULAR WETLAND BYPASS SYSTEM
N.T.S.

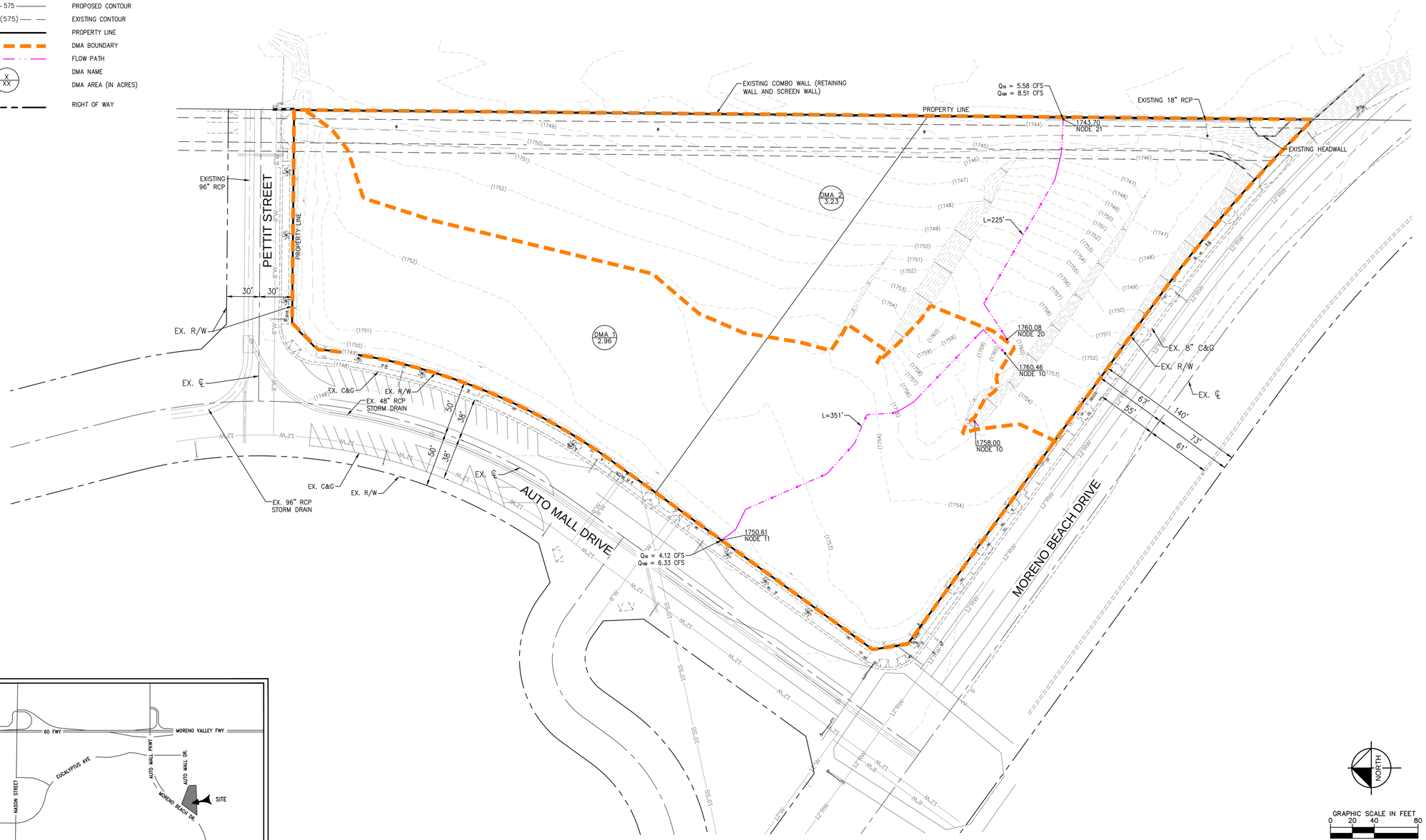
PEN 19-0047/LST19-0008

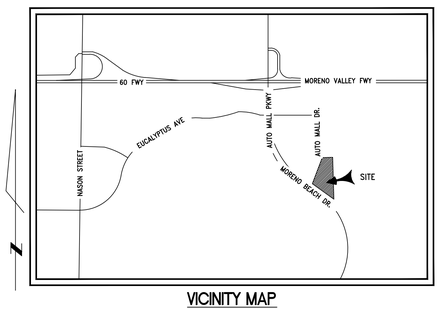
Kimley»Horn

PRELIMINARY WQMP EXHIBIT DETAILS
CAR PROS KIA SALES AND SERVICE FACILITY
SHEET 2 OF 2 5/17/2019

LEGEND

- 575 — PROPOSED CONTOUR
- (575) — EXISTING CONTOUR
- PROPERTY LINE
- DMA BOUNDARY
- FLOW PATH
- X / XX — DMA NAME / DMA AREA (IN ACRES)
- RIGHT OF WAY





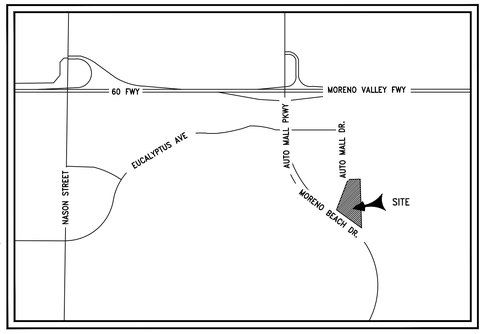
VICINITY MAP
NTS

GRAPHIC SCALE IN FEET
0 20 40 80
SCALE 1" = 40'

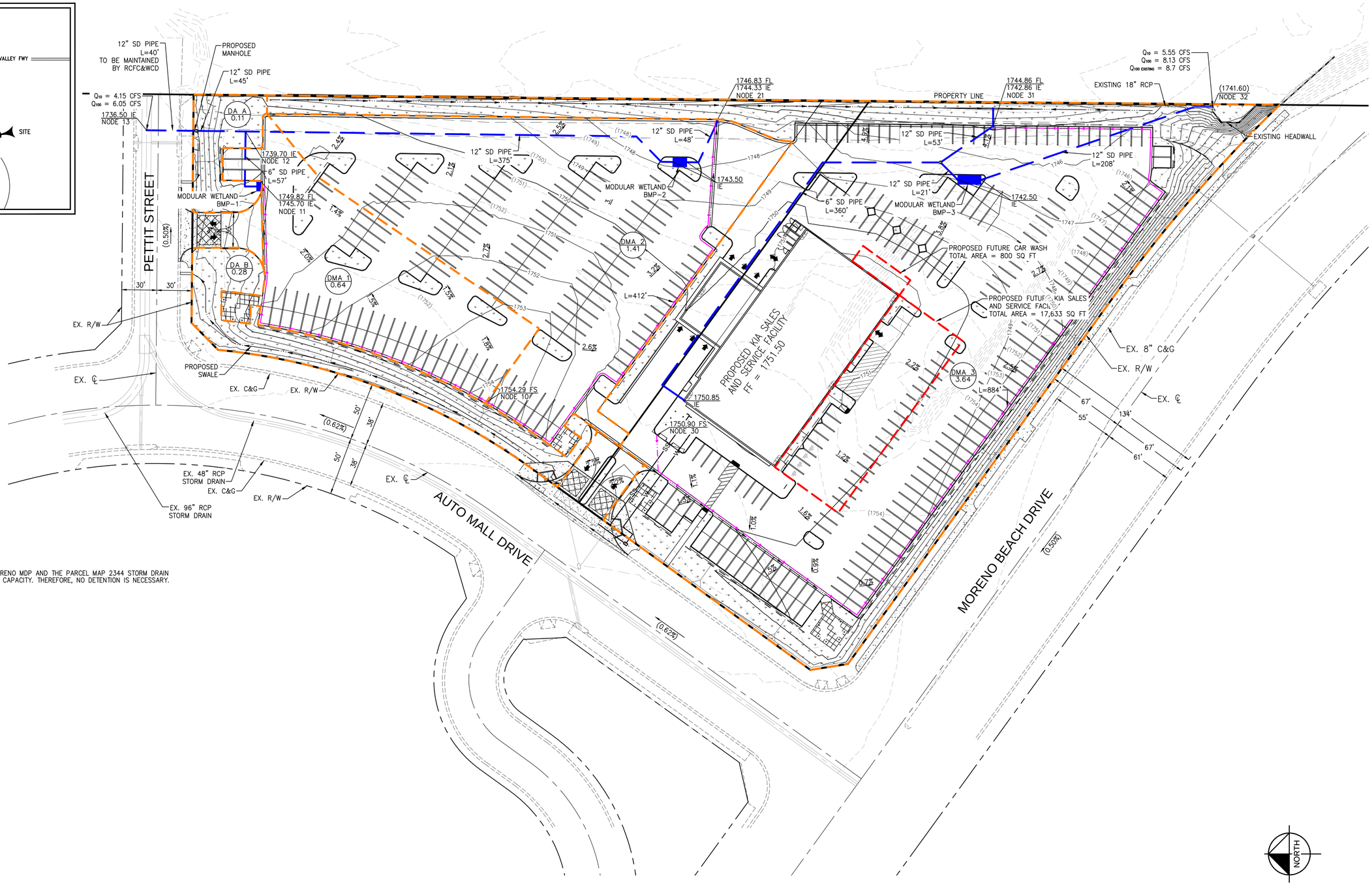
PEN 19-0047/LST19-0008

Kimley»Horn

EXISTING DRAINAGE MAP
CAR PROS KIA SALES AND SERVICE FACILITY
5/17/2019



VICINITY MAP
NTS



LEGEND

575	PROPOSED CONTOUR
(575)	EXISTING CONTOUR
	PROPERTY LINE
	DMA BOUNDARY
	FUTURE EXPANSION AREAS
	PROPOSED STORM DRAIN
	FLOW PATH
X / XX	DMA NAME / DMA AREA (IN ACRES)
	RIGHT OF WAY
	PROPOSED LANDSCAPE

NOTE: RECEIVING STORM DRAINS HAVE A SPECIFIED CAPACITY PER THE MORENO MDP AND THE PARCEL MAP 2344 STORM DRAIN PLANS. UNMITIGATED RUNOFF FROM THE PROJECT SITE IS LESS THAN THE CAPACITY. THEREFORE, NO DETENTION IS NECESSARY.

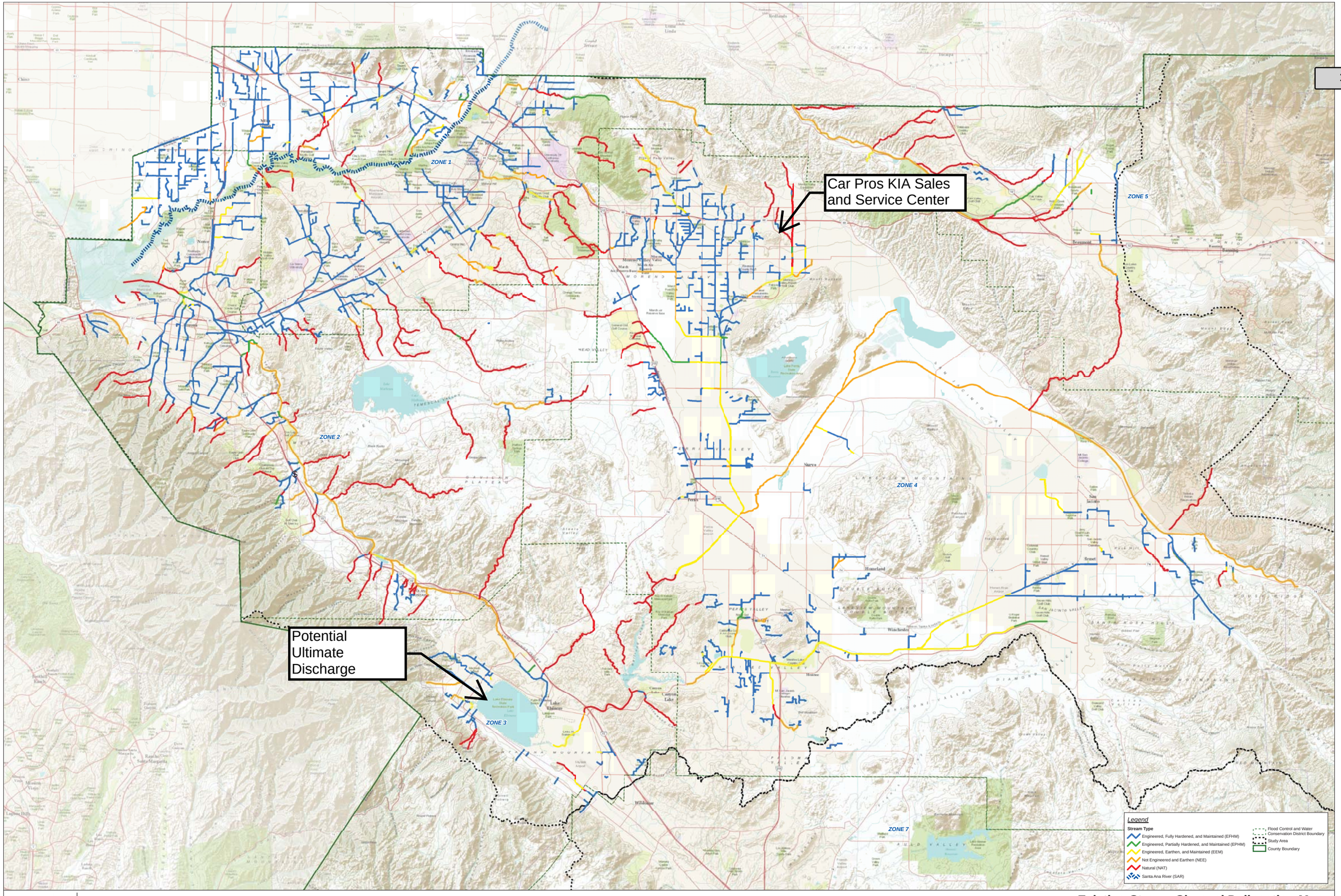
NORTH

GRAPHIC SCALE IN FEET
0 20 40 80
SCALE 1" = 40'

PEN 19-0047/LST19-0008

Kimley»Horn

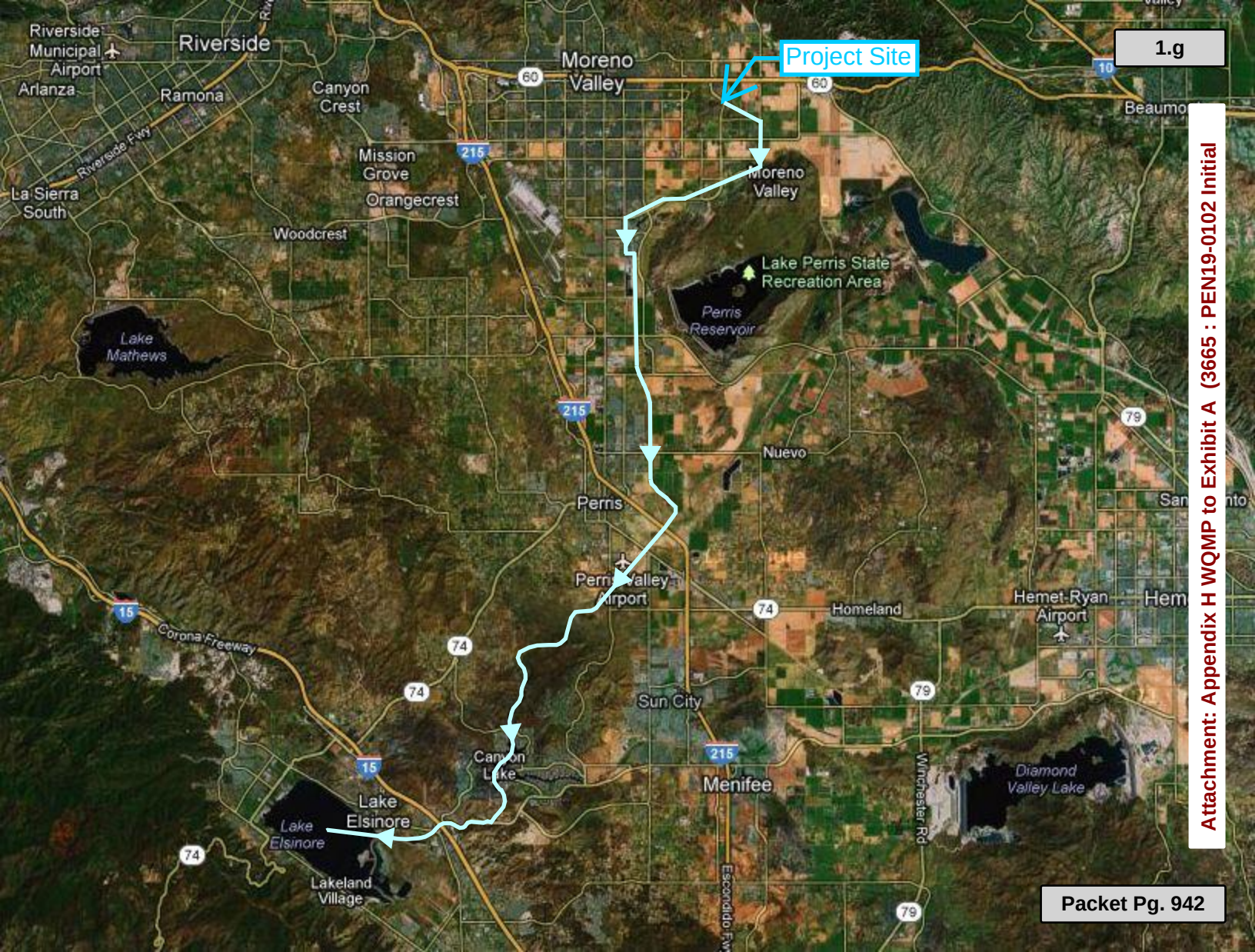
PROPOSED DRAINAGE MAP
CAR PROS KIA SALES AND SERVICE FACILITY
5/17/2019



Existing Stream Channel Delineation Map

Hydromodification Susceptibility Documentation Report and Mapping
Riverside County Flood Control and Water Conservation District

Map 1


Project Site
1.g
Riverside Municipal Airport
Riverside
Arlanza
Ramona
Canyon Crest
Moreno Valley
Mission Grove
Orangecrest
La Sierra South
Riverside Fwy
Woodcrest
Lake Perris State Recreation Area
Perris Reservoir
Lake Mathews
Nuevo
Perris
Perris Valley Airport
Homeland
Hemet-Ryan Airport
Corona Freeway
Sun City
Canyon Lake
Menifee
Lake Elsinore
Lakeland Village
Winchester Rd
Diamond Valley Lake
Escondido Fwy
60
215
10
79
74
15
Attachment: Appendix H WQMP to Exhibit A (3665 : PEN19-0102 Initial
Packet Pg. 942

Car Pros KIA Sales and Service Center =0.669"~0.67"

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
0.54 RiversideSouth
0.88 PradoDam
0.51 Woodcrest
0.50 LakeMathews
0.68 PigeonPass
0.66 MorenoEast
0.68 PerrisReservoir
0.85 Beaumont
0.87 VistaGrandeGS
0.70 SanJacintoNWS
1.18 Idyllwild
0.90 HurkeyCreek
0.58 SunCity
0.68 Winchester
0.70 ElsinoreNWS
1.11 ElCarisoStation
0.77 WildomarLaCresta
0.52 SkinnerLake
0.77 SantaRosaPlateau
1.00 TemeculaNWS
0.64 AguangaValley
0.65 Anza

Santa Ana River Watershed
Santa Margarita Watershed

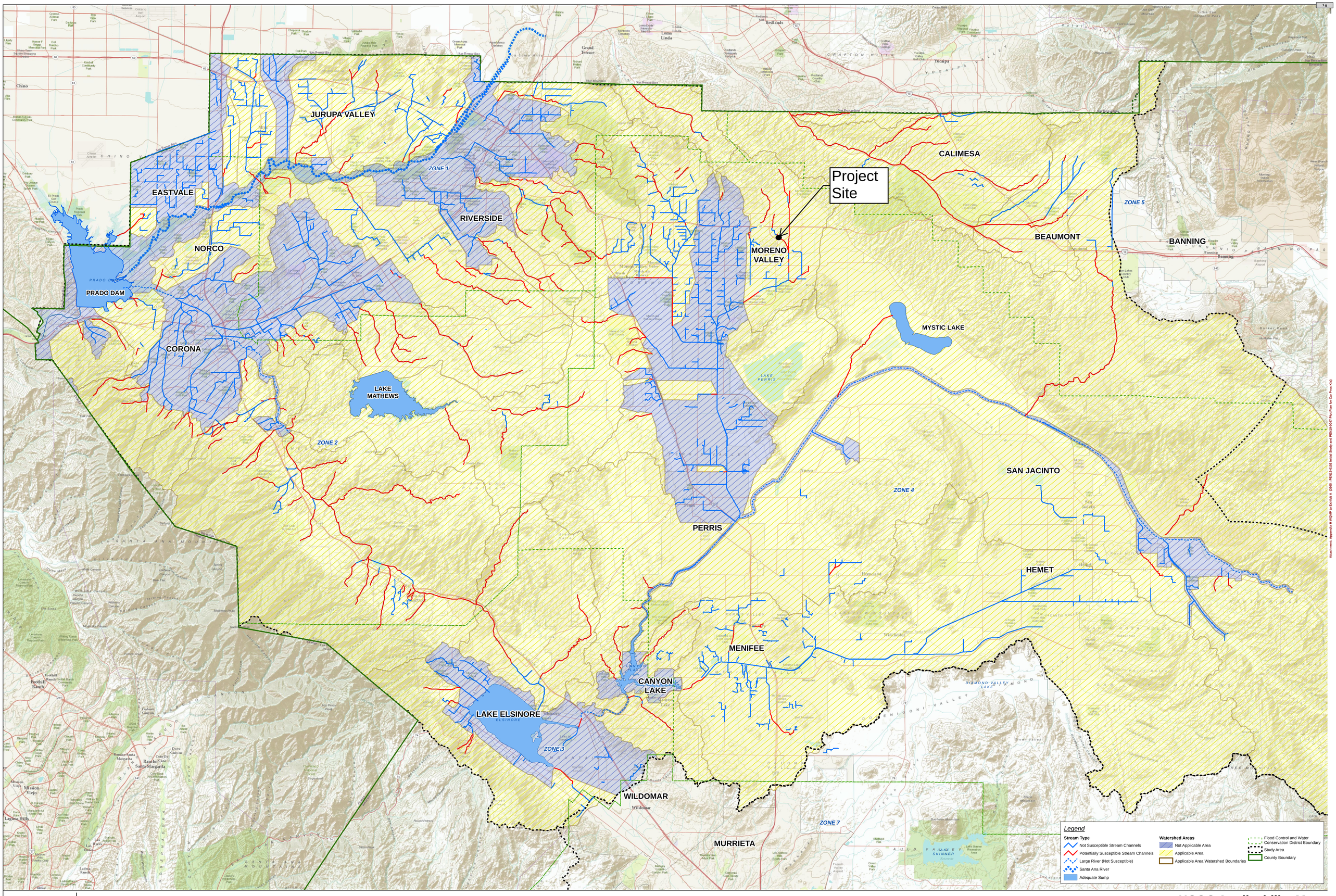
JURUPA VALLEY | EASTVALE | NORCO | CORONA | RIVERSIDE | MORENO VALLEY | CALIMESA | BEAUMONT | SAN JACINTO | PERRIS | CANYON LAKE | LAKE ELSINORE | WILDOMAR | MENIFEE | HEMET | MURRIETA | TEMECULA

Rain Gage Locations

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Isohyetal Map for the 85th Percentile 24 hour Storm Event

July 2011



HCOC Applicability Map

Hydromodification Susceptibility Documentation Report and Mapping
Riverside County Flood Control and Water Conservation District

Map 2

1.g

WQMP Project Report

County of Riverside Stormwater Program

Santa Ana River Watershed Geodatabase

Wednesday, January 30, 2019

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 applicant's Water Quality Management Plan (WQMP) and should not be relied upon without independent verification.

Project Site Parcel Number(s):	488390015, 488390016
Latitude/Longitude:	33.9337, -117.1746
Thomas Brothers Page:	718
Project Site Acreage:	6.10
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
Limitations on Infiltration:	**Project Site Onsite Soils Group(s)** - A, B **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:	1560
85th Percentile Design Storm Depth (in):	0.669
Groundwater Basin:	Perris-North
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

Appendix 2: Construction Plans

Grading and Drainage Plans

CITY OF MORENO VALLEY
PLOT PLAN FOR
CAR PROS - KIA SALES AND SERVICE FACILITY

OWNER / APPLICANT:

MV HOLDINGS, LLC
181 S. 333RD STREET # C
FEDERAL WAY, WA 98003

OWNER'S REPRESENTATIVE / CONTACT

EPD SOLUTIONS
2030 MAIN STREET # 1200
IRVINE, CA 92614
(949) 278-5413
ANDREA ARCILLA
ANDREA@EPDSOLUTIONS.COM

ENGINEER

KIMLEY HORN & ASSOCIATES, INC.
3880 LEMON STREET # 420
RIVERSIDE, CA 92501
ATTN: BOBBY KOHLTFARBER
(951) 543-9870
BOBBY.KOHLTFARBER@KIMLEY-HORN.COM

SURVEY

GRENIER AND SONS
28212 HORIZON CT
SUN CITY, CA 92585
ATTN: ANDY GRENIER, LS 7891
(951) 543-8462
ANDYG@GRENIER-AND-SONS.COM

SURVEY DATE

FEBRUARY 19, 2019

DATE PREPARED

5/17/19

ARCHITECT

CARLILE COATSWORTH ARCHITECTS, INC.
2495 CAMPUS DRIVE, 2ND FLOOR
ORVINE, CA 92612
(949) 833-1930
JAMIE C. POLADIAN, AIA

LEGAL DESCRIPTION

PARCEL 7 AND 8 OF PARCEL MAP NO. 23244, IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 161, PAGES 16 THROUGH 24 INCLUSIVE OF PARCEL MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

FEMA

THE SUBJECT PROPERTY LIES WITHIN ZONE "X" – AREAS OF 0.2% ANNUAL CHANCE FLOOD SHOWN ON FLOOD INSURANCE RATE MAP PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, COMMUNITY.PANEL NUMBER 06065C0770G, WHICH BEARS AN EFFECTIVE DATE AUGUST 28, 2008.

PROPERTY ADDRESS

NORTHEAST CORNER OF AUTO MALL DRIVE AND MORENO BEACH DRIVE INTERSECTION IN THE CITY OF MORENO VALLEY, CALIFORNIA.

EASEMENTS

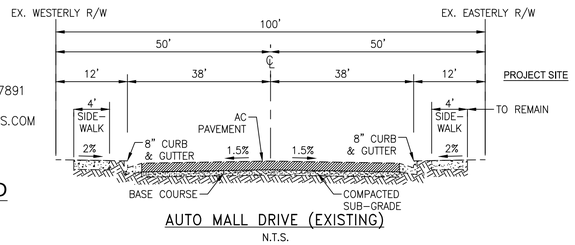
- ITEM 2D: THE FACT THAT THE OWNERSHIP OF SAID LAND DOES NOT INCLUDE RIGHTS OF ACCESS TO OR FROM MORENO BEACH DRIVE, SUCH RIGHTS HAVING BEEN RELINQUISHED BY PARCEL MAP NO. 23244.
- ITEM 6D: AN EASEMENT GRANTED TO SOUTHERN CALIFORNIA EDISON COMPANY, A CORPORATION FOR ELECTRIC SYSTEMS AND COMMUNICATION SYSTEMS PURPOSES RECORDED JULY 3, 1990 AS INSTRUMENT NO. 246837, OFFICIAL RECORDS.
- ITEM 8D: AN EASEMENT GRANTED TO GENERAL TELEPHONE COMPANY OF CALIFORNIA, A CORPORATION AND EASTERN MUNICIPAL WATER DISTRICT. A MUNICIPAL WATER DISTRICT FOR UTILITY PURPOSES RECORDED JUNE 22, 1990 AS INSTRUMENT NO. 231986, OFFICIAL RECORDS.
- ITEM 3C: AN EASEMENT FOR LANDSCAPE PURPOSES AS SHOWN OR AS OFFERED FOR DEDICATION ON PARCEL MAP 23244.
- ITEM 5C: AN EASEMENT GRANTED TO GENERAL TELEPHONE COMPANY OF CALIFORNIA, A CORPORATION AND EASTERN MUNICIPAL WATER DISTRICT. A MUNICIPAL WATER DISTRICT FOR UTILITY PURPOSES RECORDED JUNE 22, 1990 AS INSTRUMENT NO. 231986, OFFICIAL RECORDS.
- ITEM 6C: AN EASEMENT GRANTED TO SOUTHERN CALIFORNIA EDISON COMPANY, A CORPORATION FOR ELECTRIC SYSTEMS AND COMMUNICATION SYSTEMS PURPOSES RECORDED JULY 3,1990 AS INSTRUMENT NO. 246837, OFFICIAL RECORDS.

UTILITIES

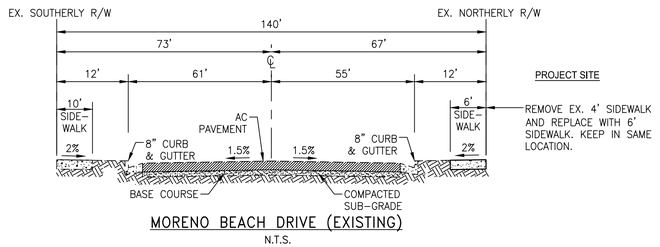
WATER:	EASTERN MUNICIPAL WATER DISTRICT (800) 426-3693
SEWER	EASTERN MUNICIPAL WATER DISTRICT (800) 426-3693
TELEPHONE:	FRONTIER COMMUNICATIONS (855) 679-3074
GAS:	THE GAS COMPANY (800) 427-2200
ELECTRIC:	SO. CAL. EDISON CO. (800) 684-8123
CABLE:	SPECTRUM CABLE CO. (855) 757-7328

GENERAL NOTES:

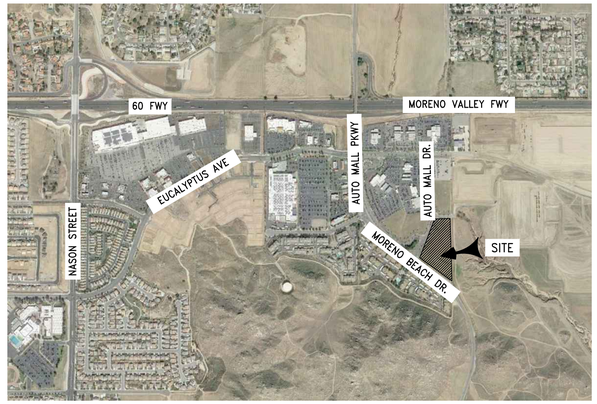
1. ALL ROOF DRAINS TO DRAIN TO CONCRETE SPLASH PAD.
2. ROOF DRAINS TO BE DIRECTED TO A LANDSCAPE AREA.



AUTO MALL DRIVE (EXISTING)
N.T.S.

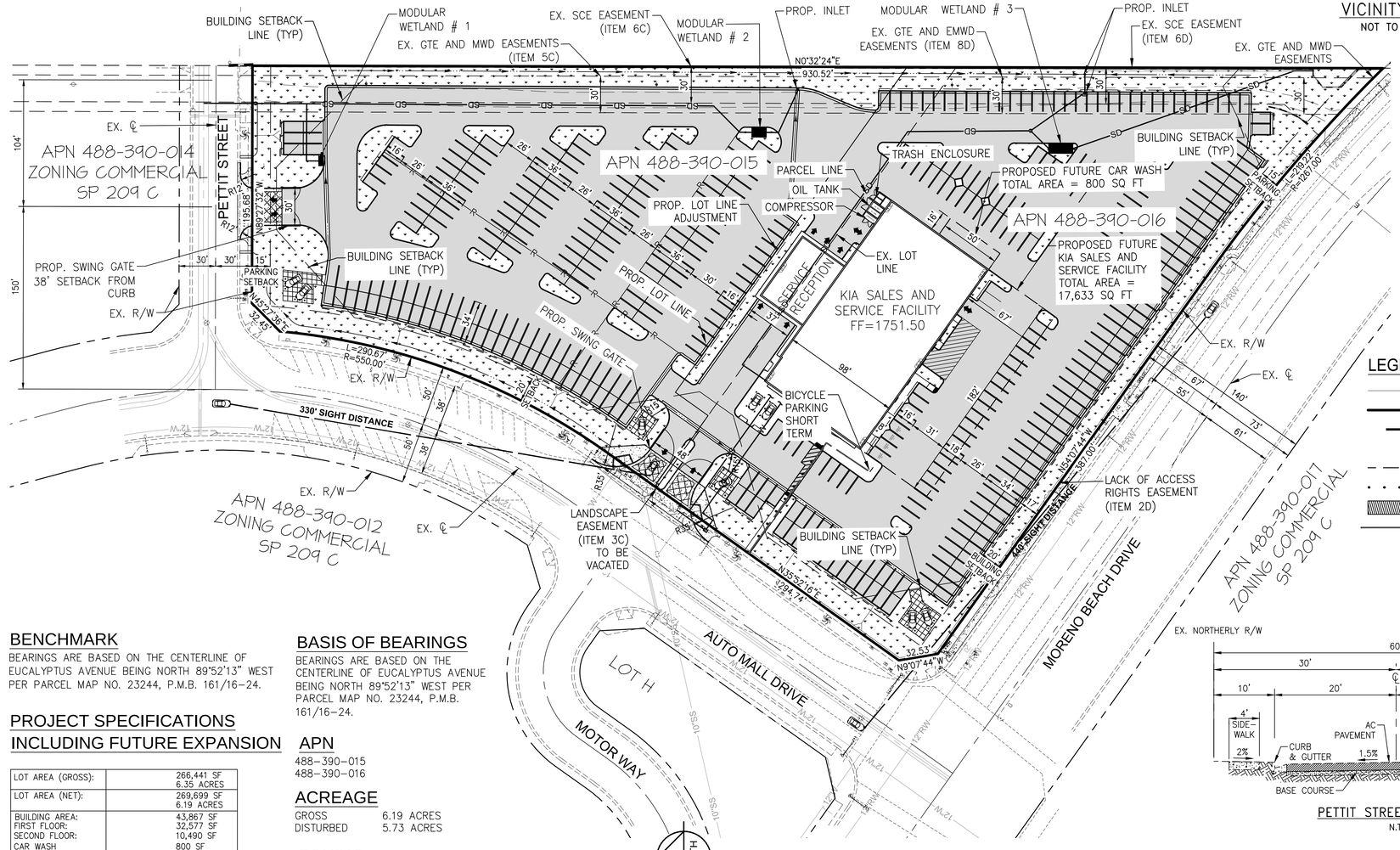


MORENO BEACH DRIVE (EXISTING)
N.T.S.



VICINITY MAP

NOT TO SCALE



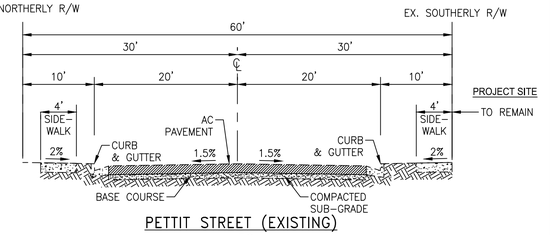
GRAPHIC SCALE IN FEET
0 25 50 100
SCALE 1" = 50'

ABBREVIATIONS:

AC	ACRES
APN	ASSESSOR'S PARCEL NUMBER
BLDG	BUILDING
CO	CLEAN OUT
EX	EXISTING
EG	EXISTING GROUND
FF	FINISHED FLOOR ELEVATION
FG	FINISHED GRADE
FH	FIRE HYDRANT
FL	FLOW LINE
FS	FINISHED SURFACE
FW	FIRE WATER
GB	GRADE BREAK
INV	INVERT
MH	MANHOLE
POC	POINT OF CONNECTION
PROP	PROPOSED
RL	RIDGE LINE
R/W	RIGHT-OF-WAY
SF	SQUARE FEET
STBK	SETBACK
SWLK	SIDEWALK
TC	TOP OF CURB
TRW	TOP OF RETAINING WALL
TYP	TYPICAL
C&G	CURB AND GUTTER

LEGEND

- CENTERLINE
- RIGHT-OF-WAY (R/W)
- STRIPING
- PROP. LIGHT
- FUTURE EXPANSION BLDG LIMITS
- ACCESSIBLE PATH OF TRAVEL
- 4' R/W DEDICATION
- BICYCLE PATH OF TRAVEL



PETTIT STREET (EXISTING)
N.T.S.

BENCHMARK

BEARINGS ARE BASED ON THE CENTERLINE OF EUCALYPTUS AVENUE BEING NORTH 89°52'13" WEST PER PARCEL MAP NO. 23244, P.M.B. 161/16-24.

BASIS OF BEARINGS

BEARINGS ARE BASED ON THE CENTERLINE OF EUCALYPTUS AVENUE BEING NORTH 89°52'13" WEST PER PARCEL MAP NO. 23244, P.M.B. 161/16-24.

PROJECT SPECIFICATIONS INCLUDING FUTURE EXPANSION

LOT AREA (GROSS):		266,441 SF 6.35 ACRES
LOT AREA (NET):		269,699 SF 6.19 ACRES
BUILDING AREA: FIRST FLOOR: SECOND FLOOR: CAR WASH		43,867 SF 32,577 SF 10,490 SF 800 SF
COVERAGE (ON NET):		12.38%
FLOOR AREA RATIO	(ON NET):	16.27%
PARKING REQUIRED: 24,414 SF @ 1 / 2,000 SF		22 SPACES
PARKING PROVIDED STANDARD: ADA		56 SPACES 52 SPACES 4 SPACES
LANDSCAPE PROVIDED:		60,680 SF (22.5%)

APN

488-390-015
488-390-016

ACREAGE

GROSS 6.19 ACRES
DISTURBED 5.73 ACRES

ZONING

SP 209-C
COMMERCIAL

CONTOUR INTERVAL

1'

IMPORTANT NOTICE
SECTION 4216/4217 OF THE GOVERNMENT CODE REQUIRES A DIG ALERT IDENTIFICATION NUMBER TO BE ISSUED BEFORE A "PERMIT TO EXCAVATE" WILL BE VALID.
UNDERGROUND SERVICE ALERT
TOLL FREE 1-800-422-4133
TWO WORKING DAYS BEFORE YOU DIG

DRAWN BY	RS
DESIGN BY	RS
CHECKED BY	BK

3880 LEMON STREET, SUITE 420
RIVERSIDE, CA 92501
PHONE: (951) 543-9868
WWW.KIMLEY-HORN.COM

BOBBY KOHLTFARBER No. C68141 CIVIL

CITY OF MORENO VALLEY
PLOT PLAN
FOR
CAR PROS – KIA SALES AND SERVICE FACILITY
COVER SHEET

1
SHEET 1 OF 3
CITY I.D. NO.
PEN19-0047

PEN19-0047

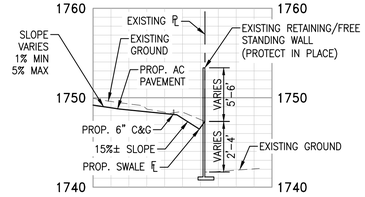
3RD REVIEW

WALL NOTE:

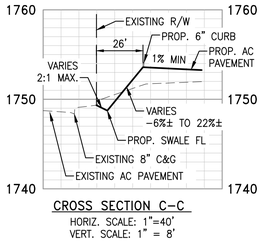
ADDITIONAL COURSES TO BE ADDED TO EXISTING WALL TO MAKE IT A MINIMUM OF 6' HIGH MEASURED FROM THE FINISH GRADE. IF SCE OWNS THE WALL, AN APPROVAL SHALL BE OBTAINED FROM SCE PRIOR TO ADDING COURSES FOR PROPER CLEARANCE TO THE EXISTING POWER LINES.

LEGEND

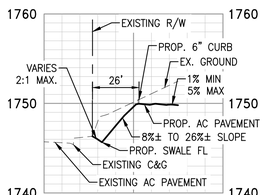
- CENTERLINE
- RIGHT-OF-WAY (R/W)
- STRIPING
- PROP. LIGHT
- 4' R/W DEDICATION
- FIRE TRUCK/DELIVERY TRUCK/ TRASH TRUCK CIRCULATION PER CALTRANS DESIGN MANUAL TURN TEMPLATES
- PROPOSED LOT LINE ADJUSTMENT



CROSS SECTION A–A
HORIZ. SCALE: 1"=40'
VERT. SCALE: 1" = 8'



CROSS SECTION C–C
HORIZ. SCALE: 1"=40'
VERT. SCALE: 1" = 8'



CROSS SECTION B–B
HORIZ. SCALE: 1"=40'
VERT. SCALE: 1" = 8'

ESTIMATED EARTHWORK QUANTITIES

CUT:	19,600 CY
FILL:	1,215 CY
NET:	18,385 CY – EXPORT

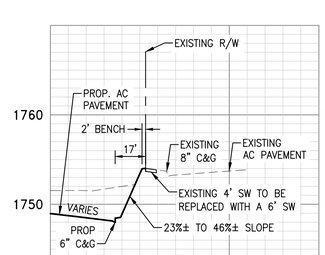
NOTE: THE ABOVE QUANTITIES ARE APPROXIMATE IN PLACE VOLUMES CALCULATED FROM THE EXISTING GROUND TO THE PROPOSED FINISHED GRADE. EXISTING GROUND IS DEFINED BY THE CONTOURS AND SPOT GRADES ON THE BASE SURVEY. PROPOSED FINISHED GRADE IS DEFINED AS THE FINAL GRADE AS INDICATED ON THE GRADING PLAN(S).

THE EARTHWORK QUANTITIES ABOVE ARE FOR PERMIT PURPOSES ONLY. THEY HAVE NOT BEEN FACTORED TO ACCOUNT FOR CHANGES IN VOLUME DUE TO BULKING, CLEARING AND GRUBBING, SHRINKAGE, OVER– EXCAVATION AND RE–COMPACTION, AND CONSTRUCTION METHODS. NOR DO THEY ACCOUNT FOR THE THICKNESS OF PAVEMENT SECTIONS, FOOTINGS, SLABS, REUSE OF PULVERIZED MATERIALS THAT WILL UNDERLIE NEW PAVEMENTS, ETC. THE CONTRACTOR SHALL RELY ON THEIR OWN EARTHWORK ESTIMATES FOR BIDDING PURPOSES.

GRAPHIC SCALE IN FEET
0 20 40 80
SCALE 1" = 40'

ROOF DRAIN KEY NOTES:

1. INTERNAL ROOF DRAIN TO BE CONNECTED TOGETHER UNDER THE ROOF AND ROUTED TO ADJACENT LANDSCAPE AREAS.
2. EXTERNAL ROOF DRAIN TO BE CONNECTED TO STORM DRAIN SYSTEM AS SHOWN.



CROSS SECTION D–D
HORIZ. SCALE: 1"=40'
VERT. SCALE: 1" = 8'

NOTES:

1– A COMMUNICATION CONDUIT ALONG PROJECT FRONTAGE ON MORENO BEACH DRIVE MAY BE REQUIRED PER CITY STANDARD NO. MVSI–186–0
2–FOR–SALE VEHICLE LOADING/UNLOADING SHALL BE DONE ON–SITE WITHIN THE PROJECT PARKING LOT
3–NO PARKING SIGNS SHALL BE INSTALLED ON PETTIT STREET

PEN19-0047

DRAWN BY	RS
DESIGN BY	RS
CHECKED BY	BK

Kimley»Horn

3880 LEMON STREET, SUITE 420
RIVERSIDE, CA 92501
PHONE: (951) 543–9868
WWW.KIMLEY–HORN.COM

BOBBY KOHLTFARBER No. C68141 CIVIL

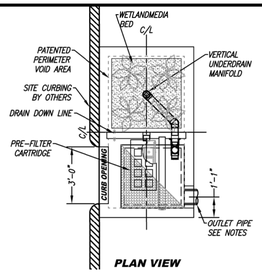
CITY OF MORENO VALLEY

PLOT PLAN FOR CAR PROS – KIA SALES AND SERVICE FACILITY CONCEPTUAL GRADING PLAN

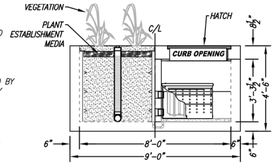
SHEET 2 OF 3
CITY I.D. NO. PEN19-0047

3RD REVIEW

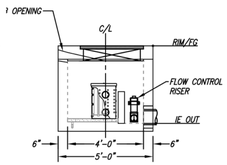
SITE SPECIFIC DATA			
PROJECT NUMBER	194117001		
ORDER NUMBER			
PROJECT NAME	CAR PROS KIA		
PROJECT LOCATION	MORENO VALLEY		
STRUCTURE ID	BMP-1		
TREATMENT REQUIRED			
VOLUME BASED (CF)	FLOW BASED (CFS)		
N/A	0.1		
TREATMENT HGL AVAILABLE (FT)			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE		1.97	
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	1745.7	HDPE	6"
INLET PIPE 2			
OUTLET PIPE	1745.7	HDPE	6"
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION	1749.8	1749.8	1749.8
SURFACE LOAD	PEDESTRIAN	OPEN PLANTER	PEDESTRIAN
FRAME & COVER	36" X 36"	N/A	N/A
WETLANDMEDIA VOLUME (CY)			TBD
ORIFICE SIZE (DIA. INCHES)			TBD
NOTES: PRELIMINARY NOT FOR CONSTRUCTION.			



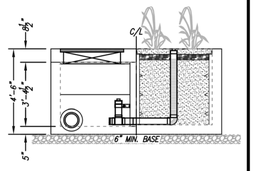
PLAN VIEW



LEFT END VIEW



ELEVATION VIEW



RIGHT END VIEW

TREATMENT FLOW (CFS)	0.115
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	2.0
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATER TIGHT PER MANUFACTURERS STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURERS WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.

GENERAL NOTES

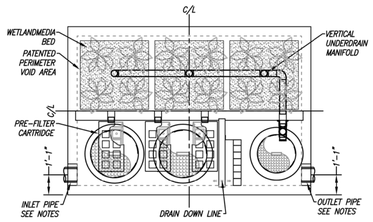
1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.

MWS-L-4-8-C
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

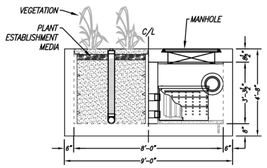
BMP-1
N.T.S.

3

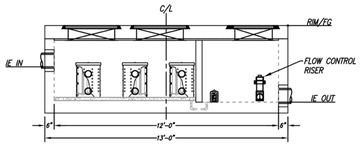
SITE SPECIFIC DATA			
PROJECT NUMBER	194117001		
ORDER NUMBER			
PROJECT NAME	CAR PROS KIA		
PROJECT LOCATION	MORENO VALLEY		
STRUCTURE ID	BMP-2		
TREATMENT REQUIRED			
VOLUME BASED (CF)	FLOW BASED (CFS)		
N/A	0.3		
TREATMENT HGL AVAILABLE (FT)			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE		4.26	
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	1743.5	HDPE	12"
INLET PIPE 2			
OUTLET PIPE	1743.5	HDPE	12"
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION	1747.6	1747.6	1747.6
SURFACE LOAD	PEDESTRIAN	OPEN PLANTER	PEDESTRIAN
FRAME & COVER	2EA ø30"	N/A	ø24"
WETLANDMEDIA VOLUME (CY)			TBD
ORIFICE SIZE (DIA. INCHES)			TBD
NOTES: PRELIMINARY NOT FOR CONSTRUCTION.			



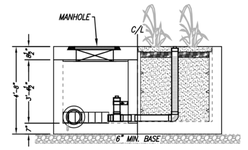
PLAN VIEW



LEFT END VIEW



ELEVATION VIEW



RIGHT END VIEW

TREATMENT FLOW (CFS)	0.346
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	2.0
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASS. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATER TIGHT PER MANUFACTURERS STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURERS WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.

GENERAL NOTES

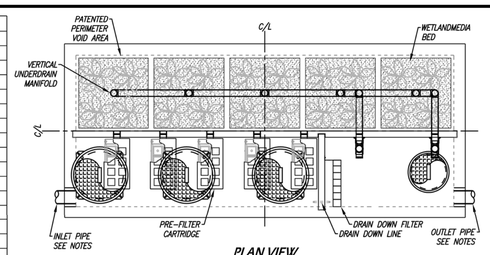
1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.

MWS-L-8-12-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

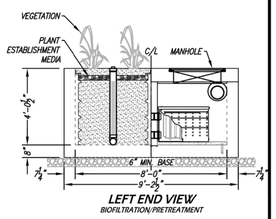
BMP-2
N.T.S.

4

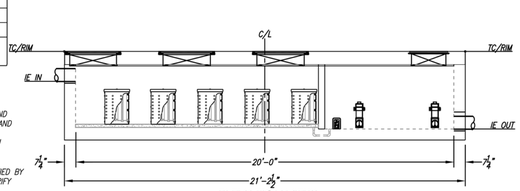
SITE SPECIFIC DATA			
PROJECT NAME	CAR PROS KIA		
PROJECT LOCATION	MORENO VALLEY		
STRUCTURE ID	BMP-3		
TREATMENT REQUIRED			
VOLUME BASED (CF)	FLOW BASED (CFS)		
N/A	0.5		
TREATMENT HGL AVAILABLE (FT)			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE		8.13	
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	1742.5	HDPE	12"
INLET PIPE 2			
OUTLET PIPE	1742.5	HDPE	12"
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION	1746.6	1746.6	1746.6
SURFACE LOAD	PARKWAY	OPEN PLANTER	PARKWAY
FRAME & COVER	ø30"	N/A	ø24"
WETLANDMEDIA VOLUME (CY)			11.85
WETLANDMEDIA DELIVERY METHOD			TBD
ORIFICE SIZE (DIA. INCHES)			ø2.43"
MAXIMUM PICK WEIGHT (LBS)			TBD
NOTES:			



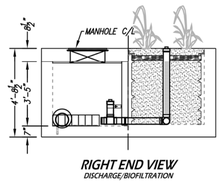
PLAN VIEW



LEFT END VIEW
BIOFILTRATION/PRETREATMENT



ELEVATION VIEW



RIGHT END VIEW
DISCHARGE/BIOFILTRATION

TREATMENT FLOW (CFS)	0.577
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	TBD
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
3. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL GAPS AROUND PIPES SHALL BE SEALED WATER TIGHT WITH A NON-SHRINK GROUT PER MANUFACTURERS STANDARD CONNECTION DETAIL AND SHALL MEET OR EXCEED REGIONAL PIPE CONNECTION STANDARDS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. DRIP OR SPRAY IRRIGATION REQUIRED ON ALL UNITS WITH VEGETATION.

GENERAL NOTES

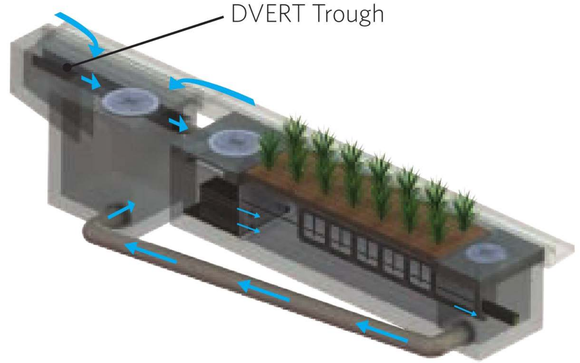
1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT MANUFACTURER.

MWS-L-8-20-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

BMP-3
N.T.S.

5

DVERT LOW FLOW DIVERSION



MODULAR WETLAND BYPASS SYSTEM
N.T.S.

PEN19-0047

DRAWN BY	RS
DESIGN BY	RS
CHECKED BY	BK

Kimley»Horn

3880 LEMON STREET, SUITE 420
RIVERSIDE, CA 92501
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WWW.KIMLEY-HORN.COM

BOBBY KOHLTFARBER
No. C68141
CIVIL

CITY OF MORENO VALLEY

PLOT PLAN
FOR
CAR PROS – KIA SALES AND SERVICE FACILITY
DETAILS

3

SHEET 3 OF 3

CITY I.D. NO.
PEN19-0047

3RD REVIEW

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

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

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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Soil Map.....8
Soil Map.....9
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Map Unit Descriptions.....11
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PaC2—Pachappa fine sandy loam, 2 to 8 percent slopes, eroded.....16
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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: 1:1,610 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

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 11, Sep 12, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 14, 2015—Jan 21, 2015

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
GkD	Gorgonio loamy sand, channeled, 2 to 15 percent slopes	0.8	13.6%
GyC2	Greenfield sandy loam, 2 to 8 percent slopes, eroded	1.3	21.7%
HcD2	Hanford coarse sandy loam, 8 to 15 percent slopes, eroded	0.1	2.0%
PaC2	Pachappa fine sandy loam, 2 to 8 percent slopes, eroded	3.8	62.7%
Totals for Area of Interest		**6.1**	**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

GkD—Gorgonio loamy sand, channeled, 2 to 15 percent slopes

Map Unit Setting

National map unit symbol: hcvd
Elevation: 20 to 3,000 feet
Mean annual precipitation: 8 to 25 inches
Mean annual air temperature: 46 to 63 degrees F
Frost-free period: 110 to 310 days
Farmland classification: Not prime farmland

Map Unit Composition

Gorgonio and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gorgonio

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 15 inches: loamy sand
H2 - 15 to 60 inches: stratified gravelly loamy sand to gravelly loamy fine sand

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water storage in profile: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A
Ecological site: SANDY ALLUVIAL (1975) (R019XD069CA)
Hydric soil rating: No

Minor Components

Riverwash

Percent of map unit: 10 percent
Landform: Drainageways
Hydric soil rating: Yes

Riverwash
Percent of map unit: 4 percent
Landform: Channels
Hydric soil rating: Yes

Soboba
Percent of map unit: 3 percent
Hydric soil rating: No

Tujunga
Percent of map unit: 3 percent
Hydric soil rating: No

GyC2—Greenfield sandy loam, 2 to 8 percent slopes, eroded

Map Unit Setting
National map unit symbol: hcvw
Elevation: 100 to 3,500 feet
Mean annual precipitation: 9 to 20 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 200 to 300 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Greenfield and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Greenfield

Setting
Landform: Alluvial fans, terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile
H1 - 0 to 26 inches: sandy loam
H2 - 26 to 43 inches: fine sandy loam
H3 - 43 to 60 inches: loam
H4 - 60 to 72 inches: stratified loamy sand to sandy loam

Properties and qualities
Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: LOAMY (1975) (R019XD029CA)
Hydric soil rating: No

Minor Components

Hanford

Percent of map unit: 3 percent
Hydric soil rating: No

Pachappa

Percent of map unit: 3 percent
Hydric soil rating: No

Arlington

Percent of map unit: 3 percent
Hydric soil rating: No

Ramona

Percent of map unit: 3 percent
Hydric soil rating: No

Unnamed

Percent of map unit: 3 percent
Hydric soil rating: No

HcD2—Hanford coarse sandy loam, 8 to 15 percent slopes, eroded

Map Unit Setting

National map unit symbol: hcw3
Elevation: 150 to 900 feet
Mean annual precipitation: 9 to 20 inches
Mean annual air temperature: 63 to 64 degrees F
Frost-free period: 250 to 280 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hanford and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hanford

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 8 inches: coarse sandy loam
H2 - 8 to 40 inches: fine sandy loam
H3 - 40 to 60 inches: stratified loamy sand to coarse sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively 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: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: SANDY (R020XD012CA)
Hydric soil rating: No

Minor Components

Tujunga

Percent of map unit: 5 percent
Hydric soil rating: No

Greenfield

Percent of map unit: 5 percent
Hydric soil rating: No

Ramona

Percent of map unit: 5 percent
Hydric soil rating: No

PaC2—Pachappa fine sandy loam, 2 to 8 percent slopes, eroded

Map Unit Setting

National map unit symbol: hcxp

Elevation: 1,000 feet
Mean annual precipitation: 14 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 270 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Pachappa and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pachappa

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 20 inches: fine sandy loam
H2 - 20 to 40 inches: loam
H3 - 40 to 63 inches: fine sandy loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: LOAMY (1975) (R019XD029CA)
Hydric soil rating: No

Minor Components

San emigdio

Percent of map unit: 5 percent
Hydric soil rating: No

Hanford

Percent of map unit: 5 percent
Hydric soil rating: No

Greenfield

Percent of map unit: 5 percent

Hydric soil rating: No

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GEOTECHNICAL INVESTIGATION AND PERCOLATION TEST RESULTS

KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE AND AUTO MALL WAY
MORENO VALLEY, CALIFORNIA

GEOCON
WEST, INC.

GEOTECHNICAL
ENVIRONMENTAL
MATERIALS

PREPARED FOR

CAR PROS AUTOMOTIVE GROUP
FEDERAL WAY, WASHINGTON

JANUARY 18, 2019
PROJECT NO. T2844-22-01

GEOCON
WEST, INC.
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

Project No. T2844-22-01
January 18, 2019

Cars Pros Automotive Group
181 S 333rd Street, Building C, Suite 210
Federal Way, Washington 98002

Attention: Mr. Ken Phillips

Subject: GEOTECHNICAL INVESTIGATION
AND PERCOLATION TEST RESULTS
KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

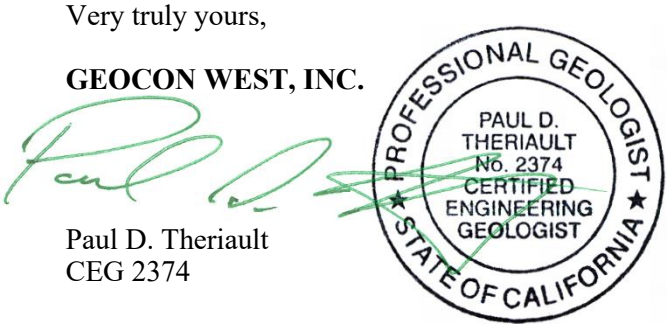
Dear Mr. Phillips:

In accordance with your authorization of Proposal No. IE-2287, Geocon West Inc. (Geocon) herein submits the results of our geotechnical investigation and percolation test results for the subject site. The accompanying report presents the results of our study and conclusions and recommendations pertaining to the geotechnical aspects of the proposed automotive sales lot. The site is considered suitable for development provided the recommendations of this report are followed.

Should you have questions regarding this report, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

GEOCON WEST, INC.



Paul D. Theriault
CEG 2374

Chet E. Robinson
GE 2890

PDT:CER:LAB:hd

(e-mail) Addressee

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GEOTECHNICAL INVESTIGATION
AND PERCOLATION TEST RESULTS

1. PURPOSE AND SCOPE

This report presents the results of our geotechnical investigation and percolation tests for the planned automotive sales development located east of the intersection of Moreno Beach Drive and Auto Mall Drive, in the city of Moreno Valley, California (see *Vicinity Map*, Figure 1). The purpose of the geotechnical investigation is to evaluate the surface and subsurface soil conditions and general site geology, and to identify geotechnical constraints that may affect development of the property. Percolation testing was performed to provide information for site storm water infiltration design. This investigation also included a review of readily available published and unpublished geologic literature (see *List of References*).

The scope of this investigation included performing a site reconnaissance, field exploration, engineering analyses, and preparing this report. We performed our field investigation on December 17 and 18, 2018 by drilling ten small-diameter borings to a maximum depth of 51½ feet below the existing ground surface. Four of the borings were used to perform percolation testing. The *Geologic Map*, Figure 2, presents the approximate locations of the borings. *Appendix A* provides a detailed discussion of the field investigation including logs of the borings and percolation test results. Details of the laboratory tests and a summary of the test results are presented in *Appendix B* and on the boring logs in *Appendix A*.

Recommendations presented herein are based on analyses of data obtained from our site investigation and our understanding of proposed site development. References reviewed to prepare this report are provided in the *List of References*. If project details vary significantly from those described herein, Geocon should be contacted to evaluate the necessity for review and possible revision of this report.

2. SITE AND PROJECT DESCRIPTION

The subject site is located southeast of the intersection of Moreno Beach Drive and Auto Mall Drive in the city of Moreno Valley, California. The site is bounded on the west by Auto Mall Drive, the north by Petit Street, the south by Moreno Beach Drive, and on the east by a parcel line. The site is currently vacant and appears to be periodically disked for weed abatement. Periodic use of the site as a parking lot was observed during our site exploration. Access to the property is from Petit Street. The existing grades range from approximate elevation 1,750 feet above Mean Sea Level (MSL) in the north to 1,755 feet above MSL in the south. A stockpile is located in the southern portion of the site, as shown on Figure 2. The maximum height of the stockpile is approximately 5 feet. The site is at latitude 33.93375 and longitude -117.17466.

Based on the *Site Plan,* prepared by Carlile Coatsworth Architects, Inc., we understand that the proposed construction consists of a 24,661-square-foot sales and service facility, car wash, several vehicle display areas, with associated parking and infrastructure. A grading plan has not been provided for our review; however, based on current site conditions, cuts and fills of less than 10 feet are expected at the site.

Based on the preliminary plans, we understand that the proposed building will be constructed of concrete masonry unit (CMU) walls and concrete cast-in-place or tilt-up walls and supported on conventional spread footing foundations with a concrete slab-on-grade floor. We expect column loads will be up to 100 kips and wall loads will be up to 10 kips per linear foot. Preliminary geotechnical recommendations for design of the structure are based on these assumptions and provided herein.

The site descriptions and proposed development are based on a site reconnaissance, review of published geologic literature, our field investigation, a review of the conceptual plans, and discussions with you. If development plans differ from those described herein, Geocon should be contacted for review of the plans and possible revisions to this report.

3. GEOLOGIC SETTING

The site is located within the Perris block of the northern Peninsular Ranges Geomorphic Province (Province), defined as a relatively stable area between the Elsinore and San Jacinto fault zones. In the vicinity of the site, the geomorphology consists of older alluvial fan deposits. The Peninsular Ranges are bounded by the Transverse Ranges (San Gabriel and San Bernardino Mountains) to the north and the Colorado Desert Geomorphic Province to the east. The Peninsular Ranges Geomorphic Province extends westward into the Pacific Ocean and southward to the tip of Baja California. Overall, the Province is characterized by Cretaceous-age granitic rock and a lesser amount of Mesozoic-age metamorphic rock overlain by terrestrial and marine sediments. Faulting within the Province is typically northwest trending and includes the San Andreas, San Jacinto, Elsinore, and Newport-Inglewood faults.

The San Jacinto fault zones is located approximately 1.8 miles to the northeast. Geologic units within the site consist of very old alluvial fan deposits and a stockpile of undocumented fill.

4. SOIL AND GEOLOGIC CONDITIONS

We observed very old alluvial fan deposits with a thin mantle of overlying undocumented fill during our field investigation. The occurrence, distribution and description of the geologic units encountered are shown on the *Geologic Map*, Figure 2 and the boring logs in *Appendix A*. The surficial soils and geologic units are described herein in order of increasing age.

4.1 Undocumented Fill (afu)

Undocumented fill was observed throughout the site in the top 1 to 4 feet of the borings during our geotechnical investigation. The stockpile of undocumented fill in the south-central portion of the site was observed to be approximately 5 feet thick. As observed the undocumented fill consists of loose to medium dense, dry to damp, reddish brown silty sand. A minor amount of clayey sand was also encountered.

4.2 Very Old Alluvial Fan Deposits (Qvof)

Very old alluvium was observed underlying the undocumented fill through the site. As observed, the older alluvium consists predominately of damp to moist, medium dense to very dense silty sand. Lesser amounts of clayey sand, sandy silt, and sandy clay was also encountered.

5. GROUNDWATER

We did not encounter groundwater or seepage during the site investigation. According to the California Department of Water Resources, several wells in the area indicated a depth to groundwater in excess of 190 feet below the existing ground surface. It is not uncommon for seepage conditions to develop where none previously existed. Groundwater and seepage are dependent on seasonal precipitation, irrigation, land use, among other factors, and varies as a result. Proper surface drainage will be important to future performance of the project.

6. GEOLOGIC HAZARDS

6.1 Faulting

The numerous faults in southern California include active, potentially active, and inactive faults. The criteria for these major groups are based on criteria developed by the California Geological Survey (CGS, formerly known as CDMG) for the Alquist-Priolo Earthquake Fault Zone Program (Bryant and Hart, 2007). By definition, an active fault is one that has had surface displacement within Holocene time (about the last 11,000 years). A potentially active fault has demonstrated surface displacement during Quaternary time (approximately the last 1.6 million years) but has had no known Holocene movement. Faults that have not moved in the last 1.6 million years are considered inactive.

The site is not within a currently established State of California Alquist-Priolo Earthquake Fault Zone or a Riverside County Fault Hazard Zone for surface fault rupture hazards. No active or potentially active faults with the potential for surface fault rupture are known to pass directly beneath the site.

According to the *Fault Activity Map of California* (2010), 18 known active faults are located within a search radius of 50 miles from the property. The nearest known active fault is the Claremont fault segment of the San Jacinto fault zone, located approximately 2 miles west of the site, and is the dominant source of potential ground motion. Earthquakes that might occur on these fault zones or other faults within the southern California and northern Baja California area are potential generators of significant ground motion at the site. Table 6.1.1 lists the estimated maximum earthquake magnitude for the most dominant faults in relationship to the site location.

TABLE 6.1.1
KNOWN ACTIVE FAULTS WITHIN 50 MILES OF THE SITE

Fault Name	Maximum Earthquake Magnitude (Mw)	Distance from Site (miles)	Direction from Site
San Jacinto (Claremont)	6.7	2	NE
San Jacinto (Casa Loma)	6.9	2.8	E
San Gorgonio Pass	7.6	8	E
Banning	7.2	10	SE
San Andreas (San Bernardino)	8.2	12	NE
San Jacinto	7.8	13	N
San Jacinto (Glen Helen)	6.7	13	N
Elsinore (Main Street)	6.7	21	W
Chino	6.7	22	W
Elsinore (Glen Ivy North)	6.8	23	WSW
Elsinore (Whittier)	6.9	24	W
Morongo Valley	7.2	28	E
Pinto Mountain	7.3	35	E
San Andreas Fault (South Branch)	8.2	40	SE
Burt Mountain	6.8	41	ENE
San Jacinto (Clark)	6.8	43	N
San Andreas Fault (North Branch)	8.2	47	N
Newport-Inglewood	7.5	50	SW

Historic earthquakes in southern California of magnitude 6.0 and greater, their magnitude, distance, and direction from the site are listed in Table 6.1.2.

TABLE 6.1.2
HISTORIC EARTHQUAKE EVENTS WITH REPECT TO THE SITE

Earthquake (Oldest to Youngest)	Date of Earthquake	Magnitude	Distance to Epicenter (Miles)	Direction to Epicenter
San Jacinto	December 25, 1899	6.7	16	SE
San Jacinto	April 21, 1918	6.8	16	SE
Loma Linda Area	July 22, 1923	6.3	6	NW
Long Beach	March 10, 1933	6.4	50	WSW
Buck Ridge	March 25, 1937	6.0	64	ESE
Imperial Valley	May 18, 1940	6.9	51	E
Desert Hot Springs	December 4, 1948	6.0	45	E
Arroyo Salada	March 19, 1954	6.4	77	E
Borrego Mountain	April 8, 1968	6.5	84	SE
San Fernando	February 9, 1971	6.6	84	WNW
Joshua Tree	April 22, 1992	6.1	54	E
Landers	June 28, 1992	7.3	50	ENE
Big Bear	June 28, 1992	6.4	29	NE
Northridge	January 17, 1994	6.7	88	WNW
Hector Mine	October 16, 1999	7.1	73	NE

6.2 Ground Rupture

Ground surface rupture occurs when movement along a fault is sufficient to cause a gap or rupture where the upper edge of the fault zone intersects the earth surface. The potential for ground rupture is considered to be very low due to the absence of active or potentially active faults at the subject site.

6.3 Liquefaction

Liquefaction typically occurs when a site is located in a zone with seismic activity, onsite soils are cohesionless or silt/clay with low plasticity, groundwater is encountered within 50 feet of the surface, and soil has a relative density less than about 70 percent. If the four previous criteria are met, a seismic event could result in a rapid pore water pressure increase from the earthquake-generated ground accelerations. Due to the lack of a permanent, near-surface groundwater table and the dense to very dense nature of the old alluvial fan deposits, liquefaction potential for the site is negligible and not a design consideration.

6.4 Expansive Soil

The older alluvium generally consists of silty or clayey sands with lesser amounts of sandy silts and sandy clays. Laboratory testing results indicate samples of the near surface soils exhibits a “very low” expansion potential (expansion index [EI] of 20 or less) with test results showing expansion index of 3.

6.5 Hydrocompression

Hydrocompression is the tendency of unsaturated soil structure to collapse upon wetting resulting in the overall settlement of the affected soil and overlying foundations or improvements supported thereon. Potentially compressible soils underlying the site are typically removed and recompacted during remedial site grading. However, if compressible soil is left in-place, a potential for settlement due to hydrocompression of the soil exists.

Soils obtained during our investigation were tested for hydrocompression and exhibited a collapse potential up to 2.2 percent when loaded to the expected post-grading pressures. The test results indicate that the soils are classified as having a "slight" (0.1 to 2.0 percent) to "moderate" (2.1 to 6.0) degree of specimen collapse in accordance with ASTM D5333.

6.6 Seiches and Tsunamis

Seiches are caused by the movement of an inland body of water due to the movement from seismic forces. The site is located approximately 5.1 miles north of Lake Perris. In the unlikely event of a seiche, water is anticipated to be confined to the young alluvial valley channel south of the site.

A tsunami is a series of long-period waves generated in the ocean by a sudden displacement of large volumes of water. Causes of tsunamis include underwater earthquakes, volcanic eruptions, or offshore slope failures. The site is located approximately 36 miles from the Pacific Ocean at an elevation greater than 1,500 feet MSL. Therefore, the risk of tsunamis affecting the site is negligible and not a design consideration.

6.7 Inundation

According to the State of California, Department of Water Resources, *Inundation Map for Perris Dam*, dated April 29, 1975, the site is not within an inundation zone due to dam failure. Therefore, inundation due to dam failure is not a design consideration.

6.8 Landslides

Landslides are not mapped on or near the site. Due to the relatively level topography at the site, the potential for landslides at the property or at a location that could impact the site is negligible and not a design consideration.

6.9 Rock Fall Hazards

Rock falls are not a design consideration due to the lack of natural bedrock slopes above and adjacent to the site.

6.10 Slope Stability

Based on the preliminary site plans and relatively level topography at the site, cut and fill slopes are anticipated to be less than 5 feet in height at inclinations no steeper than 2:1 (h:v). In general, permanent, cut slopes and graded fill slopes constructed with on-site soils inclined no steeper than 2:1 (h:v) with vertical heights of 5 feet or less are anticipated to have adequate factors of safety. Fill keys should be constructed in accordance with the standard grading specifications in *Appendix C*. Grading of fill slopes should be designed in accordance with the requirements of Moreno Valley and the 2016 California Building Code (CBC).

7. SITE INFILTRATION

Percolation testing was performed in accordance with the procedures in *Riverside County Flood Control and Water Conservation District LID BMP, Appendix A.* The percolation test locations are depicted on the *Geologic Map* (see Figures 2 and 3).

A 3-inch diameter perforated PVC pipe in silt filter sock was placed in each percolation test hole and approximately 2 inches of gravel was placed at the bottom of the PVC pipe. The test locations were pre-saturated prior to testing. Percolation testing was begun within 24 hours after the holes were presaturated. Percolation data sheets are presented in *Appendix A* of this report. Calculations to convert the percolation test rate to infiltration test rates are presented in Table 7.0 below. Note that the Handbook requires a factor of safety of 3 be applied to the values below based on the test method used.

TABLE 7.0
INFILTRATION TEST RATES FOR PERCOLATION AREAS

Parameter	P-1	P-2	P-3	P-4
Depth (inches)	91.2	79.0	117.4	120.0
Test Type	Normal	Normal	Normal	Normal
Change in head over time: ΔH (inches)	0.1	1.1	0.1	0.5
Average head: Havg (inches)	41.6	11.9	41.0	24.6
Time Interval (minutes): Δt (minutes)	30	30	30	30
Radius of test hole: r (inches)	4	4	4	4
Tested Infiltration Rate: It (inches/hour)	0.01	0.31	0.01	0.07

8. CONCLUSIONS AND RECOMMENDATIONS

8.1 General

8.1.1 From a geotechnical engineering standpoint, the site is suitable for construction of the proposed auto facility development provided the recommendations presented herein are implemented in design and construction of the project.

8.1.2 Potential geologic hazards at the site include seismic shaking and hydrocompression.

8.1.3 The site is located approximately 2 miles from the nearest active fault. Based on our background research and previous investigation, it is our opinion active, potentially active, or inactive faults do not extend across the site. Risks associated with seismic activity consist of the potential for moderate to strong seismic shaking.

8.1.4 Our field investigation indicates the site is blanketed by undocumented fill over very old alluvium. The undocumented fill and upper portion of the very old alluvium are not considered suitable for the support of compacted fill and settlement-sensitive structures. Remedial grading of the surficial soil will be required as discussed herein. The existing site soils are suitable for re-use as engineered fill provided the recommendations in the *Grading* section of this report are followed.

8.1.5 Soil samples tested for hydrocompression exhibit a collapse potential of up to 2.2 percent for the site. The test results indicate that the degree of specimen collapse would be classified as "moderate" (2.1 to 6.0 percent), in accordance with ASTM D 5333. Remedial grading will assist in reducing the collapse potential of the near-surface soils. However, precautionary measures will be needed to mitigate the potential for hydrocompression of deeper soils. Proper site drainage should be maintained. Landscape planters that saturate the subsurface or storm water infiltration structures should not be used within 20 feet of the proposed building or other on grade improvements. Localized surface settlement should be expected in the vicinity of the storm water infiltration structures or other areas where water is allowed to infiltrate to the subsurface.

8.1.6 Moisture contents in the borings varied and the upper portions were below optimum moisture content. Moisture conditioning of the soils should be expected during construction. Special handling of the soil should be anticipated, particularly if grading occurs during the rainy season.

8.1.7 Although the majority of on-site soils consist of silty and clayey sands, some granular material, having little to no cohesion and subject to caving in unshored excavations, should be expected at the site. It is the responsibility of the contractor to ensure that excavations and trenches are properly shored and maintained in accordance with OSHA rules and regulations to maintain the stability of adjacent existing improvements.

8.1.8 The laboratory tests indicate that the site soils are non-expansive and have a "very low" expansion potential. If medium to highly expansive soils are encountered at the site, they should be exported from the site or selectively graded and placed in the deeper fill areas to allow for the placement of low expansion material at the finish pad grade.

8.1.9 Grading plans were not available for our review, however, cuts and fill of less than 10 feet are anticipated to achieve planned finish grades.

8.1.10 Although not encountered in our exploration, cobbles may be encountered during site grading and may present difficulty for site excavations. The contractor should be prepared to perform site excavations in these conditions.

8.1.11 We did not encounter groundwater during our investigation and do not expect groundwater would impact site improvements. However, wet conditions and seepage could affect proposed construction if grading and improvement operations occur during or shortly after a rain event.

8.1.12 Proper drainage should be maintained in order to preserve the design properties of the fill in the sheet-graded pad and slope areas.

8.1.13 The planned structures can be supported on a shallow foundation system with a slab-on-grade floor system.

8.1.14 Changes in the design, location or elevation of improvements, as outlined in this report, should be reviewed by this office. Once final grading plans become available, they should be reviewed by this office to evaluate the necessity for review and possible revision of this report.

8.1.15 Recommended grading specifications are provided in *Appendix C*.

8.2 Excavation and Soil Characteristics

8.2.1 Excavation of the very old alluvium should be possible with moderate to heavy effort using conventional heavy-duty equipment.

8.2.2 The soil encountered in the field investigation is considered to be "non-expansive" (expansion index [EI] of less than 20) as defined by 2016 California Building Code (CBC) Section 1803.5.3. Table 8.2.2 presents soil classifications based on the expansion index. Based on the laboratory test results, we expect a majority of the soil encountered will possess a "very low" expansion potential (EI between 0 and 20). Medium to highly expansive soils may be encountered at the site and should not be placed within 4 feet of the proposed foundations, flatwork or paving improvements. Additional testing for expansion potential should be performed during grading and once final grades are achieved.

TABLE 8.2.2
EXPANSION CLASSIFICATION BASED ON EXPANSION INDEX

Expansion Index (EI)	ASTM D 4829 Expansion Classification	2016 CBC Expansion Classification
0 – 20	**Very Low**	**Non-Expansive**
21 – 50	Low	Expansive
51 – 90	Medium	
91 – 130	High	
Greater Than 130	Very High	

8.2.3 We performed laboratory tests on samples of the site materials to evaluate the percentage of water-soluble sulfate content. *Appendix B* presents results of the laboratory water-soluble sulfate content tests. The test results indicate the on-site materials at the location tested possess a sulfate content of 0.001 percent (10 parts per million [ppm]) equating to an exposure class of "S0" as defined by 2016 CBC Section 1904.3 and ACI 318. Table 8.2.3 presents a summary of concrete requirements set forth by 2016 CBC Section 1904.3 and ACI 318. The presence of water-soluble sulfates is not a visually discernible characteristic; therefore, other soil samples from the site could yield different concentrations. Additionally, over time landscaping activities (i.e., addition of fertilizers and other soil nutrients) may affect the concentration.

TABLE 8.2.3
REQUIREMENTS FOR CONCRETE EXPOSED TO SULFATE-CONTAINING SOLUTIONS

Exposure Class	Water-Soluble Sulfate (SO_4) Percent by Weight	Cement Type (ASTM C 150)	Maximum Water to Cement Ratio by Weight[1]	Minimum Compressive Strength (psi)
S0	**SO_4<0.10**	**No Type Restriction**	**n/a**	**2,500**
S1	0.10≤SO_4<0.20	II	0.50	4,000
S2	0.20≤SO_4≤2.00	V	0.45	4,500
S3	SO_4>2.00	V+Pozzolan or Slag	0.45	4,500

[1] Maximum water to cement ratio limits do not apply to lightweight concrete

8.2.4 Laboratory testing indicates the site soils have a minimum electrical resistivity of 4,600 ohm-cm, possess 98 ppm chloride, 10 ppm sulfate, and a pH of 8.3. As shown in Table 8.2.4 below, the site would not be classified as "corrosive" to buried improvements, in accordance with the Caltrans Corrosion Guidelines (Caltrans, 2018).

TABLE 8.2.4
CALTRANS CORROSION GUIDELINES

Corrosion Exposure	Resistivity (ohm-cm)	Chloride (ppm)	Sulfate (ppm)	pH
Corrosive	<1,100	500 or greater	1,500 or greater	5.5 or less

8.2.5 Geocon does not practice in the field of corrosion engineering. Therefore, further evaluation by a corrosion engineer may be performed if improvements that could be susceptible to corrosion are planned.

8.3 Seismic Design Criteria

8.3.1 We used the computer program *U.S. Seismic Design Maps*, provided by the California Office of Statewide Health Planning and Development (OSHPD) to evaluate the seismic design criteria. Table 8.3.1 summarizes site-specific design criteria obtained from the 2016 California Building Code (CBC; Based on the 2015 International Building Code [IBC] and ASCE 7-10), Chapter 16 Structural Design, Section 1613 Earthquake Loads. The short spectral response uses a period of 0.2 second. The building structure and improvements as currently proposed should be designed using a Site Class D in accordance with ASCE 7-10 Section 20.3.1. We evaluated the Site Class based on the discussion in Section 1613.3.2 of the 2016 CBC and Table 20.3-1 of ASCE 7-10 using blow count data presented on the boring logs in *Appendix A*. The values presented in Table 8.3.1 are for the risk-targeted maximum considered earthquake (MCE_R).

TABLE 8.3.1
2016 CBC SEISMIC DESIGN PARAMETERS

Parameter	Value	2016 CBC Reference
Site Class	D	Section 1613.3.2
MCE_R Ground Motion Spectral Response Acceleration – Class B (short), S_S	2.146g	Figure 1613.3.1(1)
MCE_R Ground Motion Spectral Response Acceleration – Class B (1 sec), S_1	0.971g	Figure 1613.3.1(2)
Site Coefficient, F_A	1.00	Table 1613.3.3(1)
Site Coefficient, F_V	1.50	Table 1613.3.3(2)
Site Class Modified MCE_R Spectral Response Acceleration (short), S_{MS}	2.146g	Section 1613.3.3 (Eqn 16-37)
Site Class Modified MCE_R Spectral Response Acceleration (1 sec), S_{M1}	1.457g	Section 1613.3.3 (Eqn 16-38)
5% Damped Design Spectral Response Acceleration (short), S_{DS}	1.431g	Section 1613.3.4 (Eqn 16-39)
5% Damped Design Spectral Response Acceleration (1 sec), S_{D1}	0.971g	Section 1613.3.4 (Eqn 16-40)

8.3.2 Table 8.3.2 presents additional seismic design parameters for projects located in Seismic Design Categories of D through F in accordance with ASCE 7-10 for the mapped maximum considered geometric mean (MCE_G).

TABLE 8.3.2
2016 CBC SITE ACCELERATION PARAMETERS

Parameter	Value	ASCE 7-10 Reference
Site Class	D	Section 1613.3.2
Mapped MCE_G Peak Ground Acceleration, PGA	0.83g	Figures 2 through 42-7
Site Coefficient, F_{PGA}	1.00	Table 11.8-1
Site Class Modified MCE_G Peak Ground Acceleration, PGA_M	0.83g	Section 11.8.3 (Eqn 11.8-1)

8.3.3 Conformance to the criteria in Tables 8.3.1 and 8.3.2 for seismic design does not constitute any kind of guarantee or assurance that significant structural damage or ground failure will not occur if a large earthquake occurs. The primary goal of seismic design is to protect life, not to avoid all damage, since such design may be economically prohibitive.

8.4 Temporary Excavations

8.4.1 The recommendations included herein are provided for temporary excavations. It is the responsibility of the contractor to provide a safe excavation during the construction of the proposed project.

8.4.2 Excavations on the order of 5 to 15 feet in vertical height are expected during grading operations and utility installation. The contractor's competent person should evaluate the necessity for lay back of vertical cut areas. Vertical excavations up to 5 feet may be attempted where loose soils or caving sands are not present, and where not surcharged by existing structures or vehicle/construction equipment loads.

8.4.3 Vertical excavations greater than 5 feet will require sloping measures in order to provide a stable excavation. We expect that sufficient space is available to complete the majority of the required earthwork for this project using sloping measures. If necessary, compound excavation, slot-cutting, and or shoring recommendations will be provided in an addendum.

8.4.4 Where sufficient space is available, temporary unsurcharged embankments may be sloped back at a uniform 1.5:1 (h:v) slope gradient or flatter. A uniform slope does not have a vertical portion.

8.4.5 Where sloped embankments are utilized, the top of the slope should be barricaded to prevent vehicles and storage loads at the top of the slope within a horizontal distance equal to the height of the slope. If the temporary construction embankments are to be maintained during the rainy season, berms are suggested along the tops of the slopes where necessary to prevent runoff water from entering the excavation and eroding the slope faces. The contractor's personnel should inspect the soil exposed in the cut slopes during excavation so that modifications of the slopes can be made if variations in the soil conditions occur. Excavations should be stabilized within 30 days of initial excavation.

8.5 Grading

8.5.1 Grading should be performed in accordance with the recommendations provided in this report, the *Recommended Grading Specifications* contained in *Appendix C* and Moreno Valley Standards.

8.5.2 Prior to commencing grading, a pre-construction conference should be held at the site with the owner/developer, city inspector, grading contractor, civil engineer, and geotechnical engineer in attendance. Special soil handling requirements can be discussed at that time.

8.5.3 Site preparation should begin with the removal of deleterious material, debris, buried trash, and vegetation. The depth of removal should be such that material exposed in cut areas or soil to be used as fill is relatively free of organic matter. Material generated during stripping and/or site demolition should be exported from the site.

8.5.4 Undocumented fill and the upper portion of the very old alluvium in the building areas should be removed to expose competent older alluvium. Based on our findings, we expect the existing soils within approximately 5 feet of the existing ground surface will require remedial excavation and proper compaction. Areas of loose, dry, or compressible soils will require additional excavation and processing prior to fill placement. Removals should extend at least 3 feet below the bottom of the planned foundations, and the excavations should be extended laterally a minimum distance of 5 feet beyond the building footprint or for a distance equal to the depth of removal, whichever is greater. Where the lateral over-excavation is not possible, structural setbacks or deepened footings may be required.

8.5.5 Removals in pavement and walkway areas should extend at least 2 feet beneath the pavement or flatwork subgrade elevation.

8.5.6 The actual depth of removal should be evaluated by the engineering geologist during grading operations. Deeper excavations may be required if dry, loose, soft, or porous materials are present at the base of the removals. The bottom of the excavations should be scarified to a depth of at least 1 foot, moisture conditioned as necessary, and properly compacted.

8.5.7 The site should then be brought to final subgrade elevations with fill compacted in layers. In general, soil native to the site is suitable for use as fill if free from vegetation, debris and other deleterious material. Layers of fill should be about 6 to 8 inches in loose thickness and no thicker than will allow for adequate bonding and compaction. Fill, including backfill and scarified ground surfaces, should be compacted to a dry density of at least 90 percent of the laboratory maximum dry density at 0 to 2 percent above optimum moisture content, as determined in accordance with ASTM D 1557. Fill materials placed below optimum moisture content may require additional moisture conditioning prior to placing additional fill. The upper 12 inches of subgrade soil underlying pavement should be compacted to a dry density of at least 95 percent of the laboratory maximum dry density at 0 to 2 percent above optimum moisture content shortly before paving operations.

8.5.8 Import fill soil (if necessary) should consist of granular materials with a “very low” expansion potential (EI of less than 20), free of deleterious material and rock fragments larger than 6 inches and should be compacted as recommended herein. Geocon should be notified of the import soil source and should perform laboratory testing of import soil prior to its arrival at the site to determine its suitability as fill material.

8.5.9 Foundation excavation bottoms must be observed and approved in writing by the Geotechnical Engineer, prior to placing fill, steel, gravel or concrete.

8.6 Utility Trench Backfill

8.6.1 Utility trenches should be properly backfilled in accordance with the requirements of Moreno Valley and the latest edition of the *Standard Specifications for Public Works Construction* (Greenbook). The pipes should be bedded with well graded crushed rock or clean sands (Sand Equivalent greater than 30) to a depth of at least one foot over the pipe. The bedding material must be inspected and approved in writing by the Geotechnical Engineer (a representative of Geocon). The use of well graded crushed rock is only acceptable if used in conjunction with filter fabric to prevent the gravel from having direct contact with soil. The remainder of the trench backfill may be derived from onsite soil or approved import soil, compacted as necessary, until the required compaction is obtained. Backfill of utility trenches should not contain rocks greater than 3 inches in diameter. The use of 2-sack slurry and controlled low strength material (CLSM) are also acceptable as backfill. However, consideration should be given to the possibility of differential settlement where the slurry ends and earthen backfill begins. These transitions should be minimized and additional stabilization should be considered at these transitions.

8.6.2 Trench excavation bottoms must be observed and approved in writing by the Geotechnical Engineer, prior to placing bedding materials, fill, gravel, or concrete.

8.7 Earthwork Grading Factors

8.7.1 Estimates of shrinkage factors are based on empirical judgments comparing the material in its existing or natural state as encountered in the exploratory excavations to a compacted state. Variations in natural soil density and in compacted fill density render shrinkage value estimates very approximate. As an example, the contractor can compact the fill to a dry density of 90 percent or higher of the laboratory maximum dry density. Thus, the contractor has an approximately 10 percent range of control over the fill volume. Based on our experience and the densities measured during our investigation, the shrinkage of undocumented fill and older alluvium soil is expected to be on the order of 0 to 10 percent when compacted to at least 90 percent of the laboratory maximum dry density. This estimate is for preliminary quantity estimates only. Due to the variations in the actual shrinkage/bulking factors, a balance area should be provided to accommodate variations

8.8 Foundation and Concrete Slab-On-Grade Recommendations

8.8.1 The foundation recommendations presented herein are for the proposed buildings subsequent to the recommended grading assuming that the buildings are founded in soils with a low expansion potential. If soils with a medium or high expansion potential are placed within 4 feet of finish grade, then Geocon should be contacted for additional recommendations. The proposed structure can be supported on a shallow foundation system bearing in newly placed compacted fill.

8.8.2 Foundations for the structure should consist of either continuous strip footings and/or isolated spread footings. Continuous footings should be at least 18 inches wide and extend at least 18 inches below lowest adjacent pad grade. Isolated spread footings should have a minimum width of 24 inches and should also extend at least 18 inches below lowest adjacent pad grade. A wall/column footing dimension detail depicting footing embedment is provided on Figure 3.

8.8.3 From a geotechnical engineering standpoint, concrete slabs-on-grade for the structure should be at least 4 inches thick and be reinforced with at least No. 3 steel reinforcing bars placed 24 inches on center in both directions. The concrete slab-on-grade recommendations are based on soil support characteristics only. The project structural engineer should evaluate the structural requirements of the concrete slab for supporting equipment and storage loads. A thicker concrete slab may be required for heavier loading conditions. To reduce the effects of differential settlement on the foundation system, thickened slabs and/or an increase in steel reinforcement can provide a benefit to reduce concrete cracking.

8.8.4 Steel reinforcement for continuous footings should consist of at least two No. 4 steel reinforcing bars placed horizontally in the footings, one near the top and one near the bottom. Steel reinforcement for the spread footings should be designed by the project structural engineer.

8.8.5 The recommendations presented herein are based on soil characteristics only (EI of 20 or less) and are not intended to replace steel reinforcement required for structural considerations.

8.8.6 Foundations may be designed for an allowable soil bearing pressure of 3,500 pounds per square foot (psf) (dead plus live load). The value presented herein is for dead plus live loads and may be increased by one-third when considering transient loads due to wind or seismic forces.

8.8.7 The maximum expected static settlement for the planned structures supported on conventional foundation systems with the above allowable bearing pressure and deriving support in engineered fill is estimated to be 1 inch and to occur below the heaviest loaded structural element. Differential settlement is estimated to be on the order of ½ inch over a horizontal distance of 40 feet. Once the design and foundation loading configuration proceeds to a more finalized plan, the estimated settlements within this report should be reviewed and revised, if necessary

8.8.8 Once the design and foundation loading configuration proceeds to a more finalized plan, the estimated settlements within this report should be reviewed and revised, if necessary.

8.8.9 Slabs-on-grade that may receive moisture-sensitive floor coverings or may be used to store moisture-sensitive materials should be underlain by a vapor retarder placed directly beneath the slab. The vapor retarder and acceptable permeance should be specified by the project architect or developer based on the type of floor covering that will be installed. The vapor retarder design should be consistent with the guidelines presented in Section 9.3 of the American Concrete Institute's (ACI) Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials (ACI 302.2R-06) and should be installed in general conformance with ASTM E1643 (latest edition) and the manufacturer's recommendations. A minimum thickness of 15 mils extruded polyolefin plastic is recommended; vapor retarders which contain recycled content or woven materials are not recommended. The vapor retarder should have a permeance of less than 0.01 perms demonstrated by testing before and after mandatory conditioning. The vapor retarder should be installed in direct contact with the concrete slab with proper perimeter seal. If the California Green Building Code requirements apply to this project, the vapor retarder should be underlain by 4 inches of clean aggregate. It is important that the vapor retarder be puncture resistant since it will be in direct contact with angular gravel. As an alternative to the clean aggregate suggested in the Green Building Code, the concrete slab-on-grade may be underlain by a vapor retarder over 4 inches of clean sand (sand equivalent greater than 30), since the sand will serve as a capillary break and will minimize the potential for punctures and damage to the vapor barrier.

8.8.10 The bedding sand thickness should be evaluated by the project foundation engineer, architect, and/or developer. However, we should be contacted to provide recommendations if the bedding sand is thicker than 4 inches. Placement of 3 inches and 4 inches of sand is common practice in southern California for 5-inch and 4-inch thick slabs, respectively. The foundation engineer should provide appropriate concrete mix design criteria and curing measures that may be utilized to assure proper curing of the slab to reduce the potential for rapid moisture loss and subsequent cracking and/or slab curl.

8.8.11 Special subgrade presaturation is not deemed necessary prior to placing concrete; however, the exposed foundation and slab subgrade soil should be moisturized to maintain a moist condition as would be expected in any such concrete placement.

8.8.12 The recommendations of this report are intended to reduce the potential for cracking of slabs due to expansive soil (if present), differential settlement of existing soil, or soil with varying thicknesses. However, even with the incorporation of the recommendations presented herein, foundations, stucco walls, and slabs-on-grade placed on such conditions may still exhibit some cracking due to soil movement and/or shrinkage. The occurrence of concrete shrinkage cracks is independent of the supporting soil characteristics. Their occurrence may be reduced and/or controlled by limiting the slump of the concrete, proper concrete placement and curing, and by the placement of crack control joints at periodic intervals, in particular, where re-entrant slab corners occur.

8.8.13 Geocon should be consulted to provide additional design parameters as required by the structural engineer.

8.9 Concrete Flatwork

8.9.1 Exterior concrete flatwork not subject to vehicular traffic should be constructed in accordance with the recommendations herein. Slab panels should be a minimum of 4 inches thick and, when in excess of 8 feet square, should be reinforced with No. 3 reinforcing bars spaced 24 inches on center in each direction to reduce the potential for wide cracking. In addition, concrete flatwork should be provided with crack control joints to reduce and/or control shrinkage cracking. Crack control spacing should be determined by the project structural engineer based upon the slab thickness and intended usage. Criteria of the American Concrete Institute (ACI) should be taken into consideration when establishing crack control spacing. Subgrade soil for exterior slabs not subjected to vehicle loads should be compacted in accordance with criteria presented in the grading section prior to concrete placement. Subgrade soil should be properly compacted and the moisture content of subgrade soil should be checked prior to placing concrete.

8.9.2 Even with the incorporation of the recommendations within this report, the exterior concrete flatwork has a likelihood of experiencing some movement due to swelling or settlement; therefore, the steel reinforcement should overlap continuously in flatwork to reduce the potential for vertical offsets within flatwork. Additionally, flatwork should be structurally connected to the curbs, where possible, to reduce the potential for offsets between the curbs and the flatwork.

8.9.3 Where exterior flatwork abuts structures at entrant or exit points, the exterior slab should be dowelled into the structure's foundation stemwall. This recommendation is intended to reduce the potential for differential elevations that could result from differential settlement or minor heave of the flatwork. Dowelling details should be designed by the project structural engineer.

8.9.4 The recommendations presented herein are intended to reduce the potential for cracking as a result of differential movement. However, even with the incorporation of the recommendations presented herein, concrete will still crack. The occurrence of concrete shrinkage cracks is independent of the soil supporting characteristics. Their occurrence may be reduced and/or controlled by limiting the slump of the concrete, the use of crack control joints and proper concrete placement and curing. Crack control joints should be spaced at intervals no greater than 12 feet. Literature provided by the Portland Concrete Association (PCA) and American Concrete Institute (ACI) present recommendations for proper concrete mix, construction, and curing practices, and should be incorporated into project construction.

8.10 Conventional Retaining Walls

8.10.1 The recommendations presented herein are generally applicable to the design of rigid concrete or masonry retaining walls having a maximum height of 10 feet. In the event that walls higher than 10 feet or other types of walls are planned, Geocon should be consulted for additional recommendations.

8.10.2 Retaining walls not restrained at the top and having a level backfill surface should be designed for an active soil pressure equivalent to the pressure exerted by a fluid density of 35 pounds per cubic foot (pcf). Where the backfill will be inclined at no steeper than 2:1 (horizontal to vertical), an active soil pressure of 60 pcf is recommended. These soil pressures assume that the backfill materials within an area bounded by the wall and a 1:1 plane extending upward from the base of the wall possess an EI of 50 or less. For walls where backfill materials do not conform to the criteria herein, Geocon should be consulted for additional recommendations.

8.10.3 Unrestrained walls are those that are allowed to rotate more than 0.001H (where H equals the height of the retaining portion of the wall in feet) at the top of the wall. Where walls are restrained from movement at the top, walls with a level backfill surface should be designed for a soil pressure equivalent to the pressure exerted by a fluid density of 55 pcf.

8.10.4 The structural engineer should determine the seismic design category for the project in accordance with Section 1613 of the CBC. If the project possesses a seismic design category of D, E, or F, proposed retaining walls in excess of 6 feet in height should be designed with seismic lateral pressure (Section 1803.5.12 of the 2016 CBC).

8.10.5 A seismic load of 10 pcf should be used for design of walls that support more than 6 feet of backfill in accordance with Section 1803.5.12 of the 2016 CBC. The seismic load is applied as an equivalent fluid pressure along the height of the wall and the calculated loads result in a maximum load exerted at the base of the wall and zero at the top of the wall. This seismic load should be applied in addition to the active earth pressure. The earth pressure is based on half of two-thirds of PGA_M calculated from ASCE 7-10 Section 11.8.3.

8.10.6 Unrestrained walls will move laterally when backfilled and loading is applied. The amount of lateral deflection is dependent on the wall height, the type of soil used for backfill, and loads acting on the wall. The retaining walls and improvements above the retaining walls should be designed to incorporate an appropriate amount of lateral deflection as determined by the structural engineer.

8.10.7 Retaining walls should be provided with a drainage system adequate to prevent the buildup of hydrostatic forces and waterproofed as required by the project architect. The soil immediately adjacent to the backfilled retaining wall should be composed of free draining material completely wrapped in Mirafi 140N (or equivalent) filter fabric for a lateral distance of 1 foot for the bottom two-thirds of the height of the retaining wall. The upper one-third should be backfilled with less permeable compacted fill to reduce water infiltration. Alternatively, a drainage panel, such as a Miradrain 6000 or equivalent, can be placed along the back of the wall. A typical drain detail for each option is shown on Figure 4. The use of drainage openings through the base of the wall (weep holes) is not recommended where the seepage could be a nuisance or otherwise adversely affect the property adjacent to the base of the wall. The recommendations herein assume a properly compacted backfill (EI of 50 or less) with no hydrostatic forces or imposed surcharge load. If conditions different than those described are expected or if specific drainage details are desired, Geocon should be contacted for additional recommendations.

8.10.8 Wall foundations should be designed in accordance with the above foundation recommendations.

8.11 Lateral Loading

8.11.1 To resist lateral loads, a passive pressure exerted by an equivalent fluid density of 350 pounds per cubic foot (pcf) should be used for the design of footings or shear keys. The allowable passive pressure assumes a horizontal surface extending at least 5 feet, or three times the surface generating the passive pressure, whichever is greater. The upper 12 inches of material in areas not protected by floor slabs or pavement should not be included in design for passive resistance.

8.11.2 If friction is to be used to resist lateral loads, an allowable coefficient of friction between soil and concrete of 0.40 should be used for design. The friction coefficient may be reduced depending on the vapor barrier or waterproofing material used for construction in accordance with the manufacturer's recommendations.

8.11.3 The passive and frictional resistant loads can be combined for design purposes. The lateral passive pressures may be increased by one-third when considering transient loads due to wind or seismic forces.

8.12 Preliminary Pavement Recommendations

8.12.1 We calculated the flexible pavement sections in general conformance with the *Caltrans Method of Flexible Pavement Design* (Highway Design Manual, Section 608.4) and Moreno Valley specifications using a range of Traffic Indices. The project civil engineer and owner should evaluate the final Traffic Index for the pavements and review the pavement designations to determine appropriate locations for pavement thickness. Based on our laboratory testing we have used a preliminary R-value of 30 for the subgrade soils for the purposes of this analysis. The final pavement sections should be based on the R-value of the subgrade soil encountered at final subgrade elevation. Table 8.12.1 presents the preliminary flexible pavement sections.

TABLE 8.12.1
PRELIMINARY FLEXIBLE PAVEMENT SECTION

Location	Assumed Traffic Index	Subgrade R-Value	Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)
Driveways for automobiles and light-duty vehicles	5.5	30	3.0	7.0
Medium truck traffic areas	6.0	30	3.5	8.0
Driveways for heavy truck and fire truck traffic	7.0	30	4.0	10.0
Collector Roadways	8.0	30	5.0	11.0

8.12.2 Prior to placing base materials, the upper 12 inches of the subgrade soil should be scarified, moisture conditioned as necessary, and recompacted to a dry density of at least 95 percent of the laboratory maximum dry density at 0 to 2 percent above optimum moisture content as determined by ASTM D 1557. Similarly, the base material should be compacted to a dry density of at least 95 percent of the laboratory maximum dry density at 0 to 2 percent above optimum moisture content. Asphalt concrete should be compacted to a density of at least 95 percent of the laboratory Hveem density in accordance with ASTM D 2726.

8.12.3 Base materials should conform to Section 26 of the *Standard Specifications for The State of California Department of Transportation (Caltrans)*. The asphalt concrete should conform to Section 203-6 of the *Standard Specifications for Public Works Construction (Greenbook)*.

8.12.4 A rigid Portland cement concrete (PCC) pavement section should be placed in heavy truck areas, driveway aprons, and cross gutters. We calculated the rigid pavement section in general conformance with the procedure recommended by the American Concrete Institute report ACI 330R *Guide for Design and Construction of Concrete Parking Lots* using the parameters presented in Table 8.12.4.

TABLE 8.12.4
RIGID PAVEMENT DESIGN PARAMETERS

Design Parameter	Design Value
Modulus of subgrade reaction, k	150 pci
Modulus of rupture for concrete, M_R	500 psi
Traffic Category, TC	C and D
Average daily truck traffic, ADTT	100 and 700

8.12.5 Based on the criteria presented herein, the PCC pavement sections should have a minimum thickness as presented in Table 8.12.5.

TABLE 8.12.5
RIGID PAVEMENT RECOMMENDATIONS

Location	Portland Cement Concrete (inches)
Automobile Parking Stalls (TC=C)	6.5
Heavy Truck and Fire Lane Areas (TC=D)	7.5

8.12.6 The PCC pavement should be placed over subgrade soil that is compacted to a dry density of at least 95 percent of the laboratory maximum dry density at 0 to 2 percent above optimum moisture content. This pavement section is based on a minimum concrete compressive strength of approximately 3,000 psi (pounds per square inch).

8.12.7 A thickened edge or integral curb should be constructed on the outside of concrete slabs subjected to wheel loads. The thickened edge should be 1.2 times the slab thickness or a minimum thickness of 2 inches, whichever results in a thicker edge, and taper back to the recommended slab thickness 4 feet behind the face of the slab (e.g., 6-inch and 7.5-inch-thick slabs would have an 8- and 9.5-inch-thick edge, respectively). Reinforcing steel will not be necessary within the concrete for geotechnical purposes with the possible exception of dowels at construction joints as discussed herein.

8.12.8 In order to control the location and spread of concrete shrinkage cracks, crack-control joints (weakened plane joints) should be included in the design of the concrete pavement slab in accordance with the referenced ACI report.

8.12.9 The performance of pavements is highly dependent on providing positive surface drainage away from the edge of the pavement. Ponding of water on or adjacent to the pavement surfaces will likely result in pavement distress and subgrade failure. Drainage from landscaped areas should be directed to controlled drainage structures. Landscape areas adjacent to the edge of asphalt pavements are not recommended due to the potential for surface or irrigation water to infiltrate the underlying permeable aggregate base and cause distress. Where such a condition cannot be avoided, consideration should be given to incorporating measures that will significantly reduce the potential for subsurface water migration into the aggregate base. If planter islands are planned, the perimeter curb should extend at least 6 inches below the level of the base materials.

8.13 Temporary Excavations

8.13.1 Excavations on the order of 5 to 15 feet below the existing ground surface are expected for construction of the proposed utility improvements; and we expect that the proposed utilities will be installed with conventional cut-and-cover methods.

8.13.2 The excavations will expose fill and very old alluvial soils which are suitable for vertical excavations up to 5 feet where loose soils or caving sands are not present and where not surcharged by adjacent traffic or structures.

8.13.3 Vertical excavations greater than 5 feet will require sloping measures in order to provide a stable excavation. Where sufficient space is available, temporary unsurcharged embankments should be designed by the contractor's competent person in accordance with OSHA regulations.

8.13.4 Where there is insufficient space for sloped excavations, shoring or trench shields should be used to support excavations. Shoring may also be necessary where sloped excavation could remove vertical or lateral support of existing improvements, including existing utilities and adjacent structures. Recommendations for temporary shoring can be provided in an addendum if needed.

8.13.5 Where sloped embankments are utilized, the top of the slope should be barricaded to prevent vehicles and storage loads at the top of the slope within a horizontal distance equal to the height of the slope. If the temporary construction embankments are to be maintained during the rainy season, berms are suggested along the tops of the slopes where necessary to prevent runoff water from entering the excavation and eroding the slope faces. The contractor's competent person should inspect the soils exposed in the cut slopes during excavation in accordance with OSHA regulations so that modifications of the slopes can be made if variations in the soil conditions occur.

8.14 Site Drainage and Moisture Protection

8.14.1 Adequate site drainage is critical to reduce the potential for differential soil movement, erosion and subsurface seepage. Under no circumstances should water be allowed to pond adjacent to footings. The site should be graded and maintained such that surface drainage is directed away from structures in accordance with 2016 CBC 1804.4 or other applicable standards. In addition, surface drainage should be directed away from the top of slopes into swales or other controlled drainage devices. Roof and pavement drainage should be directed into conduits that carry runoff away from the proposed structure.

8.14.2 Landscape planters that saturate the subsurface should not be used within 20 feet of the proposed structure or other settlement sensitive on grade improvements. Localized surface settlement should be anticipated in areas where water is allowed to infiltrate into the subsurface.

8.14.3 Underground utilities should be leak free. Utility and irrigation lines should be checked periodically for leaks, and detected leaks should be repaired promptly. Detrimental soil movement could occur if water is allowed to infiltrate the soil for prolonged periods of time.

8.14.4 Landscaping planters adjacent to paved areas are not recommended due to the potential for surface or irrigation water to infiltrate the pavement's subgrade and base course. Area drains to collect excess irrigation water and transmit it to drainage structures or impervious above-grade planter boxes can be used. In addition, where landscaping is planned adjacent to the pavement, construction of a cutoff wall along the edge of the pavement that extends at least 6 inches below the bottom of the base material should be considered.

8.14.5 If not properly constructed, there is a potential for distress to improvements and properties located hydrologically down gradient or adjacent to infiltration areas. Factors such as the amount of water to be detained, its residence time, and soil permeability have an important effect on seepage transmission and the potential adverse impacts that may occur if the storm water management features are not properly designed and constructed. We have not performed a hydrogeology study at the site. Down-gradient and adjacent structures may be subjected to seeps, movement of foundations and slabs, or other impacts as a result of water infiltration.

8.15 Grading and Foundation Plan Review

8.15.1 Geocon should review the project grading and foundation plans prior to final design submittal to verify that the plans have been prepared in substantial conformance with the recommendations of this report and to provide additional analyses or recommendations, if necessary.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. The firm that performed the geotechnical investigation for the project should be retained to provide testing and observation services during construction to provide continuity of geotechnical interpretation and to check that the recommendations presented for geotechnical aspects of site development are incorporated during site grading, construction of improvements, and excavation of foundations. If another geotechnical firm is selected to perform the testing and observation services during construction operations, that firm should prepare a letter indicating their intent to assume the responsibilities of project geotechnical engineer of record. A copy of the letter should be provided to the regulatory agency for their records. In addition, that firm should provide revised recommendations concerning the geotechnical aspects of the proposed development, or a written acknowledgement of their concurrence with the recommendations presented in our report. They should also perform additional analyses deemed necessary to assume the role of Geotechnical Engineer of Record.

2. The recommendations of this report pertain only to the site investigated and are based upon the assumption that the soil conditions do not deviate from those disclosed in the investigation. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that anticipated herein, Geocon should be notified so that supplemental recommendations can be given. The evaluation or identification of the potential presence of hazardous or corrosive materials was not part of the scope of services provided by Geocon.

3. This report is issued with the understanding that it is the responsibility of the owner or his representative to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project and incorporated into the plans, and the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.

4. The findings of this report are valid as of the date of this report. However, changes in the conditions of a property can occur with the passage of time, whether they be due to natural processes or 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 partially by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of three years.

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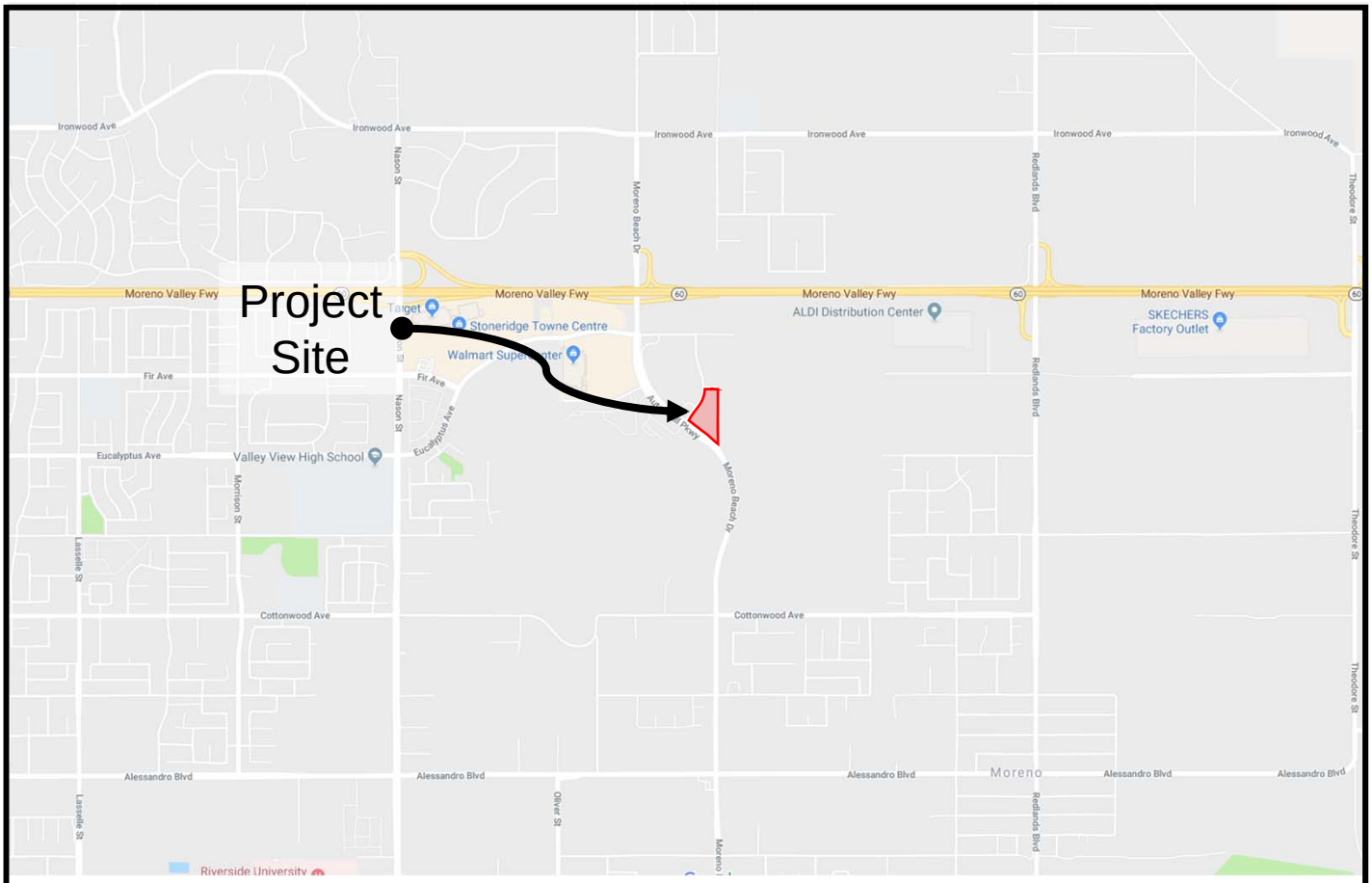


N

1000 ft

SOURCE: Google Maps, 2019

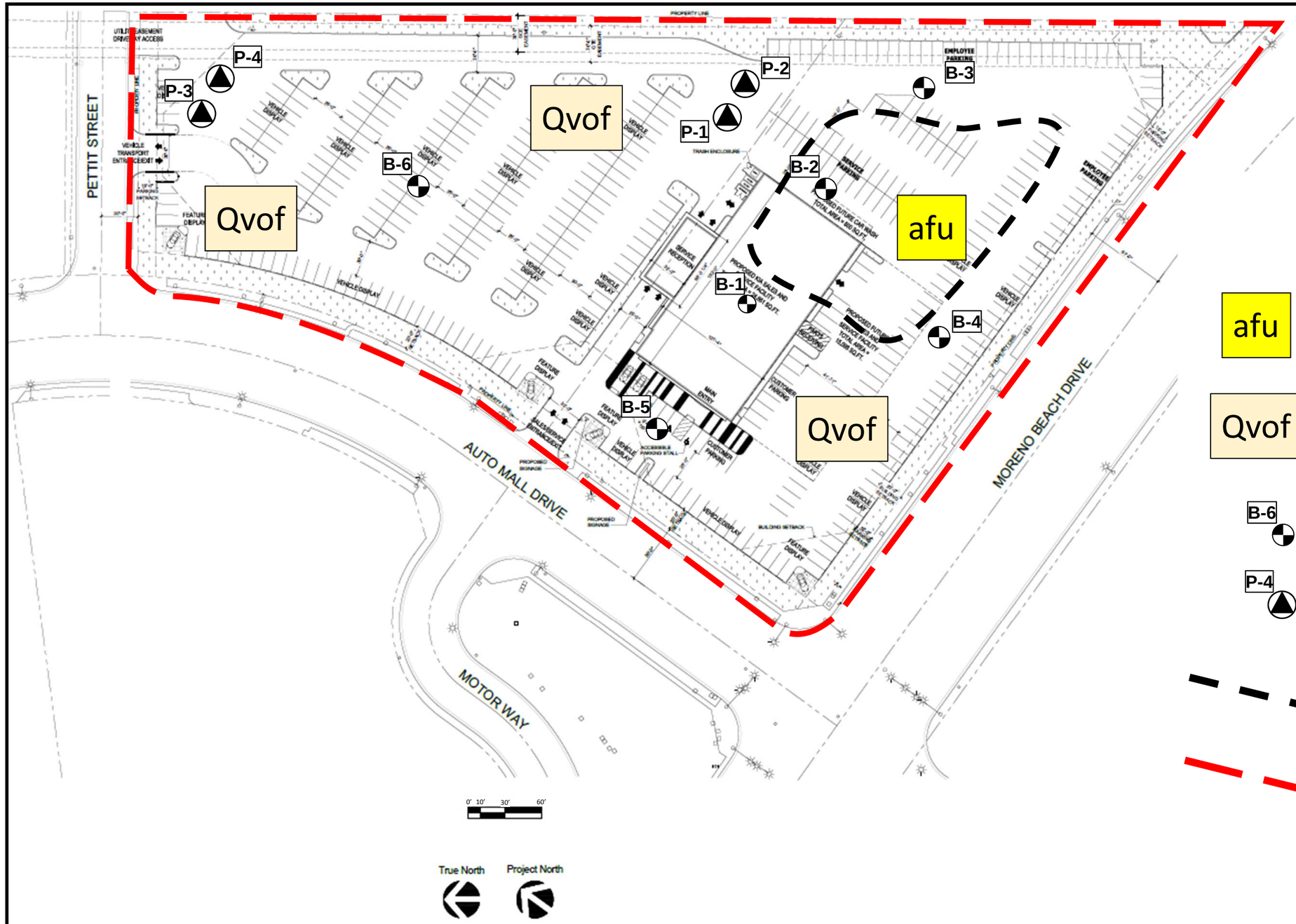
VICINITY MAP

GEOCON
W E S T, I N C.
GEOTECHNICAL ENVIRONMENTAL MATERIALS
41571 CORNING PLACE, SUITE 101, MURRIETA, CA 92562-7065
PHONE 951-304-2300 FAX 951-304-2392

PDT		

KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019	PROJECT NO. T2844-22-01	FIG. 1



GEOCON LEGEND

Locations are approximate

afu ..... UNDOCUMENTED FILL

Qvof ..... VERY OLD ALLUVIAL FAN DEPOSITS

B-6 ..... BORING LOCATION

P-4 ..... PERCOLATION TEST LOCATION

..... GEOLOGIC CONTACT

..... LIMITS OF THIS REPORT

Source: Carlile Coatsworth Architects, Inc., dated January 17, 2019

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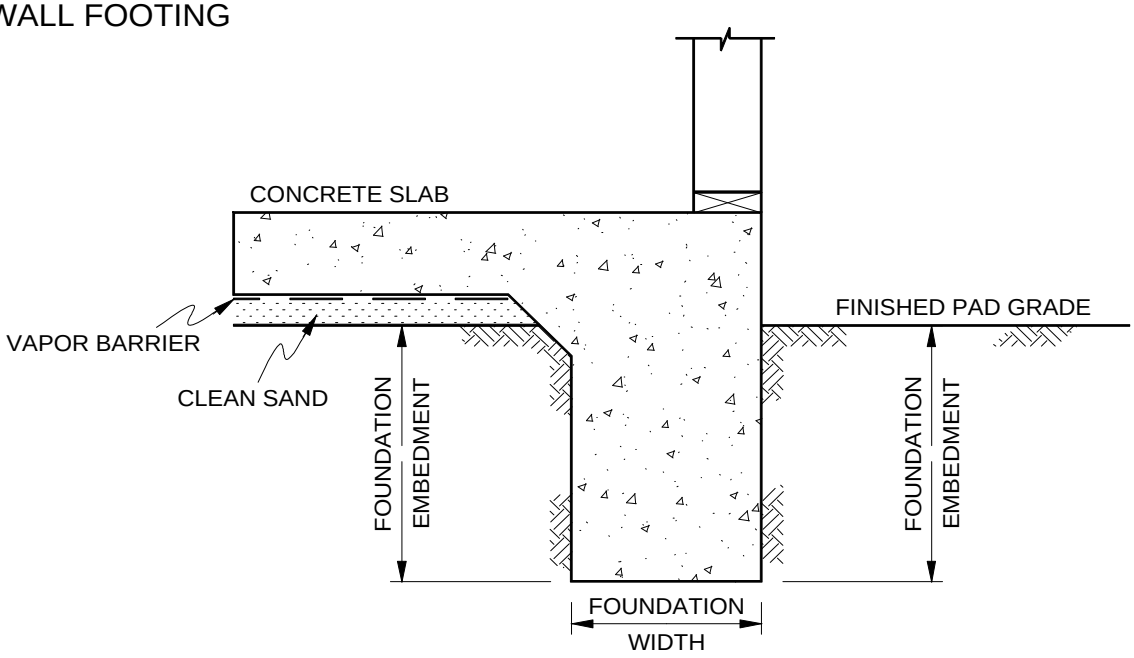
PDT

GEOLOGIC MAP

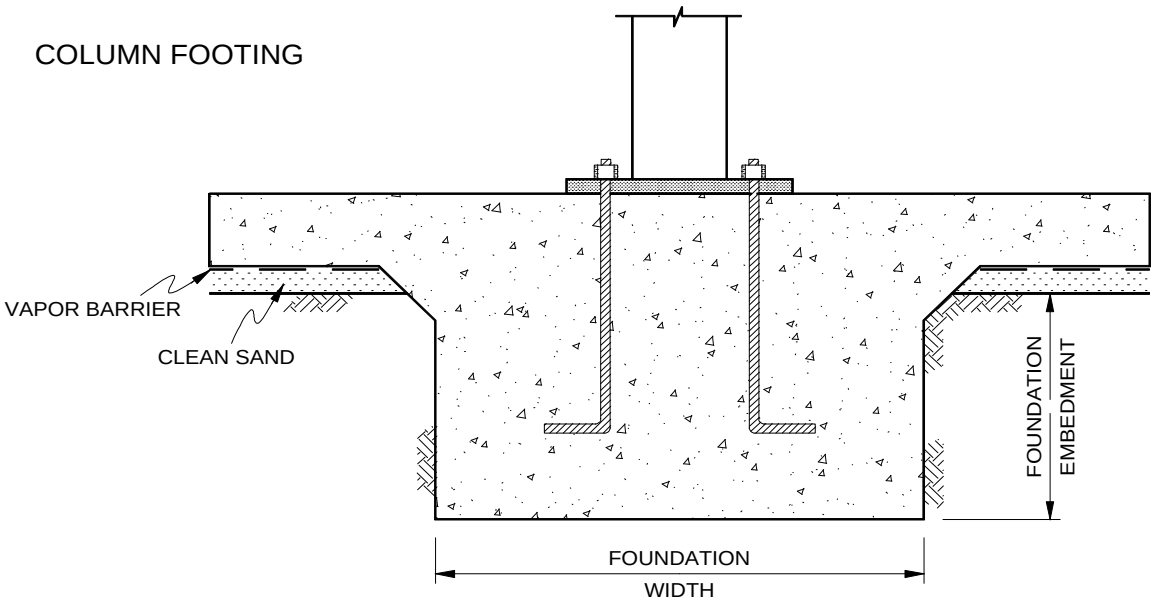
KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019 | PROJECT NO. T2844-22-01 | FIG. 2

WALL FOOTING



COLUMN FOOTING



NOTE: SEE REPORT FOR FOUNDATION WIDTH AND DEPTH RECOMMENDATION

NO SCALE

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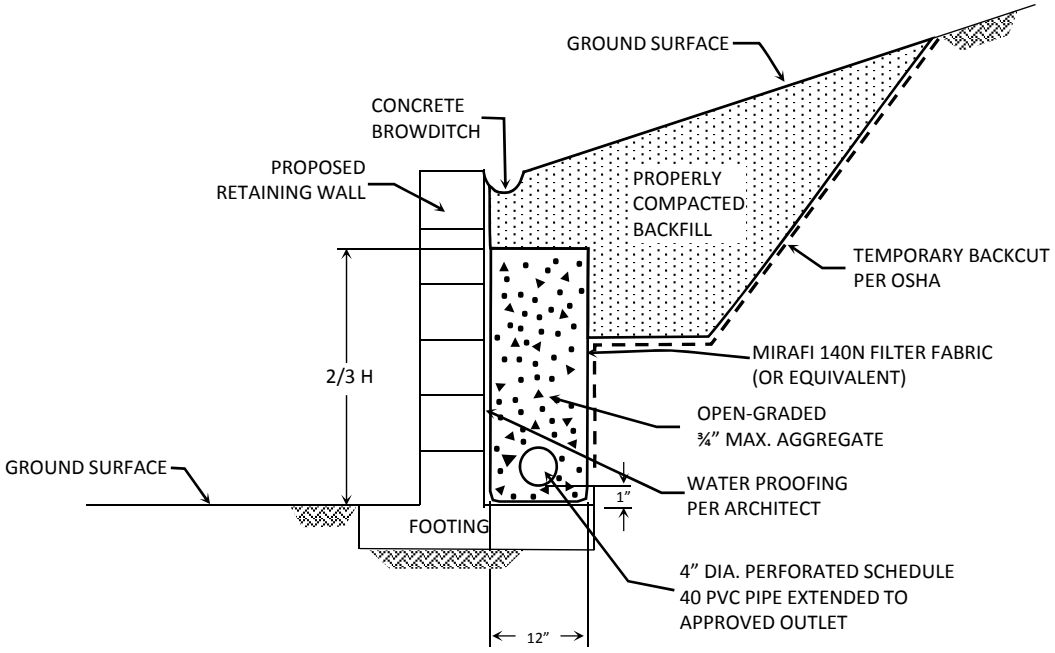
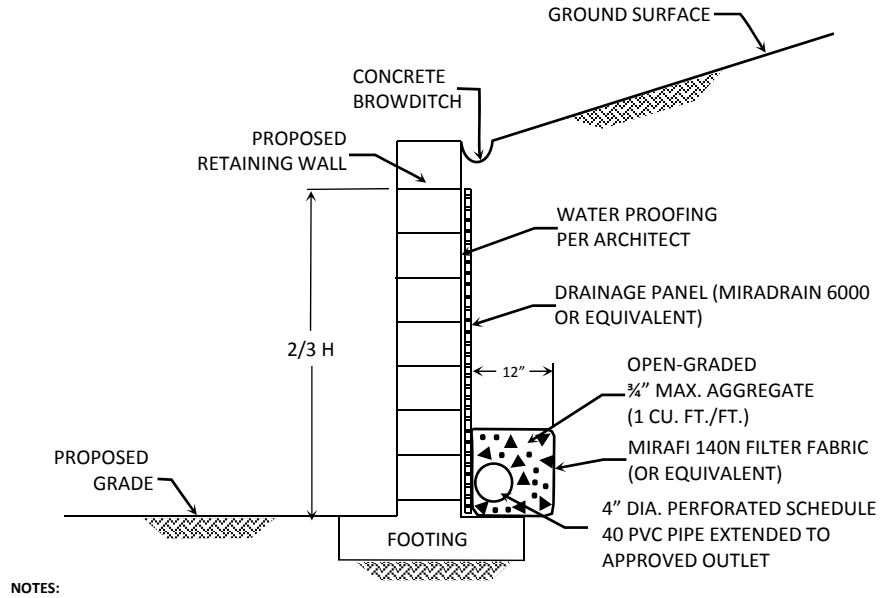
WALL / COLUMN FOOTING DETAIL

KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019	PROJECT NO. T2844-22-01	FIG. 3





NOTES:

DRAIN SHOULD BE UNFORMLY SLOPED TO GRAVITY OUTLET
OR TO A SUMP WHERE WATER CAN BE REMOVED BY PUMPIMG

CONCRETE BROW DITCH RECOMMENDED FOR SLOPE HEIGHTS
GREATER THAN 6 FEET

NO SCALE

TYPICAL RETAINING WALL DRAIN DETAIL

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KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019	PROJECT NO. T2367-22-02	FIG. 4

APPENDIX A

APPENDIX A

FIELD INVESTIGATION

Field work for our investigation included a subsurface exploration, soil sampling, and percolation testing. The *Geologic Map*, Figure 2 presents the locations of the exploratory borings. Boring logs and an explanation of the geologic units encountered are presented in figures following the text in this appendix. We located the borings in the field using existing reference points. Therefore, actual boring locations may deviate slightly. We performed a field investigation on December 17, 2018 which consisted of drilling 10 exploratory borings to a maximum depth of approximately 51½ feet below existing grade with a CME 75 drill rig equipped with 8-inch-diameter hollow-stem auger.

We collected bulk and relatively undisturbed samples from the borings by driving a 3-inch O. D., California Modified Sampler into the "undisturbed" soil mass with blows from a 140-pound hammer falling 30 inches on an auto hammer. The California Modified Sampler was equipped with 1-inch high by 2$^{3}/_{8}$-inch inside diameter brass sampler rings to facilitate removal and testing. Relatively undisturbed samples and bulk samples of disturbed soils were transported to our laboratory for testing. The type of sample is noted on the exploratory boring logs.

The samplers were driven 18 inches into the bottom of the excavations. Blow counts are recorded for every 6 inches the sampler is driven. The penetration resistances shown on the boring logs are shown in terms of blows per foot. The values indicated on the boring logs are the sum of the last 12 inches of the sampler if driven 18 inches. If the sampler was not driven for 18 inches, an approximate value is calculated in term of blows per foot or the final 6-inch interval is reported. These values are not to be taken as N-values, adjustments have not been applied. We estimated elevations shown on the boring logs from a topographic map.

We visually examined the soil conditions encountered within the borings, classified, and logged in general accordance with the Unified Soil Classification System (USCS). Logs of the borings are presented on Figures A-1 through A-10. The logs depict the general soil and geologic conditions encountered and the depth at which we obtained the samples.

Percolation testing was performed on December 18, 2018 in accordance with *Riverside County Flood Control and Water Conservation District, LID BMP Manual, Appendix A.* The percolation tests were run in accordance with *Section 2.3., Shallow Percolation Test*. The percolation test data is presented on Figures A-11 and A-14.

PROJECT NO. T2844-22-01

BORING B-1

ELEV. (MSL.) **1756** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **PDT**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B-1@0-5'			SM	**UNDOCUMENTED FILL (afu)** Silty SAND, loose, dry, reddish brown; fine to medium sand; some gravel and cobble; some concrete chunks			
2								
	B-1@2.5'			SM	**VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)** Silty SAND, very dense, damp, light brown; fine to coarse sand	85	124.6	4.6
4								
	B-1@5'				-Becomes dark reddish brown; damp; trace coarse sand; trace gravel; trace carbonate stringers	80	130.4	5.3
6								
8	B-1@7.5				-Becomes dense, moist; fine sand; some mica	56	125.4	7.8
10	B-1@10'				-Some medium sand	69	132.9	7.9
				ML	Sandy SILT, hard, moist, dark gray; fine sand; trace medium sand			
12								
14					-Becomes dark brown; some clay			
	B-1@15'			SM	Silty SAND, dense, moist, reddish brown; fine to medium sand; trace mica	60		
16								
18								
20	B-1@20				-Becomes very dense	80	126.0	10.8
22								
24								
	B-1@25'				-Becomes medium dense	44		
26								
28								

Figure A-1,
Log of Boring B-1, Page 1 of 2

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2844-22-01

BORING B-1

ELEV. (MSL.) **1756** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **PDT**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
30	B-1@30'			SM	Silty SAND, medium dense, moist, reddish brown; trace coarse sand; trace gravel; increase in silt	12		
32								
34								
36	B-1@35'				-Becomes brownish red; fine sand; trace medium sand	44		
38								
40	B-1@40'				-Some carbonate stringers	23		
42								
44								
46	B-1@45'				-Becomes dense; strong brown; fine to mediun sand; carbonate stringers; micaceous	62		
48								
50	B-1@50					34		
					Total depth 51.5 feet Groundwater not encountered Penetration resistance for 140-lb hammer falling 30" by auto-hammer Backfilled with cuttings 4/9/2018			

Figure A-1,
Log of Boring B-1, Page 2 of 2

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2844-22-01

BORING B-2

ELEV. (MSL.) **1753** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **PDT**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**UNDOCUMENTED FILL (afu)** Silty SAND, medium dense, dry, reddish brown; fine to medium sand			
2	B-2@2.5'					50/6"	117.3	6.2
4				ML	**VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)** Sandy SILT, stiff, damp, light brown; fine sand			
6	B-2@5-10 B-2@5'					33	96.7	9.6
8	B-2@7.5'				-Becomes moist moist, dark brown; micaceous	21	106.1	11.5
10	B-2@10'					24	102.9	10.3
12								
14				SM	Silty SAND, medium dense, moist, strong brown; fine sand			
16	B-2@15'					40		
18								
20	B-2@20'					42	128.0	4.5
22								
24								
26	B-2@25'				-Becomes dense	63		
					Total depth 26.5 feet Groundwater not encountered Penetration resistance for 140-lb hammer falling 30" by auto-hammer Backfilled with cuttings 4/9/2018			

Figure A-2,
Log of Boring B-2, Page 1 of 1

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2844-22-01

BORING B-3

ELEV. (MSL.) **1751** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **PDT**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**UNDOCUMENTED FILL (afu)** Silty SAND, loose, dry, reddish brown; fine to medium sand; some gravel and cobble			
2				SM	**VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)** Silty SAND, very dense, damp, brownish red; fine to medium sand; carbonate stringers			
	B-3@2.5'					50/6"		
4								
	B-3@5-10'				-Becomes moist; strong brown	50/6"	127.9	7.5
6	B-3@5'							
	B-3@7.5'				-Trace carbonate stringers; micaceous	50/6"		
8				ML	Sandy SILT, hard, moist, dark brown; fine sand			
	B-3@10'					44		
10								
12								
				CL	Sandy CLAY, stiff, moist, dark brown; fine sand			
14								
	B-3@15'					14	117.1	11.1
16								
				SC	Clayey SAND, medium dense, moist, reddish brown, fine to coarse sand; trace carbonate stringers			
18								
	B-3@20'					44		
20								
					Total depth 21.5 feet Groundwater not encountered Penetration resistance for 140-lb hammer falling 30" by auto-hammer Backfilled with cuttings 12/17/2018			

Figure A-3,
Log of Boring B-3, Page 1 of 1

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. T2844-22-01

BORING B-4

ELEV. (MSL.) **1756** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **ATS**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**UNDOCUMENTED FILL (afu)** Silty SAND, dense, damp, brown; fine sand; some coarse sand; trace gravel			
2								
4	B-4@2.5' B-4@2.5-7.5'			SM	**VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)** Silty SAND, very dense, damp, light brown; fine sand; some medium and coarse sand; trace mica; root hairs	50/5"		
6	B-4@5'				-Becomes dense, strong brown; trace pinhole porosity; micaceous	63		
8	B-4@7.5'				-Becomes very dense; moist	85	130.9	7.0
10	B-4@10'				-Becomes dense; dark gray; fine sand	53		
12								
14								
16	B-4@15'				-Becomes very dense; brownish gray; some medium and coarse sand	50/5"		
18								
20	B-4@20'			SC	Clayaey SAND, medium dense, damp, reddish brown; fine sand; some coarse sand	42	135.2	6.1
					Total depth 21.5 feet Groundwater not encountered Penetration resistance for 140-lb hammer falling 30" by auto-hammer Backfilled with cuttings 12/17/2018			

Figure A-4,
Log of Boring B-4, Page 1 of 1

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2844-22-01

BORING B-5

ELEV. (MSL.) **1755** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **ATS**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B-5@0-5'			SM	**UNDOCUMENTED FILL (afu)** Silty SAND, dense, damp, brown; fine sand; some coarse sand; trace gravel			
2								
	B-5@2.5'			SM	**VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)** Silty SAND, very dense, moist, light brown; fine sand; some medium and coarse sand; trace mica; root hairs	66	116.6	6.5
4								
	B-5@5'				-Becomes very dense, moist, strong brown; pinhole porosity; micaceous	50/4"	134.1	7.6
6								
	B-5@7.5'			SC	Clayey SAND, very dense, moist, dark brown; fine sand; trace medium and coarse sand; trace gravel; pinhole porosity; trace mica	50/6"	130.7	7.8
8								
10	B-5@10'				-Becomes dense; reddish brown	50		
12								
14								
	B-5@15'				-Becomes brown	57	132.4	6.1
16								
18								
20	B-5@20'			SM	Silty SAND, medium dense, moist, light brown; fine sand; some medium and coarse sand; pinhole porosity	32		
					Total depth 21.5 feet Groundwater not encountered Penetration resistance for 140-lb hammer falling 30" by auto-hammer Backfilled with cuttings 12/17/2018			

Figure A-5,
Log of Boring B-5, Page 1 of 1

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2844-22-01

BORING B-6

ELEV. (MSL.) **1752** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **ATS**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B-6@0-5'			SM	**UNDOCUMENTED FILL (afu)** Silty SAND, dense, damp, brown; fine sand; trace gravel; root hairs			
2								
	B-6@2.5'			SP	Poorly Graded SAND, very dense, moist, light yellowish brown; fine sand; some medium and coarse sand; trace mica	50/5"	129.6	6.0
4								
	B-6@5'			SC	Clayey SAND, very dense, moist, light reddish brown; fine sand; pinhole porosity	50/6"		
6								
	B-6@7.5'			SM	Silty SAND, very dense, moist, grayish brown; fine sane; pinhole porosity	50/6"	131.5	6.0
8								
10	B-6@10'					50/6"		
12								
14								
	B-6@15'			SC	Clayey SAND, dense, moist, gray, fine sand	72		
16								
					Total depth 16.5 feet Groundwater not encountered Penetration resistance for 140-lb hammer falling 30" by auto-hammer Backfilled with cuttings 12/17/2018			

Figure A-6,
Log of Boring B-6, Page 1 of 1

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2844-22-01

BORING P-1

ELEV. (MSL.) **1751** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **ATS**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**UNDOCUMENTED FILL (afu)** Silty SAND, medium dense, dry, medium brown; fine sand; some medium and coarse sand			
2				SM	**VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)** Silty SAND, dense, damp, brown; fine to medium sand; some coarse sand; trace gravel			
4								
6								
	P-1@7-8'							
8					Total depth 8 feet Groundwater not encountered Set as Percolation Test P-1 Backfilled with cuttings 12/18/2018			

Figure A-7,
Log of Boring P-1, Page 1 of 1

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2844-22-01

BORING P-2

ELEV. (MSL.) **1751** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **ATS**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**UNDOCUMENTED FILL (afu)** Silty SAND, medium dense, dry, medium brown; fine sand; some medium and coarse sand			
2				SM	**VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)** Silty SAND, dense, damp, brown; fine to medium sand; some coarse sand; trace gravel			
4								
6	P-2@6-7"							
					Total depth 7 feet Groundwater not encountered Set as Percolation Test P-2 Backfilled with cuttings 12/18/2018			

Figure A-8,
Log of Boring P-2, Page 1 of 1

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2844-22-01

BORING P-3

ELEV. (MSL.) **1751** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **ATS**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SC	**UNDOCUMENTED FILL (afu)** Clayey SAND, medium dense, damp, medium brown; fine sand; some coarse sand			
2				SC	**VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)** Clayey SAND, dense, damp, light olive brown; fine sand; some coarse sand			
4								
6				SM	Silty SAND, dense, damp, medium brown; fine sand			
8								
10	P-3@9-10			ML	Sandy SILT, stiff, moist, dark yellowish brown; fine to medium sand; trace coarse sand			

Total depth 10 feet
Groundwater not encountered
Set as Percolation Test P-3
Backfilled with cuttings 12/18/2018

Figure A-9,
Log of Boring P-3, Page 1 of 1

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2844-22-01

BORING P-4

ELEV. (MSL.) **1752** DATE COMPLETED **12/17/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **ATS**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SC	**UNDOCUMENTED FILL (afu)** Clayey SAND, medium dense, damp, medium brown; fine sand; some coarse sand			
2				SC	**VERY OLD ALLUVIAL FAN DEPOSITS (Qvof)** Clayey SAND, dense, damp, light olive brown; fine sand; some coarse sand			
4								
6				SM	Silty SAND, dense, damp, medium brown; fine sand			
8								
10	P-4@9-10			ML	Sandy SILT, stiff, moist, dark yellowish brown; fine to medium sand; trace coarse sand			

Total depth 10 feet
Groundwater not encountered
Set as Percolation Test P-4
Backfilled with cuttings 11/27/2018

Figure A-10,
Log of Boring P-4, Page 1 of 1

T2843-22-01 BORING LOGS.G

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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GEOCON

PERCOLATION TEST REPORT

Project Name:		KIA Moreno Valley			**Project No.:**		T2844-22-01
Test Hole No.:		P-1			**Date Excavated:**		12/17/2018
Length of Test Pipe:			108.0	inches	**Soil Classification:**		SM
Height of Pipe above Ground:			16.8	inches	**Presoak Date:**		12/17/2018
Depth of Test Hole:			91.2	inches	**Perc Test Date:**		12/18/2018
Check for Sandy Soil Criteria Tested by:				SP	**Percolation Tested by:**		SP
Water level measured from bottom of hole							

Sandy Soil Criteria Test

Trial No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Level (in)	Final Water Level (in)	Δ in Water Level (inches)	Percolation Rate (min/inch)
1	8:52 AM 9:17 AM	25	25	43.2	43.1	0.1	208
2	9:17 AM 9:42 AM	25	50	43.1	43.0	0.1	208
			Soil Criteria: Normal				

Percolation Test

Reading No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Head (in)	Final Water Head (in)	Δ in Water Level (inches)	Percolation Rate (min/inch)
1	9:42 AM 10:12 AM	30	30	43.1	43.0	0.1	250
2	10:12 AM 10:42 AM	30	60	43.0	42.8	0.1	250
3	10:42 AM 11:12 AM	30	90	42.8	42.6	0.2	125
4	11:12 AM 11:42 AM	30	120	42.6	42.5	0.1	250
5	11:42 AM 12:12 PM	30	150	42.5	42.4	0.1	250
6	12:12 PM 12:42 PM	30	180	42.4	42.2	0.1	250
7	12:42 PM 1:12 PM	30	210	42.2	42.1	0.1	250
8	1:12 PM 1:42 PM	30	240	42.1	42.0	0.1	250
9	1:42 PM 2:12 PM	30	270	42.0	41.9	0.1	250
10	2:12 PM 2:42 PM	30	300	41.9	41.8	0.1	250
11	2:42 PM 3:12 PM	30	330	41.8	41.6	0.1	250
12	3:12 PM 3:42 PM	30	360	41.6	41.5	0.1	250

Infiltration Rate (in/hr):	0.01		
Radius of test hole (in):	4		**Figure A-11**
Average Head (in):	41.6		

PERCOLATION TEST REPORT

Project Name:		KIA Moreno Valley			**Project No.:**		T2844-22-01
Test Hole No.:		P-2			**Date Excavated:**		12/17/2018
Length of Test Pipe:			95.8	inches	**Soil Classification:**		SM
Height of Pipe above Ground:			16.8	inches	**Presoak Date:**		12/17/2018
Depth of Test Hole:			79.0	inches	**Perc Test Date:**		12/18/2018
Check for Sandy Soil Criteria Tested by:				SP	**Percolation Tested by:**		SP
Water level measured from bottom of hole							

Sandy Soil Criteria Test

Trial No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Level (in)	Final Water Level (in)	Δ in Water Level (inches)	Percolation Rate (min/inch)
1	8:56 AM 9:21 AM	25	25	23.4	23.0	0.4	69
2	9:21 AM 9:46 AM	25	50	23.0	22.9	0.1	208
			Soil Criteria: Normal				

Percolation Test

Reading No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Head (in)	Final Water Head (in)	Δ in Water Level (inches)	Percolation Rate (min/inch)
1	9:46 AM 10:16 AM	30	30	22.9	22.6	0.4	83
2	10:16 AM 10:46 AM	30	60	22.6	22.2	0.4	83
3	10:46 AM 11:16 AM	30	90	22.2	21.4	0.8	36
4	11:16 AM 11:46 AM	30	120	21.4	20.2	1.2	25
5	11:46 AM 12:16 PM	30	150	20.2	19.1	1.1	28
6	12:16 PM 12:46 PM	30	180	19.1	18.0	1.1	28
7	12:46 PM 1:16 PM	30	210	18.0	16.8	1.2	25
8	1:16 PM 1:46 PM	30	240	16.8	15.7	1.1	28
9	1:46 PM 2:16 PM	30	270	15.7	14.6	1.1	28
10	2:16 PM 2:46 PM	30	300	14.6	13.6	1.1	28
11	2:46 PM 3:16 PM	30	330	13.6	12.5	1.1	28
12	3:16 PM 3:46 PM	30	360	12.5	11.4	1.1	28

Infiltration Rate (in/hr):	0.31		
Radius of test hole (in):	4		**Figure A-12**
Average Head (in):	11.9		

PERCOLATION TEST REPORT							
Project Name:		KIA Moreno Valley			**Project No.:**		T2844-22-01
Test Hole No.:		P-3			**Date Excavated:**		12/17/2018
Length of Test Pipe:			119.8	inches	**Soil Classification:**		ML
Height of Pipe above Ground:			2.4	inches	**Presoak Date:**		12/17/2018
Depth of Test Hole:			117.4	inches	**Perc Test Date:**		12/18/2018
Check for Sandy Soil Criteria Tested by:				SP	**Percolation Tested by:**		SP
Water level measured from bottom of hole							
Sandy Soil Criteria Test							
Trial No.	**Time**	**Time Interval (min)**	**Total Elapsed Time (min)**	**Initial Water Level (in)**	**Final Water Level (in)**	**Δ in Water Level (inches)**	**Percolation Rate (min/inch)**
1	9:03 AM 9:28 AM	25	25	42.6	42.5	0.1	208
2	9:28 AM 9:53 AM	25	50	42.5	42.4	0.1	208
			Soil Criteria: Normal				
			Percolation Test				
Reading No.	**Time**	**Time Interval (min)**	**Total Elapsed Time (min)**	**Initial Water Head (in)**	**Final Water Head (in)**	**Δ in Water Level (inches)**	**Percolation Rate (min/inch)**
1	9:53 AM 10:23 AM	30	30	42.4	42.2	0.1	250
2	10:23 AM 10:53 AM	30	60	42.2	42.1	0.1	250
3	10:53 AM 11:23 AM	30	90	42.1	42.0	0.1	250
4	11:23 AM 11:53 AM	30	120	42.0	41.9	0.1	250
5	11:53 AM 12:23 PM	30	150	41.9	41.8	0.1	250
6	12:23 PM 12:53 PM	30	180	41.8	41.6	0.1	250
7	12:53 PM 1:23 PM	30	210	41.6	41.5	0.1	250
8	1:23 PM 1:53 PM	30	240	41.5	41.4	0.1	250
9	1:53 PM 2:23 PM	30	270	41.4	41.3	0.1	250
10	2:23 PM 2:53 PM	30	300	41.3	41.2	0.1	250
11	2:53 PM 3:23 PM	30	330	41.2	41.0	0.1	250
12	3:23 PM 3:53 PM	30	360	41.0	40.9	0.1	250
Infiltration Rate (in/hr):			0.01				
Radius of test hole (in):			4				**Figure A-13**
Average Head (in):			41.0				

PERCOLATION TEST REPORT

Project Name:		KIA Moreno Valley			**Project No.:**		T2844-22-01
Test Hole No.:		P-4			**Date Excavated:**		12/17/2018
Length of Test Pipe:			120.0	inches	**Soil Classification:**		ML
Height of Pipe above Ground:			0.0	inches	**Presoak Date:**		12/17/2018
Depth of Test Hole:			120.0	inches	**Perc Test Date:**		12/18/2018
Check for Sandy Soil Criteria Tested by:				SP	**Percolation Tested by:**		SP
Water level measured from bottom of hole							

Sandy Soil Criteria Test

Trial No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Level (in)	Final Water Level (in)	Δ in Water Level (inches)	Percolation Rate (min/inch)
1	9:06 AM 9:31 AM	25	25	31.3	31.2	0.1	208
2	9:31 AM 9:56 AM	25	50	31.2	30.6	0.6	42
			Soil Criteria: Normal				

Percolation Test

Reading No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Head (in)	Final Water Head (in)	Δ in Water Level (inches)	Percolation Rate (min/inch)
1	9:56 AM 10:26 AM	30	30	30.6	30.5	0.1	250
2	10:26 AM 10:56 AM	30	60	30.5	29.9	0.6	50
3	10:56 AM 11:26 AM	30	90	29.9	29.3	0.6	50
4	11:26 AM 11:56 AM	30	120	29.3	28.7	0.6	50
5	11:56 AM 12:26 PM	30	150	28.7	28.1	0.6	50
6	12:26 PM 12:56 PM	30	180	28.1	27.5	0.6	50
7	12:56 PM 1:26 PM	30	210	27.5	26.9	0.6	50
8	1:26 PM 1:56 PM	30	240	26.9	26.4	0.5	63
9	1:56 PM 2:26 PM	30	270	26.4	25.9	0.5	63
10	2:26 PM 2:56 PM	30	300	25.9	25.3	0.6	50
11	2:56 PM 3:26 PM	30	330	25.3	24.8	0.5	63
12	3:26 PM 3:56 PM	30	360	24.8	24.4	0.5	63

Infiltration Rate (in/hr):			0.07				
Radius of test hole (in):			4				**Figure A-14**
Average Head (in):			24.6				

APPENDIX

APPENDIX B

LABORATORY TESTING

We performed laboratory tests in accordance with current, generally accepted test methods of ASTM International (ASTM) or other suggested procedures. We analyzed selected soil samples for *in-situ* density and moisture content, maximum dry density and optimum moisture content, expansion index, corrosivity, grain size distribution, consolidation characteristics, R-value and direct shear strength. The results of the laboratory tests are presented on Figures B-1 through B-5. The in-place dry density and moisture content of the samples tested are presented on the boring logs in *Appendix A*.

SUMMARY OF LABORATORY MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT TEST RESULTS ASTM D1557

Sample No.	Description	Maximum Dry Density (pcf)	Optimum Moisture Content (% of dry wt.)
B-1 @ 0-5’	Silty SAND (SM), reddish brown to light brown	135.2	6.7

SUMMARY OF LABORATORY EXPANSION INDEX TEST RESULTS ASTM D4829

Sample No.	Moisture Content		After Test Dry Density (pcf)	Expansion Index
	Before Test (%)	After Test (%)		
B-5 @ 0-5’	7.6	12.5	120.0	3

SUMMARY OF CORROSIVITY TEST RESULTS

Sample No.	Chloride Content (ppm)	Sulfate Content (%)	pH	Resistivity (ohm-centimeter)
B-1 @ 0-5’	98	0.001	8.3	4,600

Chloride content determined by California Test 422.
Water-soluble sulfate determined by California Test 417.
Resistivity and pH determined by Caltrans Test 643.

SUMMARY OF LABORATORY R-VALUE TEST RESULTS ASTM D2844

Sample No.	R-Value
B-6 @ 0-5”	33

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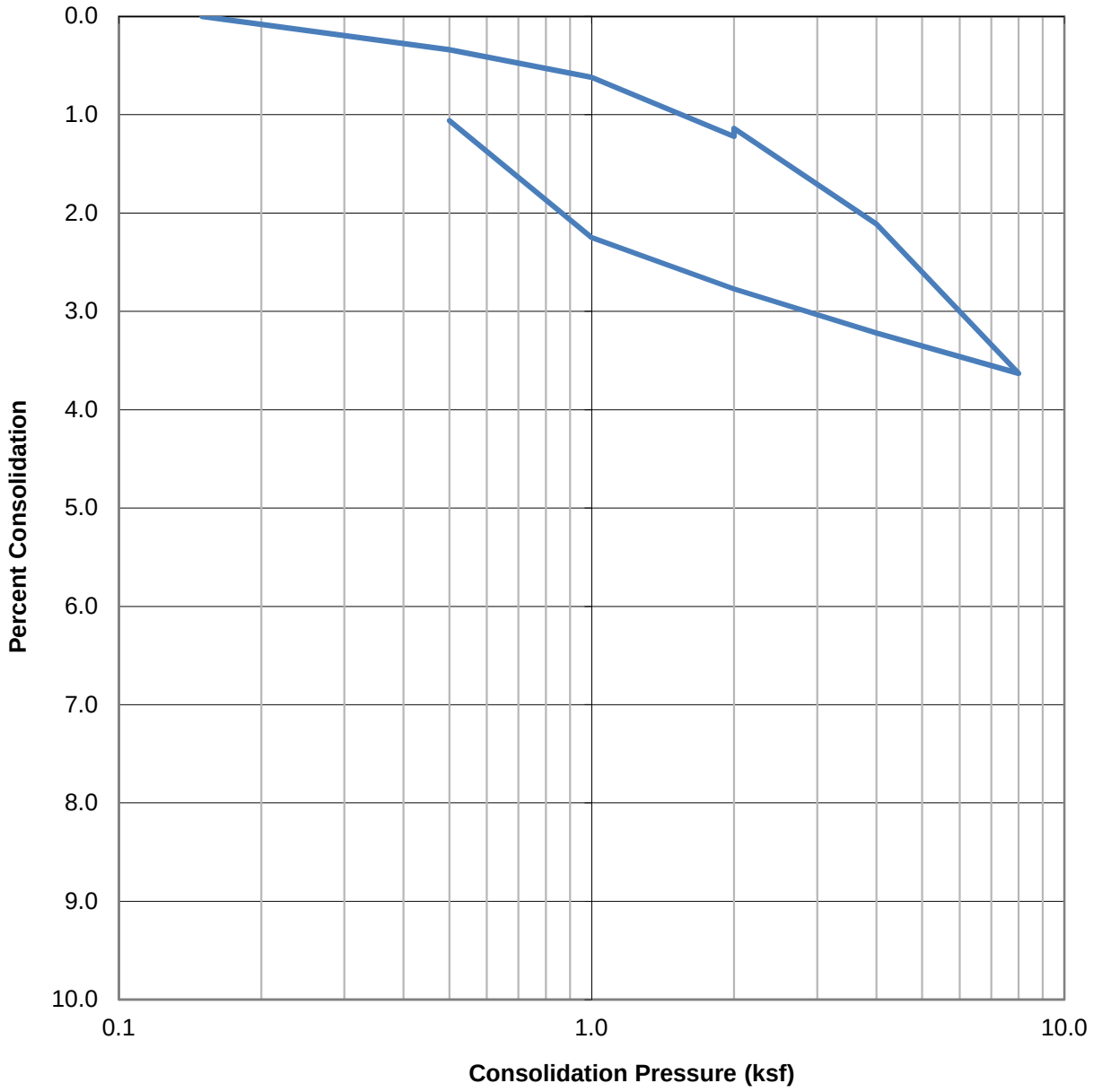
PDT		

LABORATORY TEST RESULTS

KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019	PROJECT NO. T2844-22-01	FIG B-1

WATER ADDED AT 2 KSF



SAMPLE ID	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B-2 @ 7.5'	ML	106.1	11.5	22.1

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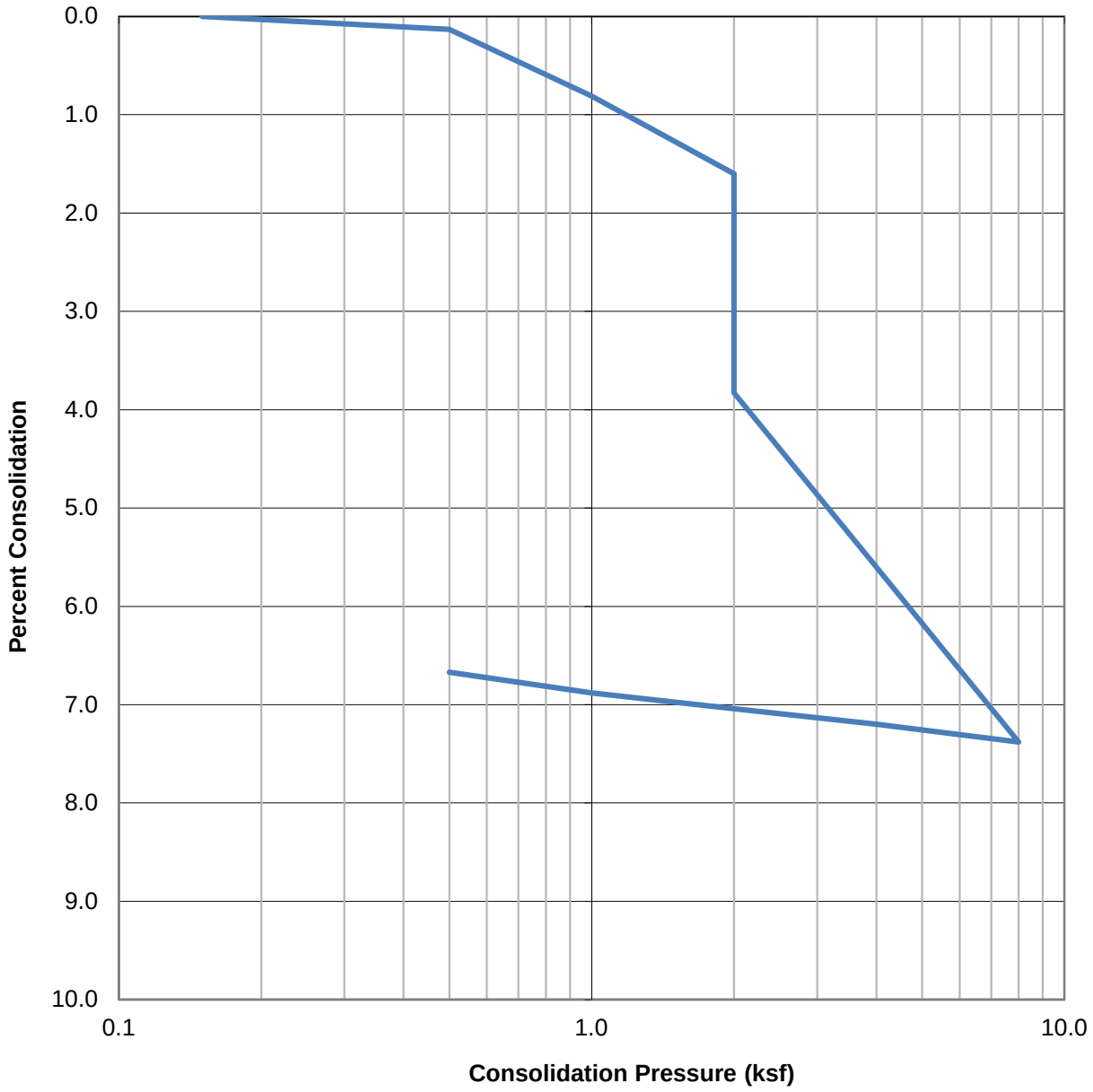
CONSOLIDATION TEST RESULTS

KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019 | PROJECT NO. T2844-22-01 | FIG B-2

WATER ADDED AT 2 KSF



SAMPLE ID	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B-5 @ 2.5'	SM	116.6	6.5	13.1

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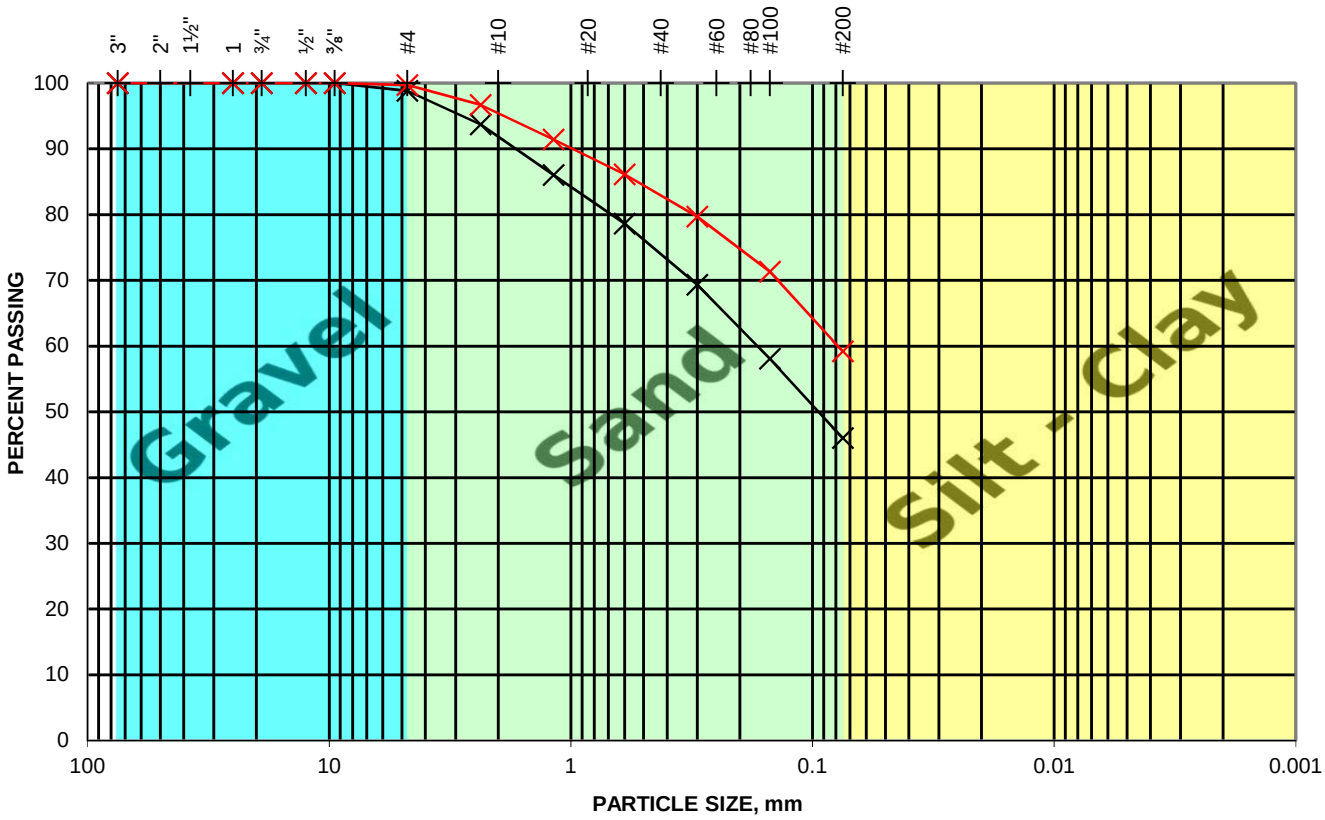
CONSOLIDATION TEST RESULTS

KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019	PROJECT NO. T2844-22-01	FIG B-3



SAMPLE ID	SAMPLE DESCRIPTION
P-1/P-2 Blend	SM - Silty Sand, trace gravel
P-3/P-4 Blend	ML - Sandy SILT

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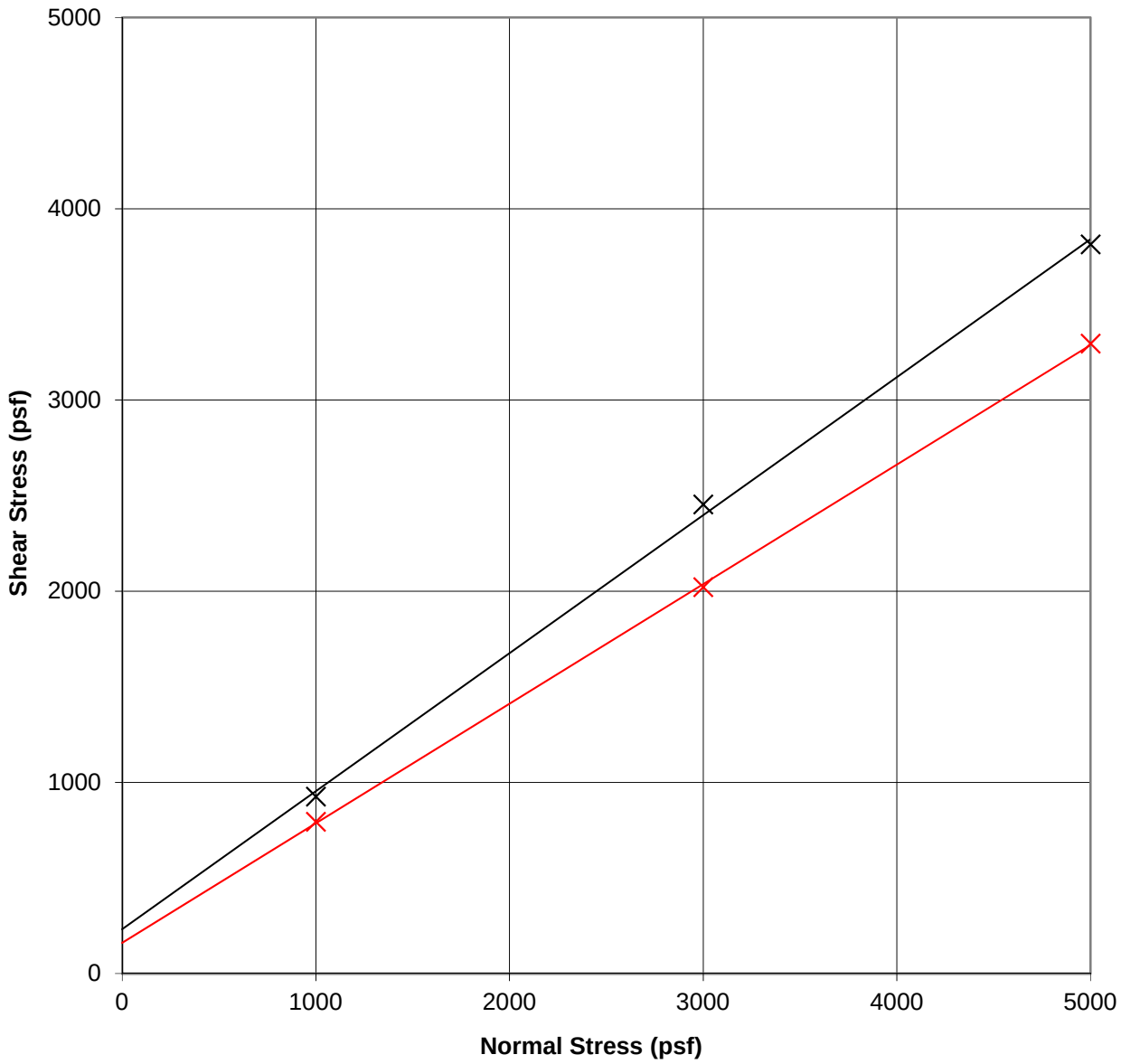
GRAIN SIZE DISTRIBUTION

KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019	PROJECT NO. T2844-22-01	FIG B-4



SAMPLE ID	SOIL TYPE	INITIAL DRY DENSITY (pcf)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)	C (psf)	ϕ (deg)
*B-1 @ 0-5'	SM	121.7	6.7	11.3	230	36
B-2 @ 5'	ML	96.7	9.6	23.3	160	32

*Sample remolded to approximately 90% of the test maximum dry density at optimum moisture content.

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DIRECT SHEAR TEST RESULTS
KIA MORENO VALLEY
EAST OF MORENO BEACH DRIVE
AND AUTO MALL DRIVE
MORENO VALLEY, CALIFORNIA

JANUARY, 2019	PROJECT NO. T2844-22-01	FIG B-5

APPENDIX C

APPENDIX C

RECOMMENDED GRADING SPECIFICATIONS

FOR

KIA MORENO VALLEY
SOUTHEAST OF MORENO BEACH DRIVE
AND AUTO MALL WAY
MORENO VALLEY, CALIFORNIA

PROJECT NO. T2844-22-01

RECOMMENDED GRADING SPECIFICATIONS

1. GENERAL

1.1 These Recommended Grading Specifications shall be used in conjunction with the Geotechnical Report for the project prepared by Geocon. The recommendations contained in the text of the Geotechnical Report are a part of the earthwork and grading specifications and shall supersede the provisions contained hereinafter in the case of conflict.

1.2 Prior to the commencement of grading, a geotechnical consultant (Consultant) shall be employed for the purpose of observing earthwork procedures and testing the fills for substantial conformance with the recommendations of the Geotechnical Report and these specifications. The Consultant should provide adequate testing and observation services so that they may assess whether, in their opinion, the work was performed in substantial conformance with these specifications. It shall be the responsibility of the Contractor to assist the Consultant and keep them apprised of work schedules and changes so that personnel may be scheduled accordingly.

1.3 It shall be the sole responsibility of the Contractor to provide adequate equipment and methods to accomplish the work in accordance with applicable grading codes or agency ordinances, these specifications and the approved grading plans. If, in the opinion of the Consultant, unsatisfactory conditions such as questionable soil materials, poor moisture condition, inadequate compaction, and/or adverse weather result in a quality of work not in conformance with these specifications, the Consultant will be empowered to reject the work and recommend to the Owner that grading be stopped until the unacceptable conditions are corrected.

2. DEFINITIONS

2.1 **Owner** shall refer to the owner of the property or the entity on whose behalf the grading work is being performed and who has contracted with the Contractor to have grading performed.

2.2 **Contractor** shall refer to the Contractor performing the site grading work.

2.3 **Civil Engineer** or **Engineer of Work** shall refer to the California licensed Civil Engineer or consulting firm responsible for preparation of the grading plans, surveying and verifying as-graded topography.

2.4 **Consultant** shall refer to the soil engineering and engineering geology consulting firm retained to provide geotechnical services for the project.

2.5 **Soil Engineer** shall refer to a California licensed Civil Engineer retained by the Owner, who is experienced in the practice of geotechnical engineering. The Soil Engineer shall be responsible for having qualified representatives on-site to observe and test the Contractor's work for conformance with these specifications.

2.6 **Engineering Geologist** shall refer to a California licensed Engineering Geologist retained by the Owner to provide geologic observations and recommendations during the site grading.

2.7 **Geotechnical Report** shall refer to a soil report (including all addenda) which may include a geologic reconnaissance or geologic investigation that was prepared specifically for the development of the project for which these Recommended Grading Specifications are intended to apply.

3. MATERIALS

3.1 Materials for compacted fill shall consist of any soil excavated from the cut areas or imported to the site that, in the opinion of the Consultant, is suitable for use in construction of fills. In general, fill materials can be classified as *soil* fills, *soil-rock* fills or *rock* fills, as defined below.

3.1.1 **Soil fills** are defined as fills containing no rocks or hard lumps greater than 12 inches in maximum dimension and containing at least 40 percent by weight of material smaller than ¾ inch in size.

3.1.2 **Soil-rock fills** are defined as fills containing no rocks or hard lumps larger than 4 feet in maximum dimension and containing a sufficient matrix of soil fill to allow for proper compaction of soil fill around the rock fragments or hard lumps as specified in Paragraph 6.2. **Oversize rock** is defined as material greater than 12 inches.

3.1.3 **Rock fills** are defined as fills containing no rocks or hard lumps larger than 3 feet in maximum dimension and containing little or no fines. Fines are defined as material smaller than ¾ inch in maximum dimension. The quantity of fines shall be less than approximately 20 percent of the rock fill quantity.

3.2 Material of a perishable, spongy, or otherwise unsuitable nature as determined by the Consultant shall not be used in fills.

3.3 Materials used for fill, either imported or on-site, shall not contain hazardous materials as defined by the California Code of Regulations, Title 22, Division 4, Chapter 30, Articles 9

and 10; 40CFR; and any other applicable local, state or federal laws. The Consultant shall not be responsible for the identification or analysis of the potential presence of hazardous materials. However, if observations, odors or soil discoloration cause Consultant to suspect the presence of hazardous materials, the Consultant may request from the Owner the termination of grading operations within the affected area. Prior to resuming grading operations, the Owner shall provide a written report to the Consultant indicating that the suspected materials are not hazardous as defined by applicable laws and regulations.

3.4 The outer 15 feet of *soil-rock* fill slopes, measured horizontally, should be composed of properly compacted *soil* fill materials approved by the Consultant. *Rock* fill may extend to the slope face, provided that the slope is not steeper than 2:1 (horizontal:vertical) and a soil layer no thicker than 12 inches is track-walked onto the face for landscaping purposes. This procedure may be utilized provided it is acceptable to the governing agency, Owner and Consultant.

3.5 Samples of soil materials to be used for fill should be tested in the laboratory by the Consultant to determine the maximum density, optimum moisture content, and, where appropriate, shear strength, expansion, and gradation characteristics of the soil.

3.6 During grading, soil or groundwater conditions other than those identified in the Geotechnical Report may be encountered by the Contractor. The Consultant shall be notified immediately to evaluate the significance of the unanticipated condition

4. CLEARING AND PREPARING AREAS TO BE FILLED

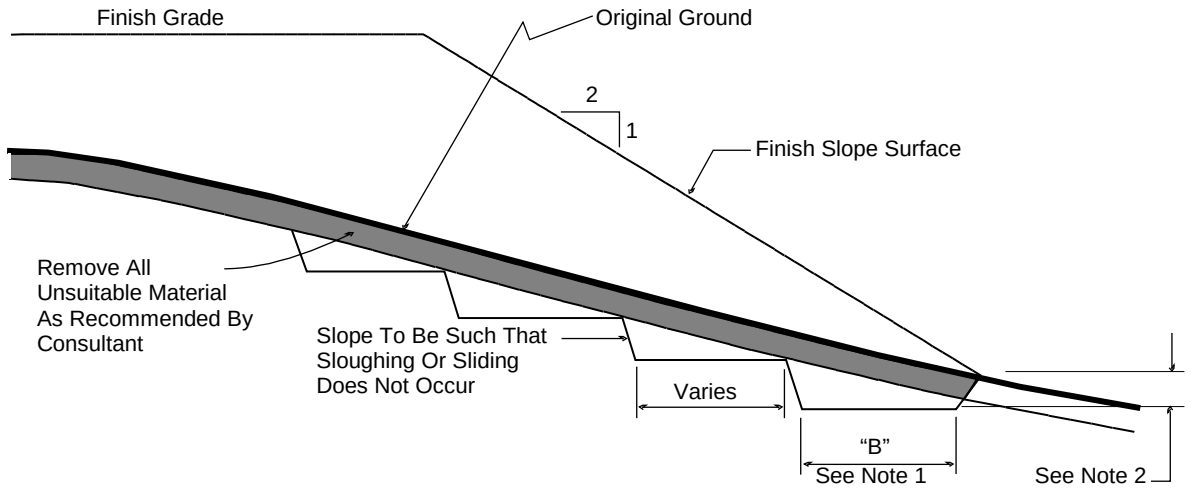
4.1 Areas to be excavated and filled shall be cleared and grubbed. Clearing shall consist of complete removal above the ground surface of trees, stumps, brush, vegetation, man-made structures, and similar debris. Grubbing shall consist of removal of stumps, roots, buried logs and other unsuitable material and shall be performed in areas to be graded. Roots and other projections exceeding 1½ inches in diameter shall be removed to a depth of 3 feet below the surface of the ground. Borrow areas shall be grubbed to the extent necessary to provide suitable fill materials.

4.2 Asphalt pavement material removed during clearing operations should be properly disposed at an approved off-site facility or in an acceptable area of the project evaluated by Geocon and the property owner. Concrete fragments that are free of reinforcing steel may be placed in fills, provided they are placed in accordance with Section 6.2 or 6.3 of this document.

4.3 After clearing and grubbing of organic matter and other unsuitable material, loose or porous soils shall be removed to the depth recommended in the Geotechnical Report. The depth of removal and compaction should be observed and approved by a representative of the Consultant. The exposed surface shall then be plowed or scarified to a minimum depth of 6 inches and until the surface is free from uneven features that would tend to prevent uniform compaction by the equipment to be used.

4.4 Where the slope ratio of the original ground is steeper than 5:1 (horizontal:vertical), or where recommended by the Consultant, the original ground should be benched in accordance with the following illustration.

TYPICAL BENCHING DETAIL



No Scale

DETAIL NOTES: (1) Key width "B" should be a minimum of 10 feet, or sufficiently wide to permit complete coverage with the compaction equipment used. The base of the key should be graded horizontal, or inclined slightly into the natural slope.

(2) The outside of the key should be below the topsoil or unsuitable surficial material and at least 2 feet into dense formational material. Where hard rock is exposed in the bottom of the key, the depth and configuration of the key may be modified as approved by the Consultant.

4.5 After areas to receive fill have been cleared and scarified, the surface should be moisture conditioned to achieve the proper moisture content, and compacted as recommended in Section 6 of these specifications.

5. COMPACTION EQUIPMENT

5.1 Compaction of *soil* or *soil-rock* fill shall be accomplished by sheepsfoot or segmented-steel wheeled rollers, vibratory rollers, multiple-wheel pneumatic-tired rollers, or other types of acceptable compaction equipment. Equipment shall be of such a design that it will be capable of compacting the *soil* or *soil-rock* fill to the specified relative compaction at the specified moisture content.

5.2 Compaction of *rock* fills shall be performed in accordance with Section 6.3.

6. PLACING, SPREADING AND COMPACTION OF FILL MATERIAL

6.1 *Soil* fill, as defined in Paragraph 3.1.1, shall be placed by the Contractor in accordance with the following recommendations:

6.1.1 *Soil* fill shall be placed by the Contractor in layers that, when compacted, should generally not exceed 8 inches. Each layer shall be spread evenly and shall be thoroughly mixed during spreading to obtain uniformity of material and moisture in each layer. The entire fill shall be constructed as a unit in nearly level lifts. Rock materials greater than 12 inches in maximum dimension shall be placed in accordance with Section 6.2 or 6.3 of these specifications.

6.1.2 In general, the *soil* fill shall be compacted at a moisture content at or above the optimum moisture content as determined by ASTM D 1557.

6.1.3 When the moisture content of *soil* fill is below that specified by the Consultant, water shall be added by the Contractor until the moisture content is in the range specified.

6.1.4 When the moisture content of the *soil* fill is above the range specified by the Consultant or too wet to achieve proper compaction, the *soil* fill shall be aerated by the Contractor by blading/mixing, or other satisfactory methods until the moisture content is within the range specified.

6.1.5 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. Relative compaction is defined as the ratio (expressed in percent) of the in-place dry density of the compacted fill to the maximum laboratory dry density as determined in accordance with ASTM D 1557. Compaction shall be continuous over the entire area, and compaction equipment shall make sufficient passes so that the specified minimum relative compaction has been achieved throughout the entire fill.

6.1.6 Where practical, soils having an Expansion Index greater than 50 should be placed at least 3 feet below finish pad grade and should be compacted at a moisture content generally 2 to 4 percent greater than the optimum moisture content for the material.

6.1.7 Properly compacted *soil* fill shall extend to the design surface of fill slopes. To achieve proper compaction, it is recommended that fill slopes be over-built by at least 3 feet and then cut to the design grade. This procedure is considered preferable to track-walking of slopes, as described in the following paragraph.

6.1.8 As an alternative to over-building of slopes, slope faces may be back-rolled with a heavy-duty loaded sheepsfoot or vibratory roller at maximum 4-foot fill height intervals. Upon completion, slopes should then be track-walked with a D-8 dozer or similar equipment, such that a dozer track covers all slope surfaces at least twice.

6.2 *Soil-rock* fill, as defined in Paragraph 3.1.2, shall be placed by the Contractor in accordance with the following recommendations:

6.2.1 Rocks larger than 12 inches but less than 4 feet in maximum dimension may be incorporated into the compacted *soil* fill, but shall be limited to the area measured 15 feet minimum horizontally from the slope face and 5 feet below finish grade or 3 feet below the deepest utility, whichever is deeper.

6.2.2 Rocks or rock fragments up to 4 feet in maximum dimension may either be individually placed or placed in windrows. Under certain conditions, rocks or rock fragments up to 10 feet in maximum dimension may be placed using similar methods. The acceptability of placing rock materials greater than 4 feet in maximum dimension shall be evaluated during grading as specific cases arise and shall be approved by the Consultant prior to placement.

6.2.3 For individual placement, sufficient space shall be provided between rocks to allow for passage of compaction equipment.

6.2.4 For windrow placement, the rocks should be placed in trenches excavated in properly compacted *soil* fill. Trenches should be approximately 5 feet wide and 4 feet deep in maximum dimension. The voids around and beneath rocks should be filled with approved granular soil having a Sand Equivalent of 30 or greater and should be compacted by flooding. Windrows may also be placed utilizing an "open-face" method in lieu of the trench procedure, however, this method should first be approved by the Consultant.

6.2.5 Windrows should generally be parallel to each other and may be placed either parallel to or perpendicular to the face of the slope depending on the site geometry. The minimum horizontal spacing for windrows shall be 12 feet center-to-center with a 5-foot stagger or offset from lower courses to next overlying course. The minimum vertical spacing between windrow courses shall be 2 feet from the top of a lower windrow to the bottom of the next higher windrow.

6.2.6 Rock placement, fill placement and flooding of approved granular soil in the windrows should be continuously observed by the Consultant.

6.3 *Rock* fills, as defined in Section 3.1.3, shall be placed by the Contractor in accordance with the following recommendations:

6.3.1 The base of the *rock* fill shall be placed on a sloping surface (minimum slope of 2 percent). The surface shall slope toward suitable subdrainage outlet facilities. The *rock* fills shall be provided with subdrains during construction so that a hydrostatic pressure buildup does not develop. The subdrains shall be permanently connected to controlled drainage facilities to control post-construction infiltration of water.

6.3.2 *Rock* fills shall be placed in lifts not exceeding 3 feet. Placement shall be by rock trucks traversing previously placed lifts and dumping at the edge of the currently placed lift. Spreading of the *rock* fill shall be by dozer to facilitate *seating* of the rock. The *rock* fill shall be watered heavily during placement. Watering shall consist of water trucks traversing in front of the current rock lift face and spraying water continuously during rock placement. Compaction equipment with compactive energy comparable to or greater than that of a 20-ton steel vibratory roller or other compaction equipment providing suitable energy to achieve the required compaction or deflection as recommended in Paragraph 6.3.3 shall be utilized. The number of passes to be made should be determined as described in Paragraph 6.3.3. Once a *rock* fill lift has been covered with *soil* fill, no additional *rock* fill lifts will be permitted over the *soil* fill.

6.3.3 Plate bearing tests, in accordance with ASTM D 1196, may be performed in both the compacted *soil* fill and in the *rock* fill to aid in determining the required minimum number of passes of the compaction equipment. If performed, a minimum of three plate bearing tests should be performed in the properly compacted *soil* fill (minimum relative compaction of 90 percent). Plate bearing tests shall then be performed on areas of *rock* fill having two passes, four passes and six passes of the compaction equipment, respectively. The number of passes required for the *rock* fill shall be determined by comparing the results of the plate bearing tests for the *soil* fill and the *rock* fill and by evaluating the deflection

variation with number of passes. The required number of passes of the compaction equipment will be performed as necessary until the plate bearing deflections are equal to or less than that determined for the properly compacted *soil* fill. In no case will the required number of passes be less than two.

6.3.4 A representative of the Consultant should be present during *rock* fill operations to observe that the minimum number of "passes" have been obtained, that water is being properly applied and that specified procedures are being followed. The actual number of plate bearing tests will be determined by the Consultant during grading.

6.3.5 Test pits shall be excavated by the Contractor so that the Consultant can state that, in their opinion, sufficient water is present and that voids between large rocks are properly filled with smaller rock material. In-place density testing will not be required in the *rock* fills.

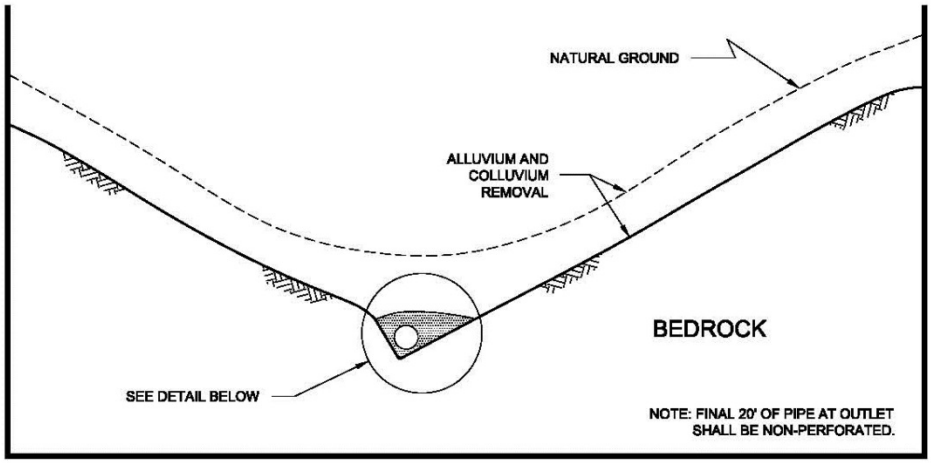
6.3.6 To reduce the potential for "piping" of fines into the *rock* fill from overlying *soil* fill material, a 2-foot layer of graded filter material shall be placed above the uppermost lift of *rock* fill. The need to place graded filter material below the *rock* should be determined by the Consultant prior to commencing grading. The gradation of the graded filter material will be determined at the time the *rock* fill is being excavated. Materials typical of the *rock* fill should be submitted to the Consultant in a timely manner, to allow design of the graded filter prior to the commencement of *rock* fill placement.

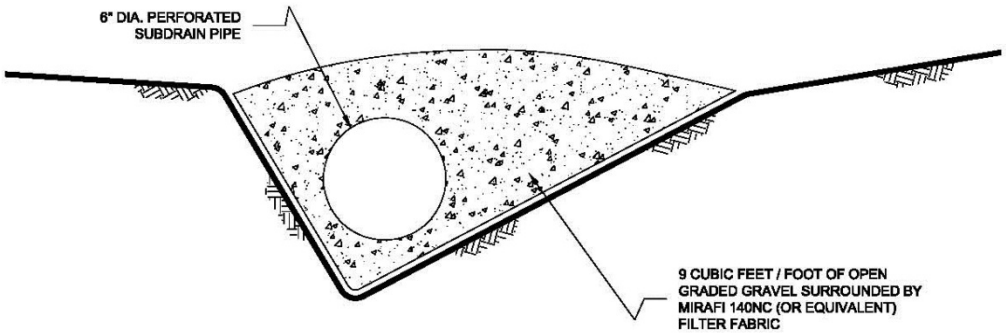
6.3.7 *Rock* fill placement should be continuously observed during placement by the Consultant.

7. SUBDRAINS

7.1 The geologic units on the site may have permeability characteristics and/or fracture systems that could be susceptible under certain conditions to seepage. The use of canyon subdrains may be necessary to mitigate the potential for adverse impacts associated with seepage conditions. Canyon subdrains with lengths in excess of 500 feet or extensions of existing offsite subdrains should use 8-inch-diameter pipes. Canyon subdrains less than 500 feet in length should use 6-inch-diameter pipes.

TYPICAL CANYON DRAIN DETAIL





NOTES:

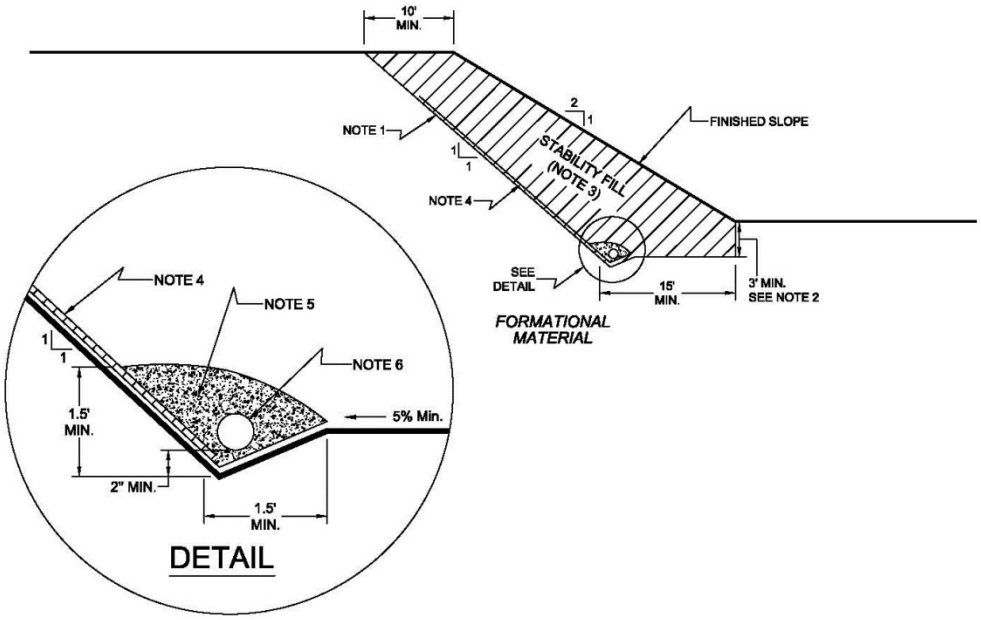
1.....6-INCH DIAMETER, SCHEDULE 80 PVC PERFORATED PIPE FOR FILLS
IN EXCESS OF 100-FEET IN DEPTH OR A PIPE LENGTH OF LONGER THAN 500 FEET.

2.....6-INCH DIAMETER, SCHEDULE 40 PVC PERFORATED PIPE FOR FILLS
LESS THAN 100-FEET IN DEPTH OR A PIPE LENGTH SHORTER THAN 500 FEET.

NO SCALE

7.2 Slope drains within stability fill keyways should use 4-inch-diameter (or larger) pipes.

TYPICAL STABILITY FILL DETAIL



NOTES:

1.....EXCAVATE BACKCUT AT 1:1 INCLINATION (UNLESS OTHERWISE NOTED).

2.....BASE OF STABILITY FILL TO BE 3 FEET INTO FORMATIONAL MATERIAL, SLOPING A MINIMUM 5% INTO SLOPE.

3.....STABILITY FILL TO BE COMPOSED OF PROPERLY COMPACTED GRANULAR SOIL.

4.....CHIMNEY DRAINS TO BE APPROVED PREFABRICATED CHIMNEY DRAIN PANELS (MIRADRAIN G200N OR EQUIVALENT) SPACED APPROXIMATELY 20 FEET CENTER TO CENTER AND 4 FEET WIDE. CLOSER SPACING MAY BE REQUIRED IF SEEPAGE IS ENCOUNTERED.

5.....FILTER MATERIAL TO BE 3/4-INCH, OPEN-GRADED CRUSHED ROCK ENCLOSED IN APPROVED FILTER FABRIC (MIRAFI 140NC).

6.....COLLECTOR PIPE TO BE 4-INCH MINIMUM DIAMETER, PERFORATED, THICK-WALLED PVC SCHEDULE 40 OR EQUIVALENT, AND SLOPED TO DRAIN AT 1 PERCENT MINIMUM TO APPROVED OUTLET.

NO SCALE

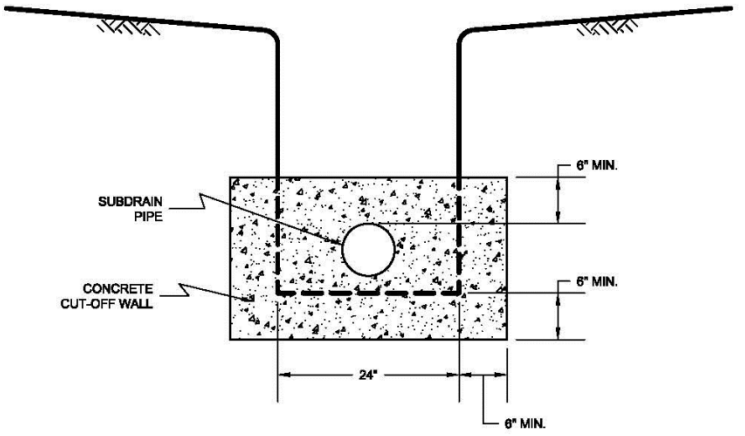
7.3 The actual subdrain locations will be evaluated in the field during the remedial grading operations. Additional drains may be necessary depending on the conditions observed and the requirements of the local regulatory agencies. Appropriate subdrain outlets should be evaluated prior to finalizing 40-scale grading plans.

7.4 *Rock* fill or *soil-rock* fill areas may require subdrains along their down-slope perimeters to mitigate the potential for buildup of water from construction or landscape irrigation. The subdrains should be at least 6-inch-diameter pipes encapsulated in gravel and filter fabric. *Rock* fill drains should be constructed using the same requirements as canyon subdrains.

7.5 Prior to outletting, the final 20-foot segment of a subdrain that will not be extended during future development should consist of non-perforated drainpipe. At the non-perforated/ perforated interface, a seepage cutoff wall should be constructed on the downslope side of the pipe.

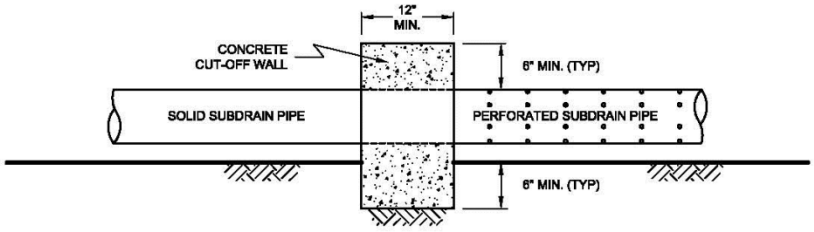
TYPICAL CUT OFF WALL DETAIL

FRONT VIEW



NO SCALE

SIDE VIEW

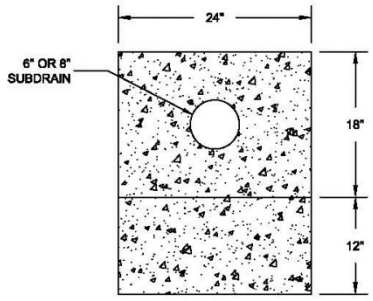


NO SCALE

7.6 Subdrains that discharge into a natural drainage course or open space area should be provided with a permanent headwall structure.

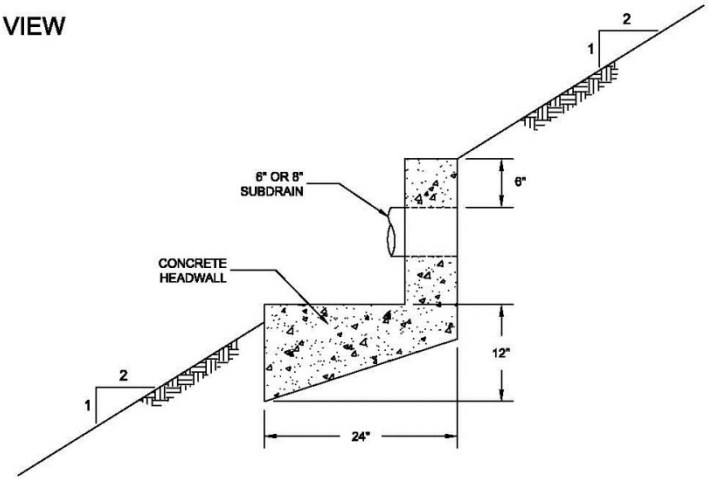
TYPICAL HEADWALL DETAIL

FRONT VIEW



NO SCALE

SIDE VIEW



NOTE: HEADWALL SHOULD OUTLET AT TOE OF FILL SLOPE OR INTO CONTROLLED SURFACE DRAINAGE

NO SCALE

7.7 The final grading plans should show the location of the proposed subdrains. After completion of remedial excavations and subdrain installation, the project civil engineer should survey the drain locations and prepare an "as-built" map showing the drain locations. The final outlet and connection locations should be determined during grading operations. Subdrains that will be extended on adjacent projects after grading can be placed on formational material and a vertical riser should be placed at the end of the subdrain. The grading contractor should consider videoing the subdrains shortly after burial to check proper installation and functionality. The contractor is responsible for the performance of the drains.

8. OBSERVATION AND TESTING

8.1 The Consultant shall be the Owner's representative to observe and perform tests during clearing, grubbing, filling, and compaction operations. In general, no more than 2 feet in vertical elevation of *soil* or *soil-rock* fill should be placed without at least one field density test being performed within that interval. In addition, a minimum of one field density test should be performed for every 2,000 cubic yards of *soil* or *soil-rock* fill placed and compacted.

8.2 The Consultant should perform a sufficient distribution of field density tests of the compacted *soil* or *soil-rock* fill to provide a basis for expressing an opinion whether the fill material is compacted as specified. Density tests shall be performed in the compacted materials below any disturbed surface. When these tests indicate that the density of any layer of fill or portion thereof is below that specified, the particular layer or areas represented by the test shall be reworked until the specified density has been achieved.

8.3 During placement of *rock* fill, the Consultant should observe that the minimum number of passes have been obtained per the criteria discussed in Section 6.3.3. The Consultant should request the excavation of observation pits and may perform plate bearing tests on the placed *rock* fills. The observation pits will be excavated to provide a basis for expressing an opinion as to whether the *rock* fill is properly seated and sufficient moisture has been applied to the material. When observations indicate that a layer of *rock* fill or any portion thereof is below that specified, the affected layer or area shall be reworked until the *rock* fill has been adequately seated and sufficient moisture applied.

8.4 A settlement monitoring program designed by the Consultant may be conducted in areas of *rock* fill placement. The specific design of the monitoring program shall be as recommended in the Conclusions and Recommendations section of the project Geotechnical Report or in the final report of testing and observation services performed during grading.

8.5 We should observe the placement of subdrains, to check that the drainage devices have been placed and constructed in substantial conformance with project specifications.

8.6 Testing procedures shall conform to the following Standards as appropriate:

8.6.1 Soil and Soil-Rock Fills:

8.6.1.1 Field Density Test, ASTM D 1556, *Density of Soil In-Place By the Sand-Cone Method.*

8.6.1.2 Field Density Test, Nuclear Method, ASTM D 6938, *Density of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth).*

8.6.1.3 Laboratory Compaction Test, ASTM D 1557, *Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-Pound Hammer and 18-Inch Drop.*

8.6.1.4. Expansion Index Test, ASTM D 4829, *Expansion Index Test*.

9. PROTECTION OF WORK

9.1 During construction, the Contractor shall properly grade all excavated surfaces to provide positive drainage and prevent ponding of water. Drainage of surface water shall be controlled 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 features have been installed. Areas subjected to erosion or sedimentation shall be properly prepared in accordance with the Specifications prior to placing additional fill or structures.

9.2 After completion of grading as observed and tested by the Consultant, no further excavation or filling shall be conducted except in conjunction with the services of the Consultant.

10. CERTIFICATIONS AND FINAL REPORTS

10.1 Upon completion of the work, Contractor shall furnish Owner a certification by the Civil Engineer stating that the lots and/or building pads are graded to within 0.1 foot vertically of elevations shown on the grading plan and that all tops and toes of slopes are within 0.5 foot horizontally of the positions shown on the grading plans. After installation of a section of subdrain, the project Civil Engineer should survey its location and prepare an *as-built* plan of the subdrain location. The project Civil Engineer should verify the proper outlet for the subdrains and the Contractor should ensure that the drain system is free of obstructions.

10.2 The Owner is responsible for furnishing a final as-graded soil and geologic report satisfactory to the appropriate governing or accepting agencies. The as-graded report should be prepared and signed by a California licensed Civil Engineer experienced in geotechnical engineering and by a California Certified Engineering Geologist, indicating that the geotechnical aspects of the grading were performed in substantial conformance with the Specifications or approved changes to the Specifications.

Appendix 4: Historical Site Conditions

Phase I Environmental Site Assessment or Other Information on Past Site Use

TO BE PROVIDED IN FINAL WQMP

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

N/A

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

Santa Ana Watershed - BMP Design Flow Rate, Q_{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	5/15/2019
Designed by	Xochitl Ortega	Case No	
Company Project Number/Name	Car Pros KIA Sales and Service Center		

BMP Identification

BMP NAME / ID: BMP-1

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

Design Rainfall Intensity I = 0.20 in/hr

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMAs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type (use pull-down menu)	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Rainfall Intensity (in/hr)*	*Design Flow Rate (cfs)*	*Proposed Flow Rate (cfs)*
DMA-1	*27742*	*Concrete or Asphalt*	*1*	*0.89*	*24745.9*			
	27742		***Total***		**24745.9**	**0.20**	***0.1***	***0.115***

Notes:

Santa Ana Watershed - BMP Design Flow Rate, Q_{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	5/15/2019
Designed by	Xochitl Ortega	Case No	
Company Project Number/Name	Car Pros KIA Sales and Service Center		

BMP Identification

BMP NAME / ID: BMP-2

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

Design Rainfall Intensity I = 0.20 in/hr

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMAs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type (use pull-down menu)	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	Design Rainfall Intensity (in/hr)	Design Flow Rate (cfs)	Proposed Flow Rate (cfs)
DMA-2	*61584*	*Concrete or Asphalt*	*1*	*0.89*	*54932.9*			
	61584		***Total***		**54932.9**	**0.20**	***0.3***	***0.346***

Notes:

Santa Ana Watershed - BMP Design Flow Rate, Q_{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
Designed by Xochitl Ortega
Company Project Number/Name Car Pros KIA Sales and Service Center
Date 5/15/2019
Case No

BMP Identification

BMP NAME / ID BMP-3

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

Design Rainfall Intensity I = 0.20 in/hr

Drainage Management Area Tabulation

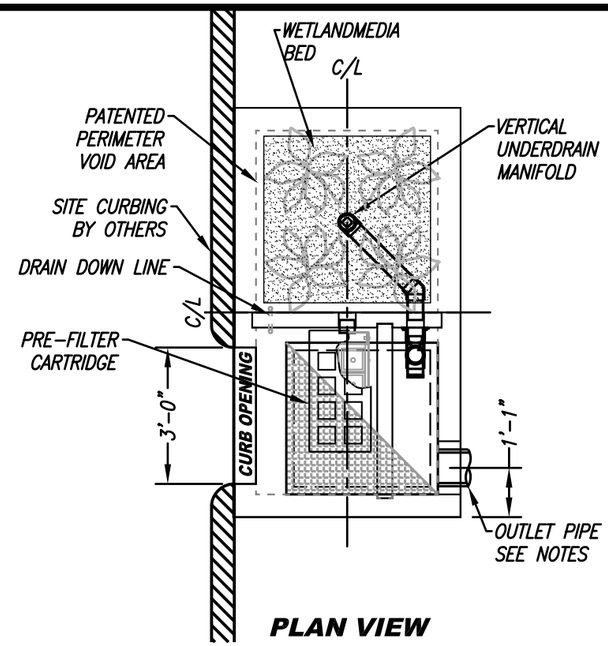
Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMAs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type (use pull-down menu)	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Rainfall Intensity (in/hr)*	*Design Flow Rate (cfs)*	*Proposed Flow Rate (cfs)*
DMA-3A	*126015*	*Concrete or Asphalt*	*1*	*0.89*	*112405.4*			
DMA-3B	*32340*	*Ornamental Landscaping*	*0.1*	*0.11046*	*3572.2*			
	158355	***Total***			**115977.6**	**0.20**	***0.5***	***0.577***

Notes:

SITE SPECIFIC DATA			
PROJECT NUMBER	SEE CONSTRUCTION PLANS		
ORDER NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
VOLUME BASED (CF)	FLOW BASED (CFS)		
TREATMENT HGL AVAILABLE (FT)			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN	OPEN PLANTER	PEDESTRIAN
FRAME & COVER	36" X 36"	N/A	N/A
WETLANDMEDIA VOLUME (CY)			TBD
ORIFICE SIZE (DIA. INCHES)			TBD
NOTES: PRELIMINARY NOT FOR CONSTRUCTION.			



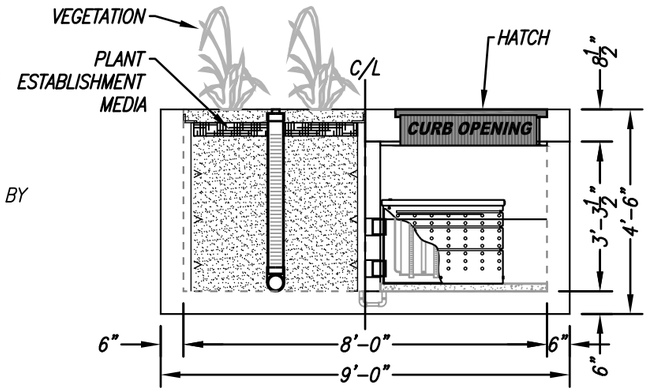
PLAN VIEW

INSTALLATION NOTES

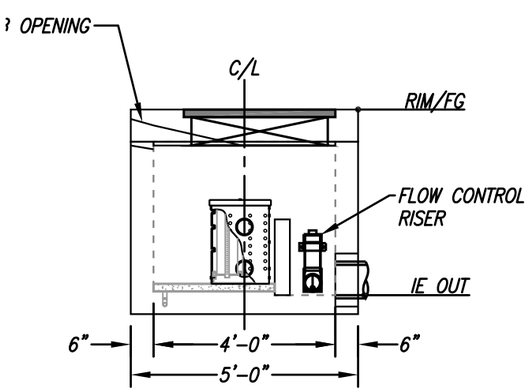
1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATER TIGHT PER MANUFACTURERS STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURERS WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.

GENERAL NOTES

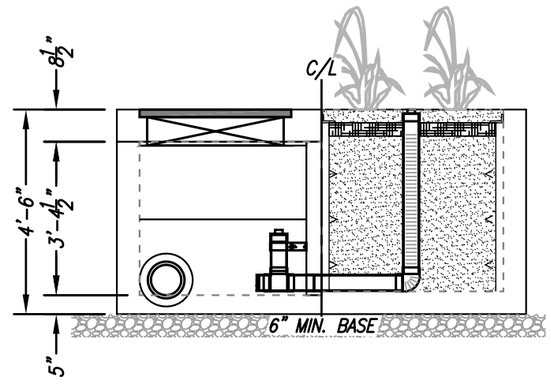
1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.



LEFT END VIEW



ELEVATION VIEW



RIGHT END VIEW

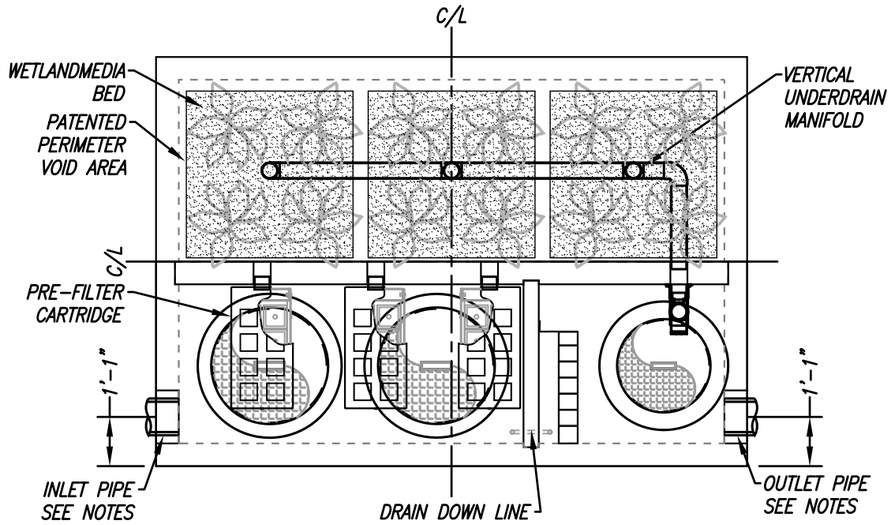
TREATMENT FLOW (CFS)	0.115
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	2.0
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

MODULAR WETLANDS

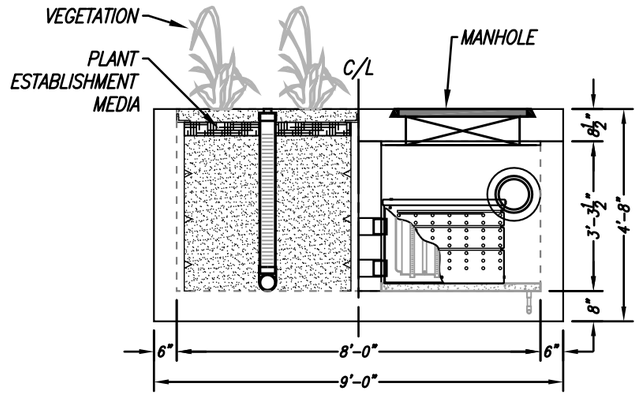
Bio Clean
A Forterra Company

MWS-L-4-8-C
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

SITE SPECIFIC DATA			
PROJECT NUMBER	SEE CONSTRUCTION PLANS		
ORDER NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
VOLUME BASED (CF)	FLOW BASED (CFS)		
TREATMENT HGL AVAILABLE (FT)			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN	OPEN PLANTER	PEDESTRIAN
FRAME & COVER	2EA ø30"	N/A	ø24"
WETLANDMEDIA VOLUME (CY)			TBD
ORIFICE SIZE (DIA. INCHES)			TBD
NOTES: PRELIMINARY NOT FOR CONSTRUCTION.			



PLAN VIEW



LEFT END VIEW

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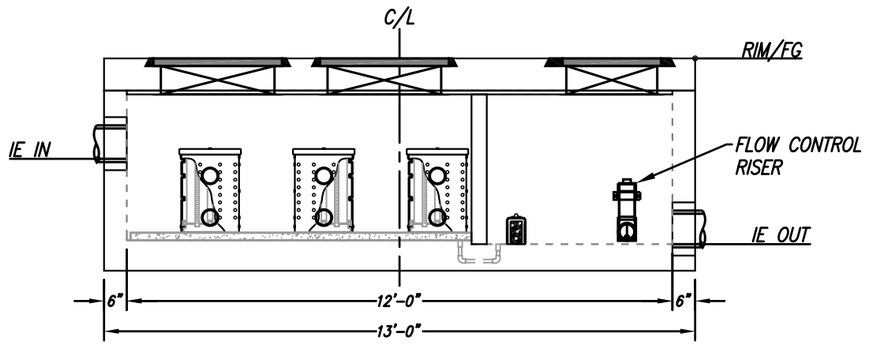
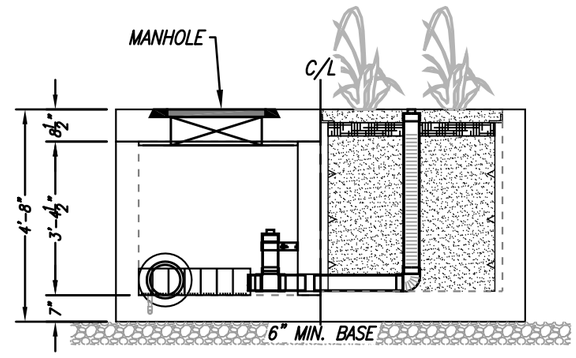


ELEVATION VIEW



RIGHT END VIEW

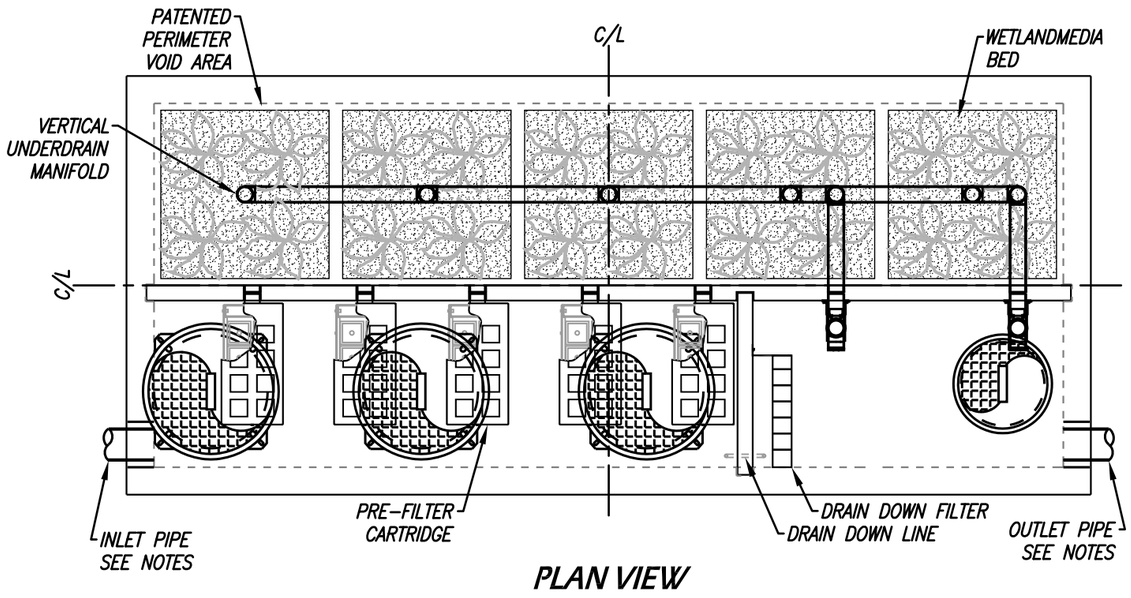
TREATMENT FLOW (CFS)	0.346
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	2.0
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

MODULAR WETLANDS

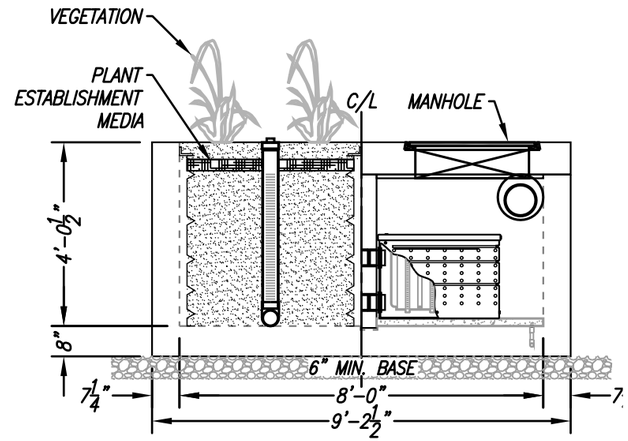
Bio Clean
A Forterra Company

MWS-L-8-12-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

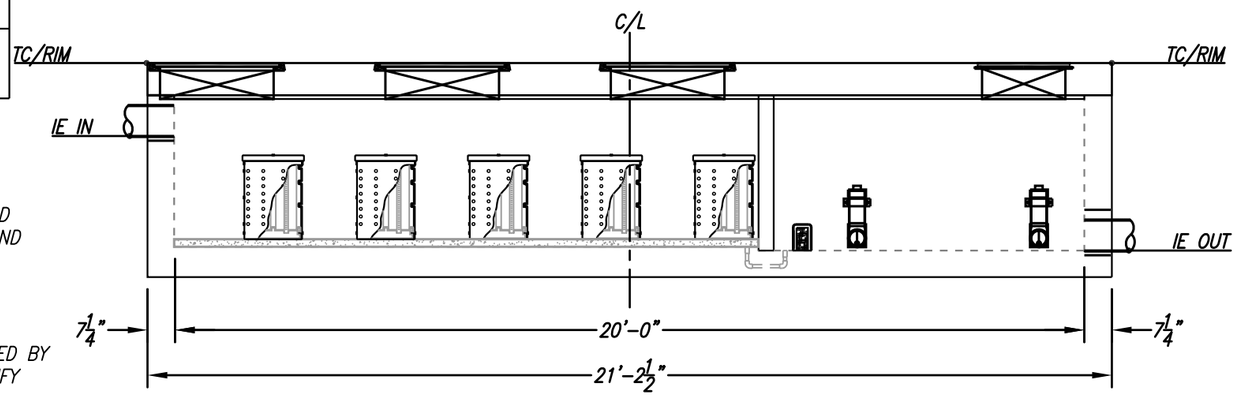
SITE SPECIFIC DATA			
PROJECT NAME		SEE CONSTRUCTION PLANS	
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
TREATMENT HGL AVAILABLE (FT)			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PARKWAY	OPEN PLANTER	PARKWAY
FRAME & COVER	ø30"	N/A	ø24"
WETLANDMEDIA VOLUME (CY)			11.85
WETLANDMEDIA DELIVERY METHOD			TBD
ORIFICE SIZE (DIA. INCHES)			ø2.43"
MAXIMUM PICK WEIGHT (LBS)			TBD
NOTES:			



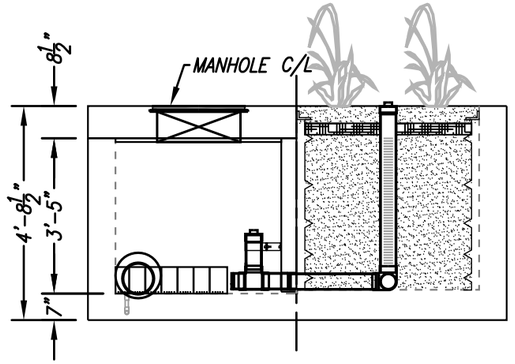
PLAN VIEW



LEFT END VIEW
BIOFILTRATION/PRETREATMENT



ELEVATION VIEW



RIGHT END VIEW
DISCHARGE/BIOFILTRATION

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
3. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL GAPS AROUND PIPES SHALL BE SEALED WATER TIGHT WITH A NON-SHRINK GROUT PER MANUFACTURERS STANDARD CONNECTION DETAIL AND SHALL MEET OR EXCEED REGIONAL PIPE CONNECTION STANDARDS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. DRIP OR SPRAY IRRIGATION REQUIRED ON ALL UNITS WITH VEGETATION.

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT MANUFACTURER.

TREATMENT FLOW (CFS)	0.577
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	TBD
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

MODULAR WETLANDS
www.ModularWetlands.com | (855) 5MOD-WET

MWS-L-8-20-V
STORMWATER BIOFILTRATION SYSTEM STANDARD DETAIL

6/2/15.JOHN

Modular Wetlands System™ Linear

Biofiltration

Comprehensive Stormwater Solutions

Bio Clean
A Forterra Company

OVERVIEW

The Bio Clean Modular Wetlands System™ Linear (MWS Linear) represents a pioneering breakthrough in stormwater technology as the only biofiltration system to utilize patented horizontal flow, allowing for a smaller footprint and higher treatment capacity. While most biofilters use little or no pretreatment, the MWS Linear incorporates an advanced pretreatment chamber that includes separation and pre-filter cartridges. In this chamber, sediment and hydrocarbons are removed from runoff before entering the biofiltration chamber, in turn reducing maintenance costs and improving performance.

The Urban Impact

For hundreds of years, natural wetlands surrounding our shores have played an integral role as nature's stormwater treatment system. But as our cities grow and develop, these natural wetlands have perished under countless roads, rooftops, and parking lots.

Plant A Wetland

Without natural wetlands, our cities are deprived of water purification, flood control, and land stability. Modular Wetlands and the MWS Linear re-establish nature's presence and rejuvenate waterways in urban areas.

PERFORMANCE

The MWS Linear continues to outperform other treatment methods with superior pollutant removal for TSS, heavy metals, nutrients, hydrocarbons, and bacteria. Since 2007 the MWS Linear has been field tested on numerous sites across the country. With its advanced pretreatment chamber and innovative horizontal flow biofilter, the system is able to effectively remove pollutants through a combination of physical, chemical, and biological filtration processes. With the same biological processes found in natural wetlands, the MWS Linear harnesses nature's ability to process, transform, and remove even the most harmful pollutants.

66% REMOVAL OF DISSOLVED ZINC	**69%** REMOVAL OF TOTAL ZINC	**38%** REMOVAL OF DISSOLVED COPPER	**64%** REMOVAL OF TOTAL PHOSPHORUS

45% REMOVAL OF NITROGEN	**50%** REMOVAL OF TOTAL COPPER	**95%** REMOVAL OF MOTOR OIL	**67%** REMOVAL OF ORTHO PHOSPHORUS	**85%** REMOVAL OF TSS

APPROVALS

The MWS Linear has successfully met years of challenging technical reviews and testing from some of the most prestigious and demanding agencies in the nation and perhaps the world.

WASHINGTON STATE TAPE APPROVED

The MWS Linear is approved for General Use Level Designation (GULD) for Basic, Enhanced, and Phosphorus treatment at 1 gpm/ft^2 loading rate. The highest performing BMP on the market for all main pollutant categories.

DEQ ASSIGNMENT

The Virginia Department of Environmental Quality assigned the MWS Linear, the highest phosphorus removal rating for manufactured treatment devices to meet the new Virginia Stormwater Management Program (VSMP) Regulation technical criteria.

MARYLAND DEPARTMENT OF THE ENVIRONMENT APPROVED

Granted Environmental Site Design (ESD) status for new construction, redevelopment, and retrofitting when designed in accordance with the design manual.

MASTEP EVALUATION

The University of Massachusetts at Amherst – Water Resources Research Center issued a technical evaluation report noting removal rates up to 84% TSS, 70% total phosphorus, 68.5% total zinc, and more.

RHODE ISLAND DEM APPROVED

Approved as an authorized BMP and noted to achieve the following minimum removal efficiencies: 85% TSS, 60% pathogens, 30% total phosphorus, and 30% total nitrogen.

ADVANTAGES

- HORIZONTAL FLOW BIOFILTRATION
- GREATER FILTER SURFACE AREA
- PRETREATMENT CHAMBER
- PATENTED PERIMETER VOID AREA
- FLOW CONTROL
- NO DEPRESSED PLANTER AREA
- AUTO DRAINDOWN MEANS NO MOSQUITO VECTOR

OPERATION

The MWS Linear is the most efficient and versatile biofiltration system on the market, and it is the only system with horizontal flow which improves performance, reduces footprint, and minimizes maintenance. Figure 1 and Figure 2 illustrate the invaluable benefits of horizontal flow and the multiple treatment stages.

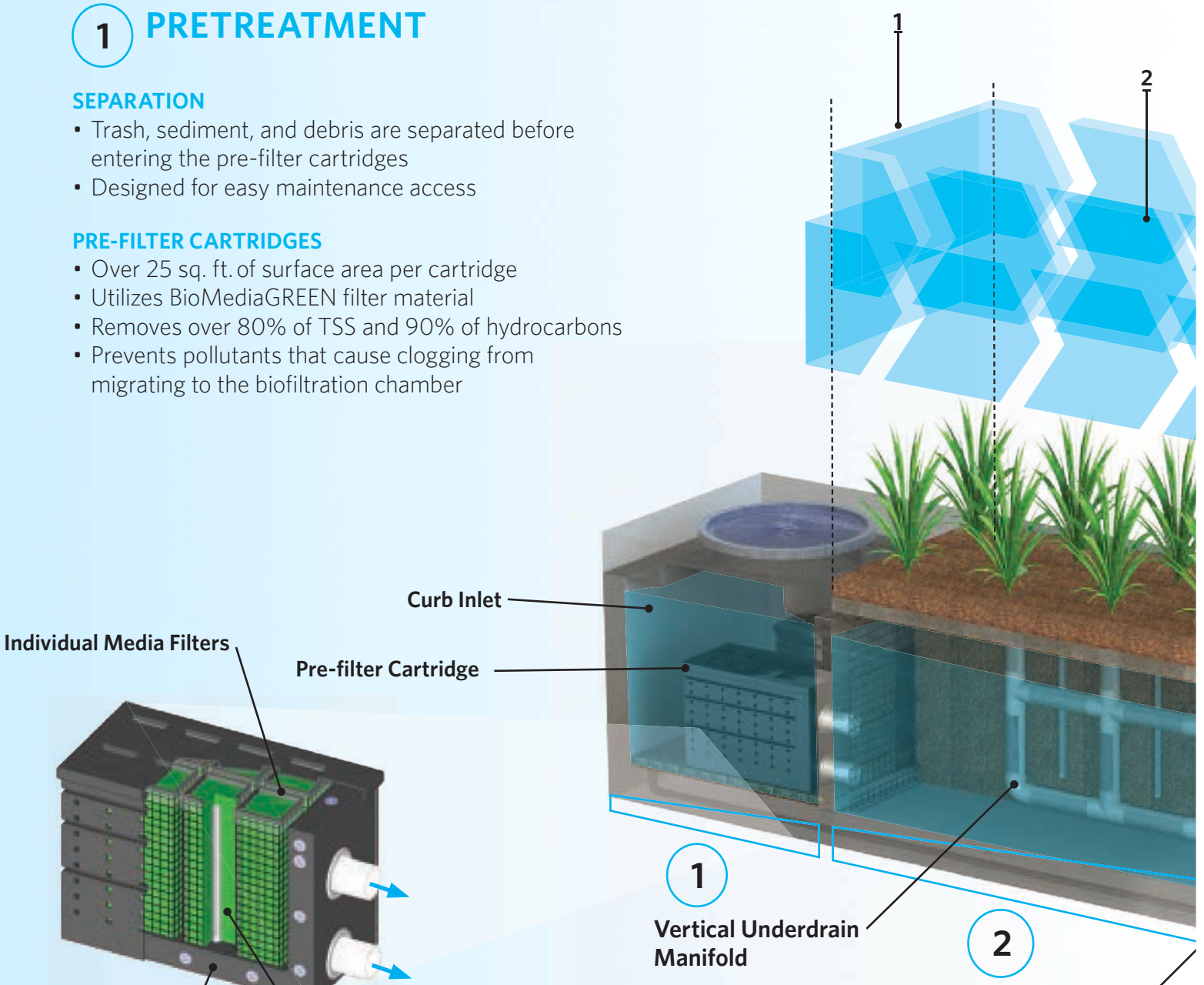
1 PRETREATMENT

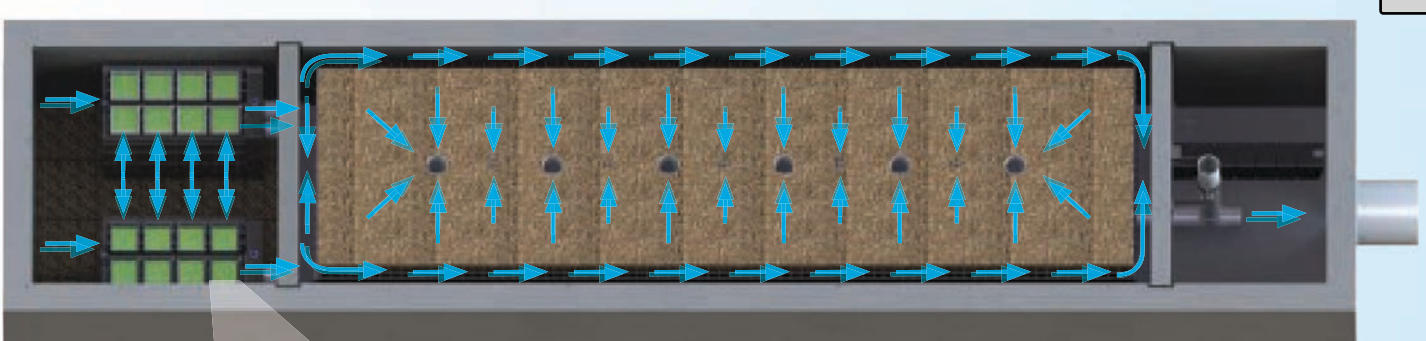
SEPARATION

- Trash, sediment, and debris are separated before entering the pre-filter cartridges
- Designed for easy maintenance access

PRE-FILTER CARTRIDGES

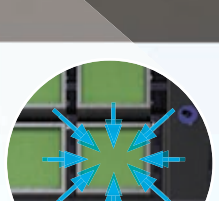
- Over 25 sq. ft. of surface area per cartridge
- Utilizes BioMediaGREEN filter material
- Removes over 80% of TSS and 90% of hydrocarbons
- Prevents pollutants that cause clogging from migrating to the biofiltration chamber





2x to 3x more surface area than traditional downward flow bioretention systems.

Figure 2,
Top View



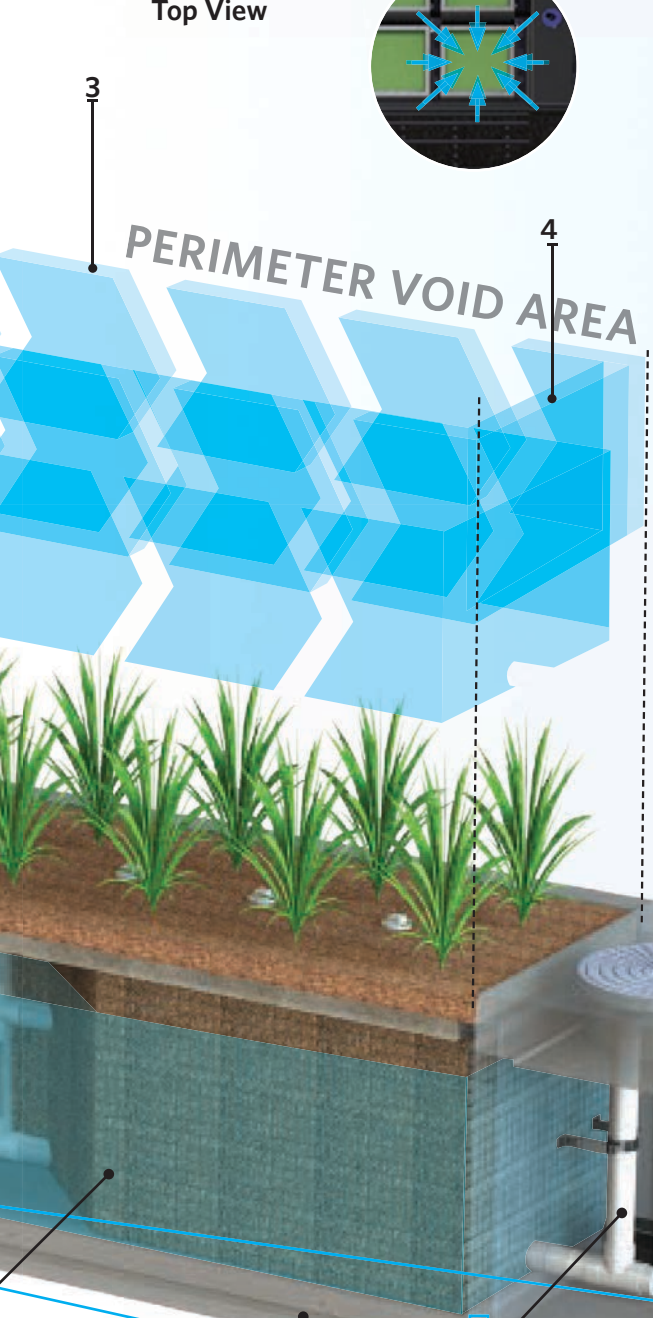


Figure 1

2 BIOFILTRATION

HORIZONTAL FLOW

- Less clogging than downward flow biofilters
- Water flow is subsurface
- Improves biological filtration

PATENTED PERIMETER VOID AREA

- Vertically extends void area between the walls and the WetlandMEDIA on all four sides
- Maximizes surface area of the media for higher treatment capacity

WETLANDMEDIA

- Contains no organics and removes phosphorus
- Greater surface area and 48% void space
- Maximum evapotranspiration
- High ion exchange capacity and lightweight

3 DISCHARGE

FLOW CONTROL

- Orifice plate controls flow of water through WetlandMEDIA to a level lower than the media's capacity
- Extends the life of the media and improves performance

DRAINDOWN FILTER

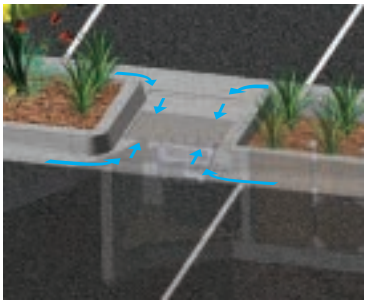
- The draindown is an optional feature that completely drains the pretreatment chamber
- Water that drains from the pretreatment chamber between storm events will be treated

CONFIGURATIONS

The MWS Linear is the preferred biofiltration system of civil engineers across the country due to its versatile design. This highly versatile system has available "pipe-in" options on most models, along with built-in curb or grated inlets for simple integration into your storm drain design.

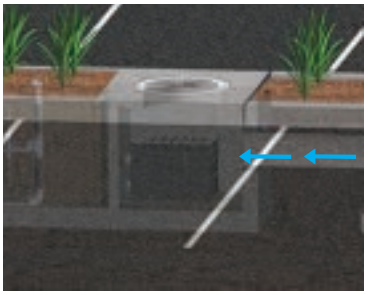
CURB TYPE

The Curb Type configuration accepts sheet flow through a curb opening and is commonly used along roadways and parking lots. It can be used in sump or flow-by conditions. Length of curb opening varies based on model and size.



GRATE TYPE

The Grate Type configuration offers the same features and benefits as the Curb Type but with a grated/drop inlet above the systems pretreatment chamber. It has the added benefit of allowing pedestrian access over the inlet. ADA-compliant grates are available to assure easy and safe access. The Grate Type can also be used in scenarios where runoff needs to be intercepted on both sides of landscape islands.



VAULT TYPE

The system's patented horizontal flow biofilter is able to accept inflow pipes directly into the pretreatment chamber, meaning the MWS Linear can be used in end-of-the-line installations. This greatly improves feasibility over typical decentralized designs that are required with other biofiltration/ bioretention systems. Another benefit of the "pipe-in" design is the ability to install the system downstream of underground detention systems to meet water quality volume requirements.

DOWNSPOUT TYPE

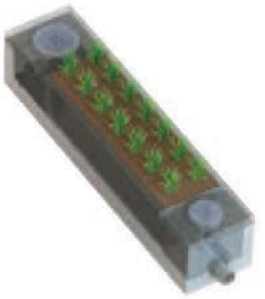
The Downspout Type is a variation of the Vault Type and is designed to accept a vertical downspout pipe from rooftop and podium areas. Some models have the option of utilizing an internal bypass, simplifying the overall design. The system can be installed as a raised planter, and the exterior can be stuccoed or covered with other finishes to match the look of adjacent buildings.

ORIENTATIONS

SIDE-BY-SIDE

The Side-By-Side orientation places the pretreatment and discharge chamber adjacent to one another with the biofiltration chamber running parallel on either side.This minimizes the system length, providing a highly compact footprint. It has been proven useful in situations such as streets with directly adjacent sidewalks, as half of the system can be placed under that sidewalk. This orientation also offers internal bypass options as discussed below.

END-TO-END



The End-To-End orientation places the pretreatment and discharge chambers on opposite ends of the biofiltration chamber, therefore minimizing the width of the system to 5 ft. (outside dimension). This orientation is perfect for linear projects and street retrofits where existing utilities and sidewalks limit the amount of space available for installation. One limitation of this orientation is that bypass must be external.

BYPASS

INTERNAL BYPASS WEIR (SIDE-BY-SIDE ONLY)

The Side-By-Side orientation places the pretreatment and discharge chambers adjacent to one another allowing for integration of internal bypass. The wall between these chambers can act as a bypass weir when flows exceed the system's treatment capacity, thus allowing bypass from the pretreatment chamber directly to the discharge chamber.

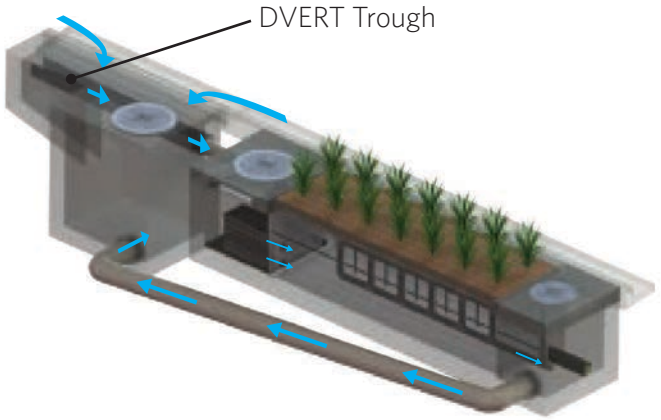
EXTERNAL DIVERSION WEIR STRUCTURE

This traditional offline diversion method can be used with the MWS Linear in scenarios where runoff is being piped to the system. These simple and effective structures are generally configured with two outflow pipes. The first is a smaller pipe on the upstream side of the diversion weir - to divert low flows over to the MWS Linear for treatment. The second is the main pipe that receives water once the system has exceeded treatment capacity and water flows over the weir.

FLOW-BY-DESIGN

This method is one in which the system is placed just upstream of a standard curb or grate inlet to intercept the first flush. Higher flows simply pass by the MWS Linear and into the standard inlet downstream.

DVERT LOW FLOW DIVERSION



This simple yet innovative diversion trough can be installed in existing or new curb and grate inlets to divert the first flush to the MWS Linear via pipe. It works similar to a rain gutter and is installed just below the opening into the inlet. It captures the low flows and channels them over to a connecting pipe exiting out the wall of the inlet and leading to the MWS Linear. The DVERT is perfect for retrofit and green street applications that allow the MWS Linear to be installed anywhere space is available.

SPECIFICATIONS

FLOW-BASED

The MWS Linear can be used in stand-alone applications to meet treatment flow requirements. Since the MWS Linear is the only biofiltration system that can accept inflow pipes several feet below the surface, it can be used not only in decentralized design applications but also as a large central end-of-the-line application for maximum feasibility.

MODEL #	DIMENSIONS	WETLANDMEDIA SURFACE AREA (sq.ft.)	TREATMENT FLOW RATE (cfs)
MWS-L-4-4	4′ x 4′	23	0.052
MWS-L-4-6	4′ x 6′	32	0.073
MWS-L-4-8	4′ x 8′	50	0.115
MWS-L-4-13	4′ x 13′	63	0.144
MWS-L-4-15	4′ x 15′	76	0.175
MWS-L-4-17	4′ x 17′	90	0.206
MWS-L-4-19	4′ x 19′	103	0.237
MWS-L-4-21	4′ x 21′	117	0.268
MWS-L-6-8	7′ x 9′	64	0.147
MWS-L-8-8	8′ x 8′	100	0.230
MWS-L-8-12	8′ x 12′	151	0.346
MWS-L-8-16	8′ x 16′	201	0.462
MWS-L-8-20	9′ x 21′	252	0.577
MWS-L-8-24	9′ x 25′	302	0.693

APPLICATIONS

The MWS Linear has been successfully used on numerous new construction and retrofit projects. The system's superior versatility makes it beneficial for a wide range of stormwater and waste water applications - treating rooftops, streetscapes, parking lots, and industrial sites.

INDUSTRIAL

Many states enforce strict regulations for discharges from industrial sites. The MWS Linear has helped various sites meet difficult EPA-mandated effluent limits for dissolved metals and other pollutants.

RESIDENTIAL

Low to high density developments can benefit from the versatile design of the MWS Linear. The system can be used in both decentralized LID design and cost-effective end-of-the-line configurations.

STREETS

Street applications can be challenging due to limited space. The MWS Linear is very adaptable, and it offers the smallest footprint to work around the constraints of existing utilities on retrofit projects.

PARKING LOTS

Parking lots are designed to maximize space and the MWS Linear's 4 ft. standard planter width allows for easy integration into parking lot islands and other landscape medians.

COMMERCIAL

Compared to bioretention systems, the MWS Linear can treat far more area in less space, meeting treatment and volume control requirements.

MIXED USE

The MWS Linear can be installed as a raised planter to treat runoff from rooftops or patios, making it perfect for sustainable "live-work" spaces.

More applications include:

• Agriculture • Reuse • Low Impact Development • Waste Water

PLANT SELECTION

Abundant plants, trees, and grasses bring value and an aesthetic benefit to any urban setting, but those in the MWS Linear do even more - they increase pollutant removal. What's not seen, but very important, is that below grade, the stormwater runoff/flow is being subjected to nature's secret weapon: a dynamic physical, chemical, and biological process working to break down and remove non-point source pollutants. The flow rate is controlled in the MWS Linear, giving the plants more contact time so that pollutants are more successfully decomposed, volatilized, and incorporated into the biomass of the MWS Linear's micro/macro flora and fauna.

A wide range of plants are suitable for use in the MWS Linear, but selections vary by location and climate. View suitable plants by visiting biocleanenvironmental.com/plants.

INSTALLATION

The MWS Linear is simple, easy to install, and has a space-efficient design that offers lower excavation and installation costs compared to traditional tree-box type systems. The structure of the system resembles precast catch basin or utility vaults and is installed in a similar fashion.

The system is delivered fully assembled for quick installation. Generally, the structure can be unloaded and set in place in 15 minutes. Our experienced team of field technicians are available to supervise installations and provide technical support.

MAINTENANCE

Reduce your maintenance costs, man hours, and materials with the MWS Linear. Unlike other biofiltration systems that provide no pretreatment, the MWS Linear is a self-contained treatment train which incorporates simple and effective pretreatment.

Maintenance requirements for the biofilter itself are almost completely eliminated, as the pretreatment chamber removes and isolates trash, sediments, and hydrocarbons. What's left is the simple maintenance of an easily accessible pretreatment chamber that can be cleaned by hand or with a standard vac truck. Only periodic replacement of low-cost media in the pre-filter cartridges is required for long-term operation, and there is absolutely no need to replace expensive biofiltration media.

Bio Clean
A Forterra Company

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stormwater@forterrabp.com
biocleanenvironmental.com

Installation Guidelines for Modular Wetland System

Delivery & Unloading/Lifting

1. Modular Wetland Systems, Inc. shall deliver the unit(s) to the site in coordination with the Contractor.

2. The Contractor will require spreader bars and chains/cables to safely and securely lift the main structure, risers a set of suitable lifting hooks, knuckles, shackles and eye bolts.

3. The main structure and lid can be lifted together or separately.

   Please see Modular Wetland Weights and Lifting Details. Contact Modular Wetlands for additional lifting details.

Inspection

1. Inspection of the Modular Wetland unit and all parts contained in or shipped outside of the unit shall be inspected at time of delivery by the site Engineer/Inspector and the Contractor. Any non-conformance to approved drawings or damage to any part of the system shall be documented on the Modular Wetland shipping ticket. Damage to the unit during and after unloading shall be corrected at the expense of the Contractor. Any necessary repairs to the Modular Wetland unit shall be made to the acceptance of the Engineer/Inspector.

Site Preparation

1. The Contractor is responsible for providing adequate and complete site/inlet protection when the Modular Wetland unit is installed prior to final site stabilization (full landscaping, grass cover, final paving, and street sweeping completed).

2. The Contractor shall adhere to all jurisdictional and/or OSHA safety rules in providing temporary shoring of the excavation.

3. The Contractor or Owner is responsible for appropriately barricading the Modular Wetland unit from traffic (in accordance with local codes).

Installation Guidelines for Modular Wetland System

Installation

1. Each unit shall be constructed at the locations and elevations according to the sizes shown on the approved drawings. Any modifications to the elevation or location shall be at the direction of and approved by the Engineer.

2. The unit shall be placed on the compacted sub-grade with a minimum 6-inch gravel base matching the final grade of the curb line in the area of the unit. The unit is to be placed such that the unit and top slab match the grade of the curb in the area of the unit. Compact undisturbed sub-grade materials to 95% of maximum density at +1% to 2% of the optimum moisture. Unsuitable material below sub-grade shall be replaced to site engineer's approval. Please see Modular Wetlands Weights and Lifting Details. Contact Modular Wetlands for guidance where slope exceeds 5%.

3. Once the unit is set, the internal wooden forms and protective silt fabric cover must be left intact (if WetlandMedia pre-installed). The top lid(s) should be sealed onto the box section before backfilling, using a non-shrink grout, butyl rubber or similar waterproof seal. The boards on the top of the lid and boards sealed in the unit's throat must NOT be removed. The Supplier will remove these sections at the time of activation.

4. Outlet connections shall be aligned and sealed to meet the approved drawings with modifications necessary to meet site conditions and local regulations. The correct outlet will be marked on the Modular Wetland unit.

5. Backfilling should be performed in a careful manner, bringing the appropriate fill material up in 6-inch lifts on all sides. Precast sections shall be set in a manner that will result in a watertight joint. In all instances, installation of the Modular Wetland unit shall conform to ASTM specification C891 "Standard Practice for Installation of Underground Precast Utility Structures" unless specified otherwise in contract documents.

6. It is the responsibility of the Contractor to provide curb and gutter and transition to the Modular Wetland unit for proper stormwater flow into the system through the throat, pipe or grate opening. A standard drawing of the throat and gutter detail is available in the following section; however the plans and contract documents supersede all standard drawings. Several variations of the standard design are available. Effective bypass for the Modular Wetland System is essential for correct operation (i.e. bypass to an overflow at lower elevation).

Installation Procedure

The contractor **MUST** provide all rigging And lifting apparatus, such as all cables, chains or straps and a set of lifting hooks, shackles, knuckles and eye bolts.

It is the contractor's responsibility to provide suitable lifting equipment to off-load the Modular Wetland unit.

Modular Wetland units are designed to be off-loaded using the contractor's spreader bar.

1. Apply Butyl Tape Seal

Apply butyl tape seal along the top of the box section. Butyl tape seal is provided with every unit.

Modular Wetland installed protective throat board and installed silt fabric must be left in place to protect the unit from construction sediment.

2. Unload and Set Box

Unload the Modular Wetland unit
the prepared hole with appropriate sub-grade.*

* Compacted sub-grade with a minimum
of six inches of gravel base which must match
the final grade of curb line the area of the unit.

3. Set Top On Box

Set the top slab on the box.

The Contractor is responsible for providing
adequate and complete site/inlet protection
when the Modular Wetland is installed prior
to final site stabilization (full landscaping,
grass cover, final paving, and street sweeping
completed).

4. Connect Outfall Pipe

The correct outlet will be marked on the
Modular Wetland.

Invert of outlet pipe **MUST** be even
with the floor of the system.

5. Install Curb & Gutter

It is the responsibility of the Contractor to provide curb and gutter and transition to the Modular Wetland for proper flow into the system through a 5”- 7” throat opening. A standard drawing of the throat and gutter detail in the following section. CONTRACTOR RESPONSIBLE FOR GROUTING IN ANY VISIBLE LIFTING POINTS.

6. Activation

Activation is performed **ONLY** by Modular Wetland personnel.

Activation can occur once the project site is fully stabilized (full landscaping, grass cover, final paving and street sweeping completed) and there is a 5” - 7” throat opening.

Call 760-433-7640 to schedule your activation.

NOTE: WetlandMedia Installation

For Larger models (MWS-L-4-13 and above) the system will be delivered without WetlandMedia pre-installed to minimize pick weight and prevent contamination of the media during construction. For these models the WetlandMedia will be delivered in bulk or in super sacks. It will be responsibility of the contractor to fill the system with the WetlandMedia during the installation process. Installation of the WetlandMedia can be done after the unit is fully installed to avoid contamination. See following pages for details.

WetlandMedia Install (if applicable)

1. Fill WetlandMedia

Position super sack of WetlandMedia over wetland chamber. Bottom of sack should not be more than 2' above top of system. Open sack and fill evenly*.

* One to several hundred cubic yards of WetlandMedia will be required based upon the model number and size of the system. For large scale jobs WetlandMedia will be delivered in bulk and will require a bobcat of similar to fill the system. All equipment is the responsibility of the contractor.

2. Install Plant Propagation Layer

Fill WetlandMedia up to 9" below the top of the wetland chamber. Level out the WetlandMedia as shown. Ensure that the level does not vary more than one inch or plant growth will be affected.

3. Install Plant Propagation Layer

Utilize plant propagation blocks provided by the manufacturer. Each block is approximately 40" by 6" by 3" thick. Blocks shall be placed side by side and end to end and cover the entire length and width of the wetland chamber unless specified.

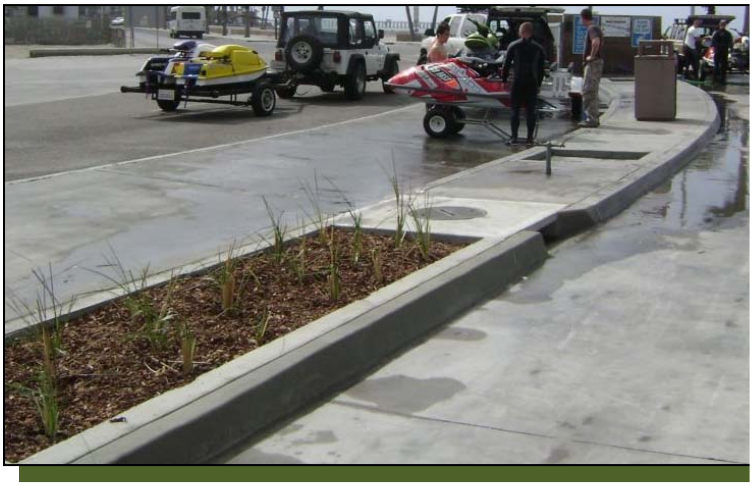
4. Finish Filling WetlandMedia

After plant propagation blocks are installed repeat step 1 and fill the system to the top of the wetland chamber as shown. WetlandMedia must be filled within 2” of the top of the unit.

5. Planting

After system is filled with WetlandMedia planting of vegetation can begin. Utilizing 1 gallon plants dig down until The plant propagation blocks are reached. Remove plant and it’s root ball from the container. Set the bottom of the root ball on the tops of the blocks. Fill hole back in with WetlandMedia. After planting a thorough watering of the plants is necessary. The plant propagation blocks must be saturated to provide a water source for the plants during the establishment phase. It is recommended that hand watering is done three times a week for the first two months. Hand water can be supplemented with drip or spray irrigation after the second week. Please call the manufacturer for more details on plants, planting arrangement and irrigation options.

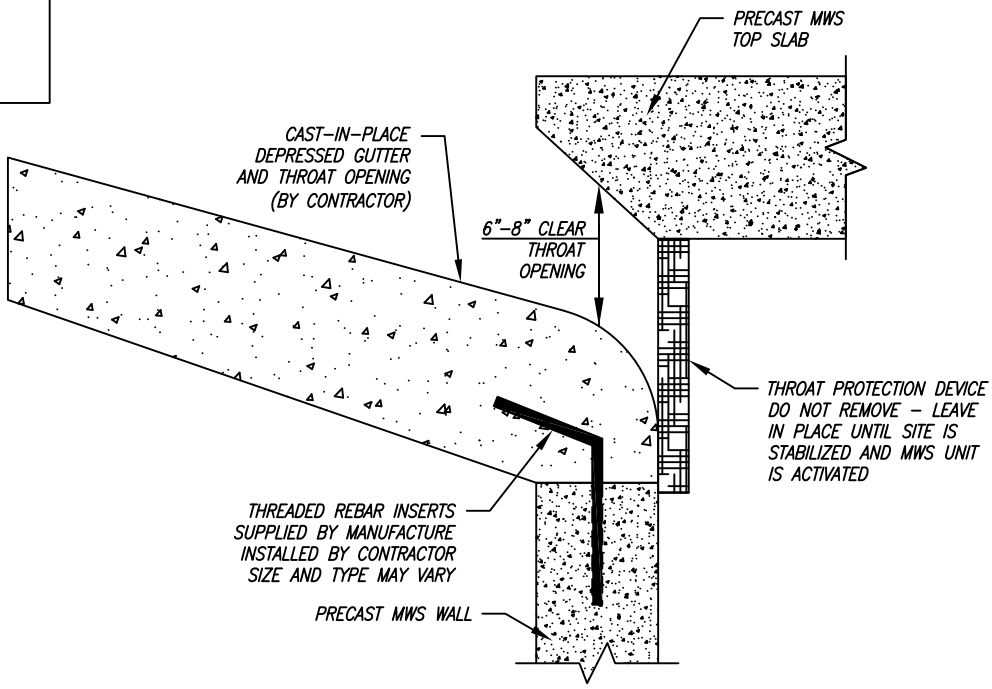
NOTE: planting is required on all units, including units delivered with WetlandMedia pre-installed.



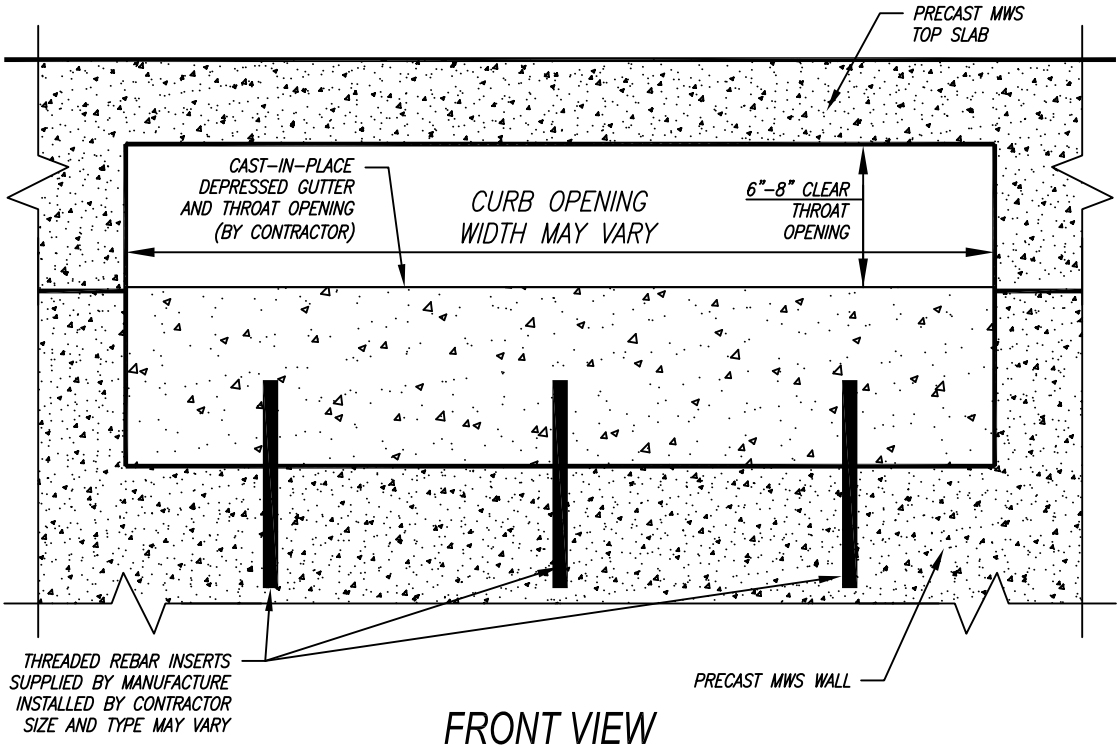
Curb and Gutter Details

Modular Wetland System, Inc.
P. 760.433-7640
F. 760-433-3176
E. Info@modularwetlands.com

www.modularwetlands.com



SECTION VIEW
STANDARD MODULAR WETLAND CURB OPENING



FRONT VIEW
STANDARD MODULAR WETLAND CURB OPENING

MODULAR WETLAND SYSTEMS INC.
P.O. BOX 869
OCEANSIDE, CA 92049
www.ModularWetlands.com

	NAME	DATE
DRAWN	John	5/3/13
EDITED		

TITLE: MWS LINEAR 2.0 CURB INLET DETAILS

COMMENTS:

SIZE | DWG. NO. | REV

SCALE NTS | UNITS = INCHES | SHEET 1 OF 1

Weights and Lifting Details

Modular Wetland System, Inc.
P. 760.433-7640
F. 760-433-3176
E. Info@modularwetlands.com

www.modularwetlands.com

MWS-L 2.0 Max Pick Weights

Model #	Size (O.D)	Size (I.D)	Unit Weight (lbs)	Media Weight (lbs)	Total Weight (lbs)
MWS-L-4-4	5' x 5'	4' x 4'	7500.0	1607.7	9107.7
MWS-L-4-6 MWS-L-4-6.5	5' x 7' 5 x 7.5'	4' x 6' 4' x 6.5'	11,000 11,500	1798.9	12,619.2 13,119.2
MWS-L-4-8	5' x 9'	8' x 4'	12500	3966	16466
MWS-L-4-13	5' x 14'	13' x 4'	21200	5895	27095
MWS-L-4-15	5' x 16'	15' x 4'	23700	8039	31739
MWS-L-4-17	5' x 18'	17' x 4'	26500	10182	36682
MWS-L-4-19	5' x 20'	19' x 4'	28300	12326	40626
MWS-L-4-21	5' x 22'	21' x 4'	30000	14470	44470
MWS-L-6-8	7' x 9'	6' x 8'	24000	6109	30109
MWS-L-8-8	9' x 9'	8' x 8'	32000	8253	40253
MWS-L-8-12	9' x 13'	8' x 12'	44000	12540	56540
MWS-L-8-16	9' x 17'	8' x 16'	47000	16828	63828

Max Pick Weight if Shipped Without Media Installed

Max Pick Weight if Shipped With Media Installed

Note: All weights listed hereon are standard max pick weights, actual pick weights may vary based upon state and local regulations and variation in concerte and rebar standards. For project specific pick weights contact the manufacturer prior to shipping of the unit(s). Is is the contractors responsibility to off-load the unit with an adequate size crane. Units are shipped with WetlandMEDIA in superbags and installed by contractor.

When Available see project contract terms, if lifting points are on the inside of the unit due to custom designs or installations requiring pionts to be on the inside the media will be shipped in bags and the contractor will be reponsibile to install after the unit is installed. For example, units places against a wall.

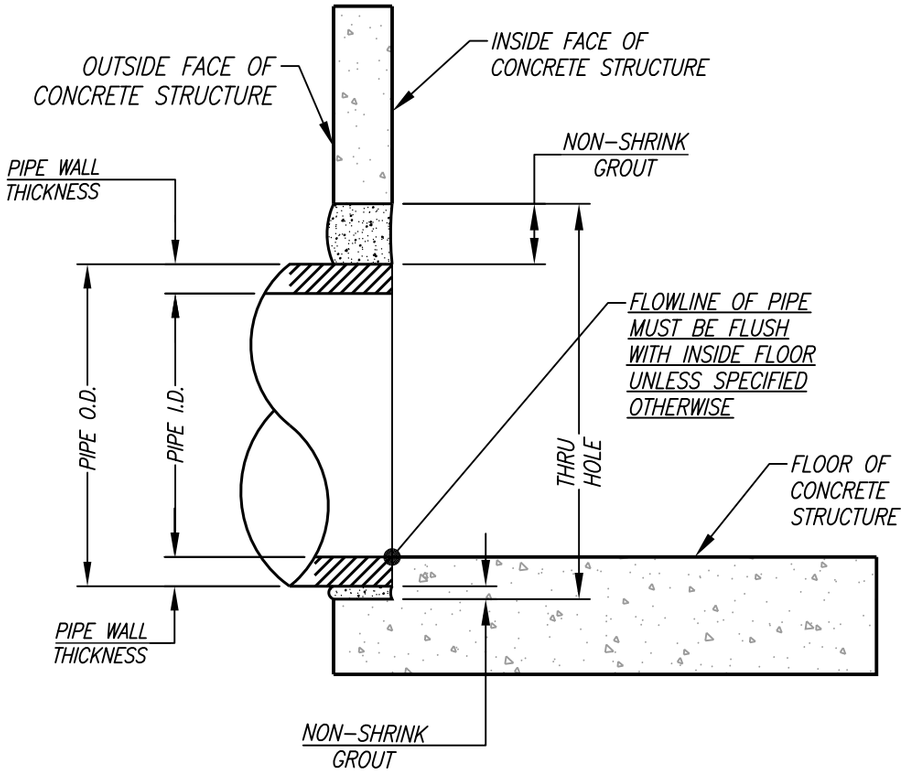
For Questions or Comments Please Call 888-566-3938 or email: info@modularwetlands.com

MODULAR WETLANDS™

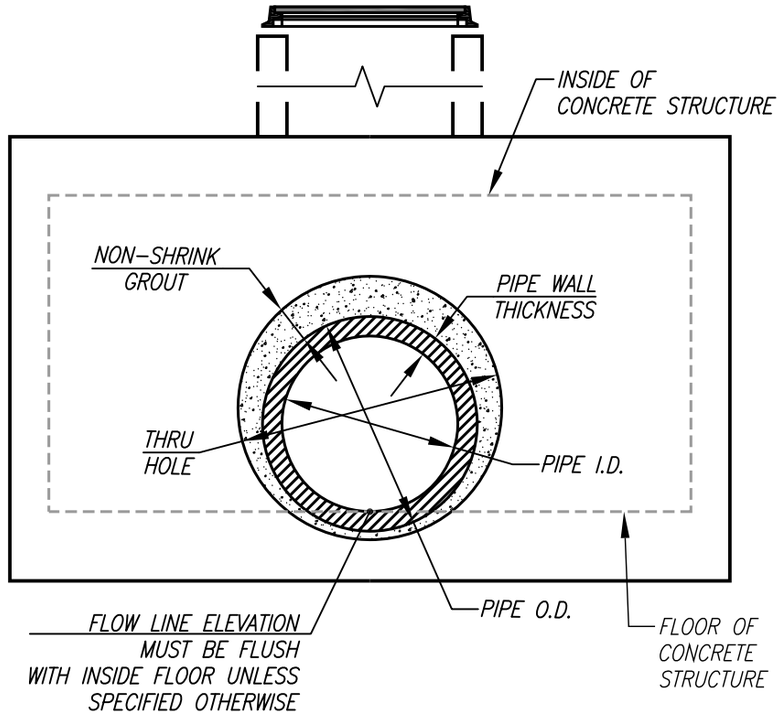
Connection Details

Modular Wetland System, Inc.
P. 760.433-7640
F. 760-433-3176
E. Info@modularwetlands.com

www.modularwetlands.com



ELEVATION VIEW



END VIEW

INSTALLATION NOTES

1. ALL CONNECTION PIPES SUPPLIED AND INSTALLED BY CONTRACTOR. MODULAR WETLAND UNIT WILL BE DELIVERED WITH A THRU HOLE AND ITS THE CONTRACTORS RESPONSIBILITY TO SUPPLY PIPE, AND ALL LABOR AND MATERIAL TO CONNECT PIPE AND SEAL UNIT WATER TIGHT INCLUDING BUT NOT LIMITED TO GROUT, CONCRETE LUG, REBAR, PLUG, ANCHORS, COUPLER, FITTINGS AND/OR ALL SUPPORT AND CONNECTING HARDWARE.
2. ALL CONNECTIONS ARE TO BE FLUSH WITH THE INSIDE SURFACE OF THE CONCRETE STRUCTURE. (CAN NOT INTRUDE BEYOND FLUSH) ALL PIPE FLOWLINES SHALL BE FLUSH WITH INSIDE FLOOR UNLESS SPECIFIED OTHERWISE.
3. ALL GROUT AND/OR CONCRETE SHALL BE NON–SHRINK AND MEET OR EXCEED LOCAL PIPE CONNECTION STANDARDS.
4. REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE.

MODULAR WETLANDS

PIPE CONNECTION
STANDARD DETAIL

Section [_____]
Modular Subsurface Flow Wetland System

PART 1 – GENERAL

01.01.00 Purpose
The purpose of this specification is to establish generally acceptable criteria for Modular Subsurface Flow Wetland Systems used for biofiltration of stormwater runoff including dry weather flows and other contaminated water sources. It is intended to serve as a guide to producers, distributors, architects, engineers, contractors, plumbers, installers, inspectors, agencies and users; to promote understanding regarding materials, manufacture and installation; and to provide for identification of devices complying with this specification.

01.02.00 Description
Modular Subsurface Flow Wetland Systems (MSFWS) are used for filtration of stormwater runoff including dry weather flows. The MSFWS is a pre-engineered biofiltration system composed of a pretreatment chamber containing filtration cartridges, a horizontal flow biofiltration chamber with a peripheral void area and a centralized and vertically extending underdrain, the biofiltration chamber containing a sorptive media mix which does not contain any organic material and a layer of plant establishment media, and a discharge chamber containing an orifice control structure . Treated water flows horizontally in series through the pretreatment chamber cartridges, biofiltration chamber and orifice control structure.

01.03.00 Manufacturer
The manufacturer of the MSFWS shall be one that is regularly engaged in the engineering design and production of systems developed for the treatment of stormwater runoff for at least (10) years, and which have a history of successful production, acceptable to the engineer of work. In accordance with the drawings, the MSFWS(s) shall be a filter device Manufactured by Bio Clean Environmental Services, Inc., or Modular Wetland Systems, Inc., or assigned distributors or licensees. Bio Clean Environmental Services Inc., and Modular Wetland Systems, Inc., can be reached at:

Corporate Headquarters:
Bio Clean Environmental Service, Inc.
2972 San Luis Rey Road
Oceanside, CA 92058
Phone: (760) 433-7640
Fax: (760) 433-3176
www.biocleanenvironmental.net

Corporate Headquarters:
Modular Wetland Systems, Inc.
P.O. Box 869
Oceanside, CA 92049
Phone: (760) 433-7650
www.modularwetlands.net

01.04.00 Submittals

01.04.01 Shop drawings are to be submitted with each order to the contractor and consulting engineer.

01.04.02 Shop drawings are to detail the MSFWS and all components required and the sequence for installation, including:

- System configuration with primary dimensions
- Interior components
- Any accessory equipment called out on shop drawings

01.04.03 Inspection and maintenance documentation submitted upon request.

01.05.00 Work Included

01.05.01 Specification requirements for installation of MSFWS.

01.05.02 Manufacturer to supply components of the MSFWS(s):

- Pretreatment chamber components (pre-assembled)
- Concrete Structure(s)
- Biofiltration chamber components (pre-assembled)
- Flow control discharge structure (pre-assembled)

01.06.00 Reference Standards

ASTM C 29	Standard Test Method for Unit Weight and Voids in Aggregate
ASTM C 88	C 88 Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C131	C 131 Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregates by Abrasion and Impact in the Los Angeles Machine
ASTM C 136	C 136 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM C 330	C 330 Standard Specification for Lightweight Aggregate for Structural Concrete
ASTM D 698	Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft.-lbf/ft3 (600 kN-m/m3)
ASTM D 1621	10 Standard Test Method for Compressive Properties Of Rigid Cellular Plastics
ASTM D 1777	ASTM D1777 - 96(2007) Standard Test Method for Thickness of Textile Materials
ASTM D 4716	Standard Test Method for Determining the (In-plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head
AASHTO T 99-01	Standard Method of Test for Moisture-Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 305-mm (12-in) Drop
AASHTO T 104	Standard Method of Test for Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate
AASHTO T 260	Standard Method of Test for Sampling and Testing for Chloride Ion in Concrete and Concrete Raw Materials.
AASHTO T 288	Standard Method of Test for Determining Minimum Laboratory Soil Resistivity
AASHTO T 289	Standard Method of Test for Determining ph of Soil for Use in Corrosion Testing
AASHTO T 291	Standard Method of Test for Determining Water Soluble Chloride Ion Content in Soil
AASHTO T 290	T 290 Standard Method of Test for Determining Water Soluble Sulfate Ion Content in Soil

PART 2 – COMPONENTS

The Modular Subsurface Flow Wetland Systems (MSFWS) and all of its components shall be self-contained within a concrete structure constructed of concrete with a minimum 28 day compressive strength of 5,000 psi, with reinforcing per ASTM A 615, Grade 60, and supports and H20 loading as indicated by AASHTO. Each Chamber shall have appropriate access hatches for easy maintenance and sized to allow removal of all internal components without disassembly. All water transfer system components shall conform with the following;

- Filter netting shall be 100% Polyester with a number 16 sieve size, and strength tested per ASTM D 3787.
- Drainage cells shall be manufactured of lightweight injection-molded plastic and have a minimum compressive strength test of 6,000 psi and a void area along the surface making contact with the filter media of 75% or greater. The cells shall be at least 2" in thickness and allow water to freely flow in all four directions.

02.01.00 Pretreatment Chamber Components

02.01.01 Filter Cartridges shall operate at a loading rate not to exceed 3 gallons per minute per square foot surface area.

02.01.02 Drain Down System shall include a pervious floor that allows water to drain into the underdrain pipe that is connected to the discharge chamber.

02.02.00 Biofiltration Chamber Components

02.02.01 Media shall consist of ceramic material produced by expanding and vitrifying select material in a rotary kiln. Media must be produced to meet the requirements of ASTM C330, ASTM C331, and AASHTO M195. Aggregates must have a minimum 24-hour water absorption of 10.5% mass. Media shall not contain any organic material. Flow through media shall be horizontal from the outer perimeter of the chamber toward the centralized and vertically extending underdrain. The retention time in the media shall be at least 3 minutes. Downward flow filters are not acceptable alternatives. The thickness of the media shall be at least 19" from influent end to effluent end. The loading rate on the media shall not exceed 1.1 gallons per minute per square foot surface area. Media must be contained within structure that spaces the surface of the media at least 2" from all vertically extending walls of the concrete structure.

02.02.02 Planting shall be native, drought tolerant species recommend by manufacturer and/or landscape architect.

02.02.03 Plant Support Media shall be made of a 3" thick moisture retention cell that is inert and contains no chemicals or fertilizers, is not made of organic material and has an internal void percentage of 80%.

02.03.00 Discharge Chamber

The discharge device shall house a flow control orifice plate that restricts flows greater than designed treatment flow rate. All piping components shall be made of a high-density polyethylene. The discharge chamber shall also contain a drain down filter if specified on the drawing.

PART 3 – PERFORMANCE

03.01.00 General

03.01.01 Function - The MSFWS has no moving internal components and functions based on gravity flow, unless otherwise specified. The MSFWS is composed of a pretreatment chamber, a biofiltration chamber and a discharge chamber. The pretreatment device houses cartridge media filters, which consist of filter media housed in a perforated enclosure. The untreated runoff flows into the system via subsurface piping and or surface inlet. Water entering the system is forced through the filter cartridge enclosures by gravity flow. Then the flow contacts the filter media. The flow through the media is horizontal toward the center of each individual media filter. In the center of the media shall be a round slotted PVC pipe of no greater than 1.5" in diameter. The slotted PVC pipe shall extend downward into the water transfer cavity of the cartridge. The slotted PVC pipe shall be threaded on the bottom to connect to the water transfer cavity. After pollutants have been removed by the filter media the water discharges the pretreatment chamber and flows into the water transfer system and is conveyed to the biofiltration chamber. Once runoff has been filtered by the biofiltration chamber it is collected by the vertical underdrain and conveyed to a discharge chamber equipped with a flow control orifice plate. Finally the treated flow exits the system.

03.01.02 Pollutants - The MSFWS will remove and retain debris, sediments, TSS, dissolved and particulate metals and nutrients including nitrogen and phosphorus species, bacteria, BOD, oxygen demanding substances, organic compounds and hydrocarbons entering the filter during frequent storm events and continuous dry weather flows.

03.01.03 Treatment Flow Rate and Bypass - The MSFWS operates in-line. The MSFWS will treat 100% of the required water quality treatment flow based on a minimum filtration capacities listed in section 03.02.00. The size of the system must match those provided on the drawing to ensure proper performance and hydraulic residence time.

Minimum Treatment Capabilities

• System must be capable of treating flows to the specified treatment flow rate on the drawings. The flow rate shall be controlled by an orifice plate.

PART 4 - EXECUTION

04.01.00 General

The installation of the MSFWS shall conform to all applicable national, state, state highway, municipal and local specifications.

04.02.00 Installation

The Contractor shall furnish all labor, equipment, materials and incidentals required to install the (MSFWS) device(s) and appurtenances in accordance with the drawings and these specifications.

04.02.01 Grading and Excavation site shall be properly surveyed by a registered professional surveyor, and clearly marked with excavation limits and elevations. After site is marked it is the responsibility of the contractor to contact local utility companies and/or DigAlert to check for underground utilities. All grading permits shall be approved by governing agencies before commencement of grading and excavation. Soil conditions shall be tested in accordance with the governing agencies requirements. All earth removed shall be transported, disposed, stored, and handled per governing agencies standards. It is the responsibility of the contractor to install and maintain proper erosion control measures during grading and excavation operations.

04.02.02 Compaction – All soil shall be compacted per registered professional soils engineer's recommendations prior to installation of MSFWS components.

04.02.03 Backfill shall be placed according to a registered professional soils engineer's recommendations, and with a minimum of 6" of gravel under all concrete structures.

04.02.04 Concrete Structures – After backfill has been inspected by the governing agency and approved the concrete structures shall be lifted and placed in proper position per plans.

04.02.05 Subsurface Flow Wetland Media shall be carefully loaded into area so not to damage the Wetland Liner or Water Transfer Systems. The entire wetland area shall be filled to a level 9 inches below finished surface.

04.02.06 Planting layer shall be installed per manufacturer's drawings and consist of a minimum 3" grow enhancement media that ensures greater than 95% plant survival rate, and 6" of wetland media. Planting shall consist of native plants recommended by manufacturer and/or landscape architect. Planting shall be drip irrigated for at least the first 3 months to insure long term plant growth. No chemical herbicides, pesticides, or fertilizers shall be used in the planting or care and maintenance of the planted area.

04.03.00 Shipping, Storage and Handling

04.03.01 Shipping – MSFWS shall be shipped to the contractor's address or job site, and is the responsibility of the contractor to offload the unit(s) and place in the exact site of installation.

04.03.02 Storage and Handling– The contractor shall exercise care in the storage and handling of the MSFWS and all components prior to and during installation. Any repair or replacement costs associated with events occurring after delivery is accepted and unloading has commenced shall be born by the contractor. The MSFWS(s) and all components shall always be stored indoors and transported inside the original shipping container until the unit(s) are ready to be installed. The MSFWS shall always be handled with care and lifted according to OSHA and NIOSA lifting recommendations and/or contractor's workplace safety professional recommendations.

04.04.00 Maintenance and Inspection

04.04.01 Inspection – After installation, the contractor shall demonstrate that the MSFWS has been properly installed at the correct location(s), elevations, and with appropriate components. All components associated with the MSFWS and its installation shall be subject to inspection by the engineer at the place of installation. In addition, the contractor shall demonstrate that the MSFWS has been installed per the manufacturer's specifications and recommendations. All

components shall be inspected by a qualified person once a year and results of inspection shall be kept in an inspection log.

04.04.02 Maintenance – The manufacturer recommends cleaning and debris removal maintenance of once a year and replacement of the Cartridge Filters as needed. The maintenance shall be performed by someone qualified. A Maintenance Manual is available upon request from the manufacturer. The manual has detailed information regarding the maintenance of the MSFWS. A Maintenance/Inspection record shall be kept by the maintenance operator. The record shall include any maintenance activities preformed, amount and description of debris collected, and the condition of the filter.

04.04.03 Material Disposal - All debris, trash, organics, and sediments captured by the MSFWS shall be transported and disposed of at an approved facility for disposal in accordance with local and state requirements. Please refer to state and local regulations for the proper disposal of toxic and non-toxic material.

PART 5 – QUALITY ASSURNACE

05.01.00 Warranty

The Manufacturer shall guarantee the MSFWS against all manufacturing defects in materials and workmanship for a period of (5) years from the date of delivery to the _____. The manufacturer shall be notified of repair or replacement issues in writing within the warranty period. The MSFWS is limited to recommended application for which it was designed.

05.02.00 Performance Certification

The MSFWS manufacturer shall submit to the Engineer of Record a “Manufacturer’s Performance Certificate” certifying the MSFWS is capable of achieving the specified removal efficiency for suspended solids, phosphorous and dissolved metals.

Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern

KMV2E.RES

```
**************************************************************************
  INTEGRATED RATIONAL METHOD/UH 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:




 ************************* DESCRIPTION OF STUDY *************************
* CAR PROS KIA SALES AND SERVICE FACILITY                                *
* XO 5/16/19                                                             *
* KMV2E.RES                                                              *
 **************************************************************************

  FILE NAME: KMV2E.DAT
  TIME/DATE OF STUDY: 10:33 05/16/2019
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 1.00
  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 =    2.00   1-HOUR INTENSITY(INCH/HOUR) =   0.554
  SLOPE OF INTENSITY DURATION CURVE = 0.5004
  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.*

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    VALLEY S-GRAPH USED.
    *24-HOUR (15-MINUTE PERIOD) DESIGN STORM USED.
    UNADJUSTED 24-HOUR RAINFALL DEPTH (INCHES) =   0.67
    USER-SPECIFIED DEPTH-AREA REDUCTION FACTOR:
      FOR 24-HOUR RAINFALL DEPTH =  1.00
    LOW LOSS RATE PERCENTAGE =  0.85
    MINIMUM LOSS RATE PERCENTAGE FOR 24-HOUR STORM =  0.05
  *PRECIPITATION ZONE NUMBER (PZN) = 2.0
  *ANTECEDENT MOISTURE CONDITION (AMC) =  0.00 ASSUMED FOR UNIT HYDROGRAPH METHOD*


****************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     11.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   351.00
  UPSTREAM ELEVATION(FEET) =     60.46
  DOWNSTREAM ELEVATION(FEET) =     50.61
  ELEVATION DIFFERENCE(FEET) =      9.85
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.276
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Runoff      SCS   Tc
       LAND USE            GROUP   (ACRES)   Coefficient    CN  (MIN.)
  NATURAL POOR COVER
  "CHAPARRAL,BROADLEAF"      D        2.96     0.6675       85   11.35
  SUBAREA RUNOFF(CFS) =      2.52
  TOTAL AREA(ACRES) =      2.96   TOTAL RUNOFF(CFS) =      2.52

****************************************************************************
  FLOW PROCESS FROM NODE     20.00 TO NODE     21.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
```

KMV2E.RES

```
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   225.00
  UPSTREAM ELEVATION(FEET) =     60.10
  DOWNSTREAM ELEVATION(FEET) =     43.70
  ELEVATION DIFFERENCE(FEET) =     16.40
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.534
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Runoff      SCS   Tc
       LAND USE            GROUP   (ACRES)   Coefficient    CN  (MIN.)
  NATURAL POOR COVER
  "CHAPARRAL,BROADLEAF"      D        3.23     0.6978       85    7.85
  SUBAREA RUNOFF(CFS) =      3.46
  TOTAL AREA(ACRES) =      3.23   TOTAL RUNOFF(CFS) =      3.46
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        3.2  TC(MIN.) =      7.85
  PEAK FLOW RATE(CFS)   =       3.46
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

KMV2EU.RES

```
**************************************************************************

             F L O O D    R O U T I N G    A N A L Y S I S

ACCORDING TO RIVERSIDE COUNTY FLOOD CONTORL AND WATER CONSERVATION DISTRICT
                    (RCFC&WCD) 1978 HYDROLOGY MANUAL
         (c) Copyright 1989-2011 Advanced Engineering Software (aes)
                 (Synthetic Unit Hydrograph Version 18.0)
                 Release Date: 05/01/2011  License ID 1499

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* CAR PROS KIA SALES AND SERVICE FACILITY                                *
* XO 5/16/19                                                             *
* KMV2EU.RES                                                             *
 ************************************************************************

  FILE NAME: KMV2EU.DAT
  TIME/DATE OF STUDY: 11:21 05/16/2019


**************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     11.00 IS CODE =   1
--------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
==========================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =       2.960 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
  Warning: Watershed Area is less than 10 acres
         *USER ENTERED "LAG" TIME =    0.151 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY S-GRAPH SELECTED
         UNIFORM MEAN SOIL-LOSS(INCH/HOUR) =  0.050
         LOW SOIL-LOSS RATE PERCENT(DECIMAL) = 0.500
         MINIMUM SOIL-LOSS RATE(INCH/HOUR) =   0.010
```

KMV2EU.RES

USER-ENTERED RAINFALL = 1.70 INCHES
RCFC&WCD 24-Hour Storm (15-Minute period) SELECTED
RCFC&WCD DEPTH-AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 1.0000

UNIT HYDROGRAPH TIME UNIT = 15.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 165.235

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	36.518	4.357
2	82.578	5.496
3	92.837	1.224
4	97.269	0.529
5	98.950	0.201
6	99.520	0.068
7	99.808	0.034
8	99.952	0.017
9	100.000	0.006

UNIT PERIOD (NUMBER)	UNIT RAINFALL (INCHES)	UNIT SOIL-LOSS (INCHES)	EFFECTIVE RAINFALL (INCHES)
1	0.0034	0.0017	0.0017
2	0.0051	0.0025	0.0025
3	0.0051	0.0025	0.0025
4	0.0068	0.0034	0.0034
5	0.0051	0.0025	0.0025
6	0.0051	0.0025	0.0025
7	0.0051	0.0025	0.0025
8	0.0068	0.0034	0.0034
9	0.0068	0.0034	0.0034
10	0.0068	0.0034	0.0034
11	0.0085	0.0042	0.0042
12	0.0085	0.0042	0.0042
13	0.0085	0.0042	0.0042
14	0.0085	0.0042	0.0042

15	0.0085	0.0042	0.0042
16	0.0102	0.0051	0.0051
17	0.0102	0.0051	0.0051
18	0.0119	0.0059	0.0059
19	0.0119	0.0059	0.0059
20	0.0136	0.0068	0.0068
21	0.0102	0.0051	0.0051
22	0.0119	0.0059	0.0059
23	0.0136	0.0068	0.0068
24	0.0136	0.0068	0.0068
25	0.0153	0.0076	0.0076
26	0.0153	0.0076	0.0076
27	0.0170	0.0085	0.0085
28	0.0170	0.0085	0.0085
29	0.0170	0.0085	0.0085
30	0.0187	0.0093	0.0093
31	0.0204	0.0102	0.0102
32	0.0221	0.0110	0.0110
33	0.0255	0.0127	0.0127
34	0.0255	0.0127	0.0127
35	0.0272	0.0136	0.0136
36	0.0289	0.0144	0.0144
37	0.0323	0.0147	0.0176
38	0.0340	0.0143	0.0197
39	0.0357	0.0140	0.0217
40	0.0374	0.0137	0.0237
41	0.0255	0.0127	0.0127
42	0.0255	0.0127	0.0127
43	0.0340	0.0128	0.0212
44	0.0340	0.0125	0.0215
45	0.0323	0.0122	0.0201
46	0.0323	0.0119	0.0204
47	0.0289	0.0116	0.0173
48	0.0306	0.0114	0.0192
49	0.0425	0.0111	0.0314
50	0.0442	0.0108	0.0334
51	0.0476	0.0105	0.0371
52	0.0493	0.0103	0.0390
53	0.0578	0.0100	0.0478
54	0.0578	0.0097	0.0481
55	0.0391	0.0095	0.0296
56	0.0391	0.0092	0.0299
57	0.0459	0.0089	0.0370
58	0.0442	0.0087	0.0355
59	0.0442	0.0084	0.0358
60	0.0425	0.0082	0.0343
61	0.0408	0.0080	0.0328
62	0.0391	0.0077	0.0314

KMV2EU.RES

63	0.0323	0.0075	0.0248
64	0.0323	0.0073	0.0250
65	0.0068	0.0034	0.0034
66	0.0068	0.0034	0.0034
67	0.0051	0.0025	0.0025
68	0.0051	0.0025	0.0025
69	0.0085	0.0042	0.0042
70	0.0085	0.0042	0.0042
71	0.0085	0.0042	0.0042
72	0.0068	0.0034	0.0034
73	0.0068	0.0034	0.0034
74	0.0068	0.0034	0.0034
75	0.0051	0.0025	0.0025
76	0.0034	0.0017	0.0017
77	0.0051	0.0025	0.0025
78	0.0068	0.0034	0.0034
79	0.0051	0.0025	0.0025
80	0.0034	0.0017	0.0017
81	0.0051	0.0025	0.0025
82	0.0051	0.0025	0.0025
83	0.0051	0.0025	0.0025
84	0.0034	0.0017	0.0017
85	0.0051	0.0025	0.0025
86	0.0034	0.0017	0.0017
87	0.0051	0.0025	0.0025
88	0.0034	0.0017	0.0017
89	0.0051	0.0025	0.0025
90	0.0034	0.0017	0.0017
91	0.0034	0.0017	0.0017
92	0.0034	0.0017	0.0017
93	0.0034	0.0017	0.0017
94	0.0034	0.0017	0.0017
95	0.0034	0.0017	0.0017
96	0.0034	0.0017	0.0017

TOTAL STORM RAINFALL(INCHES) = 1.70
TOTAL SOIL-LOSS(INCHES) = 0.61
TOTAL EFFECTIVE RAINFALL(INCHES) = 1.09

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 0.1504
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 0.2688

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2 4 - H O U R S T O R M
R U N O F F H Y D R O G R A P H

KMV2EU.RES

HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	2.5	5.0	7.5	10.0
0.083	0.0001	0.01	Q	.	.	.	.
0.167	0.0001	0.01	Q	.	.	.	.
0.250	0.0002	0.01	Q	.	.	.	.
0.333	0.0003	0.02	Q	.	.	.	.
0.417	0.0004	0.02	Q	.	.	.	.
0.500	0.0006	0.02	Q	.	.	.	.
0.583	0.0008	0.03	Q	.	.	.	.
0.667	0.0010	0.03	Q	.	.	.	.
0.750	0.0011	0.03	Q	.	.	.	.
0.833	0.0014	0.03	Q	.	.	.	.
0.917	0.0016	0.03	Q	.	.	.	.
1.000	0.0018	0.03	Q	.	.	.	.
1.083	0.0021	0.03	Q	.	.	.	.
1.167	0.0023	0.03	Q	.	.	.	.
1.250	0.0025	0.03	Q	.	.	.	.
1.333	0.0027	0.03	Q	.	.	.	.
1.417	0.0030	0.03	Q	.	.	.	.
1.500	0.0032	0.03	Q	.	.	.	.
1.583	0.0034	0.03	Q	.	.	.	.
1.667	0.0036	0.03	Q	.	.	.	.
1.750	0.0038	0.03	Q	.	.	.	.
1.833	0.0040	0.03	Q	.	.	.	.
1.917	0.0043	0.03	Q	.	.	.	.
2.000	0.0045	0.03	Q	.	.	.	.
2.083	0.0048	0.04	Q	.	.	.	.
2.167	0.0051	0.04	Q	.	.	.	.
2.250	0.0053	0.04	Q	.	.	.	.
2.333	0.0056	0.04	Q	.	.	.	.
2.417	0.0059	0.04	Q	.	.	.	.
2.500	0.0061	0.04	Q	.	.	.	.
2.583	0.0065	0.04	Q	.	.	.	.
2.667	0.0068	0.04	QV	.	.	.	.
2.750	0.0071	0.04	QV	.	.	.	.
2.833	0.0074	0.05	QV	.	.	.	.
2.917	0.0077	0.05	QV	.	.	.	.
3.000	0.0081	0.05	QV	.	.	.	.
3.083	0.0084	0.05	QV	.	.	.	.
3.167	0.0088	0.05	QV	.	.	.	.
3.250	0.0091	0.05	QV	.	.	.	.
3.333	0.0094	0.05	QV	.	.	.	.
3.417	0.0098	0.05	QV	.	.	.	.

3.500	0.0101	0.05	QV	.	.	.	.
3.583	0.0105	0.05	QV	.	.	.	.
3.667	0.0108	0.05	QV	.	.	.	.
3.750	0.0112	0.05	QV	.	.	.	.
3.833	0.0116	0.05	QV	.	.	.	.
3.917	0.0119	0.05	QV	.	.	.	.
4.000	0.0123	0.05	QV	.	.	.	.
4.083	0.0127	0.06	QV	.	.	.	.
4.167	0.0131	0.06	QV	.	.	.	.
4.250	0.0135	0.06	Q V	.	.	.	.
4.333	0.0140	0.06	Q V	.	.	.	.
4.417	0.0144	0.06	Q V	.	.	.	.
4.500	0.0148	0.06	Q V	.	.	.	.
4.583	0.0153	0.07	Q V	.	.	.	.
4.667	0.0158	0.07	Q V	.	.	.	.
4.750	0.0163	0.07	Q V	.	.	.	.
4.833	0.0168	0.07	Q V	.	.	.	.
4.917	0.0173	0.07	Q V	.	.	.	.
5.000	0.0178	0.07	Q V	.	.	.	.
5.083	0.0183	0.07	Q V	.	.	.	.
5.167	0.0188	0.07	Q V	.	.	.	.
5.250	0.0193	0.07	Q V	.	.	.	.
5.333	0.0197	0.07	Q V	.	.	.	.
5.417	0.0202	0.07	Q V	.	.	.	.
5.500	0.0207	0.07	Q V	.	.	.	.
5.583	0.0212	0.07	Q V	.	.	.	.
5.667	0.0217	0.07	Q V	.	.	.	.
5.750	0.0222	0.07	Q V	.	.	.	.
5.833	0.0227	0.08	Q V	.	.	.	.
5.917	0.0233	0.08	Q V	.	.	.	.
6.000	0.0238	0.08	Q V	.	.	.	.
6.083	0.0244	0.08	Q V	.	.	.	.
6.167	0.0250	0.08	Q V	.	.	.	.
6.250	0.0256	0.08	Q V	.	.	.	.
6.333	0.0262	0.09	Q V	.	.	.	.
6.417	0.0268	0.09	Q V	.	.	.	.
6.500	0.0274	0.09	Q V	.	.	.	.
6.583	0.0281	0.09	Q V	.	.	.	.
6.667	0.0287	0.09	Q V	.	.	.	.
6.750	0.0294	0.09	Q V	.	.	.	.
6.833	0.0300	0.10	Q V	.	.	.	.
6.917	0.0307	0.10	Q V	.	.	.	.
7.000	0.0314	0.10	Q V	.	.	.	.
7.083	0.0321	0.10	Q V	.	.	.	.
7.167	0.0328	0.10	Q V	.	.	.	.
7.250	0.0335	0.10	Q V	.	.	.	.
7.333	0.0342	0.10	Q V	.	.	.	.
7.417	0.0349	0.10	Q V	.	.	.	.

KMV2EU.RES

7.500	0.0357	0.10	Q	V	.	.	.	.
7.583	0.0364	0.11	Q	V	.	.	.	.
7.667	0.0372	0.11	Q	V	.	.	.	.
7.750	0.0380	0.11	Q	V	.	.	.	.
7.833	0.0388	0.12	Q	V	.	.	.	.
7.917	0.0397	0.12	Q	V	.	.	.	.
8.000	0.0405	0.12	Q	V	.	.	.	.
8.083	0.0415	0.14	Q	V	.	.	.	.
8.167	0.0424	0.14	Q	V	.	.	.	.
8.250	0.0434	0.14	Q	V	.	.	.	.
8.333	0.0444	0.15	Q	V	.	.	.	.
8.417	0.0454	0.15	Q	V	.	.	.	.
8.500	0.0464	0.15	Q	V	.	.	.	.
8.583	0.0475	0.15	Q	V	.	.	.	.
8.667	0.0485	0.15	Q	V	.	.	.	.
8.750	0.0496	0.15	Q	V	.	.	.	.
8.833	0.0507	0.16	Q	V	.	.	.	.
8.917	0.0518	0.16	Q	V	.	.	.	.
9.000	0.0530	0.16	Q	V	.	.	.	.
9.083	0.0542	0.18	Q	V	.	.	.	.
9.167	0.0555	0.18	Q	V	.	.	.	.
9.250	0.0568	0.18	Q	V	.	.	.	.
9.333	0.0582	0.21	Q	V	.	.	.	.
9.417	0.0597	0.21	Q	V	.	.	.	.
9.500	0.0611	0.21	Q	V	.	.	.	.
9.583	0.0627	0.24	Q	V	.	.	.	.
9.667	0.0644	0.24	Q	V	.	.	.	.
9.750	0.0660	0.24	Q	V	.	.	.	.
9.833	0.0678	0.26	.Q	V	.	.	.	.
9.917	0.0696	0.26	.Q	V	.	.	.	.
10.000	0.0714	0.26	.Q	V	.	.	.	.
10.083	0.0729	0.23	Q	V	.	.	.	.
10.167	0.0745	0.23	Q	V	.	.	.	.
10.250	0.0761	0.23	Q	V	.	.	.	.
10.333	0.0773	0.17	Q	.V	.	.	.	.
10.417	0.0785	0.17	Q	.V	.	.	.	.
10.500	0.0796	0.17	Q	.V	.	.	.	.
10.583	0.0810	0.20	Q	. V	.	.	.	.
10.667	0.0824	0.20	Q	. V	.	.	.	.
10.750	0.0837	0.20	Q	. V	.	.	.	.
10.833	0.0854	0.24	Q	. V	.	.	.	.
10.917	0.0870	0.24	Q	. V	.	.	.	.
11.000	0.0887	0.24	Q	. V	.	.	.	.
11.083	0.0903	0.24	Q	. V	.	.	.	.
11.167	0.0920	0.24	Q	. V	.	.	.	.
11.250	0.0937	0.24	Q	. V	.	.	.	.
11.333	0.0954	0.24	Q	. V	.	.	.	.
11.417	0.0970	0.24	Q	. V	.	.	.	.

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	2.5	5.0	7.5	10.0
11.500	0.0987	0.24	Q	. V	.	.	.
11.583	0.1003	0.23	Q	. V	.	.	.
11.667	0.1018	0.23	Q	. V	.	.	.
11.750	0.1034	0.23	Q	. V	.	.	.
11.833	0.1049	0.22	Q	. V	.	.	.
11.917	0.1065	0.22	Q	. V	.	.	.
12.000	0.1080	0.22	Q	. V	.	.	.
12.083	0.1099	0.28	.Q	. V	.	.	.
12.167	0.1118	0.28	.Q	. V	.	.	.
12.250	0.1138	0.28	.Q	. V	.	.	.
12.333	0.1162	0.36	.Q	. V	.	.	.
12.417	0.1187	0.36	.Q	. V	.	.	.
12.500	0.1212	0.36	.Q	. V	.	.	.
12.583	0.1239	0.40	.Q	. V	.	.	.
12.667	0.1267	0.40	.Q	. V	.	.	.
12.750	0.1294	0.40	.Q	. V.	.	.	.
12.833	0.1324	0.44	.Q	. V.	.	.	.
12.917	0.1355	0.44	.Q	. V	.	.	.
13.000	0.1385	0.44	.Q	. V	.	.	.
13.083	0.1419	0.49	.Q	. .V	.	.	.
13.167	0.1453	0.49	.Q	. .V	.	.	.
13.250	0.1487	0.49	.Q	. . V	.	.	.
13.333	0.1525	0.55	. Q	. . V	.	.	.
13.417	0.1563	0.55	. Q	. . V	.	.	.
13.500	0.1601	0.55	. Q	. . V	.	.	.
13.583	0.1634	0.48	.Q	. . V	.	.	.
13.667	0.1667	0.48	.Q	. . V	.	.	.
13.750	0.1700	0.48	.Q	. . V	.	.	.
13.833	0.1727	0.39	.Q	. . V	.	.	.
13.917	0.1754	0.39	.Q	. . V	.	.	.
14.000	0.1781	0.39	.Q	. . V	.	.	.
14.083	0.1809	0.40	.Q	. . V	.	.	.
14.167	0.1836	0.40	.Q	. . V	.	.	.
14.250	0.1864	0.40	.Q	. . V	.	.	.
14.333	0.1893	0.43	.Q	. . V	.	.	.
14.417	0.1922	0.43	.Q	. . V	.	.	.
14.500	0.1952	0.43	.Q	. . V.	.	.	.
14.583	0.1981	0.42	.Q	. . V.	.	.	.
14.667	0.2010	0.42	.Q	. . V.	.	.	.
14.750	0.2039	0.42	.Q	. . V	.	.	.
14.833	0.2068	0.42	.Q	. . V	.	.	.
14.917	0.2097	0.42	.Q	. . V	.	.	.
15.000	0.2126	0.42	.Q	. . V	.	.	.
15.083	0.2154	0.41	.Q	. .	. V	.	.

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15.167      0.2182      0.41  .Q          .          .          . V          .
15.250      0.2210      0.41  .Q          .          .          . V          .
15.333      0.2237      0.39  .Q          .          .          .  V         .
15.417      0.2264      0.39  .Q          .          .          .  V         .
15.500      0.2290      0.39  .Q          .          .          .   V        .
15.583      0.2314      0.35  .Q          .          .          .   V        .
15.667      0.2339      0.35  .Q          .          .          .   V        .
15.750      0.2363      0.35  .Q          .          .          .    V       .
15.833      0.2384      0.31  .Q          .          .          .    V       .
15.917      0.2406      0.31  .Q          .          .          .    V       .
16.000      0.2427      0.31  .Q          .          .          .     V      .
16.083      0.2442      0.21  Q           .          .          .     V      .
16.167      0.2456      0.21  Q           .          .          .     V      .
16.250      0.2471      0.21  Q           .          .          .     V      .
16.333      0.2477      0.09  Q           .          .          .     V      .
16.417      0.2483      0.09  Q           .          .          .     V      .
16.500      0.2489      0.09  Q           .          .          .      V     .
16.583      0.2493      0.06  Q           .          .          .      V     .
16.667      0.2497      0.06  Q           .          .          .      V     .
16.750      0.2501      0.06  Q           .          .          .      V     .
16.833      0.2503      0.04  Q           .          .          .      V     .
16.917      0.2506      0.04  Q           .          .          .      V     .
17.000      0.2509      0.04  Q           .          .          .      V     .
17.083      0.2512      0.04  Q           .          .          .      V     .
17.167      0.2514      0.04  Q           .          .          .      V     .
17.250      0.2517      0.04  Q           .          .          .      V     .
17.333      0.2521      0.05  Q           .          .          .      V     .
17.417      0.2524      0.05  Q           .          .          .      V     .
17.500      0.2527      0.05  Q           .          .          .      V     .
17.583      0.2531      0.05  Q           .          .          .      V     .
17.667      0.2534      0.05  Q           .          .          .      V     .
17.750      0.2538      0.05  Q           .          .          .      V     .
17.833      0.2541      0.05  Q           .          .          .      V     .
17.917      0.2544      0.05  Q           .          .          .      V     .
18.000      0.2547      0.05  Q           .          .          .      V     .
18.083      0.2550      0.04  Q           .          .          .      V     .
18.167      0.2553      0.04  Q           .          .          .      V     .
18.250      0.2556      0.04  Q           .          .          .       V    .
18.333      0.2559      0.04  Q           .          .          .       V    .
18.417      0.2562      0.04  Q           .          .          .       V    .
18.500      0.2564      0.04  Q           .          .          .       V    .
18.583      0.2567      0.04  Q           .          .          .       V    .
18.667      0.2570      0.04  Q           .          .          .       V    .
18.750      0.2572      0.04  Q           .          .          .       V    .
18.833      0.2574      0.03  Q           .          .          .       V    .
18.917      0.2576      0.03  Q           .          .          .       V    .
19.000      0.2578      0.03  Q           .          .          .       V    .
19.083      0.2580      0.03  Q           .          .          .       V    .
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19.167	0.2582	0.03	Q	.	.	.	V .
19.250	0.2584	0.03	Q	.	.	.	V .
19.333	0.2586	0.03	Q	.	.	.	V .
19.417	0.2588	0.03	Q	.	.	.	V .
19.500	0.2590	0.03	Q	.	.	.	V .
19.583	0.2593	0.03	Q	.	.	.	V .
19.667	0.2595	0.03	Q	.	.	.	V .
19.750	0.2598	0.03	Q	.	.	.	V .
19.833	0.2600	0.03	Q	.	.	.	V .
19.917	0.2601	0.03	Q	.	.	.	V .
20.000	0.2603	0.03	Q	.	.	.	V .
20.083	0.2605	0.03	Q	.	.	.	V .
20.167	0.2607	0.03	Q	.	.	.	V .
20.250	0.2609	0.03	Q	.	.	.	V .
20.333	0.2611	0.03	Q	.	.	.	V .
20.417	0.2613	0.03	Q	.	.	.	V .
20.500	0.2615	0.03	Q	.	.	.	V .
20.583	0.2617	0.03	Q	.	.	.	V .
20.667	0.2619	0.03	Q	.	.	.	V .
20.750	0.2621	0.03	Q	.	.	.	V.
20.833	0.2623	0.03	Q	.	.	.	V.
20.917	0.2625	0.03	Q	.	.	.	V.
21.000	0.2627	0.03	Q	.	.	.	V.
21.083	0.2628	0.03	Q	.	.	.	V.
21.167	0.2630	0.03	Q	.	.	.	V.
21.250	0.2632	0.03	Q	.	.	.	V.
21.333	0.2634	0.03	Q	.	.	.	V.
21.417	0.2635	0.03	Q	.	.	.	V.
21.500	0.2637	0.03	Q	.	.	.	V.
21.583	0.2639	0.03	Q	.	.	.	V.
21.667	0.2641	0.03	Q	.	.	.	V.
21.750	0.2642	0.03	Q	.	.	.	V.
21.833	0.2644	0.03	Q	.	.	.	V.
21.917	0.2646	0.03	Q	.	.	.	V.
22.000	0.2648	0.03	Q	.	.	.	V.
22.083	0.2649	0.03	Q	.	.	.	V.
22.167	0.2651	0.03	Q	.	.	.	V.
22.250	0.2653	0.03	Q	.	.	.	V.
22.333	0.2655	0.03	Q	.	.	.	V.
22.417	0.2656	0.03	Q	.	.	.	V.
22.500	0.2658	0.03	Q	.	.	.	V.
22.583	0.2660	0.02	Q	.	.	.	V.
22.667	0.2661	0.02	Q	.	.	.	V.
22.750	0.2663	0.02	Q	.	.	.	V.
22.833	0.2664	0.02	Q	.	.	.	V.
22.917	0.2665	0.02	Q	.	.	.	V.
23.000	0.2667	0.02	Q	.	.	.	V.
23.083	0.2668	0.02	Q	.	.	.	V.

KMV2EU.RES

23.166	0.2670	0.02	Q	.	.	.	V.
23.250	0.2671	0.02	Q	.	.	.	V.
23.333	0.2673	0.02	Q	.	.	.	V.
23.416	0.2674	0.02	Q	.	.	.	V.
23.500	0.2675	0.02	Q	.	.	.	V.
23.583	0.2677	0.02	Q	.	.	.	V.
23.666	0.2678	0.02	Q	.	.	.	V.
23.750	0.2680	0.02	Q	.	.	.	V.
23.833	0.2681	0.02	Q	.	.	.	V.
23.916	0.2682	0.02	Q	.	.	.	V.
24.000	0.2684	0.02	Q	.	.	.	V.

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	2.5	5.0	7.5	10.0
24.083	0.2685	0.01	Q	.	.	.	V.
24.166	0.2685	0.01	Q	.	.	.	V.
24.250	0.2686	0.01	Q	.	.	.	V.
24.333	0.2687	0.00	Q	.	.	.	V.
24.416	0.2687	0.00	Q	.	.	.	V.
24.500	0.2687	0.00	Q	.	.	.	V.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1470.0
10%	765.0
20%	525.0
30%	435.0
40%	360.0
50%	240.0
60%	210.0
70%	180.0
80%	45.0
90%	30.0

****
FLOW PROCESS FROM NODE 20.00 TO NODE 21.00 IS CODE = 1

>>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
==========

KMV2EU.RES
(UNIT-HYDROGRAPH ADDED TO STREAM #1)

WATERSHED AREA = 3.230 ACRES
BASEFLOW = 0.000 CFS/SQUARE-MILE
Warning: Watershed Area is less than 10 acres
*USER ENTERED "LAG" TIME = 0.105 HOURS
CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
VALLEY S-GRAPH SELECTED
UNIFORM MEAN SOIL-LOSS(INCH/HOUR) = 0.050
LOW SOIL-LOSS RATE PERCENT(DECIMAL) = 0.500
MINIMUM SOIL-LOSS RATE(INCH/HOUR) = 0.010
USER-ENTERED RAINFALL = 1.70 INCHES
RCFC&WCD 24-Hour Storm (15-Minute period) SELECTED
RCFC&WCD DEPTH-AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 1.0000

UNIT HYDROGRAPH TIME UNIT = 15.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 238.777

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	49.304	6.420
2	90.106	5.313
3	97.423	0.953
4	99.347	0.251
5	99.739	0.051
6	99.935	0.026
7	100.000	0.009

UNIT PERIOD (NUMBER)	UNIT RAINFALL (INCHES)	UNIT SOIL-LOSS (INCHES)	EFFECTIVE RAINFALL (INCHES)
1	0.0034	0.0017	0.0017
2	0.0051	0.0025	0.0025
3	0.0051	0.0025	0.0025

4	0.0068	0.0034	0.0034
5	0.0051	0.0025	0.0025
6	0.0051	0.0025	0.0025
7	0.0051	0.0025	0.0025
8	0.0068	0.0034	0.0034
9	0.0068	0.0034	0.0034
10	0.0068	0.0034	0.0034
11	0.0085	0.0042	0.0042
12	0.0085	0.0042	0.0042
13	0.0085	0.0042	0.0042
14	0.0085	0.0042	0.0042
15	0.0085	0.0042	0.0042
16	0.0102	0.0051	0.0051
17	0.0102	0.0051	0.0051
18	0.0119	0.0059	0.0059
19	0.0119	0.0059	0.0059
20	0.0136	0.0068	0.0068
21	0.0102	0.0051	0.0051
22	0.0119	0.0059	0.0059
23	0.0136	0.0068	0.0068
24	0.0136	0.0068	0.0068
25	0.0153	0.0076	0.0076
26	0.0153	0.0076	0.0076
27	0.0170	0.0085	0.0085
28	0.0170	0.0085	0.0085
29	0.0170	0.0085	0.0085
30	0.0187	0.0093	0.0093
31	0.0204	0.0102	0.0102
32	0.0221	0.0110	0.0110
33	0.0255	0.0127	0.0127
34	0.0255	0.0127	0.0127
35	0.0272	0.0136	0.0136
36	0.0289	0.0144	0.0144
37	0.0323	0.0147	0.0176
38	0.0340	0.0143	0.0197
39	0.0357	0.0140	0.0217
40	0.0374	0.0137	0.0237
41	0.0255	0.0127	0.0127
42	0.0255	0.0127	0.0127
43	0.0340	0.0128	0.0212
44	0.0340	0.0125	0.0215
45	0.0323	0.0122	0.0201
46	0.0323	0.0119	0.0204
47	0.0289	0.0116	0.0173
48	0.0306	0.0114	0.0192
49	0.0425	0.0111	0.0314
50	0.0442	0.0108	0.0334
51	0.0476	0.0105	0.0371

52	0.0493	0.0103	0.0390
53	0.0578	0.0100	0.0478
54	0.0578	0.0097	0.0481
55	0.0391	0.0095	0.0296
56	0.0391	0.0092	0.0299
57	0.0459	0.0089	0.0370
58	0.0442	0.0087	0.0355
59	0.0442	0.0084	0.0358
60	0.0425	0.0082	0.0343
61	0.0408	0.0080	0.0328
62	0.0391	0.0077	0.0314
63	0.0323	0.0075	0.0248
64	0.0323	0.0073	0.0250
65	0.0068	0.0034	0.0034
66	0.0068	0.0034	0.0034
67	0.0051	0.0025	0.0025
68	0.0051	0.0025	0.0025
69	0.0085	0.0042	0.0042
70	0.0085	0.0042	0.0042
71	0.0085	0.0042	0.0042
72	0.0068	0.0034	0.0034
73	0.0068	0.0034	0.0034
74	0.0068	0.0034	0.0034
75	0.0051	0.0025	0.0025
76	0.0034	0.0017	0.0017
77	0.0051	0.0025	0.0025
78	0.0068	0.0034	0.0034
79	0.0051	0.0025	0.0025
80	0.0034	0.0017	0.0017
81	0.0051	0.0025	0.0025
82	0.0051	0.0025	0.0025
83	0.0051	0.0025	0.0025
84	0.0034	0.0017	0.0017
85	0.0051	0.0025	0.0025
86	0.0034	0.0017	0.0017
87	0.0051	0.0025	0.0025
88	0.0034	0.0017	0.0017
89	0.0051	0.0025	0.0025
90	0.0034	0.0017	0.0017
91	0.0034	0.0017	0.0017
92	0.0034	0.0017	0.0017
93	0.0034	0.0017	0.0017
94	0.0034	0.0017	0.0017
95	0.0034	0.0017	0.0017
96	0.0034	0.0017	0.0017

TOTAL STORM RAINFALL(INCHES) = 1.70
TOTAL SOIL-LOSS(INCHES) = 0.61

KMV2EU.RES

TOTAL EFFECTIVE RAINFALL(INCHES) = 1.09

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 0.1642
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 0.2933

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2 4 - H O U R S T O R M
R U N O F F H Y D R O G R A P H

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HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	2.5	5.0	7.5	10.0
0.083	0.0001	0.01	Q	.	.	.	.
0.167	0.0002	0.01	Q	.	.	.	.
0.250	0.0002	0.01	Q	.	.	.	.
0.333	0.0004	0.03	Q	.	.	.	.
0.417	0.0006	0.03	Q	.	.	.	.
0.500	0.0008	0.03	Q	.	.	.	.
0.583	0.0010	0.03	Q	.	.	.	.
0.667	0.0012	0.03	Q	.	.	.	.
0.750	0.0014	0.03	Q	.	.	.	.
0.833	0.0017	0.04	Q	.	.	.	.
0.917	0.0019	0.04	Q	.	.	.	.
1.000	0.0022	0.04	Q	.	.	.	.
1.083	0.0025	0.04	Q	.	.	.	.
1.167	0.0027	0.04	Q	.	.	.	.
1.250	0.0030	0.04	Q	.	.	.	.
1.333	0.0032	0.03	Q	.	.	.	.
1.417	0.0034	0.03	Q	.	.	.	.
1.500	0.0037	0.03	Q	.	.	.	.
1.583	0.0039	0.03	Q	.	.	.	.
1.667	0.0041	0.03	Q	.	.	.	.
1.750	0.0044	0.03	Q	.	.	.	.
1.833	0.0046	0.04	Q	.	.	.	.
1.917	0.0049	0.04	Q	.	.	.	.
2.000	0.0052	0.04	Q	.	.	.	.
2.083	0.0055	0.04	Q	.	.	.	.
2.167	0.0058	0.04	Q	.	.	.	.
2.250	0.0061	0.04	Q	.	.	.	.
2.333	0.0064	0.04	Q	.	.	.	.
2.417	0.0067	0.04	Q	.	.	.	.
2.500	0.0070	0.04	Q	.	.	.	.

2.583	0.0073	0.05	Q	.	.	.	.
2.667	0.0076	0.05	QV	.	.	.	.
2.750	0.0080	0.05	QV	.	.	.	.
2.833	0.0084	0.05	QV	.	.	.	.
2.917	0.0087	0.05	QV	.	.	.	.
3.000	0.0091	0.05	QV	.	.	.	.
3.083	0.0095	0.06	QV	.	.	.	.
3.167	0.0099	0.06	QV	.	.	.	.
3.250	0.0102	0.06	QV	.	.	.	.
3.333	0.0106	0.06	QV	.	.	.	.
3.417	0.0110	0.06	QV	.	.	.	.
3.500	0.0114	0.06	QV	.	.	.	.
3.583	0.0118	0.06	QV	.	.	.	.
3.667	0.0121	0.06	QV	.	.	.	.
3.750	0.0125	0.06	QV	.	.	.	.
3.833	0.0129	0.06	QV	.	.	.	.
3.917	0.0134	0.06	QV	.	.	.	.
4.000	0.0138	0.06	QV	.	.	.	.
4.083	0.0142	0.07	QV	.	.	.	.
4.167	0.0147	0.07	Q V	.	.	.	.
4.250	0.0151	0.07	Q V	.	.	.	.
4.333	0.0156	0.07	Q V	.	.	.	.
4.417	0.0161	0.07	Q V	.	.	.	.
4.500	0.0166	0.07	Q V	.	.	.	.
4.583	0.0171	0.08	Q V	.	.	.	.
4.667	0.0177	0.08	Q V	.	.	.	.
4.750	0.0182	0.08	Q V	.	.	.	.
4.833	0.0188	0.08	Q V	.	.	.	.
4.917	0.0193	0.08	Q V	.	.	.	.
5.000	0.0199	0.08	Q V	.	.	.	.
5.083	0.0204	0.08	Q V	.	.	.	.
5.167	0.0210	0.08	Q V	.	.	.	.
5.250	0.0215	0.08	Q V	.	.	.	.
5.333	0.0220	0.07	Q V	.	.	.	.
5.417	0.0225	0.07	Q V	.	.	.	.
5.500	0.0230	0.07	Q V	.	.	.	.
5.583	0.0236	0.08	Q V	.	.	.	.
5.667	0.0241	0.08	Q V	.	.	.	.
5.750	0.0247	0.08	Q V	.	.	.	.
5.833	0.0253	0.09	Q V	.	.	.	.
5.917	0.0259	0.09	Q V	.	.	.	.
6.000	0.0265	0.09	Q V	.	.	.	.
6.083	0.0272	0.09	Q V	.	.	.	.
6.167	0.0278	0.09	Q V	.	.	.	.
6.250	0.0284	0.09	Q V	.	.	.	.
6.333	0.0291	0.10	Q V	.	.	.	.
6.417	0.0298	0.10	Q V	.	.	.	.
6.500	0.0305	0.10	Q V	.	.	.	.

KMV2EU.RES

6.583	0.0312	0.10	Q	V	.	.	.	.
6.667	0.0319	0.10	Q	V	.	.	.	.
6.750	0.0326	0.10	Q	V	.	.	.	.
6.833	0.0334	0.11	Q	V	.	.	.	.
6.917	0.0341	0.11	Q	V	.	.	.	.
7.000	0.0349	0.11	Q	V	.	.	.	.
7.083	0.0357	0.11	Q	V	.	.	.	.
7.167	0.0364	0.11	Q	V	.	.	.	.
7.250	0.0372	0.11	Q	V	.	.	.	.
7.333	0.0380	0.12	Q	V	.	.	.	.
7.417	0.0388	0.12	Q	V	.	.	.	.
7.500	0.0396	0.12	Q	V	.	.	.	.
7.583	0.0404	0.13	Q	V	.	.	.	.
7.667	0.0413	0.13	Q	V	.	.	.	.
7.750	0.0422	0.13	Q	V	.	.	.	.
7.833	0.0431	0.14	Q	V	.	.	.	.
7.917	0.0441	0.14	Q	V	.	.	.	.
8.000	0.0450	0.14	Q	V	.	.	.	.
8.083	0.0461	0.15	Q	V	.	.	.	.
8.167	0.0471	0.15	Q	V	.	.	.	.
8.250	0.0482	0.15	Q	V	.	.	.	.
8.333	0.0493	0.16	Q	V	.	.	.	.
8.417	0.0504	0.16	Q	V	.	.	.	.
8.500	0.0516	0.16	Q	V	.	.	.	.
8.583	0.0527	0.17	Q	V	.	.	.	.
8.667	0.0539	0.17	Q	V	.	.	.	.
8.750	0.0551	0.17	Q	V	.	.	.	.
8.833	0.0563	0.18	Q	V	.	.	.	.
8.917	0.0576	0.18	Q	V	.	.	.	.
9.000	0.0588	0.18	Q	V	.	.	.	.
9.083	0.0603	0.21	Q	V	.	.	.	.
9.167	0.0617	0.21	Q	V	.	.	.	.
9.250	0.0631	0.21	Q	V	.	.	.	.
9.333	0.0648	0.24	Q	V	.	.	.	.
9.417	0.0664	0.24	Q	V	.	.	.	.
9.500	0.0680	0.24	Q	V	.	.	.	.
9.583	0.0699	0.27	.Q	V	.	.	.	.
9.667	0.0717	0.27	.Q	V	.	.	.	.
9.750	0.0735	0.27	.Q	V	.	.	.	.
9.833	0.0755	0.29	.Q	V	.	.	.	.
9.917	0.0775	0.29	.Q	V	.	.	.	.
10.000	0.0795	0.29	.Q	V	.	.	.	.
10.083	0.0811	0.23	Q	.V	.	.	.	.
10.167	0.0828	0.23	Q	.V	.	.	.	.
10.250	0.0844	0.23	Q	.V	.	.	.	.
10.333	0.0856	0.18	Q	.V	.	.	.	.
10.417	0.0868	0.18	Q	.V	.	.	.	.
10.500	0.0881	0.18	Q	. V	.	.	.	.

KMV2EU.RES

10.583	0.0896	0.22	Q	. V . . .
10.667	0.0912	0.22	Q	. V . . .
10.750	0.0927	0.22	Q	. V . . .
10.833	0.0945	0.27	.Q	. V . . .
10.917	0.0964	0.27	.Q	. V . . .
11.000	0.0982	0.27	.Q	. V . . .
11.083	0.1001	0.27	.Q	. V . . .
11.167	0.1019	0.27	.Q	. V . . .
11.250	0.1038	0.27	.Q	. V . . .
11.333	0.1056	0.26	.Q	. V . . .
11.417	0.1074	0.26	.Q	. V . . .
11.500	0.1092	0.26	.Q	. V . . .

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	2.5	5.0	7.5	10.0
11.583	0.1109	0.25	Q	. V	.	.	.
11.667	0.1126	0.25	Q	. V	.	.	.
11.750	0.1143	0.25	Q	. V	.	.	.
11.833	0.1160	0.24	Q	. V	.	.	.
11.917	0.1176	0.24	Q	. V	.	.	.
12.000	0.1193	0.24	Q	. V	.	.	.
12.083	0.1215	0.33	.Q	. V	.	.	.
12.167	0.1238	0.33	.Q	. V	.	.	.
12.250	0.1260	0.33	.Q	. V	.	.	.
12.333	0.1288	0.41	.Q	. V	.	.	.
12.417	0.1316	0.41	.Q	. V	.	.	.
12.500	0.1344	0.41	.Q	. V	.	.	.
12.583	0.1375	0.45	.Q	. V	.	.	.
12.667	0.1406	0.45	.Q	. V	.	.	.
12.750	0.1438	0.45	.Q	. V	.	.	.
12.833	0.1471	0.49	.Q	. V	.	.	.
12.917	0.1505	0.49	.Q	. V	.	.	.
13.000	0.1539	0.49	.Q	. V	.	.	.
13.083	0.1577	0.56	. Q	. V	.	.	.
13.167	0.1616	0.56	. Q	. V	.	.	.
13.250	0.1654	0.56	. Q	. V	.	.	.
13.333	0.1697	0.61	. Q	. V	.	.	.
13.417	0.1739	0.61	. Q	. V	.	.	.
13.500	0.1781	0.61	. Q	. V	.	.	.
13.583	0.1816	0.50	. Q	. V	.	.	.
13.667	0.1850	0.50	. Q	. V	.	.	.
13.750	0.1885	0.50	. Q	. V	.	.	.
13.833	0.1913	0.41	.Q	. V	.	.	.
13.917	0.1942	0.41	.Q	. V	.	.	.
14.000	0.1970	0.41	.Q	. V	.	.	.
14.083	0.2000	0.44	.Q	. V	.	.	.
14.167	0.2030	0.44	.Q	. V	.	.	.

```
14.250      0.2061      0.44  .Q          .          .        V .          .
14.333      0.2093      0.46  .Q          .          .        V .          .
14.417      0.2125      0.46  .Q          .          .        V .          .
14.500      0.2157      0.46  .Q          .          .         V.          .
14.583      0.2189      0.46  .Q          .          .         V.          .
14.667      0.2221      0.46  .Q          .          .          V          .
14.750      0.2253      0.46  .Q          .          .          V          .
14.833      0.2284      0.46  .Q          .          .          .V         .
14.917      0.2315      0.46  .Q          .          .          .V         .
15.000      0.2347      0.46  .Q          .          .          . V        .
15.083      0.2377      0.44  .Q          .          .          . V        .
15.167      0.2407      0.44  .Q          .          .          . V        .
15.250      0.2437      0.44  .Q          .          .          .  V       .
15.333      0.2466      0.42  .Q          .          .          .  V       .
15.417      0.2495      0.42  .Q          .          .          .   V      .
15.500      0.2524      0.42  .Q          .          .          .   V      .
15.583      0.2550      0.37  .Q          .          .          .   V      .
15.667      0.2575      0.37  .Q          .          .          .    V     .
15.750      0.2600      0.37  .Q          .          .          .    V     .
15.833      0.2623      0.33  .Q          .          .          .    V     .
15.917      0.2646      0.33  .Q          .          .          .     V    .
16.000      0.2669      0.33  .Q          .          .          .     V    .
16.083      0.2682      0.19  Q           .          .          .     V    .
16.167      0.2695      0.19  Q           .          .          .     V    .
16.250      0.2709      0.19  Q           .          .          .     V    .
16.333      0.2714      0.07  Q           .          .          .      V   .
16.417      0.2719      0.07  Q           .          .          .      V   .
16.500      0.2724      0.07  Q           .          .          .      V   .
16.583      0.2727      0.05  Q           .          .          .      V   .
16.667      0.2730      0.05  Q           .          .          .      V   .
16.750      0.2733      0.05  Q           .          .          .      V   .
16.833      0.2736      0.04  Q           .          .          .      V   .
16.917      0.2738      0.04  Q           .          .          .      V   .
17.000      0.2741      0.04  Q           .          .          .      V   .
17.083      0.2744      0.05  Q           .          .          .      V   .
17.167      0.2747      0.05  Q           .          .          .      V   .
17.250      0.2750      0.05  Q           .          .          .      V   .
17.333      0.2754      0.05  Q           .          .          .      V   .
17.417      0.2757      0.05  Q           .          .          .      V   .
17.500      0.2761      0.05  Q           .          .          .      V   .
17.583      0.2765      0.05  Q           .          .          .      V   .
17.667      0.2768      0.05  Q           .          .          .      V   .
17.750      0.2772      0.05  Q           .          .          .      V   .
17.833      0.2776      0.05  Q           .          .          .      V   .
17.917      0.2779      0.05  Q           .          .          .      V   .
18.000      0.2783      0.05  Q           .          .          .      V   .
18.083      0.2786      0.05  Q           .          .          .      V   .
18.167      0.2789      0.05  Q           .          .          .       V  .
```

18.250	0.2792	0.05	Q	.	.	.	V .
18.333	0.2795	0.04	Q	.	.	.	V .
18.417	0.2798	0.04	Q	.	.	.	V .
18.500	0.2801	0.04	Q	.	.	.	V .
18.583	0.2804	0.04	Q	.	.	.	V .
18.667	0.2806	0.04	Q	.	.	.	V .
18.750	0.2809	0.04	Q	.	.	.	V .
18.833	0.2811	0.03	Q	.	.	.	V .
18.917	0.2813	0.03	Q	.	.	.	V .
19.000	0.2815	0.03	Q	.	.	.	V .
19.083	0.2817	0.03	Q	.	.	.	V .
19.167	0.2819	0.03	Q	.	.	.	V .
19.250	0.2821	0.03	Q	.	.	.	V .
19.333	0.2824	0.04	Q	.	.	.	V .
19.417	0.2826	0.04	Q	.	.	.	V .
19.500	0.2829	0.04	Q	.	.	.	V .
19.583	0.2831	0.04	Q	.	.	.	V .
19.667	0.2834	0.04	Q	.	.	.	V .
19.750	0.2837	0.04	Q	.	.	.	V .
19.833	0.2839	0.03	Q	.	.	.	V .
19.917	0.2841	0.03	Q	.	.	.	V .
20.000	0.2843	0.03	Q	.	.	.	V .
20.083	0.2845	0.03	Q	.	.	.	V .
20.167	0.2847	0.03	Q	.	.	.	V .
20.250	0.2849	0.03	Q	.	.	.	V .
20.333	0.2851	0.03	Q	.	.	.	V .
20.417	0.2853	0.03	Q	.	.	.	V .
20.500	0.2855	0.03	Q	.	.	.	V .
20.583	0.2858	0.03	Q	.	.	.	V .
20.667	0.2860	0.03	Q	.	.	.	V.
20.750	0.2862	0.03	Q	.	.	.	V.
20.833	0.2864	0.03	Q	.	.	.	V.
20.917	0.2866	0.03	Q	.	.	.	V.
21.000	0.2868	0.03	Q	.	.	.	V.
21.083	0.2870	0.03	Q	.	.	.	V.
21.167	0.2872	0.03	Q	.	.	.	V.
21.250	0.2874	0.03	Q	.	.	.	V.
21.333	0.2876	0.03	Q	.	.	.	V.
21.417	0.2877	0.03	Q	.	.	.	V.
21.500	0.2879	0.03	Q	.	.	.	V.
21.583	0.2881	0.03	Q	.	.	.	V.
21.667	0.2883	0.03	Q	.	.	.	V.
21.750	0.2885	0.03	Q	.	.	.	V.
21.833	0.2887	0.03	Q	.	.	.	V.
21.917	0.2889	0.03	Q	.	.	.	V.
22.000	0.2891	0.03	Q	.	.	.	V.
22.083	0.2893	0.03	Q	.	.	.	V.
22.167	0.2895	0.03	Q	.	.	.	V.

22.250	0.2897	0.03	Q	.	.	.	V.
22.333	0.2898	0.03	Q	.	.	.	V.
22.417	0.2900	0.03	Q	.	.	.	V.
22.500	0.2902	0.03	Q	.	.	.	V.
22.583	0.2904	0.02	Q	.	.	.	V.
22.667	0.2905	0.02	Q	.	.	.	V.
22.750	0.2907	0.02	Q	.	.	.	V.
22.833	0.2908	0.02	Q	.	.	.	V.
22.917	0.2910	0.02	Q	.	.	.	V.
23.000	0.2912	0.02	Q	.	.	.	V.
23.083	0.2913	0.02	Q	.	.	.	V.
23.166	0.2915	0.02	Q	.	.	.	V.
23.250	0.2916	0.02	Q	.	.	.	V.
23.333	0.2918	0.02	Q	.	.	.	V.
23.416	0.2919	0.02	Q	.	.	.	V.
23.500	0.2921	0.02	Q	.	.	.	V.
23.583	0.2922	0.02	Q	.	.	.	V.
23.666	0.2924	0.02	Q	.	.	.	V.
23.750	0.2925	0.02	Q	.	.	.	V.
23.833	0.2927	0.02	Q	.	.	.	V.
23.916	0.2928	0.02	Q	.	.	.	V.
24.000	0.2930	0.02	Q	.	.	.	V.

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	2.5	5.0	7.5	10.0
24.083	0.2931	0.01	Q	.	.	.	V.
24.166	0.2931	0.01	Q	.	.	.	V.
24.250	0.2932	0.01	Q	.	.	.	V.
24.333	0.2932	0.00	Q	.	.	.	V.
24.416	0.2932	0.00	Q	.	.	.	V.
24.500	0.2933	0.00	Q	.	.	.	V.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1470.0
10%	750.0
20%	525.0
30%	420.0
40%	330.0
50%	240.0
60%	210.0
70%	150.0

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80%	45.0
90%	30.0

==========

END OF FLOODSCx ROUTING ANALYSIS

KMV2P.RES

```
**************************************************************************
  INTEGRATED RATIONAL METHOD/UH 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:




 ************************* DESCRIPTION OF STUDY *************************
* CAR PROS KIA SALES AND SERVICE FACILITY                                *
* XO 5/16/19                                                             *
* KMV2P.RES                                                              *
 **************************************************************************

  FILE NAME: KMV2P.DAT
  TIME/DATE OF STUDY: 09:52 05/16/2019
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 1.00
  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 =    2.00   1-HOUR INTENSITY(INCH/HOUR) =   0.554
  SLOPE OF INTENSITY DURATION CURVE = 0.5004
  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.*

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    VALLEY S-GRAPH USED.
    *24-HOUR (15-MINUTE PERIOD) DESIGN STORM USED.
    UNADJUSTED 24-HOUR RAINFALL DEPTH (INCHES) =   0.67
    USER-SPECIFIED DEPTH-AREA REDUCTION FACTOR:
      FOR 24-HOUR RAINFALL DEPTH =  1.00
    LOW LOSS RATE PERCENTAGE =  0.85
    MINIMUM LOSS RATE PERCENTAGE FOR 24-HOUR STORM =  0.05
  *PRECIPITATION ZONE NUMBER (PZN) = 2.0
  *ANTECEDENT MOISTURE CONDITION (AMC) =  0.00 ASSUMED FOR UNIT HYDROGRAPH METHOD*


****************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     11.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   324.00
  UPSTREAM ELEVATION(FEET) =     54.30
  DOWNSTREAM ELEVATION(FEET) =     49.80
  ELEVATION DIFFERENCE(FEET) =      4.50
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.602
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Runoff      SCS   Tc
       LAND USE            GROUP   (ACRES)   Coefficient    CN  (MIN.)
  COMMERCIAL                 D        0.64     0.8805       75    7.20
  SUBAREA RUNOFF(CFS) =      0.90
  TOTAL AREA(ACRES) =      0.64   TOTAL RUNOFF(CFS) =      0.90

****************************************************************************
  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) =    45.70  DOWNSTREAM(FEET) =    39.70
  FLOW LENGTH(FEET) =    57.00   MANNING'S N =  0.015
```

```
  DEPTH OF FLOW IN   6.0 INCH PIPE IS   3.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.31
  ESTIMATED PIPE DIAMETER(INCH) =   6.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.90
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =    7.31
  LONGEST FLOWPATH FROM NODE     10.00 TO NODE     12.00 =     381.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     12.00 TO NODE     12.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     21.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   412.00
  UPSTREAM ELEVATION(FEET) =     54.30
  DOWNSTREAM ELEVATION(FEET) =     46.80
  ELEVATION DIFFERENCE(FEET) =      7.50
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.569
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Runoff      SCS   Tc
       LAND USE            GROUP   (ACRES)   Coefficient    CN  (MIN.)
  COMMERCIAL                 D        1.41     0.8801       75    7.51
  SUBAREA RUNOFF(CFS) =      1.95
  TOTAL AREA(ACRES) =      1.41   TOTAL RUNOFF(CFS) =      1.95

****************************************************************************
  FLOW PROCESS FROM NODE     21.00 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) =    44.30  DOWNSTREAM(FEET) =    39.70
  FLOW LENGTH(FEET) =   423.00   MANNING'S N =  0.015
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.29
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.95
  PIPE TRAVEL TIME(MIN.) =   1.64    Tc(MIN.) =    9.15
  LONGEST FLOWPATH FROM NODE     10.00 TO NODE     12.00 =     835.00 FEET.

****************************************************************************
```

```
 FLOW PROCESS FROM NODE     12.00 TO NODE     12.00 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        1.95     9.15       1.421        1.41
 LONGEST FLOWPATH FROM NODE     10.00 TO NODE     12.00 =     835.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM     RUNOFF      Tc      INTENSITY     AREA
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1        0.90     7.31       1.589        0.64
 LONGEST FLOWPATH FROM NODE     10.00 TO NODE     12.00 =     381.00 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       2.46       7.31        1.589
     2       2.75       9.15        1.421

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       2.75   Tc(MIN.) =    9.15
 TOTAL AREA(ACRES) =        2.0

****************************************************************************
 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) =    39.70  DOWNSTREAM(FEET) =    36.50
 FLOW LENGTH(FEET) =    85.00   MANNING'S N =  0.015
 DEPTH OF FLOW IN   9.0 INCH PIPE IS   7.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.19
 ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       2.75
 PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =    9.35
 LONGEST FLOWPATH FROM NODE     10.00 TO NODE     13.00 =     920.00 FEET.
```

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```
****************************************************************************
  FLOW PROCESS FROM NODE     30.00 TO NODE     31.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   884.00
  UPSTREAM ELEVATION(FEET) =     50.90
  DOWNSTREAM ELEVATION(FEET) =     44.90
  ELEVATION DIFFERENCE(FEET) =      6.00
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.182
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Runoff      SCS   Tc
       LAND USE            GROUP   (ACRES)   Coefficient    CN  (MIN.)
  APARTMENTS                 D        3.64     0.8508       75   13.21
  SUBAREA RUNOFF(CFS) =      3.66
  TOTAL AREA(ACRES) =      3.64   TOTAL RUNOFF(CFS) =      3.66

****************************************************************************
  FLOW PROCESS FROM NODE     31.00 TO NODE     32.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    42.86  DOWNSTREAM(FEET) =    41.60
  FLOW LENGTH(FEET) =   282.00   MANNING'S N =  0.015
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  12.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.48
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.66
  PIPE TRAVEL TIME(MIN.) =   1.35    Tc(MIN.) =   14.57
  LONGEST FLOWPATH FROM NODE     30.00 TO NODE     32.00 =    1166.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        3.6  TC(MIN.) =     14.57
  PEAK FLOW RATE(CFS)   =       3.66
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

KMV2PU.RES

```
**************************************************************************

              F L O O D    R O U T I N G    A N A L Y S I S

ACCORDING TO RIVERSIDE COUNTY FLOOD CONTORL AND WATER CONSERVATION DISTRICT
                    (RCFC&WCD) 1978 HYDROLOGY MANUAL
         (c) Copyright 1989-2011 Advanced Engineering Software (aes)
                 (Synthetic Unit Hydrograph Version 18.0)
                 Release Date: 05/01/2011  License ID 1499

                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* CAR PROS KIA SALES AND SERVICE FACILITY                                 *
* XO 5/16/19                                                              *
* KMV2PU.RES                                                              *
 **************************************************************************

  FILE NAME: KMV2PU.DAT
  TIME/DATE OF STUDY: 11:24 05/16/2019


**************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     13.00 IS CODE =   1
--------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
==========================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =       2.050 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
  Warning: Watershed Area is less than 10 acres
         *USER ENTERED "LAG" TIME =    0.125 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY S-GRAPH SELECTED
         UNIFORM MEAN SOIL-LOSS(INCH/HOUR) =  0.050
         LOW SOIL-LOSS RATE PERCENT(DECIMAL) = 0.500
         MINIMUM SOIL-LOSS RATE(INCH/HOUR) =   0.010
```

KMV2PU.RES

USER-ENTERED RAINFALL = 1.70 INCHES
RCFC&WCD 24-Hour Storm (15-Minute period) SELECTED
RCFC&WCD DEPTH-AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 1.0000

UNIT HYDROGRAPH TIME UNIT = 15.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 200.481

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	43.361	3.583
2	86.804	3.590
3	95.553	0.723
4	98.648	0.256
5	99.513	0.071
6	99.805	0.024
7	99.951	0.012
8	100.000	0.004

UNIT PERIOD (NUMBER)	UNIT RAINFALL (INCHES)	UNIT SOIL-LOSS (INCHES)	EFFECTIVE RAINFALL (INCHES)
1	0.0034	0.0017	0.0017
2	0.0051	0.0025	0.0025
3	0.0051	0.0025	0.0025
4	0.0068	0.0034	0.0034
5	0.0051	0.0025	0.0025
6	0.0051	0.0025	0.0025
7	0.0051	0.0025	0.0025
8	0.0068	0.0034	0.0034
9	0.0068	0.0034	0.0034
10	0.0068	0.0034	0.0034
11	0.0085	0.0042	0.0042
12	0.0085	0.0042	0.0042
13	0.0085	0.0042	0.0042
14	0.0085	0.0042	0.0042
15	0.0085	0.0042	0.0042

16	0.0102	0.0051	0.0051
17	0.0102	0.0051	0.0051
18	0.0119	0.0059	0.0059
19	0.0119	0.0059	0.0059
20	0.0136	0.0068	0.0068
21	0.0102	0.0051	0.0051
22	0.0119	0.0059	0.0059
23	0.0136	0.0068	0.0068
24	0.0136	0.0068	0.0068
25	0.0153	0.0076	0.0076
26	0.0153	0.0076	0.0076
27	0.0170	0.0085	0.0085
28	0.0170	0.0085	0.0085
29	0.0170	0.0085	0.0085
30	0.0187	0.0093	0.0093
31	0.0204	0.0102	0.0102
32	0.0221	0.0110	0.0110
33	0.0255	0.0127	0.0127
34	0.0255	0.0127	0.0127
35	0.0272	0.0136	0.0136
36	0.0289	0.0144	0.0144
37	0.0323	0.0147	0.0176
38	0.0340	0.0143	0.0197
39	0.0357	0.0140	0.0217
40	0.0374	0.0137	0.0237
41	0.0255	0.0127	0.0127
42	0.0255	0.0127	0.0127
43	0.0340	0.0128	0.0212
44	0.0340	0.0125	0.0215
45	0.0323	0.0122	0.0201
46	0.0323	0.0119	0.0204
47	0.0289	0.0116	0.0173
48	0.0306	0.0114	0.0192
49	0.0425	0.0111	0.0314
50	0.0442	0.0108	0.0334
51	0.0476	0.0105	0.0371
52	0.0493	0.0103	0.0390
53	0.0578	0.0100	0.0478
54	0.0578	0.0097	0.0481
55	0.0391	0.0095	0.0296
56	0.0391	0.0092	0.0299
57	0.0459	0.0089	0.0370
58	0.0442	0.0087	0.0355
59	0.0442	0.0084	0.0358
60	0.0425	0.0082	0.0343
61	0.0408	0.0080	0.0328
62	0.0391	0.0077	0.0314
63	0.0323	0.0075	0.0248

KMV2PU.RES

64	0.0323	0.0073	0.0250
65	0.0068	0.0034	0.0034
66	0.0068	0.0034	0.0034
67	0.0051	0.0025	0.0025
68	0.0051	0.0025	0.0025
69	0.0085	0.0042	0.0042
70	0.0085	0.0042	0.0042
71	0.0085	0.0042	0.0042
72	0.0068	0.0034	0.0034
73	0.0068	0.0034	0.0034
74	0.0068	0.0034	0.0034
75	0.0051	0.0025	0.0025
76	0.0034	0.0017	0.0017
77	0.0051	0.0025	0.0025
78	0.0068	0.0034	0.0034
79	0.0051	0.0025	0.0025
80	0.0034	0.0017	0.0017
81	0.0051	0.0025	0.0025
82	0.0051	0.0025	0.0025
83	0.0051	0.0025	0.0025
84	0.0034	0.0017	0.0017
85	0.0051	0.0025	0.0025
86	0.0034	0.0017	0.0017
87	0.0051	0.0025	0.0025
88	0.0034	0.0017	0.0017
89	0.0051	0.0025	0.0025
90	0.0034	0.0017	0.0017
91	0.0034	0.0017	0.0017
92	0.0034	0.0017	0.0017
93	0.0034	0.0017	0.0017
94	0.0034	0.0017	0.0017
95	0.0034	0.0017	0.0017
96	0.0034	0.0017	0.0017

TOTAL STORM RAINFALL(INCHES) = 1.70
TOTAL SOIL-LOSS(INCHES) = 0.61
TOTAL EFFECTIVE RAINFALL(INCHES) = 1.09

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 0.1042
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 0.1861

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2 4 - H O U R S T O R M
R U N O F F H Y D R O G R A P H

KMV2PU.RES

HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	2.5	5.0	7.5	10.0
0.083	0.0000	0.01	Q	.	.	.	.
0.167	0.0001	0.01	Q	.	.	.	.
0.250	0.0001	0.01	Q	.	.	.	.
0.333	0.0002	0.02	Q	.	.	.	.
0.417	0.0003	0.02	Q	.	.	.	.
0.500	0.0004	0.02	Q	.	.	.	.
0.583	0.0006	0.02	Q	.	.	.	.
0.667	0.0007	0.02	Q	.	.	.	.
0.750	0.0008	0.02	Q	.	.	.	.
0.833	0.0010	0.02	Q	.	.	.	.
0.917	0.0012	0.02	Q	.	.	.	.
1.000	0.0013	0.02	Q	.	.	.	.
1.083	0.0015	0.02	Q	.	.	.	.
1.167	0.0017	0.02	Q	.	.	.	.
1.250	0.0018	0.02	Q	.	.	.	.
1.333	0.0020	0.02	Q	.	.	.	.
1.417	0.0021	0.02	Q	.	.	.	.
1.500	0.0023	0.02	Q	.	.	.	.
1.583	0.0024	0.02	Q	.	.	.	.
1.667	0.0026	0.02	Q	.	.	.	.
1.750	0.0027	0.02	Q	.	.	.	.
1.833	0.0029	0.02	Q	.	.	.	.
1.917	0.0030	0.02	Q	.	.	.	.
2.000	0.0032	0.02	Q	.	.	.	.
2.083	0.0034	0.03	Q	.	.	.	.
2.167	0.0036	0.03	Q	.	.	.	.
2.250	0.0038	0.03	Q	.	.	.	.
2.333	0.0040	0.03	Q	.	.	.	.
2.417	0.0042	0.03	Q	.	.	.	.
2.500	0.0043	0.03	Q	.	.	.	.
2.583	0.0046	0.03	Q	.	.	.	.
2.667	0.0048	0.03	QV	.	.	.	.
2.750	0.0050	0.03	QV	.	.	.	.
2.833	0.0052	0.03	QV	.	.	.	.
2.917	0.0055	0.03	QV	.	.	.	.
3.000	0.0057	0.03	QV	.	.	.	.
3.083	0.0059	0.03	QV	.	.	.	.
3.167	0.0062	0.03	QV	.	.	.	.
3.250	0.0064	0.03	QV	.	.	.	.
3.333	0.0067	0.04	QV	.	.	.	.
3.417	0.0069	0.04	QV	.	.	.	.
3.500	0.0071	0.04	QV	.	.	.	.

3.583	0.0074	0.04	QV	.	.	.	.
3.667	0.0076	0.04	QV	.	.	.	.
3.750	0.0079	0.04	QV	.	.	.	.
3.833	0.0081	0.04	QV	.	.	.	.
3.917	0.0084	0.04	QV	.	.	.	.
4.000	0.0087	0.04	QV	.	.	.	.
4.083	0.0089	0.04	QV	.	.	.	.
4.167	0.0092	0.04	QV	.	.	.	.
4.250	0.0095	0.04	Q V	.	.	.	.
4.333	0.0098	0.04	Q V	.	.	.	.
4.417	0.0101	0.04	Q V	.	.	.	.
4.500	0.0104	0.04	Q V	.	.	.	.
4.583	0.0108	0.05	Q V	.	.	.	.
4.667	0.0111	0.05	Q V	.	.	.	.
4.750	0.0114	0.05	Q V	.	.	.	.
4.833	0.0118	0.05	Q V	.	.	.	.
4.917	0.0121	0.05	Q V	.	.	.	.
5.000	0.0125	0.05	Q V	.	.	.	.
5.083	0.0128	0.05	Q V	.	.	.	.
5.167	0.0132	0.05	Q V	.	.	.	.
5.250	0.0135	0.05	Q V	.	.	.	.
5.333	0.0138	0.05	Q V	.	.	.	.
5.417	0.0142	0.05	Q V	.	.	.	.
5.500	0.0145	0.05	Q V	.	.	.	.
5.583	0.0148	0.05	Q V	.	.	.	.
5.667	0.0152	0.05	Q V	.	.	.	.
5.750	0.0155	0.05	Q V	.	.	.	.
5.833	0.0159	0.06	Q V	.	.	.	.
5.917	0.0163	0.06	Q V	.	.	.	.
6.000	0.0167	0.06	Q V	.	.	.	.
6.083	0.0171	0.06	Q V	.	.	.	.
6.167	0.0175	0.06	Q V	.	.	.	.
6.250	0.0179	0.06	Q V	.	.	.	.
6.333	0.0183	0.06	Q V	.	.	.	.
6.417	0.0188	0.06	Q V	.	.	.	.
6.500	0.0192	0.06	Q V	.	.	.	.
6.583	0.0196	0.07	Q V	.	.	.	.
6.667	0.0201	0.07	Q V	.	.	.	.
6.750	0.0205	0.07	Q V	.	.	.	.
6.833	0.0210	0.07	Q V	.	.	.	.
6.917	0.0215	0.07	Q V	.	.	.	.
7.000	0.0220	0.07	Q V	.	.	.	.
7.083	0.0225	0.07	Q V	.	.	.	.
7.167	0.0229	0.07	Q V	.	.	.	.
7.250	0.0234	0.07	Q V	.	.	.	.
7.333	0.0239	0.07	Q V	.	.	.	.
7.417	0.0244	0.07	Q V	.	.	.	.
7.500	0.0249	0.07	Q V	.	.	.	.

KMV2PU.RES

7.583	0.0255	0.08	Q	V	.	.	.	.
7.667	0.0260	0.08	Q	V	.	.	.	.
7.750	0.0266	0.08	Q	V	.	.	.	.
7.833	0.0272	0.09	Q	V	.	.	.	.
7.917	0.0278	0.09	Q	V	.	.	.	.
8.000	0.0284	0.09	Q	V	.	.	.	.
8.083	0.0290	0.10	Q	V	.	.	.	.
8.167	0.0297	0.10	Q	V	.	.	.	.
8.250	0.0303	0.10	Q	V	.	.	.	.
8.333	0.0310	0.10	Q	V	.	.	.	.
8.417	0.0318	0.10	Q	V	.	.	.	.
8.500	0.0325	0.10	Q	V	.	.	.	.
8.583	0.0332	0.11	Q	V	.	.	.	.
8.667	0.0339	0.11	Q	V	.	.	.	.
8.750	0.0347	0.11	Q	V	.	.	.	.
8.833	0.0355	0.11	Q	V	.	.	.	.
8.917	0.0363	0.11	Q	V	.	.	.	.
9.000	0.0371	0.11	Q	V	.	.	.	.
9.083	0.0379	0.13	Q	V	.	.	.	.
9.167	0.0388	0.13	Q	V	.	.	.	.
9.250	0.0397	0.13	Q	V	.	.	.	.
9.333	0.0408	0.15	Q	V	.	.	.	.
9.417	0.0418	0.15	Q	V	.	.	.	.
9.500	0.0428	0.15	Q	V	.	.	.	.
9.583	0.0440	0.17	Q	V	.	.	.	.
9.667	0.0451	0.17	Q	V	.	.	.	.
9.750	0.0462	0.17	Q	V	.	.	.	.
9.833	0.0475	0.18	Q	V	.	.	.	.
9.917	0.0488	0.18	Q	V	.	.	.	.
10.000	0.0500	0.18	Q	V	.	.	.	.
10.083	0.0511	0.15	Q	V	.	.	.	.
10.167	0.0521	0.15	Q	V	.	.	.	.
10.250	0.0532	0.15	Q	V	.	.	.	.
10.333	0.0540	0.12	Q	V	.	.	.	.
10.417	0.0548	0.12	Q	V	.	.	.	.
10.500	0.0556	0.12	Q	V	.	.	.	.
10.583	0.0565	0.14	Q	V	.	.	.	.
10.667	0.0575	0.14	Q	V	.	.	.	.
10.750	0.0585	0.14	Q	V	.	.	.	.
10.833	0.0596	0.17	Q	V	.	.	.	.
10.917	0.0608	0.17	Q	V	.	.	.	.
11.000	0.0619	0.17	Q	V	.	.	.	.
11.083	0.0631	0.17	Q	V	.	.	.	.
11.167	0.0643	0.17	Q	V	.	.	.	.
11.250	0.0654	0.17	Q	V	.	.	.	.
11.333	0.0666	0.17	Q	V	.	.	.	.
11.417	0.0677	0.17	Q	V	.	.	.	.
11.500	0.0689	0.17	Q	V	.	.	.	.

KMV2PU.RES

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	2.5	5.0	7.5	10.0
11.583	0.0700	0.16	Q	.	V .	.	.
11.667	0.0711	0.16	Q	.	V .	.	.
11.750	0.0721	0.16	Q	.	V .	.	.
11.833	0.0732	0.15	Q	.	V .	.	.
11.917	0.0743	0.15	Q	.	V .	.	.
12.000	0.0753	0.15	Q	.	V .	.	.
12.083	0.0767	0.20	Q	.	V .	.	.
12.167	0.0781	0.20	Q	.	V .	.	.
12.250	0.0795	0.20	Q	.	V .	.	.
12.333	0.0812	0.25	.Q	.	V .	.	.
12.417	0.0830	0.25	.Q	.	V .	.	.
12.500	0.0847	0.25	.Q	.	V .	.	.
12.583	0.0866	0.28	.Q	.	V .	.	.
12.667	0.0886	0.28	.Q	.	V.	.	.
12.750	0.0905	0.28	.Q	.	V.	.	.
12.833	0.0927	0.31	.Q	.	V.	.	.
12.917	0.0948	0.31	.Q	.	V	.	.
13.000	0.0969	0.31	.Q	.	V	.	.
13.083	0.0993	0.35	.Q	.	.V	.	.
13.167	0.1017	0.35	.Q	.	.V	.	.
13.250	0.1041	0.35	.Q	.	. V	.	.
13.333	0.1068	0.39	.Q	.	. V	.	.
13.417	0.1094	0.39	.Q	.	. V	.	.
13.500	0.1121	0.39	.Q	.	. V	.	.
13.583	0.1143	0.33	.Q	.	. V	.	.
13.667	0.1166	0.33	.Q	.	. V	.	.
13.750	0.1188	0.33	.Q	.	. V	.	.
13.833	0.1207	0.26	.Q	.	. V	.	.
13.917	0.1225	0.26	.Q	.	. V	.	.
14.000	0.1243	0.26	.Q	.	. V	.	.
14.083	0.1262	0.28	.Q	.	. V	.	.
14.167	0.1281	0.28	.Q	.	. V	.	.
14.250	0.1301	0.28	.Q	.	. V	.	.
14.333	0.1321	0.29	.Q	.	. V	.	.
14.417	0.1341	0.29	.Q	.	. V	.	.
14.500	0.1361	0.29	.Q	.	. V.	.	.
14.583	0.1382	0.29	.Q	.	. V.	.	.
14.667	0.1402	0.29	.Q	.	. V	.	.
14.750	0.1422	0.29	.Q	.	. V	.	.
14.833	0.1442	0.29	.Q	.	. V	.	.
14.917	0.1462	0.29	.Q	.	. V	.	.
15.000	0.1482	0.29	.Q	.	. V	.	.
15.083	0.1501	0.28	.Q	.	. . V	.	.
15.167	0.1521	0.28	.Q	.	. . V	.	.

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15.250      0.1540      0.28  .Q        .         .         .  V       .
15.333      0.1558      0.27  .Q        .         .         .  V       .
15.417      0.1577      0.27  .Q        .         .         .  V       .
15.500      0.1595      0.27  .Q        .         .         .   V      .
15.583      0.1612      0.24  Q         .         .         .   V      .
15.667      0.1628      0.24  Q         .         .         .   V      .
15.750      0.1644      0.24  Q         .         .         .    V     .
15.833      0.1659      0.21  Q         .         .         .    V     .
15.917      0.1674      0.21  Q         .         .         .    V     .
16.000      0.1689      0.21  Q         .         .         .     V    .
16.083      0.1698      0.13  Q         .         .         .     V    .
16.167      0.1707      0.13  Q         .         .         .     V    .
16.250      0.1716      0.13  Q         .         .         .     V    .
16.333      0.1719      0.05  Q         .         .         .     V    .
16.417      0.1723      0.05  Q         .         .         .      V   .
16.500      0.1727      0.05  Q         .         .         .      V   .
16.583      0.1729      0.03  Q         .         .         .      V   .
16.667      0.1731      0.03  Q         .         .         .      V   .
16.750      0.1734      0.03  Q         .         .         .      V   .
16.833      0.1735      0.02  Q         .         .         .      V   .
16.917      0.1737      0.02  Q         .         .         .      V   .
17.000      0.1739      0.02  Q         .         .         .      V   .
17.083      0.1741      0.03  Q         .         .         .      V   .
17.167      0.1743      0.03  Q         .         .         .      V   .
17.250      0.1745      0.03  Q         .         .         .      V   .
17.333      0.1747      0.03  Q         .         .         .      V   .
17.417      0.1749      0.03  Q         .         .         .      V   .
17.500      0.1751      0.03  Q         .         .         .      V   .
17.583      0.1754      0.03  Q         .         .         .      V   .
17.667      0.1756      0.03  Q         .         .         .      V   .
17.750      0.1759      0.03  Q         .         .         .      V   .
17.833      0.1761      0.03  Q         .         .         .      V   .
17.917      0.1763      0.03  Q         .         .         .      V   .
18.000      0.1765      0.03  Q         .         .         .      V   .
18.083      0.1767      0.03  Q         .         .         .      V   .
18.167      0.1769      0.03  Q         .         .         .       V  .
18.250      0.1771      0.03  Q         .         .         .       V  .
18.333      0.1773      0.03  Q         .         .         .       V  .
18.417      0.1775      0.03  Q         .         .         .       V  .
18.500      0.1777      0.03  Q         .         .         .       V  .
18.583      0.1779      0.03  Q         .         .         .       V  .
18.667      0.1781      0.03  Q         .         .         .       V  .
18.750      0.1782      0.03  Q         .         .         .       V  .
18.833      0.1784      0.02  Q         .         .         .       V  .
18.917      0.1785      0.02  Q         .         .         .       V  .
19.000      0.1786      0.02  Q         .         .         .       V  .
19.083      0.1787      0.02  Q         .         .         .       V  .
19.167      0.1789      0.02  Q         .         .         .       V  .
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19.250	0.1790	0.02	Q	.	.	.	V .
19.333	0.1792	0.02	Q	.	.	.	V .
19.417	0.1793	0.02	Q	.	.	.	V .
19.500	0.1795	0.02	Q	.	.	.	V .
19.583	0.1796	0.02	Q	.	.	.	V .
19.667	0.1798	0.02	Q	.	.	.	V .
19.750	0.1800	0.02	Q	.	.	.	V .
19.833	0.1801	0.02	Q	.	.	.	V .
19.917	0.1802	0.02	Q	.	.	.	V .
20.000	0.1804	0.02	Q	.	.	.	V .
20.083	0.1805	0.02	Q	.	.	.	V .
20.167	0.1806	0.02	Q	.	.	.	V .
20.250	0.1807	0.02	Q	.	.	.	V .
20.333	0.1809	0.02	Q	.	.	.	V .
20.417	0.1810	0.02	Q	.	.	.	V .
20.500	0.1812	0.02	Q	.	.	.	V .
20.583	0.1813	0.02	Q	.	.	.	V .
20.667	0.1815	0.02	Q	.	.	.	V .
20.750	0.1816	0.02	Q	.	.	.	V.
20.833	0.1817	0.02	Q	.	.	.	V.
20.917	0.1818	0.02	Q	.	.	.	V.
21.000	0.1820	0.02	Q	.	.	.	V.
21.083	0.1821	0.02	Q	.	.	.	V.
21.167	0.1822	0.02	Q	.	.	.	V.
21.250	0.1823	0.02	Q	.	.	.	V.
21.333	0.1825	0.02	Q	.	.	.	V.
21.417	0.1826	0.02	Q	.	.	.	V.
21.500	0.1827	0.02	Q	.	.	.	V.
21.583	0.1828	0.02	Q	.	.	.	V.
21.667	0.1829	0.02	Q	.	.	.	V.
21.750	0.1831	0.02	Q	.	.	.	V.
21.833	0.1832	0.02	Q	.	.	.	V.
21.917	0.1833	0.02	Q	.	.	.	V.
22.000	0.1834	0.02	Q	.	.	.	V.
22.083	0.1835	0.02	Q	.	.	.	V.
22.167	0.1837	0.02	Q	.	.	.	V.
22.250	0.1838	0.02	Q	.	.	.	V.
22.333	0.1839	0.02	Q	.	.	.	V.
22.417	0.1840	0.02	Q	.	.	.	V.
22.500	0.1842	0.02	Q	.	.	.	V.
22.583	0.1843	0.01	Q	.	.	.	V.
22.667	0.1844	0.01	Q	.	.	.	V.
22.750	0.1845	0.01	Q	.	.	.	V.
22.833	0.1846	0.01	Q	.	.	.	V.
22.917	0.1847	0.01	Q	.	.	.	V.
23.000	0.1847	0.01	Q	.	.	.	V.
23.083	0.1848	0.01	Q	.	.	.	V.
23.166	0.1849	0.01	Q	.	.	.	V.

```
  23.250      0.1850      0.01  Q          .          .          .          V.
  23.333      0.1851      0.01  Q          .          .          .          V.
  23.416      0.1852      0.01  Q          .          .          .          V.
  23.500      0.1853      0.01  Q          .          .          .          V.
  23.583      0.1854      0.01  Q          .          .          .          V.
  23.666      0.1855      0.01  Q          .          .          .          V.
  23.750      0.1856      0.01  Q          .          .          .          V.
  23.833      0.1857      0.01  Q          .          .          .          V.
  23.916      0.1858      0.01  Q          .          .          .          V.
  24.000      0.1859      0.01  Q          .          .          .          V.
```

```
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.        2.5       5.0       7.5      10.0
  24.083      0.1860      0.01  Q          .          .          .          V.
  24.166      0.1860      0.01  Q          .          .          .          V.
  24.250      0.1861      0.01  Q          .          .          .          V.
```

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1455.0
10%	750.0
20%	525.0
30%	435.0
40%	330.0
50%	240.0
60%	210.0
70%	150.0
80%	45.0
90%	30.0

```
 ****************************************************************************
  FLOW PROCESS FROM NODE     30.00 TO NODE     32.00 IS CODE =   1
 ----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
 ============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =       3.640 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
```

KMV2PU.RES

Warning: Watershed Area is less than 10 acres
*USER ENTERED "LAG" TIME = 0.194 HOURS
CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
VALLEY S-GRAPH SELECTED
UNIFORM MEAN SOIL-LOSS(INCH/HOUR) = 0.050
LOW SOIL-LOSS RATE PERCENT(DECIMAL) = 0.500
MINIMUM SOIL-LOSS RATE(INCH/HOUR) = 0.010
USER-ENTERED RAINFALL = 1.70 INCHES
RCFC&WCD 24-Hour Storm (15-Minute period) SELECTED
RCFC&WCD DEPTH-AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 1.0000

UNIT HYDROGRAPH TIME UNIT = 15.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 128.667

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	27.527	4.039
2	75.994	7.112
3	88.565	1.845
4	94.216	0.829
5	97.329	0.457
6	98.694	0.200
7	99.441	0.110
8	99.777	0.049
9	99.944	0.025
10	100.000	0.008

UNIT PERIOD (NUMBER)	UNIT RAINFALL (INCHES)	UNIT SOIL-LOSS (INCHES)	EFFECTIVE RAINFALL (INCHES)
1	0.0034	0.0017	0.0017
2	0.0051	0.0025	0.0025
3	0.0051	0.0025	0.0025
4	0.0068	0.0034	0.0034

5	0.0051	0.0025	0.0025
6	0.0051	0.0025	0.0025
7	0.0051	0.0025	0.0025
8	0.0068	0.0034	0.0034
9	0.0068	0.0034	0.0034
10	0.0068	0.0034	0.0034
11	0.0085	0.0042	0.0042
12	0.0085	0.0042	0.0042
13	0.0085	0.0042	0.0042
14	0.0085	0.0042	0.0042
15	0.0085	0.0042	0.0042
16	0.0102	0.0051	0.0051
17	0.0102	0.0051	0.0051
18	0.0119	0.0059	0.0059
19	0.0119	0.0059	0.0059
20	0.0136	0.0068	0.0068
21	0.0102	0.0051	0.0051
22	0.0119	0.0059	0.0059
23	0.0136	0.0068	0.0068
24	0.0136	0.0068	0.0068
25	0.0153	0.0076	0.0076
26	0.0153	0.0076	0.0076
27	0.0170	0.0085	0.0085
28	0.0170	0.0085	0.0085
29	0.0170	0.0085	0.0085
30	0.0187	0.0093	0.0093
31	0.0204	0.0102	0.0102
32	0.0221	0.0110	0.0110
33	0.0255	0.0127	0.0127
34	0.0255	0.0127	0.0127
35	0.0272	0.0136	0.0136
36	0.0289	0.0144	0.0144
37	0.0323	0.0147	0.0176
38	0.0340	0.0143	0.0197
39	0.0357	0.0140	0.0217
40	0.0374	0.0137	0.0237
41	0.0255	0.0127	0.0127
42	0.0255	0.0127	0.0127
43	0.0340	0.0128	0.0212
44	0.0340	0.0125	0.0215
45	0.0323	0.0122	0.0201
46	0.0323	0.0119	0.0204
47	0.0289	0.0116	0.0173
48	0.0306	0.0114	0.0192
49	0.0425	0.0111	0.0314
50	0.0442	0.0108	0.0334
51	0.0476	0.0105	0.0371
52	0.0493	0.0103	0.0390

53	0.0578	0.0100	0.0478
54	0.0578	0.0097	0.0481
55	0.0391	0.0095	0.0296
56	0.0391	0.0092	0.0299
57	0.0459	0.0089	0.0370
58	0.0442	0.0087	0.0355
59	0.0442	0.0084	0.0358
60	0.0425	0.0082	0.0343
61	0.0408	0.0080	0.0328
62	0.0391	0.0077	0.0314
63	0.0323	0.0075	0.0248
64	0.0323	0.0073	0.0250
65	0.0068	0.0034	0.0034
66	0.0068	0.0034	0.0034
67	0.0051	0.0025	0.0025
68	0.0051	0.0025	0.0025
69	0.0085	0.0042	0.0042
70	0.0085	0.0042	0.0042
71	0.0085	0.0042	0.0042
72	0.0068	0.0034	0.0034
73	0.0068	0.0034	0.0034
74	0.0068	0.0034	0.0034
75	0.0051	0.0025	0.0025
76	0.0034	0.0017	0.0017
77	0.0051	0.0025	0.0025
78	0.0068	0.0034	0.0034
79	0.0051	0.0025	0.0025
80	0.0034	0.0017	0.0017
81	0.0051	0.0025	0.0025
82	0.0051	0.0025	0.0025
83	0.0051	0.0025	0.0025
84	0.0034	0.0017	0.0017
85	0.0051	0.0025	0.0025
86	0.0034	0.0017	0.0017
87	0.0051	0.0025	0.0025
88	0.0034	0.0017	0.0017
89	0.0051	0.0025	0.0025
90	0.0034	0.0017	0.0017
91	0.0034	0.0017	0.0017
92	0.0034	0.0017	0.0017
93	0.0034	0.0017	0.0017
94	0.0034	0.0017	0.0017
95	0.0034	0.0017	0.0017
96	0.0034	0.0017	0.0017

TOTAL STORM RAINFALL(INCHES) = 1.70
TOTAL SOIL-LOSS(INCHES) = 0.61
TOTAL EFFECTIVE RAINFALL(INCHES) = 1.09

KMV2PU.RES

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 0.1850
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 0.3305

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2 4 - H O U R S T O R M
R U N O F F H Y D R O G R A P H

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HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	2.5	5.0	7.5	10.0
0.083	0.0000	0.01	Q	.	.	.	.
0.167	0.0001	0.01	Q	.	.	.	.
0.250	0.0001	0.01	Q	.	.	.	.
0.333	0.0003	0.02	Q	.	.	.	.
0.417	0.0005	0.02	Q	.	.	.	.
0.500	0.0006	0.02	Q	.	.	.	.
0.583	0.0008	0.03	Q	.	.	.	.
0.667	0.0010	0.03	Q	.	.	.	.
0.750	0.0013	0.03	Q	.	.	.	.
0.833	0.0015	0.04	Q	.	.	.	.
0.917	0.0018	0.04	Q	.	.	.	.
1.000	0.0020	0.04	Q	.	.	.	.
1.083	0.0023	0.04	Q	.	.	.	.
1.167	0.0026	0.04	Q	.	.	.	.
1.250	0.0029	0.04	Q	.	.	.	.
1.333	0.0032	0.04	Q	.	.	.	.
1.417	0.0034	0.04	Q	.	.	.	.
1.500	0.0037	0.04	Q	.	.	.	.
1.583	0.0040	0.04	Q	.	.	.	.
1.667	0.0042	0.04	Q	.	.	.	.
1.750	0.0045	0.04	Q	.	.	.	.
1.833	0.0048	0.04	Q	.	.	.	.
1.917	0.0051	0.04	Q	.	.	.	.
2.000	0.0053	0.04	Q	.	.	.	.
2.083	0.0057	0.05	Q	.	.	.	.
2.167	0.0060	0.05	Q	.	.	.	.
2.250	0.0063	0.05	Q	.	.	.	.
2.333	0.0066	0.05	Q	.	.	.	.
2.417	0.0070	0.05	Q	.	.	.	.
2.500	0.0073	0.05	Q	.	.	.	.
2.583	0.0077	0.05	Q	.	.	.	.

2.667	0.0080	0.05	Q	.	.	.	.
2.750	0.0084	0.05	QV	.	.	.	.
2.833	0.0088	0.06	QV	.	.	.	.
2.917	0.0092	0.06	QV	.	.	.	.
3.000	0.0096	0.06	QV	.	.	.	.
3.083	0.0100	0.06	QV	.	.	.	.
3.167	0.0105	0.06	QV	.	.	.	.
3.250	0.0109	0.06	QV	.	.	.	.
3.333	0.0113	0.06	QV	.	.	.	.
3.417	0.0117	0.06	QV	.	.	.	.
3.500	0.0121	0.06	QV	.	.	.	.
3.583	0.0126	0.06	QV	.	.	.	.
3.667	0.0130	0.06	QV	.	.	.	.
3.750	0.0134	0.06	QV	.	.	.	.
3.833	0.0139	0.07	QV	.	.	.	.
3.917	0.0143	0.07	QV	.	.	.	.
4.000	0.0148	0.07	QV	.	.	.	.
4.083	0.0153	0.07	QV	.	.	.	.
4.167	0.0158	0.07	QV	.	.	.	.
4.250	0.0163	0.07	QV	.	.	.	.
4.333	0.0168	0.08	Q V	.	.	.	.
4.417	0.0173	0.08	Q V	.	.	.	.
4.500	0.0179	0.08	Q V	.	.	.	.
4.583	0.0184	0.08	Q V	.	.	.	.
4.667	0.0190	0.08	Q V	.	.	.	.
4.750	0.0196	0.08	Q V	.	.	.	.
4.833	0.0202	0.09	Q V	.	.	.	.
4.917	0.0208	0.09	Q V	.	.	.	.
5.000	0.0214	0.09	Q V	.	.	.	.
5.083	0.0220	0.09	Q V	.	.	.	.
5.167	0.0226	0.09	Q V	.	.	.	.
5.250	0.0233	0.09	Q V	.	.	.	.
5.333	0.0238	0.08	Q V	.	.	.	.
5.417	0.0244	0.08	Q V	.	.	.	.
5.500	0.0250	0.08	Q V	.	.	.	.
5.583	0.0256	0.09	Q V	.	.	.	.
5.667	0.0262	0.09	Q V	.	.	.	.
5.750	0.0268	0.09	Q V	.	.	.	.
5.833	0.0275	0.10	Q V	.	.	.	.
5.917	0.0281	0.10	Q V	.	.	.	.
6.000	0.0288	0.10	Q V	.	.	.	.
6.083	0.0295	0.10	Q V	.	.	.	.
6.167	0.0302	0.10	Q V	.	.	.	.
6.250	0.0309	0.10	Q V	.	.	.	.
6.333	0.0316	0.11	Q V	.	.	.	.
6.417	0.0324	0.11	Q V	.	.	.	.
6.500	0.0331	0.11	Q V	.	.	.	.
6.583	0.0339	0.11	Q V	.	.	.	.

KMV2PU.RES

6.667	0.0347	0.11	Q	V	.	.	.	.
6.750	0.0355	0.11	Q	V	.	.	.	.
6.833	0.0363	0.12	Q	V	.	.	.	.
6.917	0.0372	0.12	Q	V	.	.	.	.
7.000	0.0380	0.12	Q	V	.	.	.	.
7.083	0.0388	0.12	Q	V	.	.	.	.
7.167	0.0397	0.12	Q	V	.	.	.	.
7.250	0.0405	0.12	Q	V	.	.	.	.
7.333	0.0414	0.13	Q	V	.	.	.	.
7.417	0.0423	0.13	Q	V	.	.	.	.
7.500	0.0432	0.13	Q	V	.	.	.	.
7.583	0.0441	0.14	Q	V	.	.	.	.
7.667	0.0450	0.14	Q	V	.	.	.	.
7.750	0.0460	0.14	Q	V	.	.	.	.
7.833	0.0470	0.15	Q	V	.	.	.	.
7.917	0.0480	0.15	Q	V	.	.	.	.
8.000	0.0491	0.15	Q	V	.	.	.	.
8.083	0.0502	0.16	Q	V	.	.	.	.
8.167	0.0513	0.16	Q	V	.	.	.	.
8.250	0.0524	0.16	Q	V	.	.	.	.
8.333	0.0537	0.18	Q	V	.	.	.	.
8.417	0.0549	0.18	Q	V	.	.	.	.
8.500	0.0561	0.18	Q	V	.	.	.	.
8.583	0.0574	0.19	Q	V	.	.	.	.
8.667	0.0587	0.19	Q	V	.	.	.	.
8.750	0.0600	0.19	Q	V	.	.	.	.
8.833	0.0614	0.20	Q	V	.	.	.	.
8.917	0.0627	0.20	Q	V	.	.	.	.
9.000	0.0641	0.20	Q	V	.	.	.	.
9.083	0.0656	0.22	Q	V	.	.	.	.
9.167	0.0671	0.22	Q	V	.	.	.	.
9.250	0.0686	0.22	Q	V	.	.	.	.
9.333	0.0704	0.25	.Q	V	.	.	.	.
9.417	0.0721	0.25	.Q	V	.	.	.	.
9.500	0.0738	0.25	.Q	V	.	.	.	.
9.583	0.0758	0.28	.Q	V	.	.	.	.
9.667	0.0777	0.28	.Q	V	.	.	.	.
9.750	0.0797	0.28	.Q	V	.	.	.	.
9.833	0.0818	0.31	.Q	V	.	.	.	.
9.917	0.0840	0.31	.Q	V	.	.	.	.
10.000	0.0861	0.31	.Q	V	.	.	.	.
10.083	0.0881	0.29	.Q	V	.	.	.	.
10.167	0.0901	0.29	.Q	V	.	.	.	.
10.250	0.0921	0.29	.Q	V	.	.	.	.
10.333	0.0936	0.22	Q	.V	.	.	.	.
10.417	0.0951	0.22	Q	.V	.	.	.	.
10.500	0.0967	0.22	Q	.V	.	.	.	.
10.583	0.0983	0.24	Q	.V	.	.	.	.

KMV2PU.RES

10.667	0.0999	0.24	Q	. V . . .
10.750	0.1015	0.24	Q	. V . . .
10.833	0.1035	0.29	.Q	. V . . .
10.917	0.1055	0.29	.Q	. V . . .
11.000	0.1075	0.29	.Q	. V . . .
11.083	0.1096	0.30	.Q	. V . . .
11.167	0.1116	0.30	.Q	. V . . .
11.250	0.1137	0.30	.Q	. V . . .
11.333	0.1157	0.29	.Q	. V . . .
11.417	0.1178	0.29	.Q	. V . . .
11.500	0.1198	0.29	.Q	. V . . .

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	2.5	5.0	7.5	10.0
11.583	0.1217	0.28	.Q	. V	.	.	.
11.667	0.1237	0.28	.Q	. V	.	.	.
11.750	0.1257	0.28	.Q	. V	.	.	.
11.833	0.1275	0.27	.Q	. V	.	.	.
11.917	0.1294	0.27	.Q	. V	.	.	.
12.000	0.1313	0.27	.Q	. V	.	.	.
12.083	0.1335	0.33	.Q	. V	.	.	.
12.167	0.1358	0.33	.Q	. V	.	.	.
12.250	0.1381	0.33	.Q	. V	.	.	.
12.333	0.1410	0.43	.Q	. V	.	.	.
12.417	0.1439	0.43	.Q	. V	.	.	.
12.500	0.1469	0.43	.Q	. V	.	.	.
12.583	0.1502	0.48	.Q	. V	.	.	.
12.667	0.1534	0.48	.Q	. V	.	.	.
12.750	0.1567	0.48	.Q	. V	.	.	.
12.833	0.1603	0.53	. Q	. V	.	.	.
12.917	0.1640	0.53	. Q	. V	.	.	.
13.000	0.1676	0.53	. Q	. V	.	.	.
13.083	0.1716	0.59	. Q	. V	.	.	.
13.167	0.1757	0.59	. Q	. V	.	.	.
13.250	0.1797	0.59	. Q	. V	.	.	.
13.333	0.1843	0.66	. Q	. V	.	.	.
13.417	0.1889	0.66	. Q	. V	.	.	.
13.500	0.1934	0.66	. Q	. V	.	.	.
13.583	0.1976	0.61	. Q	. V	.	.	.
13.667	0.2018	0.61	. Q	. V	.	.	.
13.750	0.2061	0.61	. Q	. V	.	.	.
13.833	0.2094	0.49	.Q	. V	.	.	.
13.917	0.2128	0.49	.Q	. V	.	.	.
14.000	0.2162	0.49	.Q	. V	.	.	.
14.083	0.2196	0.49	.Q	. V	.	.	.
14.167	0.2230	0.49	.Q	. V	.	.	.
14.250	0.2264	0.49	.Q	. V	.	.	.

```
14.333      0.2300      0.52  . Q       .         .      V  .         .
14.417      0.2336      0.52  . Q       .         .       V .         .
14.500      0.2372      0.52  . Q       .         .       V .         .
14.583      0.2408      0.52  . Q       .         .        V.         .
14.667      0.2444      0.52  . Q       .         .        V.         .
14.750      0.2480      0.52  . Q       .         .         V         .
14.833      0.2516      0.52  . Q       .         .         V         .
14.917      0.2551      0.52  . Q       .         .         V         .
15.000      0.2587      0.52  . Q       .         .          V        .
15.083      0.2621      0.50  . Q       .         .         .V        .
15.167      0.2656      0.50  . Q       .         .          . V      .
15.250      0.2691      0.50  . Q       .         .          . V      .
15.333      0.2724      0.48  .Q        .         .          . V      .
15.417      0.2757      0.48  .Q        .         .          .  V     .
15.500      0.2790      0.48  .Q        .         .          .  V     .
15.583      0.2821      0.44  .Q        .         .          .   V    .
15.667      0.2851      0.44  .Q        .         .          .   V    .
15.750      0.2882      0.44  .Q        .         .          .   V    .
15.833      0.2909      0.39  .Q        .         .          .    V   .
15.917      0.2936      0.39  .Q        .         .          .    V   .
16.000      0.2963      0.39  .Q        .         .          .    V   .
16.083      0.2983      0.29  .Q        .         .          .     V  .
16.167      0.3003      0.29  .Q        .         .          .     V  .
16.250      0.3023      0.29  .Q        .         .          .     V  .
16.333      0.3032      0.13  Q         .         .          .     V  .
16.417      0.3041      0.13  Q         .         .          .     V  .
16.500      0.3051      0.13  Q         .         .          .     V  .
16.583      0.3056      0.09  Q         .         .          .     V  .
16.667      0.3062      0.09  Q         .         .          .      V .
16.750      0.3068      0.09  Q         .         .          .      V .
16.833      0.3072      0.06  Q         .         .          .      V .
16.917      0.3077      0.06  Q         .         .          .      V .
17.000      0.3081      0.06  Q         .         .          .      V .
17.083      0.3084      0.05  Q         .         .          .      V .
17.167      0.3088      0.05  Q         .         .          .      V .
17.250      0.3092      0.05  Q         .         .          .      V .
17.333      0.3096      0.06  Q         .         .          .      V .
17.417      0.3100      0.06  Q         .         .          .      V .
17.500      0.3105      0.06  Q         .         .          .      V .
17.583      0.3109      0.06  Q         .         .          .      V .
17.667      0.3113      0.06  Q         .         .          .      V .
17.750      0.3117      0.06  Q         .         .          .      V .
17.833      0.3121      0.06  Q         .         .          .      V .
17.917      0.3125      0.06  Q         .         .          .      V .
18.000      0.3129      0.06  Q         .         .          .      V .
18.083      0.3133      0.05  Q         .         .          .      V .
18.167      0.3137      0.05  Q         .         .          .      V .
18.250      0.3140      0.05  Q         .         .          .       V.
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18.333	0.3144	0.05	Q	.	.	.	V .
18.417	0.3147	0.05	Q	.	.	.	V .
18.500	0.3151	0.05	Q	.	.	.	V .
18.583	0.3154	0.05	Q	.	.	.	V .
18.667	0.3157	0.05	Q	.	.	.	V .
18.750	0.3161	0.05	Q	.	.	.	V .
18.833	0.3163	0.04	Q	.	.	.	V .
18.917	0.3166	0.04	Q	.	.	.	V .
19.000	0.3168	0.04	Q	.	.	.	V .
19.083	0.3171	0.03	Q	.	.	.	V .
19.167	0.3173	0.03	Q	.	.	.	V .
19.250	0.3175	0.03	Q	.	.	.	V .
19.333	0.3178	0.04	Q	.	.	.	V .
19.417	0.3181	0.04	Q	.	.	.	V .
19.500	0.3183	0.04	Q	.	.	.	V .
19.583	0.3186	0.04	Q	.	.	.	V .
19.667	0.3189	0.04	Q	.	.	.	V .
19.750	0.3192	0.04	Q	.	.	.	V .
19.833	0.3195	0.04	Q	.	.	.	V .
19.917	0.3197	0.04	Q	.	.	.	V .
20.000	0.3200	0.04	Q	.	.	.	V .
20.083	0.3202	0.03	Q	.	.	.	V .
20.167	0.3204	0.03	Q	.	.	.	V .
20.250	0.3206	0.03	Q	.	.	.	V .
20.333	0.3209	0.04	Q	.	.	.	V .
20.417	0.3211	0.04	Q	.	.	.	V .
20.500	0.3214	0.04	Q	.	.	.	V .
20.583	0.3216	0.04	Q	.	.	.	V .
20.667	0.3219	0.04	Q	.	.	.	V .
20.750	0.3221	0.04	Q	.	.	.	V .
20.833	0.3224	0.03	Q	.	.	.	V.
20.917	0.3226	0.03	Q	.	.	.	V.
21.000	0.3228	0.03	Q	.	.	.	V.
21.083	0.3230	0.03	Q	.	.	.	V.
21.167	0.3232	0.03	Q	.	.	.	V.
21.250	0.3235	0.03	Q	.	.	.	V.
21.333	0.3237	0.03	Q	.	.	.	V.
21.417	0.3239	0.03	Q	.	.	.	V.
21.500	0.3241	0.03	Q	.	.	.	V.
21.583	0.3243	0.03	Q	.	.	.	V.
21.667	0.3246	0.03	Q	.	.	.	V.
21.750	0.3248	0.03	Q	.	.	.	V.
21.833	0.3250	0.03	Q	.	.	.	V.
21.917	0.3252	0.03	Q	.	.	.	V.
22.000	0.3254	0.03	Q	.	.	.	V.
22.083	0.3256	0.03	Q	.	.	.	V.
22.167	0.3258	0.03	Q	.	.	.	V.
22.250	0.3261	0.03	Q	.	.	.	V.

22.333	0.3263	0.03	Q	.	.	.	V.
22.417	0.3265	0.03	Q	.	.	.	V.
22.500	0.3267	0.03	Q	.	.	.	V.
22.583	0.3269	0.03	Q	.	.	.	V.
22.667	0.3271	0.03	Q	.	.	.	V.
22.750	0.3273	0.03	Q	.	.	.	V.
22.833	0.3275	0.03	Q	.	.	.	V.
22.917	0.3276	0.03	Q	.	.	.	V.
23.000	0.3278	0.03	Q	.	.	.	V.
23.083	0.3280	0.03	Q	.	.	.	V.
23.166	0.3282	0.03	Q	.	.	.	V.
23.250	0.3283	0.03	Q	.	.	.	V.
23.333	0.3285	0.03	Q	.	.	.	V.
23.416	0.3287	0.03	Q	.	.	.	V.
23.500	0.3289	0.03	Q	.	.	.	V.
23.583	0.3290	0.03	Q	.	.	.	V.
23.666	0.3292	0.03	Q	.	.	.	V.
23.750	0.3294	0.03	Q	.	.	.	V.
23.833	0.3295	0.02	Q	.	.	.	V.
23.916	0.3297	0.02	Q	.	.	.	V.
24.000	0.3299	0.02	Q	.	.	.	V.

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	2.5	5.0	7.5	10.0
24.083	0.3300	0.02	Q	.	.	.	V.
24.166	0.3301	0.02	Q	.	.	.	V.
24.250	0.3303	0.02	Q	.	.	.	V.
24.333	0.3303	0.01	Q	.	.	.	V.
24.416	0.3303	0.01	Q	.	.	.	V.
24.500	0.3304	0.01	Q	.	.	.	V.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1470.0
10%	765.0
20%	525.0
30%	435.0
40%	375.0
50%	225.0
60%	210.0
70%	180.0
80%	45.0

KMV2PU.RES

90% 30.0

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END OF FLOODSCx ROUTING ANALYSIS

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 preven 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 preven 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
☒ I. **Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)**	☒ **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.** ☒ **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.** ☒ **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.**	☒ **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/**	☒ **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		
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
☒ 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

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
☑ 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

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
☑ 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

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
☑ 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

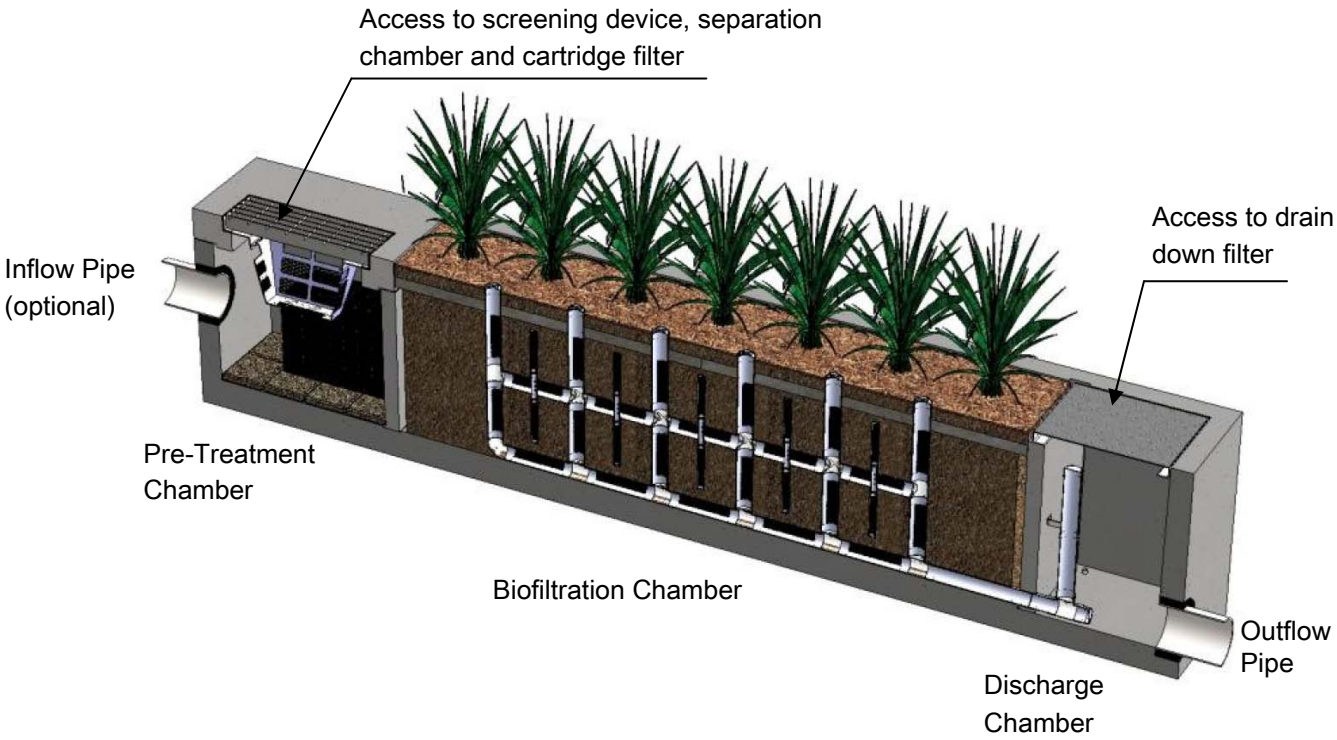
TO BE PROVIDED IN FINAL WQMP

Maintenance Guidelines for Modular Wetland System - Linear

Maintenance Summary

- Remove Trash from Screening Device – average maintenance interval is 6 to 12 months.
  - (*5 minute average service time*).
- Remove Sediment from Separation Chamber – average maintenance interval is 12 to 24 months.
  - (*10 minute average service time*).
- Replace Cartridge Filter Media – average maintenance interval 12 to 24 months.
  - (*10-15 minute per cartridge average service time*).
- Replace Drain Down Filter Media – average maintenance interval is 12 to 24 months.
  - (*5 minute average service time*).
- Trim Vegetation – average maintenance interval is 6 to 12 months.
  - (*Service time varies*).

System Diagram



Maintenance Procedures

Screening Device

1. Remove grate or manhole cover to gain access to the screening device in the Pre-Treatment Chamber. Vault type units do not have screening device. Maintenance can be performed without entry.
2. Remove all pollutants collected by the screening device. Removal can be done manually or with the use of a vacuum truck. The hose of the vacuum truck will not damage the screening device.
3. Screening device can easily be removed from the Pre-Treatment Chamber to gain access to separation chamber and media filters below. Replace grate or manhole cover when completed.

Separation Chamber

1. Perform maintenance procedures of screening device listed above before maintaining the separation chamber.
2. With a pressure washer spray down pollutants accumulated on walls and cartridge filters.
3. Vacuum out Separation Chamber and remove all accumulated pollutants. Replace screening device, grate or manhole cover when completed.

Cartridge Filters

1. Perform maintenance procedures on screening device and separation chamber before maintaining cartridge filters.
2. Enter separation chamber.
3. Unscrew the two bolts holding the lid on each cartridge filter and remove lid.
4. Remove each of 4 to 8 media cages holding the media in place.
5. Spray down the cartridge filter to remove any accumulated pollutants.
6. Vacuum out old media and accumulated pollutants.
7. Reinstall media cages and fill with new media from manufacturer or outside supplier. Manufacturer will provide specification of media and sources to purchase.
8. Replace the lid and tighten down bolts. Replace screening device, grate or manhole cover when completed.

Drain Down Filter

1. Remove hatch or manhole cover over discharge chamber and enter chamber.
2. Unlock and lift drain down filter housing and remove old media block. Replace with new media block. Lower drain down filter housing and lock into place.
3. Exit chamber and replace hatch or manhole cover.

Maintenance Notes

1. Following maintenance and/or inspection, it is recommended the maintenance operator prepare a maintenance/inspection record. The record should include any maintenance activities performed, amount and description of debris collected, and condition of the system and its various filter mechanisms.

2. The owner should keep maintenance/inspection record(s) for a minimum of five years from the date of maintenance. These records should be made available to the governing municipality for inspection upon request at any time.

3. Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.

4. Entry into chambers may require confined space training based on state and local regulations.

5. No fertilizer shall be used in the Biofiltration Chamber.

6. Irrigation should be provided as recommended by manufacturer and/or landscape architect. Amount of irrigation required is dependent on plant species. Some plants may require irrigation.

Maintenance Procedure Illustration

Screening Device

The screening device is located directly under the manhole or grate over the Pre-Treatment Chamber. It's mounted directly underneath for easy access and cleaning. Device can be cleaned by hand or with a vacuum truck.

Separation Chamber

The separation chamber is located directly beneath the screening device. It can be quickly cleaned using a vacuum truck or by hand. A pressure washer is useful to assist in the cleaning process.

Cartridge Filters

The cartridge filters are located in the Pre-Treatment chamber connected to the wall adjacent to the biofiltration chamber. The cartridges have removable tops to access the individual media filters. Once the cartridge is open media can be easily removed and replaced by hand or a vacuum truck.

Drain Down Filter

The drain down filter is located in the Discharge Chamber. The drain filter unlocks from the wall mount and hinges up. Remove filter block and replace with new block.

MODULAR WETLANDS

Trim Vegetation

Vegetation should be maintained in the same manner as surrounding vegetation and trimmed as needed. No fertilizer shall be used on the plants. Irrigation per the recommendation of the manufacturer and or landscape architect. Different types of vegetation requires different amounts of irrigation.

Inspection Form

Modular Wetland System, Inc.
P. 760.433-7640
F. 760-433-3176
E. Info@modularwetlands.com

www.modularwetlands.com

BIO CLEAN ENVIRONMENTAL SERVICES, INC.

Inspection Report
Modular Wetlands System

MODULAR WETLANDS

Project Name _____

Project Address _____ (city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

Inspector Name _____ Date ___/___/___ Time _____ AM / PM

For Office Use Only
(Reviewed By)
(Date)
Office personnel to complete section the left.

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

Inspection Checklist

Modular Wetland System Type (Curb, Grate or UG Vault): _____ Size (22', 14' or etc.): _____

Structural Integrity:	**Yes**	**No**	**Comments**
Damage to pre-treatment access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Damage to discharge chamber access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Does the MWS unit show signs of structural deterioration (cracks in the wall, damage to frame)?			
Is the inlet/outlet pipe or drain down pipe damaged or otherwise not functioning properly?			
Working Condition:			
Is there evidence of illicit discharge or excessive oil, grease, or other automobile fluids entering and clogging the unit?			
Is there standing water in inappropriate areas after a dry period?			
Is the filter insert (if applicable) at capacity and/or is there an accumulation of debris/trash on the shelf system?			
Does the depth of sediment/trash/debris suggest a blockage of the inflow pipe, bypass or cartridge filter? If yes, specify which one in the comments section. Note depth of accumulation in in pre-treatment chamber.			Depth:
Does the cartridge filter media need replacement in pre-treatment chamber and/or discharge chamber?			Chamber:
Any signs of improper functioning in the discharge chamber? Note issues in comments section.			
Other Inspection Items:			
Is there an accumulation of sediment/trash/debris in the wetland media (if applicable)?			
Is it evident that the plants are alive and healthy (if applicable)? Please note Plant Information below.			
Is there a septic or foul odor coming from inside the system?			

Waste:	**Yes**	**No**
Sediment / Silt / Clay		
Trash / Bags / Bottles		
Green Waste / Leaves / Foliage		

Recommended Maintenance	
No Cleaning Needed	
Schedule Maintenance as Planned	
Needs Immediate Maintenance	

Plant Information	
Damage to Plants	
Plant Replacement	
Plant Trimming	

Additional Notes:

Maintenance Report

Modular Wetland System, Inc.
P. 760.433-7640
F. 760-433-3176
E. Info@modularwetlands.com

www.modularwetlands.com

BIO CLEAN ENVIRONMENTAL SERVICES, INC.

Cleaning and Maintenance Report
Modular Wetlands System

MODULAR WETLANDS

Project Name _____

Project Address _____
(city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

Inspector Name _____ Date ____/____/____ Time _____ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

For Office Use Only
(Reviewed By)
(Date)
Office personnel to complete section to the left.

Site Map #	GPS Coordinates of Insert	Manufacturer / Description / Sizing	Trash Accumulation	Foliage Accumulation	Sediment Accumulation	Total Debris Accumulation	Condition of Media 25/50/75/100 (will be changed @ 75%)	Operational Per Manufactures' Specifications (If not, why?)
	Lat: Long:	MWS Catch Basins						
		MWS Sedimentation Basin						
		Media Filter Condition						
		Plant Condition						
		Drain Down Media Condition						
		Discharge Chamber Condition						
		Drain Down Pipe Condition						
		Inlet and Outlet Pipe Condition						

Comments:

2972 San Luis Rey Road, Oceanside, CA 92058 P. 760.433.7640 F. 760.433.3176

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

After the Storm

A Citizen's Guide to Understanding Stormwater

THE YEAR OF CLEAN WATER
Clean Water Environment

EPA United States Environmental Protection Agency

EPA 833-B-03-002

January 2003

Internet Address (URL) • HTTP://www.epa.gov
Printed with Vegetable Oil Based Inks on Recycled Postconsumer, Process Chlorine Free Recycled Paper

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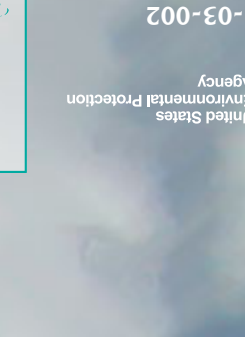


What is stormwater runoff?

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 directually 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.

Construction

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.

Agriculture

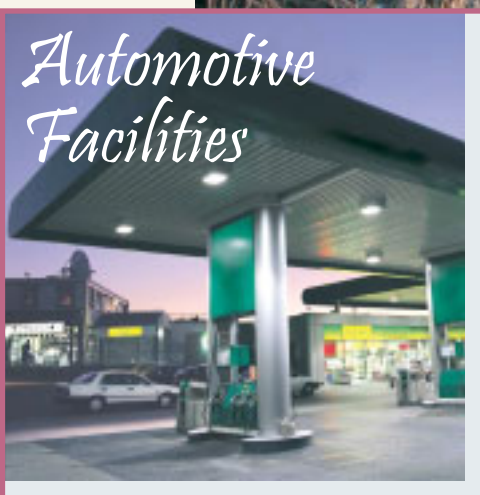
Lack of vegetation on streambanks can lead to erosion. Overgrazed pastures can also contribute excessive amounts of sediment to local waterbodies. Excess fertilizers and pesticides can poison aquatic animals and lead to destructive algae blooms. Livestock in streams can contaminate waterways with bacteria, 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.

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.



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

Stormwater Pollution

What you should know for...

Industrial & Commercial Facilities

Best Management Practices (BMPS) f

- Industrial Facilities
- Commercial Faciliti

Riverside County Stormwater Program Members

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

City of Cathedral City
(760) 770-0340

City of Coachella
(760) 398-3502

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 Jurupa Valley
(951) 332-6464

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) 826-5311

City of San Jacinto
(951) 487-7330

City of Temecula
(951) 694-6444

City of Wildomar
(951) 677-7751

Coachella Valley Water District
(760) 398-2651

County of Riverside
(951) 955-1000

Riverside County Flood Control District
(951) 955-1200

Industrial and Commercial Facilities

The Riverside County Stormwater Program has identified a number of Best Management Practices (BMPs) for Industrial and Commercial Facilities. These BMPs control and reduce stormwater pollutants from reaching our storm drain system and ultimately our local water bodies. City and County ordinances require businesses to use these BMPs to protect our water quality. Local cities and the County are required to verify implementation of these BMPs by performing regular facility inspections.

Prohibited Discharges

Discontinue all non-stormwater discharges to the storm drain system. It is *prohibited* to discharge any chemicals, paints, debris, wastes or wastewater into the gutter, street or storm drain.

Outdoor Storage BMPs

- Install covers and secondary containment areas for all hazardous materials and wastes stored outdoors in accordance with County and/or City standards.
- Keep all temporary waste containers covered, at all times when not in use.
- Sweep outdoor areas instead of using a hose or pressure washer.
- Move all process operations including vehicle/equipment maintenance inside of the building or under a covered and contained area.
- Wash equipment and vehicles in a contained and covered wash bay which is closed-loop or connected to a clarifier sized to local standards and discharged to a sanitary sewer or take them to a commercial car wash.

Spills and Clean Up BMPs

- Keep the work site clean and orderly. Remove debris in a timely fashion. Sweep up the area.
- Clean up spills immediately when they occur, using dry clean up methods such as absorbent materials or sweep followed by proper disposal of materials.
- Always have a spill kit available near chemical loac dock doors and vehicle maintenance and fueling ar
- Follow your Business Emergency Plan, as filed with the local Fire Department.
- Report all prohibited discharges and non-implementation of BMPs to your local Stormwater Coordinator as listed on the back of this pamphlet.
- Report hazardous materials spills to 951-358-5055 call after hours to 951-782-2973 or, if an emerge call the Fire Department's Haz Mat Team at 911.

Plastic Manufacturing Facilities BMPs

AB 258 requires plastic product manufacturers to use BM such as safe storage and clean-up procedures to prevent pla pellets (nurdles) from entering the waterway. The pla pellets are released into the environment during transport packaging and processing and migrate to waterways thro the storm drain system. AB 258 will help protect fish wildlife from the hazards of plastic pollution.

Training BMPs

As prescribed by your City and County Stormw Ordinance(s), train employees in spill procedures prohibit non-stormwater discharges to the storm d system. Applicable BMP examples can be found www.cabmphandbooks.com.

Permitting

Stormwater discharges associated with specific catego for industrial facilities are regulated by the State W Resources Control Board through an Industrial Stormw General Permit. A copy of this General Permit application forms are available at: www.waterboards.ca.g select stormwater then the industrial quick link.

To report illegal dumping or for more information stormwater pollution prevention call: 1-800-506-2555 or e-mail us at: fcnpdes@rcflood.org.

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

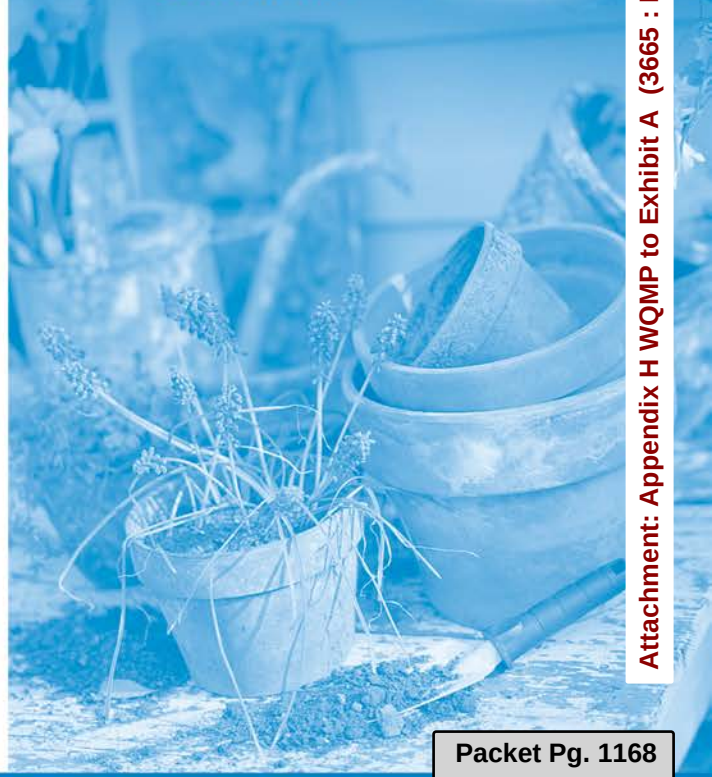
The Riverside County "Only Rain Down the Storm Drain" Pollution Prevention Program gratefully acknowledges Orange County's Storm Water Program for their contribution to this brochure.

...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

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.

APPENDIX I: NOISE IMPACT ANALYSIS

NOISE IMPACT ANALYSIS

Car Pros Kia Dealership Project

City of Moreno Valley

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Project No. 19014

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ACRONYMS AND ABBREVIATIONS

ANSI	American National Standards Institute
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dB	Decibel
dBA	A-weighted decibels
DOT	Department of Transportation
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
EPA	Environmental Protection Agency
Hz	Hertz
Ldn	Day-night average noise level
Leq	Equivalent sound level
Lmax	Maximum noise level
ONAC	Federal Office of Noise Abatement and Control
OSB	Oriented Strand Board
OSHA	Occupational Safety and Health Administration
PPV	Peak particle velocity
RMS	Root mean square
SEL	Single Event Level or Sound Exposure Level
STC	Sound Transmission Class
UMTA	Federal Urban Mass Transit Administration
VdB	Vibration velocity level in decibels

1.0 INTRODUCTION

1.1 Purpose of Analysis and Study Objectives

This Noise Impact Analysis has been prepared to determine the noise impacts associated with the proposed Car Pros Kia Dealership project (proposed project). The following is provided in this report:

- A description of the study area and the proposed project;
- Information regarding the fundamentals of noise;
- Information regarding the fundamentals of vibration;
- A description of the local noise guidelines and standards;
- An evaluation of the current noise environment;
- An analysis of the potential short-term construction-related noise impacts from the proposed project; and,
- An analysis of long-term operations-related noise impacts from the proposed project.

1.2 Site Location and Study Area

The project site is located in the eastern portion of the City of Moreno Valley (City) on the eastern corner of the intersection of Auto Mall Drive and Moreno Beach Drive. The approximately 6.19-acre net project site which encompasses 2 parcels is currently vacant and is bounded by Pettit Street and a car storage lot to the north, vacant residential land and industrial uses to the east, Moreno beach Drive and multi-family residential uses to the south, and Auto Mall Drive and vacant land to the west. The project study area is shown in Figure 1.

Sensitive Receptors in Project Vicinity

The nearest sensitive receptors to the project site are the multi-family homes located as near as 180 feet to the southwest of the project site. The nearest school to the project site is Calvary Chapel Christian School, which is located as near as 0.8 mile north of the project site.

1.3 Proposed Project Description

The proposed project would consist of the development of a Kia Dealership with a 41,511 square foot, two-story building and car wash that would be utilized as a sales and service facility, with a 2,562 square foot service reception loading area on the northeast side of the structure. The proposed hours of operation for sales will be seven days a week from 9:00 a.m. to 9:00 p.m. and car service will be Monday through Saturday from 8:00 a.m. to 6:00 p.m.. The proposed site plan is shown in Figure 2.

1.4 Executive Summary

Standard Noise Regulatory Conditions

The proposed project will be required to comply with the following regulatory conditions from the City and State of California (State).

City of Moreno Valley Noise Regulations

The following lists the noise and vibration regulations from the Municipal Code that are applicable, but not limited to the proposed project.

- Section 9.10.170 Vibration;
- Section 11.80.030(B)(2) Sound Level Limits;
- Section 11.80.030(D)(7) Construction Prohibitions

State of California Noise Regulations

The following lists the State of California noise regulations that are applicable, but not limited to the proposed project.

- California Vehicle Code Section 2700-27207 – On Road Vehicle Noise Limits
- California Vehicle Code Section 38365-38350 – Off-Road Vehicle Noise Limits

Summary of Analysis Results

The following is a summary of the proposed project's impacts with regard to the State CEQA Guidelines noise checklist questions.

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?

Potentially significant impact. Implementation of Mitigation Measure 1 would reduce the impact to less than significant levels.

Generation of excessive groundborne vibration or groundborne noise levels?

Less than significant impact.

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?

No impact.

1.5 Mitigation Measures for the Proposed Project

This analysis found that through adherence to the noise and vibration regulations detailed in Section 1.4 above were adequate to limit all noise and vibration impacts to less than significant levels. No mitigation measures are required for the proposed project with respect to noise and vibration impacts.

Figure 1 – Project Location Map

Figure 2 – Proposed Site Plan

2.0 NOISE FUNDAMENTALS

Noise is defined as unwanted sound. Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Sound is produced by the vibration of sound pressure waves in the air. Sound pressure levels are used to measure the intensity of sound and are described in terms of decibels. The decibel (dB) is a logarithmic unit which expresses the ratio of the sound pressure level being measured to a standard reference level. A-weighted decibels (dBA) approximate the subjective response of the human ear to a broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear.

2.1 Noise Descriptors

Noise Equivalent sound levels are not measured directly, but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (Leq) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. The peak traffic hour Leq is the noise metric used by California Department of Transportation (Caltrans) for all traffic noise impact analyses.

The Day-Night Average Level (Ldn) is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time of day corrections require the addition of ten decibels to sound levels at night between 10 p.m. and 7 a.m. While the Community Noise Equivalent Level (CNEL) is similar to the Ldn, except that it has another addition of 4.77 decibels to sound levels during the evening hours between 7 p.m. and 10 p.m. These additions are made to the sound levels at these time periods because during the evening and nighttime hours, when compared to daytime hours, there is a decrease in the ambient noise levels, which creates an increased sensitivity to sounds. For this reason the sound appears louder in the evening and nighttime hours and is weighted accordingly. The City of Moreno Valley relies on the CNEL dB(A) noise standard to assess transportation-related impacts on noise sensitive land uses.

2.2 Tone Noise

A pure tone noise is a noise produced at a single frequency and laboratory tests have shown that humans are more perceptible to changes in noise levels of a pure tone. For a noise source to contain a “pure tone,” there must be a significantly higher A-weighted sound energy in a given frequency band than in the neighboring bands, thereby causing the noise source to “stand out” against other noise sources. A pure tone occurs if the sound pressure level in the one-third octave band with the tone exceeds the average of the sound pressure levels of the two contiguous one-third octave bands by:

- 5 dB for center frequencies of 500 hertz (Hz) and above
- 8 dB for center frequencies between 160 and 400 Hz
- 15 dB for center frequencies of 125 Hz or less

2.3 Noise Propagation

From the noise source to the receiver, noise changes both in level and frequency spectrum. The most obvious is the decrease in noise as the distance from the source increases. The manner in which noise reduces with distance depends on whether the source is a point or line source as well as ground absorption, atmospheric effects and refraction, and shielding by natural and manmade features. Sound

from point sources, such as air conditioning condensers, radiate uniformly outward as it travels away from the source in a spherical pattern. The noise drop-off rate associated with this geometric spreading is 6 dBA per each doubling of the distance (dBA/DD). Transportation noise sources such as roadways are typically analyzed as line sources, since at any given moment the receiver may be impacted by noise from multiple vehicles at various locations along the roadway. Because of the geometry of a line source, the noise drop-off rate associated with the geometric spreading of a line source is 3 dBA/DD.

2.4 Ground Absorption

The sound drop-off rate is highly dependent on the conditions of the land between the noise source and receiver. To account for this ground-effect attenuation (absorption), two types of site conditions are commonly used in traffic noise models, soft-site and hard-site conditions. Soft-site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. For point sources, a drop-off rate of 7.5 dBA/DD is typically observed over soft ground with landscaping, as compared with a 6.0 dBA/DD drop-off rate over hard ground such as asphalt, concrete, stone and very hard packed earth. For line sources a 4.5 dBA/DD is typically observed for soft-site conditions compared to the 3.0 dBA/DD drop-off rate for hard-site conditions. Caltrans research has shown that the use of soft-site conditions is more appropriate for the application of the Federal Highway Administration (FHWA) traffic noise prediction model used in this analysis.

3.0 GROUND-BORNE VIBRATION FUNDAMENTALS

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.

3.1 Vibration Descriptors

There are several different methods that are used to quantify vibration amplitude such as the maximum instantaneous peak in the vibrations velocity, which is known as the peak particle velocity (PPV) or the root mean square (rms) amplitude of the vibration velocity. Due to the typically small amplitudes of vibrations, vibration velocity is often expressed in decibels and is denoted as (L_v) and is based on the rms velocity amplitude. A commonly used abbreviation is "VdB", which in this text, is when L_v is based on the reference quantity of 1 micro inch per second.

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. Off-site 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.

3.3 Vibration Propagation

The propagation of ground-borne vibration is not as simple to model as airborne noise. This is due to the fact that noise in the air travels through a relatively uniform median, while ground-borne vibrations travel through the earth which may contain significant geological differences. 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 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.

4.0 REGULATORY SETTING

The project site is located in the City of Moreno Valley. 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:

- Promulgating noise emission standards for interstate commerce
- Assisting state and local abatement efforts
- Promoting noise education and research

The Federal Office of Noise Abatement and Control (ONAC) was initially tasked with implementing the Noise Control Act. However, the ONAC has since been eliminated, leaving the development of federal noise policies and programs to other federal agencies and interagency committees. For example, the Occupational Safety and Health Administration (OSHA) agency prohibits exposure of workers to excessive sound levels. The Department of Transportation (DOT) assumed a significant role in noise control through its various operating agencies. The Federal Aviation Administration (FAA) regulates noise of aircraft and airports. Surface transportation system noise is regulated by a host of agencies, including the Federal Transit Administration (FTA). Transit noise is regulated by the federal Urban Mass Transit Administration (UMTA), while freeways that are part of the interstate highway system are regulated by the Federal Highway Administration (FHWA). Finally, the federal government actively advocates that local jurisdictions use their land use regulatory authority to arrange new development in such a way that "noise sensitive" uses are either prohibited from being sited adjacent to a highway or, alternately that the developments are planned and constructed in such a manner that potential noise impacts are minimized.

Although the proposed project is not under the jurisdiction of the FTA, the FTA is the only agency that has defined what constitutes a significant noise impact from implementing a project. The FTA standards are based on extensive studies by the FTA and other governmental agencies on the human effects and reaction to noise and a summary of the FTA findings are provided below in Table A.

Table A – FTA Project Effects on Cumulative Noise Exposure

Existing Noise Exposure (dBA Leq or Ldn)	Allowable Noise Impact Exposure dBA Leq or Ldn		
	Project Only	Combined	Noise Exposure Increase
45	51	52	+7
50	53	55	+5
55	55	58	+3
60	57	62	+2
65	60	66	+1
70	64	71	+1
75	65	75	0

Source: Federal Transit Administration, 2006.

Since the federal government has preempted the setting of standards for noise levels that can be emitted by the transportation sources, 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

Noise Standards

California Department of Health Services Office of Noise Control

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," which allows the local jurisdiction to clearly delineate compatibility of sensitive uses with various incremental levels of noise.

California Noise Insulation Standards

Title 24, Chapter 1, Article 4 of the California Administrative Code (California Noise Insulation Standards) requires noise insulation in new hotels, motels, apartment houses, and dwellings (other than single-family detached housing) that provides an annual average noise level of no more than 45 dBA CNEL. When such structures are located within a 60-dBA CNEL (or greater) noise contour, an acoustical analysis is required to ensure that interior levels do not exceed the 45-dBA CNEL annual threshold. In addition, Title 21, Chapter 6, Article 1 of the California Administrative Code requires that all habitable rooms, hospitals, convalescent homes, and places of worship shall have an interior CNEL of 45 dB or less due to aircraft noise.

Government Code Section 65302

Government Code Section 65302 mandates that the legislative body of each county and city in California 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.

California Vehicle Code Section 27200-27207 – On-Road Vehicle Noise

California Vehicle Code Section 27200-27207 provides noise limits for vehicles operated in California. For vehicles over 10,000 pounds noise is limited to 88 dB for vehicles manufactured before 1973, 86 dB for vehicles manufactured before 1975, 83 dB for vehicles manufactured before 1988, and 80 dB for vehicles manufactured after 1987. All measurements are based at 50 feet from the vehicle.

California Vehicle Section 38365-38380 – Off-Road Vehicle Noise

California Vehicle Code Section 38365-38380 provides noise limits for off-highway motor vehicles operated in California. 92 dBA for vehicles manufactured before 1973, 88 dBA for vehicles manufactured before 1975, 86 dBA for vehicles manufactured before 1986, and 82 dBA for vehicles manufactured after December 31, 1985. All measurements are based at 50 feet from the vehicle.

Vibration Standards

Title 14 of the California Administrative Code Section 15000 requires that all state and local agencies implement the California Environmental Quality Act (CEQA) Guidelines, which requires the analysis of exposure of persons to excessive groundborne vibration. However, no statute has been adopted by the state that quantifies the level at which excessive groundborne vibration occurs.

Caltrans issued the *Transportation- and Construction-Induced Vibration Guidance Manual* in 2004. The manual provides practical guidance to Caltrans engineers, planners, and consultants who must address vibration issues associated with the construction, operation, and maintenance of Caltrans projects. However, this manual is also used as a reference point by many lead agencies and CEQA practitioners throughout California, as it provides numeric thresholds for vibration impacts. Thresholds are established for continuous (construction-related) and transient (transportation-related) sources of vibration, which found that the human response becomes distinctly perceptible at 0.25 inch per second PPV for transient sources and 0.04 inch per second PPV for continuous sources.

4.3 Local Regulations

The City of Moreno Valley General Plan and Municipal Code establishes the following applicable policies related to noise and vibration.

City of Moreno Valley General Plan

The following applicable goals and policies to the proposed project are from the Noise Element of the General Plan.

Objective 6.3

Provide noise compatible land use relationships by establishing noise standards utilized for design and siting purposes.

Policies

6.3.6 Building shall be limited in areas of sensitive receptors.

Objective 6.4

Review noise issues during the planning process and require noise attenuation measures to minimize acoustic impacts to existing and future surrounding land uses.

Policies

6.4.1 Site, landscape and architectural design features shall be encouraged to mitigate noise impacts for new developments, with a preference for noise barriers that avoid freeway sound barrier walls.

Objective 6.5

Minimize noise impacts from significant noise generators such as, but not limited to, motor vehicles, trains, aircraft, commercial, industrial, construction, and other activities.

Policies

6.5.1 New commercial and industrial activities (including the placement of mechanical equipment) shall be evaluated and designed to mitigate noise impacts on adjacent uses.

6.5.1 Construction activities shall be operated in a manner that limits noise impacts on surrounding uses.

City of Moreno Valley Municipal Code

The City of Moreno Valley Municipal Code establishes the following applicable standards related to noise.

Section 9.10.170 Vibration

No vibration shall be permitted which can be felt at or beyond the property line.

Section 11.80.030 Prohibited Acts

A. General Prohibition. 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, as defined in Section 11.80.020.

B. Sound causing permanent hearing loss.

1. Sound level limits. Based on statistics from the Center for Disease Control and Prevention and the National Institute for Occupational Safety and Health, Table 1 and Table 1-A specify sound level limits which, if exceeded, will have a high probability of producing permanent hearing loss in anyone in the area where the sound levels are being exceeded. No sound shall be permitted within the city which exceeds the parameters set for in Tables 11.80.030-1 [see Table B] and 11.80.030-1-A [see Table C] of this chapter:

Table B – City of Moreno Valley Maximum Continuous Sound Levels

Duration per Day (Continuous Hours)	Sound Level [dB(A)]
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
.5	110
.25	115

Source: City of Moreno Valley Municipal Code Section 11.80.030.

Table C – City of Moreno Valley Maximum Impulsive Sound Levels

Number of Repetitions per 24-Hour Period	Sound Level [dB(A)]
1	145
10	135
100	125

Source: City of Moreno Valley Municipal Code Section 11.80.030.

C. Nonimpulsive Sound Decibel Limits. 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 nonimpulsive 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 [see Table D] 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 D – City of Moreno Valley Maximum Sound Levels for Source Land Uses

Residential		Commercial	
Daytime[1]	**Nightime[2]**	**Daytime[1]**	**Nightime[2]**
60	55	65	60

Notes:
[1] Daytime defined as 8:00 a.m. to 10:00 p.m.
[2] Nighttime define as 10:01 p.m. to 7:59 a.m. the following day.
Source: City of Moreno Valley Municipal Code Section 11.80.030.

D. Specific Prohibitions. In addition to the general prohibitions set out in subsection A of this section, and unless otherwise exempted by this chapter, the following specific acts, or the causing or permitting thereof, are regulated as follows:

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 Monday through Friday, and between the hours of four p.m. and eight a.m. Saturday 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. No work shall occur on Sunday. This section shall not apply to the use of power tools as provided in subsection (D)(9) of this section.

E. 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 [see Table B] and 11.80.030-1A [see Table C]:

5. Sounds from the operation of motor vehicles, to the extent they are regulated by the California Vehicle Code.

5.0 EXISTING NOISE CONDITIONS

To determine the existing noise levels, noise measurements have been taken in the vicinity of the project site. The field survey noted that noise within the proposed project area is generally characterized by vehicle traffic on Moreno Beach Drive, which is located adjacent southwest side of the project site. The following describes the measurement procedures, measurement locations, noise measurement results, and the modeling of the existing noise environment.

5.1 Noise Measurement Equipment

The noise measurements were taken using two Extech Model 407780 Type 2 integrating sound level meters programmed in "slow" mode to record the sound pressure level at 3-second intervals for approximately 24 hours in "A" weighted form. In addition, the L_{eq} averaged over the entire measuring time and L_{max} were recorded. The sound level meters and microphones were mounted approximately five feet above the ground and were equipped with a windscreen. The sound level meters were calibrated before and after the monitoring using an Extech calibrator, Model 407766. The noise level measurement equipment meets American National Standards Institute specifications for sound level meters (S1.4-1983 identified in Chapter 19.68.020.AA).

Noise Measurement Location

The noise monitoring locations were selected in order to obtain noise levels in the vicinity of the nearest residential uses to the project site. Descriptions of the noise monitoring sites are provided below in Table E. Appendix A includes a photo index of the study area and noise level measurement locations.

Noise Measurement Timing and Climate

The noise measurements were recorded between 1:13 p.m. on Monday, February 25, 2019 and 1:17 p.m. on Tuesday, February 26, 2019. When the noise measurements were started the sky was clear, the temperature was 67 degrees Fahrenheit, the humidity was 31 percent, barometric pressure was 28.14 inches of mercury, and the wind was blowing around 3 miles per hour. Overnight, the sky was partly cloudy and the temperature dropped to 40 degrees Fahrenheit. At the conclusion of the noise measurements, the sky was partly cloudy, the temperature was 68 degrees Fahrenheit, the humidity was 41 percent, barometric pressure was 28.17 inches of mercury, and the wind was blowing around 4 miles per hour.

5.2 Noise Measurement Results

The results of the noise level measurements are presented in Table E. The measured sound pressure levels in dBA have been used to calculate the minimum and maximum L_{eq} averaged over 1-hour intervals. Table E also shows the L_{eq}, L_{max}, and CNEL, based on the entire measurement time. The noise monitoring data printouts are included in Appendix B. Figure 3 shows a graph of the 24-hour noise measurements.

Table E – Existing (Ambient) Noise Level Measurements

Site No.	Site Description	Average (dBA L_{eq})		1-hr Average (dBA L_{eq}/Time)		Average (dBA CNEL)
		Daytime[1]	Nighttime[2]	Minimum	Maximum	
A	Located southwest of the project site on a palm tree approximately 80 feet east of the Auto Mall Drive centerline and 100 feet south of the Moreno Beach Drive centerline.	70.7	66.0	60.4 2:22 a.m.	74.1 6:36 p.m.	73.4
B	Located south of the project site on a palm tree approximately 450 feet east of the Auto Mall Drive centerline and 95 feet south of the Moreno Beach Drive centerline.	69.6	64.7	58.6 2:21 a.m.	71.3 3:40 p.m.	71.9

Notes:
[1] Daytime defined as 8:00 a.m. to 10:00 p.m. (Section 11.80.030 of the Municipal Code)
[2] Nighttime define as 10:01 p.m. to 7:59 a.m. the following day. (Section 11.80.030 of the Municipal Code)
Source: Noise measurements taken with two Extech Model 407780 Type 2 integrating sound level meters between Monday, February 25 and Tuesday, February 26, 2019.

Table E shows that the both the daytime and nighttime average noise levels at the nearby multi-family residential uses, south of the project site currently exceed the City's residential noise standards of 60 dBA Leq during the daytime and 55 dBA Leq during the nighttime.

Figure 3 – Field Noise Measurements Graph

6.0 MODELING PARAMETERS AND ASSUMPTIONS

6.1 Construction Noise

The noise impacts from construction of the proposed project have been analyzed through use of the FHWA's Roadway Construction Noise Model (RCNM). The FHWA compiled noise measurement data regarding the noise generating characteristics of several different types of construction equipment used during the Central Artery/Tunnel project in Boston. Table F below provides a list of the construction equipment anticipated to be used for each phase of construction that was calculated through use of the default equipment mixes provided by the CalEEMod model published by Breeze Software under a contract from the South Coast Air Quality Management District for estimating air emissions from land use projects.

Table F – Construction Equipment Noise Emissions and Usage Factors

Equipment Description	Number of Equipment	Acoustical Use Factor[1] (percent)	Spec 721.560 Lmax at 50 feet[2] (dBA, slow[3])	Actual Measured Lmax at 50 feet[4] (dBA, slow[3])
Site Preparation				
Rubber Tired Dozer	3	40	85	82
Tractor, Loader, or Backhoe	4	40	84	N/A
Grading				
Excavator	1	40	85	81
Grader	1	40	85	83
Rubber Tired Dozer	1	40	85	82
Tractor, Loader or Backhoe[5]	3	40	84	N/A
Building Construction				
Crane	1	16	85	81
Forklift (Gradall)	3	40	85	83
Generator	1	50	82	81
Tractor, Loader or Backhoe[5]	3	40	84	N/A
Welder	1	40	73	74
Paving				
Paver	2	50	85	77
Paving Equipment	2	50	85	77
Roller	2	20	85	80
Architectural Coating				
Air Compressor	1	40	80	78

Notes:
[1] Acoustical use factor is the percentage of time each piece of equipment is operational during a typical workday.
[2] Spec 721.560 is the equipment noise level utilized by the RCNM program.
[3] The "slow" response averages sound levels over 1-second increments. A "fast" response averages sound levels over 0.125-second increments.
[4] Actual Measured is the average noise level measured of each piece of equipment during the Central Artery/Tunnel project in Boston, Massachusetts primarily during the 1990s.
[5] For the tractor/loader/backhoe, the tractor noise level was utilized, since it is the loudest of the three types of equipment.
[6] For the cement & mortar mixer, the concrete mixer truck noise level was utilized.
Source: Federal Highway Administration, 2006 and CalEEMod default equipment mix.

Table F also shows the associated measured noise emissions for each piece of equipment from the RCNM model and measured percentage of typical equipment use per day. Construction noise impacts to the nearby sensitive receptors have been calculated according to the equipment noise levels and usage factors listed in Table F and through use of the RCNM. For each phase of construction, the nearest piece

of equipment was placed at the shortest distance of the proposed activity to the nearest sensitive receptor and each subsequent piece of equipment was placed an additional 50 feet away.

6.2 Vibration

Construction activity can result in varying degrees of ground vibration, depending on the equipment used on the site. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Buildings in the vicinity of the construction site respond to these vibrations with varying results ranging from no perceptible effects at the low levels to slight damage at the highest levels. Table G gives approximate vibration levels for particular construction activities. The data in Table G provides a reasonable estimate for a wide range of soil conditions.

Table G – Vibration Source Levels for Construction Equipment

Equipment		Peak Particle Velocity (inches/second)	Approximate Vibration Level (L_v)at 25 feet
Pile driver (impact)	Upper range	1.518	112
	typical	0.644	104
Pile driver (sonic)	Upper range	0.734	105
	typical	0.170	93
Clam shovel drop (slurry wall)		0.202	94
Vibratory Roller		0.210	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, May 2006.

The construction-related vibration impacts have been calculated through the vibration levels shown above in Table G and through typical vibration propagation rates. The equipment assumptions were based on the equipment lists provided above in Table F.

7.0 IMPACT ANALYSIS

7.1 CEQA Thresholds of Significance

Consistent with the California Environmental Quality Act (CEQA) and the State CEQA Guidelines, a significant impact related to noise would occur if a proposed project is determined to result in:

- 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;
- Generation of excessive groundborne vibration or groundborne noise levels; or
- 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.

7.2 Generation of Noise Levels in Excess of Standards

The proposed project would not generate 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. The following section calculates the potential noise emissions associated with the temporary construction activities and long-term operations of the proposed project and compares the noise levels to the City standards.

Construction-Related Noise

The construction activities for the proposed project are anticipated to include site preparation and grading of the 6.19-acre project site, building construction of the sales and service building, paving of the onsite driveways and parking areas, and application of architectural coatings. Noise impacts from construction activities associated with the proposed project would be a function of the noise generated by construction equipment, equipment location, sensitivity of nearby land uses, and the timing and duration of the construction activities. The nearest sensitive receptors to the project site are the multi-family homes located as near as 180 feet to the southwest of the project site. The nearest offsite worker is located at Caliber Collison, that is as near as 265 feet northwest of the project site.

Section 11.80.030(B) of the City's Municipal Code limits all noise sources in the City to the noise levels where a high probability hearing loss would occur as determined by the Center for Disease Control and Prevention and OSHA. The noise levels thresholds are shown above in Table B and include a threshold of 90 dBA for eight hours, which is the typical daily duration of construction activities. Section 11.80.030(D)(7) of the City's Municipal Code provides additional prohibitions on construction activities by restricting construction activities from occurring between the hours of 8:00 p.m. and 7:00 a.m Monday through Friday, between the hours of four p.m. and eight a.m. on Saturday and no work on Sunday.

Construction noise impacts to the nearby sensitive receptors have been calculated through use of the RCNM and the parameters and assumptions detailed in Section 6.1 of this report including Table F – Construction Equipment Noise Emissions and Usage Factors. The results are shown below in Table H and the RCNM printouts are provided in Appendix C.

Table H – Construction Noise Levels at the Nearest Business Structure and Homes

Construction Phase	Construction Noise Level (dBA Leq) at:	
	Nearest Homes[1]	Nearest Offsite Workers[2]
Site Preparation	72	70
Grading	72	70
Building Construction	70	65
Paving	67	64
Painting	60	53
City's Noise Threshold[3]	**90**	**90**
Exceed Thresholds?	**No**	**No**

[1] The nearest homes are located on the south side of Moreno Beach Drive and are as near as 180 feet southwest of the project site.
[2] The nearest offsite workers are located at Caliber Collision that is as near as 265 feet northwest of the project site.
[3] City Noise Threshold obtained from Section 11.80.030(B) of the Municipal Code.
Source: RCNM, Federal Highway Administration, 2006

Table H shows that the greatest noise impacts would occur during the site preparation and grading phases of construction, with a noise level as high as 72 dBA Leq at the nearest homes and as high as 70 dBA at the nearest offsite workers to the project site, which are both within the City's 8-hour noise threshold of 90 dBA. Through adherence to the limitation of allowable construction times provided in Section 11.80.030(D)(7) of the City's Municipal Code, the construction-related noise levels would not exceed any standards. Therefore, impacts would be less than significant.

Operational-Related Noise

The proposed project would consist of the development of a Kia dealership. Potential noise impacts associated with the operations of the proposed project would be from project-generated vehicular traffic on the nearby roadways and from onsite activities, which have been analyzed separately below.

Roadway Vehicular Noise

Vehicle noise is a combination of the noise produced by the engine, exhaust and tires. The level of traffic noise depends on three primary factors (1) the volume of traffic, (2) the speed of traffic, and (3) the number of trucks in the flow of traffic. The proposed project does not propose any uses that would require a substantial number of truck trips and the proposed project would not alter the speed limit on any existing roadway so the proposed project's potential offsite noise impacts have been focused on the noise impacts associated with the change of volume of traffic that would occur with development of the proposed project.

Objective 6.5 of the City's General Plan Noise Element, requires the City to minimize noise impacts from significant noise generators including roadway noise impacts. However neither the General Plan nor the CEQA Guidelines define what constitutes a "substantial permanent increase to ambient noise levels", as such, this impact analysis has utilized guidance from the Federal Transit Administration for a moderate impact that has been detailed above in Table A that shows that the project contribution to the noise environment can range between 0 and 7 dB, which is dependent on the existing noise levels.

The *Trip Generation Analysis for Proposed Kia Dealership,* prepared by EPD Solutions, Inc., March, 2019, found that the proposed project would generate 1,200 daily vehicle trips. According to the *Moreno Valley*

General Plan Final Program EIR, prepared July 2006, show that Moreno Beach Drive in the vicinity of the project site is anticipated to have 40,760[1] daily trips at General Plan buildout.

In order for project-generated vehicular traffic to increase the noise level by 3 dB the roadway traffic would have to double and for the noise levels to increase by 1.5 dB, the roadway traffic would have to increase by 50 percent. Since the proposed project would only result in a maximum of a 2.9 percent increase on Moreno Beach Drive, the project-related roadway noise increases is anticipated to be negligible. Impacts would be less than significant.

Onsite Noise Sources

The operation of the proposed project may create an increase in onsite noise levels from the proposed auto service bays, rooftop mechanical equipment, car wash, and parking lot activities. Section 11.80.030(C) of the City's Municipal Code limits noise levels at the nearby residential properties to 60 dBA between 8:00 a.m. and 10:00 p.m. and 55 dBA between 10:01 p.m. and 7:59 a.m. the following day. Section 11.80.030(C) also limits noise levels at the nearby commercial properties to 65 dBA between 8:00 a.m. and 10:00 p.m. and 60 dBA between 10:01 p.m. and 7:59 a.m. the following day.

Since the proposed project's hours of operation for sales will be seven days a week from 9:00 a.m. to 9:00 p.m. and car service will be Monday through Saturday from 8:00 a.m. to 6:00 p.m., no onsite activities would occur during the 10:01 p.m to 7:59 a.m. time period. As such, only the 8:00 a.m. to 10:00 p.m. noise standards of 60 dBA at the nearest homes and 65 dBA at the nearest commercial properties have been analyzed.

In order to determine the noise impacts from the proposed auto service bays, rooftop mechanical equipment, car wash, and parking lot activities, reference noise measurements were taken of each noise source and are shown in Table I. Table I also shows the anticipated noise level from each source at the nearest off-site receptors. The operational reference noise measurements are shown in Appendix D.

Table I – Operational Noise Levels at the Nearest Homes and Commercial Uses

	Nearest Homes		Nearest Commercial	
Noise Source	Homes to Noise Source Distance (feet)	Noise Level[1] (dBA Leq)	Off-Site Worker to Noise Source (feet)	Noise Level[1] (dBA Leq)
Auto Service Bays[2]	235	37	530	30
Parking Lot[3]	195	31	290	28
Rooftop Equipment[4]	240	39	530	32
Car Wash[5]	250	58	680	49
Combined Noise Levels		58		49
City Noise Standards[6]		**60**		65
Exceed City Noise Standards?		No		No

Notes:
[1] The noise levels were calculated through use of geometric spreading of noise from a point source with a drop-off rate of 6 dB for each doubling of the distance between the source and receiver.
[2] The auto service bays was based on a noise measurement 35 feet from a dealership service bay that produced a noise level of 53.3 dBA Leq
[3] The parking lot was based on a noise measurement 5 feet from a commercial parking lot that produced a noise level of 63.1 dBA Leq

[1] From Alternative 1 – Proposed Circulation Plan for Moreno Beach Drive between Alessandro Boulevard and Cactus Avenue (closest available roadway segment to the project site) of the Moreno Valley General Plan Final Program EIR, July 2006

[4] The rooftop equipment was based on a noise measurement 10 feet from an operational rooftop HVAC unit that measured 66.6 dBA Leq.
[5] The car wash was based on a noise measurement 30 feet from a car wash that produced a noise level of 76.2 dBA Leq.
[6] The City noise standards are from Table 11.80.030-2 of the Municipal Code and are based on the 8:00 am to 10:00 pm noise standards.

Table I shows that the combined sources noise level would be 58 dBA at the homes located southwest of the project site on the south side of Moreno Beach Drive, which would be within the City's daytime noise standard of 60 dBA Leq. Table I also shows that the combined sources noise level would be 49 dBA Leq at the nearest commercial uses that are located northwest of the project site, which would be within the City's commercial daytime noise standard of 65 dBA Leq. Through adherence to the proposed project's hours of operation for sales will be seven days a week from 9:00 a.m. to 9:00 p.m. and car service will be Monday through Saturday from 8:00 a.m. to 6:00 p.m., the operational onsite noise sources would not exceed the City's noise standards. Therefore, impacts would be less than significant.

Level of Significance after Mitigation

Less than significant impact.

7.3 Generation of Excessive Groundborne Vibration

The proposed project would not expose persons to or generation of excessive groundborne vibration or groundborne noise levels. The following section analyzes the potential vibration impacts associated with the construction and operations of the proposed project.

Construction-Related Vibration Impacts

The construction activities for the proposed project are anticipated to include site preparation and grading of the 6.19-acre project site, building construction of the sales and service building, paving of the onsite driveways and parking areas, and application of architectural coatings. Vibration impacts from construction activities associated with the proposed project would typically be created from the operation of heavy off-road equipment. The nearest sensitive receptors to the project site are the multi-family homes located as near as 180 feet to the southwest of the project site. The nearest offsite worker is located at Caliber Collison, that is as near as 265 feet northwest of the project site.

Section 9.10.170 of the City's Municipal Code prohibits any vibration which can be felt at or beyond the property line. Since the City's Municipal does not provide a quantifiable vibration level, Caltrans guidance that is detailed above in Section 4.2 has been utilized, which defines the threshold of perception from transient sources at 0.25 inch per second PPV.

The primary source of vibration during construction would be from the operation of a bulldozer. From Table G above a large bulldozer would create a vibration level of 0.089 inch per second PPV at 25 feet.

Based on typical propagation rates, the vibration level at the nearest offsite receptor (180 feet away) would be 0.006 inch per second PPV. The vibration level at the nearest offsite receptor would be within the 0.25 inch per second PPV threshold detailed above. Impacts would be less than significant.

Operations-Related Vibration Impacts

The proposed project would consist of the development of a Kia dealership. The on-going operation of the proposed project would not include the operation of any known vibration sources. Therefore, a less than significant vibration impact is anticipated from the operation of the proposed project.

Level of Significance

Less than significant impact.

7.4 Aircraft Noise

The proposed project would not expose people residing or working in the project area to excessive noise levels from aircraft. The nearest airport is March Air Reserve Base that is located approximately 5.3 miles southwest of the project site. The project site is located outside of the 60 dBA CNEL noise contours of the March Air Reserve Base. No impact would occur from aircraft noise.

Level of Significance

No impact.

8.0 REFERENCES

Breeze Software, *California Emissions Estimator Model* (CalEEMod) version 2016.3.2.

California Department of Transportation, *2016 Annual Average Daily Truck Traffic on the California State Highway System*, 2018.

California Department of Transportation (Caltrans), *Technical Noise Supplement to the Traffic Noise Analytics Protocol*, September 2013.

California Department of Transportation, *Transportation- and Construction-Induced Vibration Guidance Manual*, September 2013.

City of Moreno Valley, *City of Moreno Valley General Plan*, July 11, 2006.

City of Moreno Valley, *Moreno Valley General Plan Final Program EIR,* July 2006.

City of Moreno Valley, *City of Moreno Valley Municipal Code*, May 2014.

EPD Solutions, Inc., *Trip Generation Analysis for Proposed Kia Dealership,* March, 2019.

Federal Transit Administration, *Transit Noise and Vibration Impact Assessment,* May 2006.

U.S. Department of Transportation, *FHWA Roadway Construction Noise Model User's Guide,* January, 2006.

APPENDIX A

Field Noise Measurements Photo Index

APPENDIX B

Field Noise Measurements Printouts

APPENDIX C

RCNM Model Construction Noise Calculations

APPENDIX D

Reference Noise Measurements Printouts

APPENDIX J: TRIP GENERATION ANALYSIS

ENVIRONMENT | PLANNING | DEVELOPMENT SOLUTIONS, INC.

To: Eric Lewis, PE, TE, City Traffic Engineer, City of Moreno Valley
From: Meghan Macias, TE
CC:
Date: 4/5/2019
Re: Trip Generation Analysis for Proposed Kia Dealership

This technical memorandum presents an analysis of the trip generation for the proposed Kia Dealership located at the eastern corner of Moreno Beach Drive/Auto Mall Drive, in the North East part of the City of Moreno Valley. The project proposes the construction of a 23,858 square foot, two-story building for the proposed Kia Dealership on a 6.35-acre lot, with a 17,653 square foot future expansion planned (inclusive of a proposed 856 square foot car wash). The project site plan is shown in Figure 1. The project site is currently vacant.

The project trip generation was prepared using trip rates from the Institute of Transportation Engineers (ITE) *Trip Generation*, 10th Edition (2017). Table 1 presents the trip generation estimate for the proposed project. The project was analyzed utilizing both square feet and service bays to find the worst-case scenario.

As shown in Table 1, the project is forecast to generate 1156 daily trips including 78 trips during the AM peak hour and 96 trips during the PM peak hour. According to Exhibit A of the City of Moreno Valley *Traffic Impact Analysis Preparation Guide*, projects that generate fewer than 100 vehicle trips during the peak hours are generally exempt from the requirement to prepare a traffic impact analysis. The worst-case peak hour trip generation of the project is 96 PM peak hour trips, fewer than 100 peak hour, trips and would therefore be exempt from the requirement to prepare a TIA.

If you have any questions about this analysis, please contact me at (949) 794-1186 or at meghan@epdsolutions.com.

Table 1. Project Trip Generation

Land Use	Units		Daily	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Trip Rates									
Automobile Sales[1]		TSF	27.840	1.365	0.505	1.870	0.928	1.392	2.320
Automobile Sales[1]		Bays	-[2]	1.320	0.711	2.030	1.017	1.243	2.260
Project Trip Generation									
Square Feet[3]	41.511	TSF	1156	57	21	78	39	58	96
Service Bays	25	Bays	-[2]	33	18	51	25	31	57

TSF = Thousand Square Feet

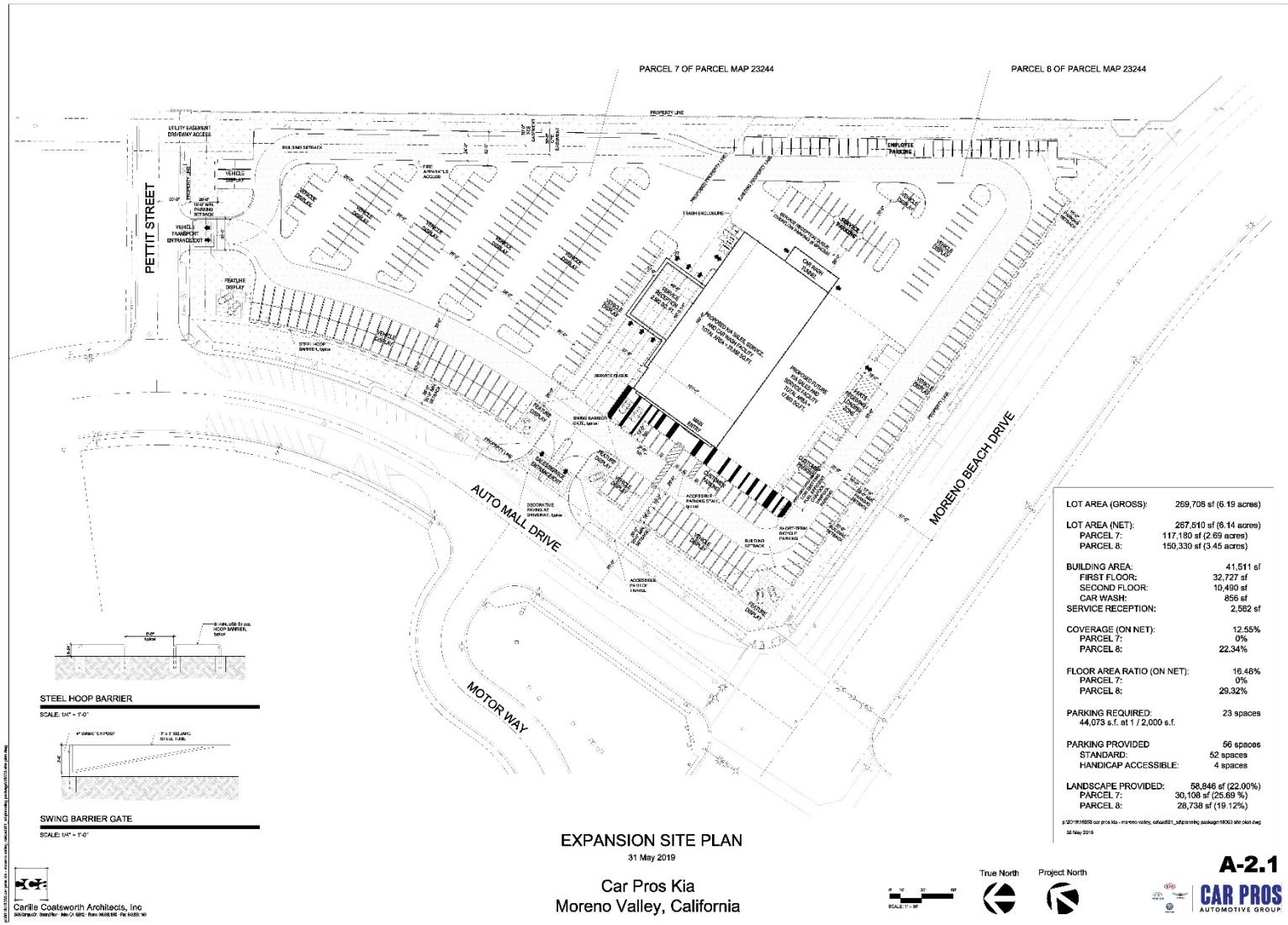
[1] Trip rates from the Institute of Transportation Engineers, *Trip Generation, 10th Edition,* 2017. Land Use Code 840 - Automobile Sales. PM peak hour trip rate determined using fitted curve equation.

[2] No Daily Trip Rate is provided based on service bays.

[3] Square footage was calculated based on City of Moreno Valley Municipal Code Chapter 9.15, Definitions, for Floor Area (Gross).

Note' Highlight indicates worst case trip generation.

Figure 1: Project Site Plan



6 MITIGATION MONITORING AND REPORTING PROGRAM

6.1 INTRODUCTION

The California Environmental Quality Act (CEQA) requires a lead or public agency that approves or carries out a project for which a Mitigated Negative Declaration has been certified which identifies one or more significant adverse environmental effects and where findings with respect to changes or alterations in the project have been made, to adopt a "…reporting or monitoring program for the changes to the project which it has adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment" (CEQA, Public Resources Code Sections 21081, 21081.6).

A Mitigation Monitoring and Reporting Program (MMRP) is required to ensure that adopted mitigation measures are successfully implemented for the Car Pros Kia Dealership (project). The City of Moreno Valley is the Lead Agency for the project and is responsible for implementation of the MMRP. This MMRP identifies the parties that will be responsible for monitoring implementation of the individual mitigation measures.

6.2 MITIGATION MONTORING AND REPORTING PROGRAM

The mitigation monitoring and reporting program has been prepared in compliance with Public Resource Code Section 21081.6. It describes the requirements and procedures to be followed by the City to ensure that all mitigation measures adopted as part of the proposed Project would be carried out as described in the IS/MND. This MMRP for the project will be active through all phases of the project, including design, construction, and operation.

Table 1 identifies project specific mitigation measures required by the City to mitigate or avoid significant adverse impacts associated with the implementation of the project, the timing of implementation, and the responsible party or parties for monitoring compliance. This MMRP also includes a column that will be used by the compliance monitor (individual responsible for monitoring compliance) to document when implementation of the measure is completed.

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TABLE 6-1
MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure Number	Measure	Timing	Responsibility for Oversight of Compliance/ Verification	Completion
BIO-1	**Pre-construction Burrowing Owl Survey.** Preconstruction burrowing owl (BUOW) surveys shall be complete a maximum of 30 days prior to the start of construction. A total of 4 focused BUOW preconstruction surveys shall be conducted on separate days, preferably during the BUOW breeding season (March 1 through August 31) (not including the initial habitat assessment and burrow survey). The survey area shall include the project site and the 150-meter survey area surrounding the project site pursuant to the Western Riverside County Regional Conservation Authority Burrowing Owl Survey Instructions for the Plan Area (2006). If burrowing owls are observed during take avoidance surveys or incidentally during construction, the City of Moreno Valley Planning Division shall be notified, and avoidance measures implemented during the breeding season (March 1 through August 31). If burrowing owls are present during the non-breeding season (September 1 through February 28), burrowing owl exclusion measures may be implemented in accordance with the MSHCP.	Prior to ground disturbing activities; Prior to the issuance of a grading permit.	Planning Department	
BIO-2	**Nesting Birds Survey.** To the extent feasible, the project shall conduct vegetation removal outside of the nesting bird season (generally between February 15 and August 31). If vegetation removal is required during the nesting bird season, a nesting bird survey should be conducted for areas within 100-feet of the vegetation removal. Surveys shall be conducted by a qualified biologist(s) within three days of vegetation removal. If active nests are observed, a qualified biologist shall determine appropriate minimum disturbance buffers or other adaptive mitigation techniques (e.g., biological monitoring of active nests during construction-related activities, staggered schedules, etc.) to ensure that impacts to nesting birds are avoided until the nest is no longer active.	Within three days of vegetation removal during nesting bird season (Feb.15 and Aug. 31)	Planning Department	
CR-1	Prior to the issuance of a grading permit, the Developer shall retain a professional archaeologist meeting Secretary of Interior's Professional Qualifications for Archaeology as defined at 36 CFR Part 61, Appendix A	Prior to the issuance of a grading permit.	Planning Department	

TABLE 6-1
MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure Number	Measure	Timing	Responsibility for Oversight of Compliance/ Verification	Completion
	stating that the archaeologist has been retained to provide on-call services in the event archaeological resources are discovered. 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 Consulting Tribe(s), 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 AB 52 (Soboba Band of Luiseno Indians and Rincon Band of Luiseno Indians). Details in the Plan shall include: a. Project grading and development scheduling; b. The Project archeologist and the Consulting Tribes(s) as defined in CR-1 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			

TABLE 6-1
MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure Number	Measure	Timing	Responsibility for Oversight of Compliance/ Verification	Completion
	Project archaeologist and Consulting Tribe(s) shall make themselves available to provide 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.			
CR-2	Prior to the issuance of a grading permit, the Applicant shall secure agreements with the Soboba Band of Luiseno Indians for tribal monitoring. The Applicant 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.	Planning Department	
CR-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	Prior to the issuance of a grading permit; Ongoing during rough grading and trenching.	Planning Department	

TABLE 6-1
MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure Number	Measure	Timing	Responsibility for Oversight of Compliance/ Verification	Completion
	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 CR-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 CR-1. The location for the future reburial area shall be identified on a confidential exhibit on file with the City and concurred to by the Consulting Native American Tribal Governments prior to certification of the environmental document.			
CR-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; Note on plans.	Planning Department	
CR-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	Prior to issuance of grading permit; Note on plans.	Planning Department	

TABLE 6-1
MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure Number	Measure	Timing	Responsibility for Oversight of Compliance/ Verification	Completion
	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 CR-1 before any further work commences in the affected area.			
CR-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 24 hours 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).	Prior to issuance of grading permit; Note on plans.	Planning Department	
GEO-1	**Paleontological Resources.** Prior to the issuance of the first grading permit, the applicant shall provide a letter to the City of Moreno Valley Building and Safety Division, or designee, from a paleontologist selected from the roll of qualified paleontologists maintained by Riverside County, stating that the paleontologist has been retained to provide services for the project. The paleontologist shall develop a Paleontological Resources Impact Mitigation Plan (PRIMP) to mitigate the potential impacts to unknown buried paleontological resources that may exist onsite for the review and approval by the City. The PRIMP shall require that the paleontologist be present at the pre-grading conference to establish procedures for paleontological resource surveillance. The PRIMP shall require paleontological monitoring of excavation that exceeds depths of four feet. The PRIMP shall state that the project paleontologist may re-evaluate the necessity for paleontological monitoring after 50 percent or greater of the excavations deeper than four feet have been completed.	Prior to issuance of grading permit.	Planning Department	

TABLE 6-1
MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure Number	Measure	Timing	Responsibility for Oversight of Compliance/ Verification	Completion
	In the event that paleontological resources are encountered, ground-disturbing activity within 100 feet of the area of the discovery shall cease. The paleontologist shall examine the materials encountered, assess the nature and extent of the find, and recommend a course of action to further investigate and protect or recover and salvage those resources that have been encountered. Criteria for discard of specific fossil specimens will be made explicit. If a qualified paleontologist determines that impacts to a sample containing significant paleontological resources cannot be avoided by project planning, then recovery may be applied. Actions may include recovering a sample of the fossiliferous material prior to construction, monitoring work and halting construction if an important fossil needs to be recovered, and/or cleaning, identifying, and cataloging specimens for curation and research purposes. Recovery, salvage and treatment shall be done at the applicant's expense. All recovered and salvaged resources shall be prepared to the point of identification and permanent preservation by the paleontologist. Resources shall be identified and curated into an established accredited professional repository. The paleontologist shall have a repository agreement in hand prior to initiating recovery of the resource.			

PLANNING COMMISSION RESOLUTION NO. 2019-31

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF MORENO VALLEY APPROVING APPLICATION NO. PEN19-0047, A PLOT PLAN FOR DEVELOPMENT OF A 41,511 SQUARE FOOT KIA SALES AND SERVICE FACILITY ON 6.14 ACRES LOCATED AT THE NORTHEAST CORNER OF MORENO BEACH DRIVE AND AUTO MALL DRIVE, ASSESSOR PARCEL NUMBERS 488-390-015 and 488-309-016

WHEREAS, MV Holdings, LLC, filed Application No. PEN19-0047 requesting approval of a Plot Plan for the development, of a Car Pros Kia Dealership, totaling 41,511 square foot on 2-vacant parcels totaling 6.14 acres to be constructed and operated in two phases, as described in the title of this Resolution; and

WHEREAS, the application has been evaluated in accordance with established City of Moreno Valley (City) procedures, and with consideration of the General Plan, Moreno Valley Auto Mall Specific Plan (SP209) and other applicable regulations; and

WHEREAS, the City has reviewed this project and determined that it is consistent with the site's General Plan Commercial designation, all applicable General Plan policies, and the Moreno Valley Auto Mall Specific Plan No. 209, Planning Area C, zoning district; and

WHEREAS, an Initial Study and Mitigated Negative Declaration have been prepared for the consistent with the California Environmental Quality Act (CEQA). Based on a thorough analysis of potential environmental impacts, the Mitigated Negative Declaration represents the City's independent judgment and analysis; and

WHEREAS, the project was appropriately agenized and noticed for a public hearing before the Planning Commission of the City of Moreno Valley (Planning Commission); and

WHEREAS, the public hearing notice for this project was published in the local newspaper on June 21, 2019, public notice was sent to all property owners of record within 300 feet of the project site on June 20, 2019, and the public hearing notice for this project was also posted on the project site on June 29, 2019;

WHEREAS, on July 11, 2019, the Planning Commission of the City of Moreno Valley held a public hearing to consider the subject applications and all of the environmental documentation prepared for the project; and

WHEREAS, all legal prerequisites to the adoption of this Resolution have occurred; and

WHEREAS, pursuant to Government Code Section 66020(d)(1), **NOTICE IS HEREBY GIVEN** that this project is subject to certain fees, dedications, reservations and other exactions as provided herein.

NOW, THEREFORE, the Planning Commission of the City of Moreno Valley, California, does hereby find, determine, and resolve as follows:

A. This Planning Commission hereby specifically finds that all of the facts set forth above in this Resolution are true and correct.

B. Based upon substantial evidence presented to this Planning Commission during the above-referenced meeting on July 11, 2019, including written and oral staff reports, public testimony and the record from the public hearing, this Planning Commission hereby specifically finds as follows:

1. **Conformance with General Plan Policies –** The proposed project is consistent with the General Plan, and its goals, objectives, policies and programs.

   FACT: The Proposed project is for the development of a new automotive dealership on 6.14 acres including the construction of a 41,511 square foot sales and service building. The project site has a General Plan Land Use designation of Commercial (C). The proposed land use is consistent with General Plan Policy 2.4.1 which states that 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 project is located within Specific Plan 209 (SP 209, Planning Area C), which encourages automotive sales and service facilities, consistent with the sites General Plan Land Use designation. The proposed project is consistent with the permitted uses and development standards of the Specific Plan and is therefore consistent with the goals, objectives, policies, and programs of the General Plan, and the adopted Specific Plan.

2. **Conformance with Zoning Regulations –** The proposed project complies with all applicable zoning and other regulations.

   FACT: The proposed Plot Plan includes development of a 41,511 square foot Kia sales and service facility and associated improvements on 6.14 acres of land located at the northeast corner of Moreno Beach Drive and Auto Mall Drive. The site is located in Specific Plan 209 (SP 209, Planning Area C), and as such is subject to the development standards of the Community Commercial District (CC) zone of the Moreno Valley Municipal Code.

   The proposed project complies with the minimum development standards for the Community Commercial (CC) zone of the City Municipal Code.

Parking and on-site circulation have been designed to meet or exceed the parking, pedestrian and loading requirements in Chapter 9.11 of the City Municipal Code and is consistent with the purposes and intent of Title 9 of the Municipal Code.

3. **Health, Safety and Welfare –** The proposed project will not be detrimental to the public health, safety or welfare or materially injurious to properties or improvements in the vicinity.

FACT: The proposed Plot Plan as designed and conditioned will provide acceptable levels of protection from natural and man-made hazards to life, health, and property consistent with General Plan Goal 9.6.1. The project is located in close proximity to Fire protection with two stations within less than two miles of the site. Fire station 58 is located 0.2 miles from the project site, at 28040 Eucalyptus Avenue. Fire Station 99 is 1.4 miles from the project site, at 13400 Morrison Street. Police Services are available through the City Police Station at 22850 Calle San Juan De Los Lagos, which is approximately 5.2 miles from the site. Therefore, adequate emergency services can be provided to the site consistent with General Plan Goals 9.6.1.

The proposed project as designed and conditioned will result in a development that will minimize the potential for loss of life and protect workers, and visitors to the City from physical injury and property damage due to seismic ground shaking and flooding as provided for in General Plan Objective 6.1 and General Plan Objective 6.2.

The project is consistent with the City General Plan, Specific Plan 209, and Moreno valley Municipal Code which are intended to protect the public health, safety and welfare, therefore the proposed project will not be detrimental to the public health, safety or welfare or material injurious to properties or improvements in the vicinity.

4. **Redevelopment Plan -** The project conforms with any applicable provisions of any city redevelopment plan.

FACT: In January 2011, the Governor of the State of California proposed statewide elimination of redevelopment agencies. State legislation was passed on June 29, 2011 prohibiting redevelopment agencies from engaging in new business and established timelines for dissolution of redevelopment agencies. For these reasons, the finding is no longer applicable. Even if redevelopment was still in place, the site is not within the boundaries of the City redevelopment plan.

5. **Location, Design and Operation –** The location, design and operation of the proposed project will be compatible with existing and planned land uses in the vicinity.

FACT: The proposed project is located in Specific Plan 209 (SP209, Planning Area C). The proposed automotive service and sales facility is a permitted use within the Specific Plan. Furthermore, the proposed use is consistent with existing automotive sale and service facilities located to the north of the site. Additionally, the design and operations of the facility have been conditioned to ensure the proposed use will be compatible with existing multiple-family residential development located on the west side of Moreno Beach Drive.

The project has been designed to comply with Specific Plan 209 and the development standards and design guidelines of the Moreno Valley Municipal Code. The project as designed and conditioned is compatible with existing and proposed land uses in the vicinity.

C. FEES, DEDICATIONS, RESERVATIONS, AND OTHER EXACTIONS

1. FEES

Impact, mitigation and other fees are due and payable under currently applicable ordinances and resolutions. These fees may include but are not limited to: Development Impact Fee, Transportation Uniform Mitigation Fee (TUMF), Multi-species Habitat Conservation Plan (MSHCP) Mitigation Fee, Stephens Kangaroo Habitat Conservation fee, Underground Utilities in lieu Fee, Area Drainage Plan fee, Bridge and Thoroughfare Mitigation fee (Future) and Traffic Signal Mitigation fee. The final amount of fees payable is dependent upon information provided by the applicant and will be determined at the time the fees become due and payable.

Unless otherwise provided for by this Resolution, all impact fees shall be calculated and collected at the time and in the manner provided in Chapter 3.32 of the City of Moreno Valley Municipal Code or as so provided in the applicable ordinances and resolutions. The City expressly reserves the right to amend the fees and the fee calculations consistent with applicable law.

2. DEDICATIONS, RESERVATIONS, AND OTHER EXACTIONS

The adopted Conditions of Approval for PEN19-0047, incorporated herein by reference, may include dedications, reservations, and exactions pursuant to Government Code Section 66020 (d) (1).

3. CITY RIGHT TO MODIFY/ADJUST; PROTEST LIMITATIONS

The City expressly reserves the right to establish, modify or adjust any fee, dedication, reservation or other exaction to the extent permitted and as authorized by law.

Pursuant to Government Code Section 66020(d)(1), NOTICE IS FURTHER GIVEN that the 90-day period to protest the imposition of any impact fee, dedication, reservation, or other exaction described in this Resolution begins on the effective date of this Resolution and any such protest must be in a manner that complies with Section 66020(a) and failure to timely follow this procedure will bar any subsequent legal action to attack, review, set aside, void or annul imposition.

The right to protest the fees, dedications, reservations, or other exactions does not apply to planning, zoning, grading, or other similar application processing fees or service fees in connection with this project and it does not apply to any fees, dedication, reservations, or other exactions of which a notice has been given similar to this, nor does it revive challenges to any fees for which the applicable statute of limitations has previously expired.

BE IT FURTHER RESOLVED that the Planning Commission **HEREBY APPROVES** Resolution No. 2019-31, and thereby:

1. **APPROVES** PEN19-0047, Plot Plan, based on the findings contained in this resolution and subject to conditions of approval attached as Exhibit A.

APPROVED this 11th day of July, 2019.

AYES:
NOES:
ABSTAIN:

_____
Jeffrey Sims
Chairperson, Planning Commission

ATTEST:

_____
Patty Nevins, Planning Official
Secretary to the Planning Commission

APPROVED AS TO FORM:

_____
City Attorney

Attachment:
Exhibit A: Conditions of Approval

CITY OF MORENO VALLEY
CONDITIONS OF APPROVAL
Plot Plan (PEN19-0047)

EFFECTIVE DATE:
EXPIRATION DATE:

COMMUNITY DEVELOPMENT DEPARTMENT

Planning Division

1. 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)

2. 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)

3. This project is located within Specific Plan 209 (SP 209 Planning Area C). The provisions of the specific plan, the design manual, their subsequent amendments, and the Conditions of Approval shall prevail unless modified herein. (MC 9.13)

4. 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.

5. 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)

6. 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.

7. 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)

8. The developer, or the developer's successor-in-interest, shall be responsible for maintaining any undeveloped portion of the site in a manner that provides for the control of weeds, erosion and dust. (MC 9.02.030)

9. All landscaped areas shall be maintained in a healthy and thriving condition, free from weeds, trash and debris. (MC 9.02.030)

Special Conditions

10. All site plans, grading plans, landscape and irrigation plans, and street improvement plans shall be coordinated for consistency with this approval.

11. The site has been approved for a Car Pros Kia dealership and services center. The approval includes Plot Plan approval for a 41,511 square foot sales and service facility to be constructed in two phases. Phase 1 includes construction of a 23,858 square foot two story sales facility, 13-bay service center, display parking and car wash. Phase 2 includes a 17,653 square foot expansion of the facility including the addition of 10 service bays, per the approved plans on file with the Planning Division. A change or modification shall require separate approval.

12. Prior to Issuance of grading or building permits for Phase 2 development, the applicant shall obtain approval of an Administrative Plot Plan for the actual final floor plan and elevations.

13. No external public address system shall be use in association with the Sales and Service Facility.

14. The dealership parking and display lots lighting shall be maintained in good repair and shall comply with the Municipal Code lighting standards.

15. To reduce single event noise impacts to below the level of 55 dBA beyond the boundaries of the property, delivery operations shall be limited to between the hours of 7:00 am and 8:00 pm. Loading or unloading activities shall be conducted from the designated loading area; at no time shall unloading of vehicles take place in the Public Right of Way. (MC 9.10.140,)

16. 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).

17. The owner or owner's representative shall establish and maintain a relationship with the City of Moreno Valley and cooperate with the Problem Oriented Policing (POP) program, or its successors.

18. The Police Chief may require the business owner to provide future security within the dealership parking or display lot to address issues that arise from the operation of the business.

Prior to Grading Permit

19. Prior to issuance of any grading permit, all Conditions of Approval, and Mitigation Measures shall be printed on the grading plans.

20. 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)

21. BIO-1 Pre-construction Burrowing Owl Survey. Preconstruction burrowing owl (BUOW) surveys shall be complete a maximum of 30 days prior to the start of construction. A total of 4

focused BUOW preconstruction surveys shall be conducted on separate days, preferably during the BUOW breeding season (March 1 through August 31) (not including the initial habitat assessment and burrow survey). The survey area shall include the project site and the 150-meter survey area surrounding the project site pursuant to the Western Riverside County Regional Conservation Authority Burrowing Owl Survey Instructions for the Plan Area (2006).

If burrowing owls are observed during take avoidance surveys or incidentally during construction, the City of Moreno Valley Planning Division shall be notified, and avoidance measures implemented during the breeding season (March 1 through August 31). If burrowing owls are present during the non-breeding season (September 1 through February 28), burrowing owl exclusion measures may be implemented in accordance with the MSHCP.

22. BIO-2 Nesting Birds Survey. To the extent feasible, the project shall conduct vegetation removal outside of the nesting bird season (generally between February 15 and August 31). If vegetation removal is required during the nesting bird season, a nesting bird survey should be conducted for areas within 100-feet of the vegetation removal. Surveys shall be conducted by a qualified biologist(s) within three days of vegetation removal. If active nests are observed, a qualified biologist shall determine appropriate minimum disturbance buffers or other adaptive mitigation techniques (e.g., biological monitoring of active nests during construction-related activities, staggered schedules, etc.) to ensure that impacts to nesting birds are avoided until the nest is no longer active.

23. CR-1 Prior to the issuance of a grading permit, the Developer shall retain a professional archaeologist meeting Secretary of Interior's Professional Qualifications for Archaeology as defined at 36 CFR Part 61, Appendix A stating that the archaeologist has been retained to provide on -call services in the event archaeological resources are discovered. 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 Consulting Tribe(s), the contractor, and the City, shall develop a Cultural Resources Management Plan (CRMP) pursuant to the provisions of 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 California Public Resources Code Section 21080.3.2(b)(1) of AB 52 (Soboba Band of Luiseno Indians and Rincon Band of Luiseno Indians). Details in the Plan shall include:

a. Project grading and development scheduling;

b. The Project archeologist and the Consulting Tribes(s) as defined in CR-1 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 Consulting Tribe(s) shall make themselves available to provide 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.

24. CR-2 Prior to the issuance of a grading permit, the Applicant shall secure agreements with the Soboba Band of Luiseno Indians for tribal monitoring. The Applicant 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.

25. CR-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.

ii. Onsite reburial of the discovered items as detailed in the treatment plan required pursuant to Mitigation Measure CR-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 CR-1. The location for the future reburial area shall be identified on a confidential exhibit on file with the City and concurred to by the Consulting Native American Tribal Governments prior to certification of the environmental document.

26. CR-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."

27. CR-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 CR-1 before any further work commences in the affected area.

28. CR-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 24 hours 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).

29. GEO-1 Paleontological Resources. Prior to the issuance of the first grading permit, the applicant shall provide a letter to the City of Moreno Valley Building and Safety Division, or designee, from a paleontologist selected from the roll of qualified paleontologists maintained by Riverside County, stating that the paleontologist has been retained to provide services for the project. The paleontologist shall develop a Paleontological Resources Impact Mitigation Plan (PRIMP) to mitigate the potential impacts to unknown buried paleontological resources that may exist onsite for the review and approval by the City. The PRIMP shall require that the paleontologist be present at the pre-grading conference to establish procedures for paleontological resource surveillance. The PRIMP shall require paleontological monitoring of excavation that exceeds depths of four feet. The PRIMP shall state that the project paleontologist may re-evaluate the necessity for paleontological monitoring after 50 percent or greater of the excavations deeper than four feet have been completed.

    In the event that paleontological resources are encountered, ground -disturbing activity within 100 feet of the area of the discovery shall cease. The paleontologist shall examine the materials encountered, assess the nature and extent of the find, and recommend a course of action to further investigate and protect or recover and salvage those resources that have been encountered.

    Criteria for discard of specific fossil specimens will be made explicit. If a qualified paleontologist determines that impacts to a sample containing significant paleontological resources cannot be avoided by project planning, then recovery may be applied. Actions may include recovering a sample of the fossiliferous material prior to construction, monitoring work and halting construction if an important fossil needs to be recovered, and/or cleaning, identifying, and cataloging specimens for curation and research purposes. Recovery, salvage and treatment shall be done at the applicant’s expense. All recovered and salvaged resources shall be prepared to the point of identification and permanent preservation by the paleontologist. Resources shall be identified and curated into an established accredited professional repository. The paleontologist shall have a repository agreement in hand prior to initiating recovery of the resource.

30. Prior to issuance of grading permits, the developer shall pay the applicable Stephens’ Kangaroo Rat (SKR) Habitat Conservation Plan mitigation fee. (Ord)

31. Prior to the issuance of grading permits, the site plan and grading plans shall show decorative hardscape (e.g. colored concrete, stamped concrete, pavers or as approved by the Planning Official) consistent and compatible with the design, color and materials of the proposed development for all driveway ingress /egress locations of the project.

32. Prior to issuance of grading permits, the developer shall submit wall/fence plans to the Planning Division for review and approval as follows:

    a. A maximum 6 foot high solid decorative block perimeter wall with pilasters and a cap shall be required adjacent to all residential zoned areas.

    b. Any proposed retaining walls shall also be decorative in nature, while the combination of retaining and other walls on top shall not exceed the height requirement in the Municipal Code.

    c. Walls and fences for visual screening are required when there are adjacent residential uses or residentially zone property. The height, placement and design will be based on a site specific review of the project. All walls are subject to the approval of the Planning Official. (DC 9.08.070).

33. Prior to the issuance of grading permits, a temporary project identification sign shall be erected on the site in a secure and visible manner. The sign shall be conspicuously posted at the site and remain in place until occupancy of the project. The sign shall include the following:

    a. The name (if applicable) and address of the development.

    b. The developer's name, address, and a 24-hour emergency telephone number.

34. Prior to issuance of grading permits, the location of the trash enclosure shall be included on the plans.

Prior to Building Permit

35. Prior to issuance of any building permit, all Conditions of Approval shall be printed on the building plans.

36. 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)

37. 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)

38. 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.

39. Prior to approval of any building permits, plans for any security gate system shall be submitted to and approved by to the Planning Division.

40. Prior to issuance of any building permits, final landscaping and irrigation plans shall be submitted for review and approved by the Planning Division. 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. (or No sod shall be installed)

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. Landscaping on three sides of any trash enclosure.

i. All site perimeter and parking lot landscape and irrigation shall be installed prior to the release of certificate of any occupancy permits for the site or pad in question (master plot plan). [only include items above that apply to the project]

41. Prior to or at building plan check submittal, two copies of a detailed, on -site, computer generated, point-by-point comparison lighting plan, including exterior building, parking lot, and landscaping lighting, shall be submitted to the Planning Division for review and approval prior to the issuance of a building permit. 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)

42. Prior to issuance of building permits, proposed covered trash enclosure (s) shall be included in the Planning review of the Fence and Wall plans. The trash enclosure (s), including the roof materials, shall be compatible with the architecture, color and materials of the building(s) design. Trash enclosure areas shall include landscaping on three sides unless located within the truck loading area. Approved design plans shall be included in a Building submittal (Fence and walls or building design plans). (GP Objective 43.6, DG)

43. 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)

44. 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

45. 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).

46. Prior to building final, Planning approved/stamped landscape plans shall be provided to the Community Development Department – Planning Division on a CD disk.

47. Prior to building final, all required and proposed fences and walls shall be constructed according to the approved plans on file in the Planning Division. (MC 9.080.070).

COMMUNITY DEVELOPMENT DEPARTMENT

Building Division

48. 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.

49. 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.

50. Contact the Building Safety Division for permit application submittal requirements.

51. 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 2016 California Green Building Standards Code, sections 5.410.2 - 5.410.2.6 must be met.

52. Any construction within the city shall only be completed between the hours of seven a.m. to seven p.m. Monday through Friday, excluding holidays and from eight a.m. to four p.m. on Saturday, unless written approval is obtained from the city building official or city engineer (Municipal Code Section 8.14.040.E).

53. Building plans submitted shall be signed and sealed by a California licensed design professional as required by the State Business and Professions Code.

54. The proposed development is subject to the payment of applicable processing fees as required by the City's current Fee Ordinance at the time a building permit application is submitted or prior to the issuance of permits as determined by the City.

55. 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.

56. 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. The current code edition is the 2016 CBC.

57. The proposed non-residential project shall comply with 2016 California Green Building

Standards Code, Section 5.106.5.3, mandatory requirements for Electric Vehicle Charging Station (EVCS).

58. 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 2016 California Plumbing Code, Table 422.1. The occupant load and occupancy classification shall be determined in accordance with the California Building Code.

59. 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)

FIRE DEPARTMENT

Fire Prevention Bureau

60. 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)

61. 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)

62. 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])

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. The Fire Code Official is authorized to enforce the fire safety during construction requirements of Chapter 33. (CFC Chapter 33 & CBC Chapter 33)

65. 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])

66. 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])

67. 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)

68. 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)

69. 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 B 105.1. The applicant/developer shall provide documentation to show there exists a water system capable of delivering 1,750 GPM 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)

70. 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

71. 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.

72. 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 /or 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, 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 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.

73. 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.

74. This project is subject to a Reimbursement Agreement. The Developer is responsible for a proportionate share of costs associated with electrical distribution infrastructure previously installed that directly benefits the project.

PUBLIC WORKS DEPARTMENT

Land Development

75. 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]

76. The final approved conditions of approval (COAs) and any applicable Mitigation Measures issued by the Planning Division shall be photographically or electronically placed on mylar sheets and included in the Grading and Street Improvement plans.

77. 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.

78. 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.

79. 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]

80. 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.

81. The proposed private storm drain system shall connect to the existing Riverside County Flood Control and Water Conservation District (RCFC&WCD) Moreno Area Drainage Plan Line "G" located within Pettit Street. A storm drain manhole shall be placed at the right-of- way line to mark the beginning of the publicly maintained portion of this storm drain. The minimum storm drain size within the public right of way shall be 24 inches.

82. 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. Final drainage study (prior to rough grading plan approval);

    d. Final WQMP (prior to rough grading plan approval);

    e. Dedication at proposed driveway locations (prior to rough grading plan approval;

    f. As-Built revision for all plans (prior to Occupancy release);

83. 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.

<u>Prior to Grading Plan Approval</u>

84. Resolution of all drainage issues shall be as approved by the City Engineer.

85. 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.

86. 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 device, spillways, etc.

87. 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.

88. 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 (revised May 11, 2018). 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 three (3) modular wetland systems. 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 will be mitigated by limiting the discharge from the site to a flow rate no greater than 110% of the pre-development 2-year peak flow.

    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.

89. 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.

90. 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.

91. 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.

92. The developer shall pay all remaining plan check fees.

93. 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.

94. 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

95. 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)]

96. For non-subdivision projects, a copy of the Covenants, Conditions and Restrictions (CC&Rs) shall be submitted for review by the City Engineer. The CC&Rs shall include, but not be limited to, access easements, reciprocal access, private and /or public utility easements as may be

relevant to the project.

97. A digital (pdf) copy of all approved grading plans shall be submitted to the Land Development Division.

98. 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)]

99. 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]

100. The developer shall pay all applicable inspection fees. Prior to Improvement Plan Approval

101. 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.

102. The developer shall submit clearances from all applicable agencies, and pay all applicable plan check fees.

103. Any missing or deficient existing improvements along the project frontage within Moreno Beach Drive, Auto Mall Drive, and Pettit Street shall be constructed or secured for construction. The City Engineer may require the ultimate structural section for pavement to half-street width plus 18 feet or provide core test results confirming that existing pavement section is per current City Standards; additional signing & striping to accommodate increased traffic imposed by the development, etc.

104. 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.

105. 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 for trench repairs may be allowed for emergency repairs or as specifically approved by the City Engineer.

106. 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

107. A digital (pdf) copy of all approved improvement plans shall be submitted to the Land Development Division.

108. All applicable inspection fees shall be paid.

109. Any work performed within public right-of-way requires an encroachment permit.

Prior to Building Permit

110. 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.

111. 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.

112. 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.

113. In order to construct the proposed service reception area, a lot line adjustment shall be submitted for review, approval, and recordation.

Prior to Occupancy

114. All outstanding fees shall be paid.

115. All required as-built plans submitted for review and (prepared by a registered/licensed civil engineer) shall be approved by the City Engineer per the current submittal requirements.

116. The final/precise grade certification shall be submitted for review and approved by the City Engineer.

117. 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]

118. 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.

119. 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 “Stormwater Treatment Device and Control Measure Access and Maintenance Covenant” can be obtained by contacting the Land Development Division.

120. 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.

121. 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.

122. The Developer shall construct the following public improvements:

a. Moreno Beach Drive - remove the existing sidewalk and replace per City Standard No. MVSI-115 Series, dual ADA ramps per City Standard No. MVSI- 114A-1 at the northeast corner of Moreno Beach Drive and Auto Mall Drive

b. Auto Mall Drive - project main entrance curb returns with ADA ramps per City Standard No. MVSI-114A-1, and ensure ADA compliance with the existing public sidewalk along the project frontage. No decorative pavers shall be placed within the public right-of-way.

c. Pettit Street - driveway approach per City Standard Plan No. MVSI-112-C, street light per City Standard Plan No. MVLT-400A-1, and ensure ADA compliance with the existing public sidewalk along the project frontage. No decorative pavers shall be placed within the public right-of-way.

123. Street lights shall be constructed per City Standard Plan No. MVLT-400A-1. One (1) street light is required on Pettit Street east of Auto Mall Drive.

Special Districts Division

124. 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.

125. Street Light Authorization forms for all street lights that are conditioned to be installed as part of this project must be submitted to the Special Districts Division for approval, prior to street light installation. The Street Light Authorization form can be obtained from the utility company providing electric service to the project, either Moreno Valley Utility or Southern California Edison. For questions, contact the Special Districts Division at 951.413.3480 or specialdistricts@moval.org.

126. The ongoing maintenance of any landscaping required to be installed behind the curb shall be the responsibility of the property owner.

127. The parcel(s) associated with this project have been incorporated into the Moreno Valley Community Services District Zone A (Parks & Community Services) and Zone C (Arterial Street Lighting). All assessable parcels therein shall be subject to annual parcel taxes for Zone A and Zone C for operations and capital improvements.

Prior to Building Permit

128. Prior to the issuance of the first building permit for this project, the Developer shall pay Advanced Energy fees for all applicable Residential and Arterial Street Lights required for this

development. Payment shall be made to the City of Moreno Valley and collected by the Land Development Division. Fees are based upon the Advanced Energy fee rate in place at the time of payment, as set forth in the current Listing of City Fees, Charges, and Rates adopted by City Council. The Developer shall provide a copy of the receipt to the Special Districts Division (specialdistricts@moval.org). Any change in the project which may increase the number of street lights to be installed will require payment of additional Advanced Energy fees at the then current fee. Questions may be directed to the Special Districts Division at 951.413.3480 or specialdistricts@moval.org.

129. This project has been identified to potentially be included in the formation of a Map Act Area of Benefit Special District for the construction of major thoroughfares and/or freeway improvements. The property owner(s) shall participate in such District and pay any special tax, assessment, or fee levied upon the project property for such District. At the time of the public hearing to consider formation of the district, the property owner(s) will not protest the formation, but will retain the right to object any eventual assessment that is not equitable should the financial burden of the assessment not be reasonably proportionate to the benefit the affected property obtains from the improvements to be installed. The Developer must notify the Special Districts Division at 951.413.3480 or at specialdistricts@moval.org of its selected financial option when submitting an application for the first building permit to determine whether the development will be subjected to this condition. If subject to the condition, the special election requires a 90 day process in compliance with the provisions of Article 13C of the California Constitution. (Street & Highway Code, GP Objective 2.14.2, MC 9.14.100).

130. This project is conditioned for a proposed district to provide a funding source for the operation and maintenance of public improvements and /or services associated with new development in that territory. The Developer shall satisfy this condition with one of the options outlined below.

a. Participate in a special election for maintenance/services and pay all associated costs of the election process and formation, if any. Financing may be structured through a Community Facilities District, Landscape and Lighting Maintenance District, or other financing structure as determined by the City; or

b. Establish an endowment fund to cover the future maintenance and /or service costs. The Developer must notify the Special Districts Division at 951.413.3480 or at specialdistricts@moval.org when submitting the application for building permit issuance. If the first building permit is pulled prior to formation of the district, this condition will not apply. If the district has been or is in the process of being formed the Developer must inform the Special Districts Division of its selected financing option (a. or b. above). The option for participating in a special election requires 90 days to complete the special election process. This allows adequate time to be in compliance with the provisions of Article 13C of the California Constitution.

The financial option selected shall be in place prior to the issuance of the first certificate of occupancy for the project.

131. This project is conditioned to provide a funding source for the following special financing program(s):

a. Street Lighting Services for capital improvements, energy charges, and maintenance.

The Developer's responsibility is to provide a funding source for the capital improvements and the continued maintenance. The Developer shall satisfy this

condition with one of the options below.

i. Participate in a special election (mail ballot proceeding) and pay all associated costs of the special election and formation, if any. Financing may be structured through a Community Services District zone, Community Facilities District, Landscape and Lighting Maintenance District, or other financing structure as determined by the City; or

ii. Establish a Property Owner's Association (POA) or Home Owner's Association (HOA) which will be responsible for any and all operation and maintenance costs

The Developer must notify the Special Districts Division at 951.413.3480 or at specialdistricts@moval.org of its selected financial option when submitting the application for building permit issuance. The option for participating in a special election requires approximately 90 days to complete the special election process. This allows adequate time to be in compliance with the provisions of Article 13C of the California Constitution.

The financial option selected shall be in place prior to the issuance of the first certificate of occupancy for the project and prior to acceptance of any improvements.

132. Prior to building permit if Land Development, a Division of the Public Works Department, requires this project to supply a funding source necessary to provide for, but not limited to, stormwater utilities services for the continuous operation, remediation and/or replacement, monitoring, systems evaluations and enhancement of on-site facilities and performing annual inspections of the affected areas to ensure compliance with state mandated stormwater regulations, a funding source needs to be established. The Developer must notify the Special Districts Division at 951.413.3480 or at specialdistricts@moval.org of its selected financial option for the Commercial National Pollution Discharge Elimination System (NPDES) program when submitting the application for the first building permit issuance (see Land Development's related condition). Participating in a special election the process requires a 90 day period prior to the City's issuance of a building permit. This allows adequate time to be in compliance with the provisions of Article 13D of the California Constitution. (California Health and Safety Code Sections 5473 through 5473.8 (Ord. 708 Section 3.1, 2006) & City of Moreno Valley Municipal Code Title 3, Section 3.50.050.)

133. This project has been identified to be included in the formation of a Community Facilities District (Mello-Roos) for Public Safety services, including but not limited to Police, Fire Protection, Paramedic Services, Park Rangers, and Animal Control services. The property owner(s) shall not protest the formation; however, they retain the right to object to the rate and method of maximum special tax. In compliance with Proposition 218, the property owner shall agree to approve the mail ballot proceeding (special election) for either formation of the CFD or annexation into an existing district. The Developer must notify the Special Districts Division at 951.413.3480 or at specialdistricts@moval.org when submitting the application for building permit issuance to determine the requirement for participation. If the first building permit is pulled prior to formation of the district, this condition will not apply. If the condition applies, the special election will require a minimum of 90 days prior to issuance of the first building permit. This allows adequate time to be in compliance with the provisions of Article 13C of the California Constitution. (California Government Code Section 53313 et. seq.)

Transportation Engineering Division

134. Conditions of approval may be modified or added if a phasing plan is submitted for this development.

135. Project driveways shall conform to City of Moreno Valley Standard No. MVSI-112C-0 for Commercial Driveway Approaches. Any after-hour security gate at the driveway entrance shall be set back at a minimum of 25 feet from the property line to accommodate 1 vehicle queuing in front of the gate.

136. All proposed on-site traffic signing and striping should be accordance with the latest California Manual on Uniform Traffic Control Devices (CAMUTCD).

137. 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 driveway conforms to City Standard Plan No. MVSI-164A-0 through MVSI-164C-0. Trees, plants, shrubs, fence and monument sign shall not be located in an area that obstructs the drivers' line-of-sight.

138. 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 all streets along the project frontages. 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.

139. Prior to the final approval of the street improvement plans, a communication conduit plan shall be prepared by a registered civil engineer to install new communication conduit and pull boxes under sidewalk along the project frontage of Moreno Beach Drive per City Standard Plan No. MVSI-186-0.

140. 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 Traffic Engineer.

Prior to Building Final or Occupancy

141. Prior to issuance of Certificate of Occupancy, all signing and striping shall be installed per current City Standards and the approved plans.

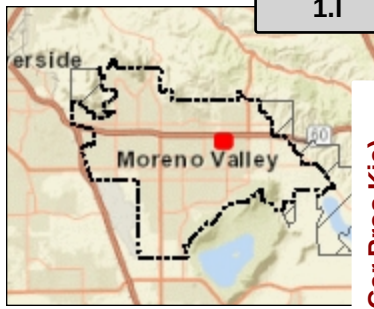
142. Prior to issuance of Certificate of Occupancy, communication conduit and pull boxes along the project frontage of Moreno Beach Drive shall be installed under sidewalk per the approved plans to the satisfaction of the City Engineer.

PARKS & COMMUNITY SERVICES DEPARTMENT

143. The parcel(s) associated with this project have been incorporated into the Moreno Valley Community Services District Zone A (Parks and Community Services). All assessable parcels therein shall be subject to the annual Zone 'A' charge for operations and capital improvements. Proof of such shall be supplied to Parks and Community Services upon Final Map and at Building Permits.

MORENO VALLEY
WHERE DREAMS SOAR

Aerial Map



Legend

Public Facilities
- Public Facilities
- Fire Stations

Parcels
City Boundary
Sphere of Influence

Notes

631.0 0 315.48 631.0 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere

Print Date: 6/19/2019

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.

Attachment: Aerial Map (3665 : PEN19-0102 Initial Study and PEN19-0047 Plot Plan for Car Pros Kia)

PARCEL 7 OF PARCEL MAP 23244

PARCEL 8 OF PARCEL MAP 23244

PETTIT STREET

AUTO MALL DRIVE

MORENO BEACH DRIVE

MOTOR WAY

PROPERTY LINE

PROPOSED PROPERTY LINE

EXISTING PROPERTY LINE

UTILITY EASEMENT
DRIVEWAY ACCESS

BUILDING SETBACK

30'-0" SCE EASEMENT

30'-0" GTE EASEMENT

24'-0"

32'-0"

FIRE APPARATUS ACCESS

EMPLOYEE PARKING

VEHICLE DISPLAY

30'-0"

26'-0" 15'-0" MIN. PARKING SETBACK

VEHICLE TRANSPORT ENTRANCE/EXIT

30'-0"

FEATURE DISPLAY

TRASH ENCLOSURE

SERVICE PARKING

CAR WASH TUNNEL

SERVICE RECEPTION 2,562 SQ. FT.

PROPOSED KIA SALES, SERVICE, AND CAR WASH FACILITY TOTAL AREA = 23,858 SQ.FT.

PARTS RECEIVING LOADING ZONE

STEEL HOOP BARRIER, typical

SERVICE QUEUE

SWING BARRIER GATE, typical

MAIN ENTRY

CUSTOMER PARKING

LOW EMITTING FUEL EFFICIENT CARPOOL PARKING

SALES/SERVICE ENTRANCE/EXIT

DECORATIVE PAVING AT DRIVEWAY, typical

ACCESSIBLE PARKING STALL, typical

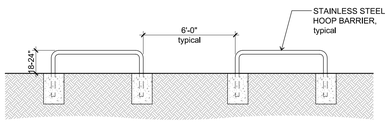
SHORT-TERM BICYCLE PARKING

ACCESSIBLE PATH OF TRAVEL

BUILDING SETBACK

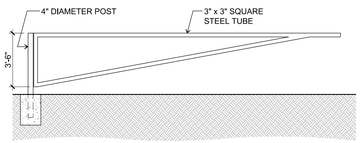
15'-0" PARKING SETBACK

67'-0"



STEEL HOOP BARRIER

SCALE: 1/4" = 1'-0"



SWING BARRIER GATE

SCALE: 1/4" = 1'-0"

LOT AREA (GROSS):	269,708 sf (6.19 acres)
LOT AREA (NET):	267,510 sf (6.14 acres)
PARCEL 7:	117,180 sf (2.69 acres)
PARCEL 8:	150,330 sf (3.45 acres)
BUILDING AREA:	23,858 sf
FIRST FLOOR:	18,014 sf
SECOND FLOOR:	4,988 sf
CAR WASH:	856 sf
SERVICE RECEPTION:	2,562 sf
COVERAGE (ON NET):	8.01%
PARCEL 7:	0%
PARCEL 8:	14.26%
FLOOR AREA RATIO (ON NET):	9.88%
PARCEL 7:	0%
PARCEL 8:	17.57%
PARKING REQUIRED:	14 spaces
26,420 s.f. at 1 / 2,000 s.f.	
PARKING PROVIDED	50 spaces
STANDARD:	48 spaces
HANDICAP ACCESSIBLE:	2 spaces
LANDSCAPE PROVIDED:	59,248 sf (22.15%)
PARCEL 7:	30,108 sf (25.69 %)
PARCEL 8:	29,140 sf (19.38%)

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30 May 2019

SITE PLAN

31 May 2019

Car Pros Kia
Moreno Valley, California

SCALE: 1" = 30'

True North

Project North

Carlile Coatsworth Architects, Inc
2466 Campus Dr. - Second Floor - Irvine, CA 92612 - Phone: 949.833.1930 - Fax: 949.833.1140

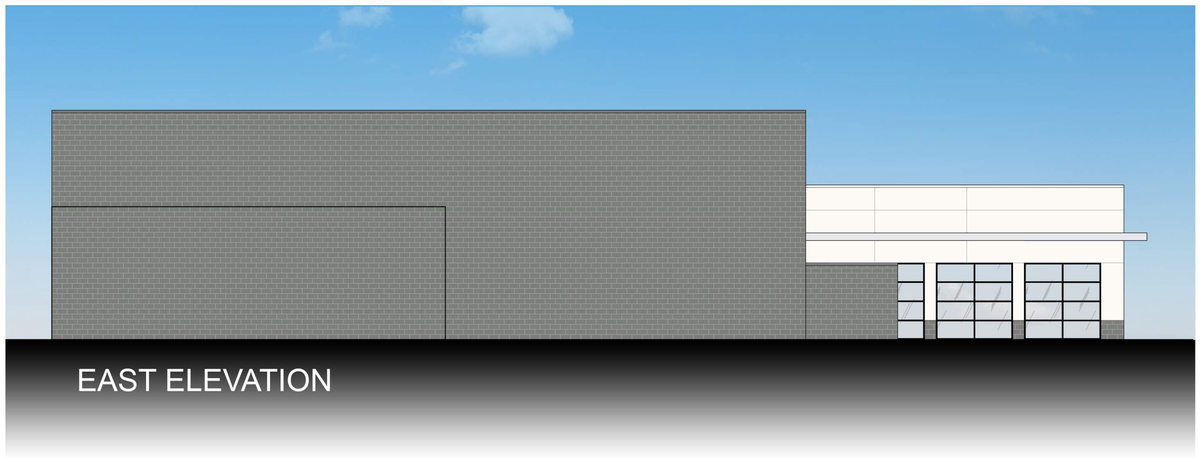
CAR PROS AUTOMOTIVE GROUP

A-2

NORTH ELEVATION

SOUTH ELEVATION

WEST ELEVATION



EAST ELEVATION

CLEAR GLASS IN BLACK ANODIZED STOREFRONT SYSTEM

SPANDREL GLASS - COLOR: #3-820 GREY

SPLIT FACE CONCRETE MASONRY UNIT

ALPOLIC METAL PANELS - COLOR: 4MMSAW SAW WHITE

LEGEND

EXTERIOR ELEVATIONS

31 May 2019

Car Pros Kia
Moreno Valley, California

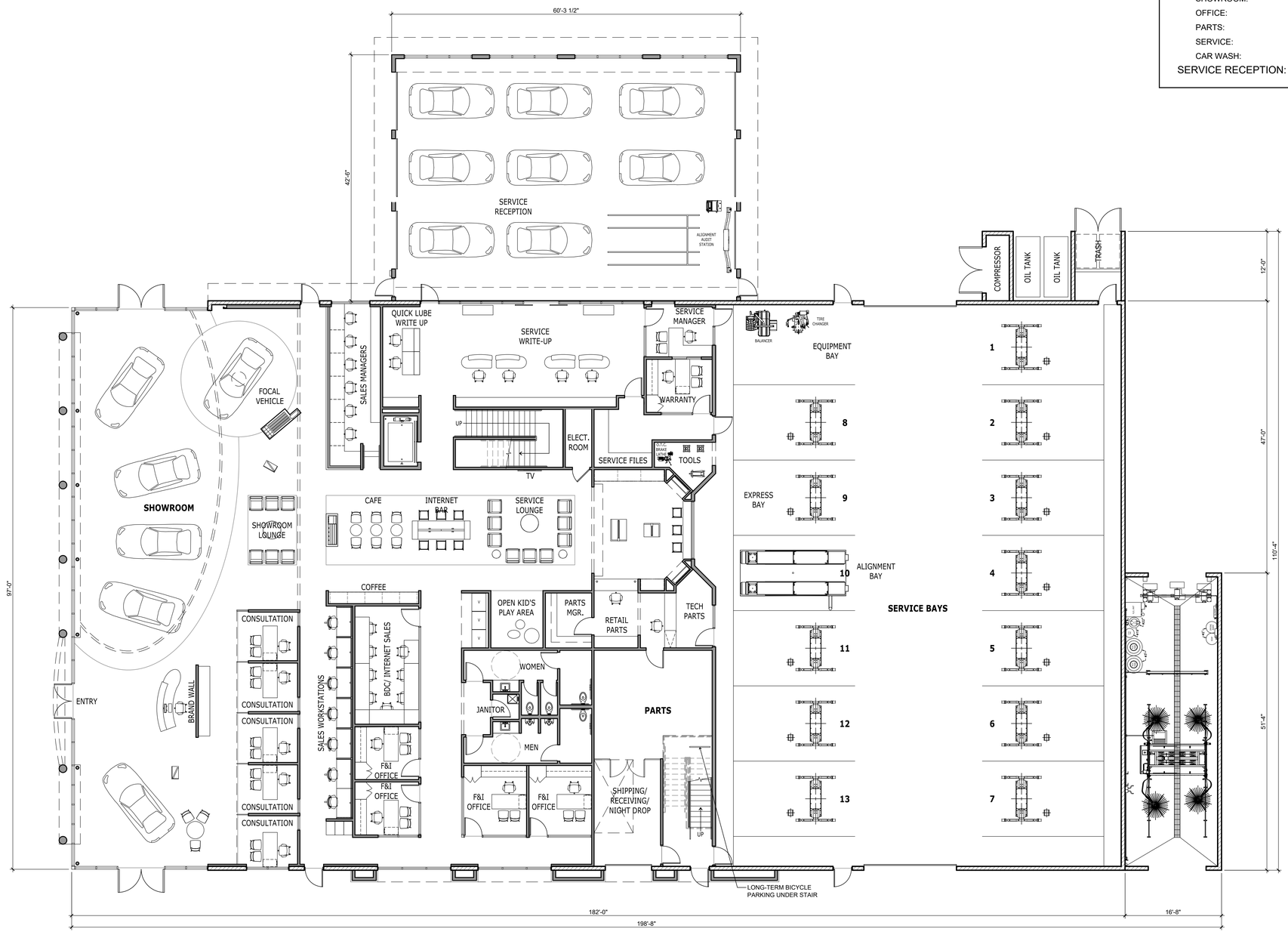
0' 8' 16' 32'
SCALE: 1/8" = 1'-0""

Carlile Coatsworth Architects, Inc
2495 Campus Dr. - Second Floor - Irvine, CA 92612 - Phone: 949.833.1930 - Fax: 949.833.1140

A-6

CAR PROS AUTOMOTIVE GROUP

TOTAL FIRST FLOOR AREA:	18,870 sf
SHOWROOM:	4,291 sf
OFFICE:	5,816 sf
PARTS:	841 sf
SERVICE:	7,066 sf
CAR WASH:	856 sf
SERVICE RECEPTION:	2,562 sf



FIRST FLOOR PLAN

31 May 2019

Car Pros Kia
Moreno Valley, California

SCALE: 1/8" = 1'-0"

True North

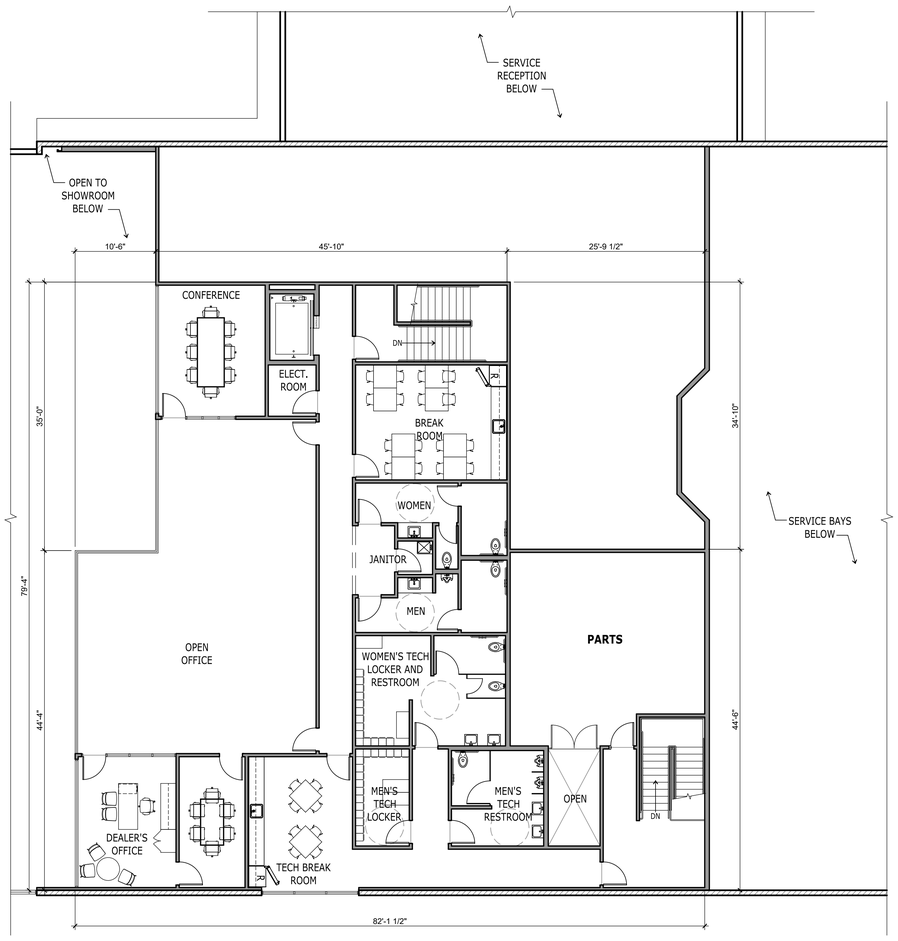
Project North

Carlile Coatsworth Architects, Inc
2495 Campus Dr. - Second Floor - Irvine, CA 92612 - Phone: 949.833.1930 - Fax: 949.833.1140

A-3

CAR PROS AUTOMOTIVE GROUP

TOTAL SECOND FLOOR AREA:	4,988 sf
OFFICE:	2,988 sf
PARTS:	919 sf
TECHNICIAN AREA:	1,081 sf



SECOND FLOOR PLAN

31 May 2019

Car Pros Kia
Moreno Valley, California

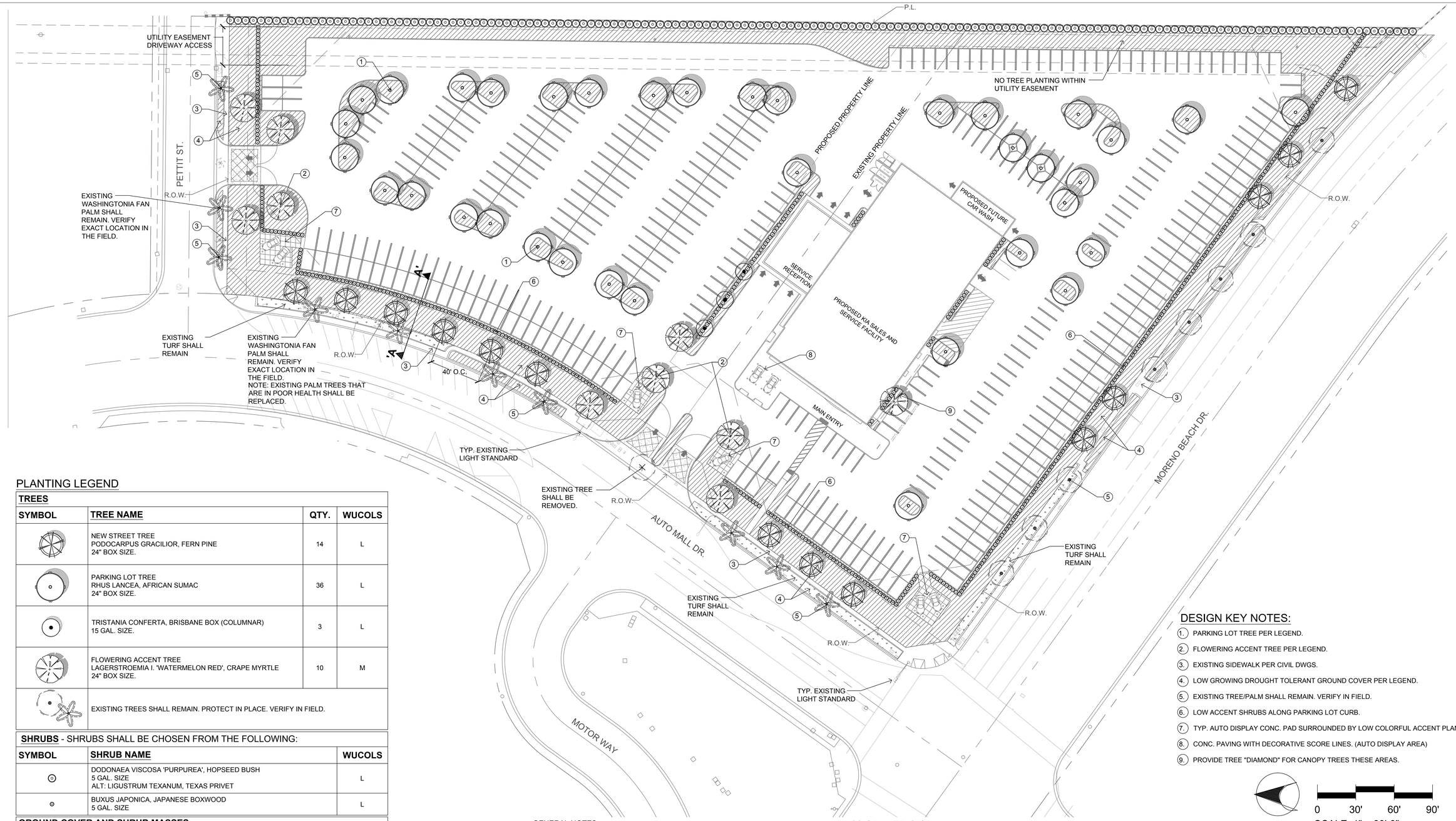
0' 8' 16' 32'
SCALE: 1/8" = 1'-0"

True North

Project North

A-4

Carlile Coatsworth Architects, Inc
2465 Campus Dr. - Second Floor - Irvine, CA 92612 - Phone: 949.833.1930 - Fax: 949.833.1140



PLANTING LEGEND

TREES			
SYMBOL	**TREE NAME**	**QTY.**	**WUCOLS**
	NEW STREET TREE PODOCARPUS GRACILIOR, FERN PINE 24" BOX SIZE.	14	L
	PARKING LOT TREE RHUS LANCEA, AFRICAN SUMAC 24" BOX SIZE.	36	L
	TRISTANIA CONFERTA, BRISBANE BOX (COLUMNAR) 15 GAL. SIZE.	3	L
	FLOWERING ACCENT TREE LAGERSTROEMIA I. 'WATERMELON RED', CRAPE MYRTLE 24" BOX SIZE.	10	M
	EXISTING TREES SHALL REMAIN. PROTECT IN PLACE. VERIFY IN FIELD.		

SHRUBS - SHRUBS SHALL BE CHOSEN FROM THE FOLLOWING:		
SYMBOL	**SHRUB NAME**	**WUCOLS**
	DODONAEA VISCOSA 'PURPUREA', HOPSEED BUSH 5 GAL. SIZE ALT: LIGUSTRUM TEXANUM, TEXAS PRIVET	L
	BUXUS JAPONICA, JAPANESE BOXWOOD 5 GAL. SIZE	L

GROUND COVER AND SHRUB MASSES		
SYMBOL	**GROUND COVER/SHRUB MASS NAME**	**WUCOLS**
	ROSMARINUS O. 'PROSTRATUS', CREEPING ROSEMARY 1 GAL. SIZE @ 30" O.C.	L
	LANTANA 'DWARF YELLOW', YELLOW LANTANA 1 GAL. SIZE @ 24" O.C.	L
	MYOPORUM P. 'PINK', PINK MYOPORUM 1 GAL. SIZE @ 36" O.C.	L
	FESTUCA GLAUCA, BLUE FESCUE 5 GAL. SIZE @ 36" O.C.	L
	DIANELLA TASMANICA 'VARIEGATA', VARIEGATED FLAX LILY 5 GAL. SIZE @ 36" O.C.	L
	EXISTING TURF SHALL REMAIN. "PROTECT IN PLACE." VERIFY IN FIELD.	

DESIGN KEY NOTES:

1. PARKING LOT TREE PER LEGEND.
2. FLOWERING ACCENT TREE PER LEGEND.
3. EXISTING SIDEWALK PER CIVIL DWGS.
4. LOW GROWING DROUGHT TOLERANT GROUND COVER PER LEGEND.
5. EXISTING TREE/PALM SHALL REMAIN. VERIFY IN FIELD.
6. LOW ACCENT SHRUBS ALONG PARKING LOT CURB.
7. TYP. AUTO DISPLAY CONC. PAD SURROUNDED BY LOW COLORFUL ACCENT PLANTING.
8. CONC. PAVING WITH DECORATIVE SCORE LINES. (AUTO DISPLAY AREA)
9. PROVIDE TREE "DIAMOND" FOR CANOPY TREES THESE AREAS.

NORTH

0 30' 60' 90'

SCALE: 1" = 30'-0"

GENERAL NOTES:

- SLOPES GREATER THAN 3:1 SHALL BE STABILIZED WITH EROSION CONTROL GROUND COVER PER LEGEND, AND MULCH MATERIAL WITH 'BINDER' MATERIAL SHALL BE APPLIED FOR EROSION CONTROL.
- ROCK RIP-RAP MATERIAL SHALL BE INSTALLED WHERE DRAIN LINES CONNECT TO INFILTRATION AREAS.
- ALL UTILITY EQUIPMENT SUCH AS BACKFLOW UNITS, FIRE DETECTOR CHECKS AND FIRE CHECK VALVES WILL BE SCREENED WITH EVERGREEN PLANT MATERIAL ONCE FINAL LOCATIONS HAVE BEEN DETERMINED.
- ENSURE ANY TREES SURROUNDING BUILDING ROOFTOPS BE KEPT AT A DISTANCE TO PREVENT ROOF ACCESSIBILITY BY POTENTIAL BURGLARS. BRANCHES MUST BE PRUNED TO HAVE AT LEAST SIX-FOOT CLEARANCE FROM BUILDINGS.

CONCEPTUAL PLAN NOTE:

THIS IS A CONCEPTUAL LANDSCAPE PLAN. IT IS BASED ON PRELIMINARY INFORMATION WHICH IS NOT FULLY VERIFIED AND MAY BE INCOMPLETE. IT IS MEANT AS A COMPARATIVE AID IN EXAMINING ALTERNATE DEVELOPMENT STRATEGIES AND ANY QUANTITIES INDICATED ARE SUBJECT TO REVISION AS MORE RELIABLE INFORMATION BECOMES AVAILABLE.

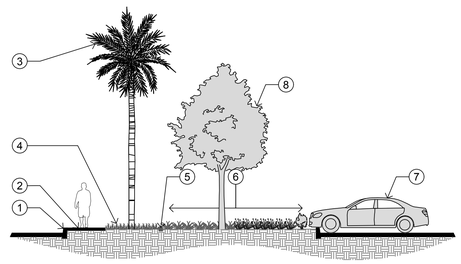
IRRIGATION NOTE:

THE PROJECT WILL BE EQUIPPED WITH A LOW FLOW IRRIGATION SYSTEM CONSISTING OF ET WEATHER BASED SMART CONTROLLER, LOW FLOW ROTORS, BUBBLER AND/ OR DRIP SYSTEMS USED THROUGHOUT. THE IRRIGATION WATER EFFICIENCY WILL MEET OR SURPASS THE CURRENT STATE MANDATED AB-1881 WATER ORDINANCE.

WUCOLS PLANT FACTOR

THIS PROJECT IS LOCATED IN 'WUCOLS' REGION '4-SOUTH INLAND VALLEY'.

H = HIGH WATER NEEDS
M = MODERATE WATER NEEDS
L = LOW WATER NEEDS
VL= VERY LOW WATER NEEDS



SECTION 'A-A'

SCALE: 1/8" = 1'-0"

SECTION 'A-A' KEY NOTES:

1. EXISTING STREET CURB
2. EXISTING CONC. SIDEWALK
3. EXISTING WASHINGTONIA FAN PALM TREE TO REMAIN.
4. EXISTING LAWN (GRASS) SHALL REMAIN.
5. PROVIDE NEW CONC. HDR. SEPARATING EXISTING LANDSCAPE ALONG STREET FRONTAGE FROM 'ON-SITE' LANDSCAPE.
6. NEW LOW GROUND DROUGHT TOLERANT PLANTING.
7. AUTO DISPLAY PARKING.
8. NEW STREET TREE PER LEGEND.

Carlile Coatsworth Architects, Inc
2495 Campus Dr.- Second Floor - Irvine, CA 92612 - Phone: 949.833.1930 - Fax: 949.833.1140

SCOTT PETERSON LANDSCAPE ARCHITECT, INC.
2883 VIA RANCHEROS WAY
FALLBROOK, CA 92028
PH: 760-842-8993

Car Pros Kia
Moreno Valley, California

MAY 31, 2019

L-1

CAR PROS AUTOMOTIVE GROUP

PARCEL 7 OF PARCEL MAP 23244

PARCEL 8 OF PARCEL MAP 23244

PETTIT STREET

AUTO MALL DRIVE

MOTOR WAY

MORENO BEACH DRIVE

PROPERTY LINE

PROPOSED PROPERTY LINE

EXISTING PROPERTY LINE

UTILITY EASEMENT
DRIVEWAY ACCESS

BUILDING SETBACK

30'-0" SCE EASEMENT

30'-0" GTE EASEMENT

24'-0"

32'-0"

FIRE APPARATUS ACCESS

EMPLOYEE PARKING

VEHICLE DISPLAY

30'-0"

26'-0" 15'-0" MIN. PARKING SETBACK

VEHICLE TRANSPORT ENTRANCE/EXIT

30'-0"

FEATURE DISPLAY

STEEL HOOP BARRIER, typical

26'-0"

TRASH ENCLOSURE

SERVICE RECEPTION QUEUE
OVERFLOW PARKING (8 SPACES)

SERVICE PARKING

CAR WASH TUNNEL

SERVICE RECEPTION
2,562 SQ. FT.

45'-6"

66'-3 1/4"

101'-0"

182'-0"

PROPOSED KIA SALES, SERVICE, AND CAR WASH FACILITY
TOTAL AREA = 23,858 SQ.FT.

PROPOSED FUTURE KIA SALES AND SERVICE FACILITY TOTAL AREA = 17,853 SQ.FT.

37'-6"

101'-4"

SERVICE QUEUE

PARTS RECEIVING / LOADING ZONE

18'-0"

50'-0"

SWING BARRIER GATE, typical

MAIN ENTRY

18'-0"

9'-0" typ.

SALES/SERVICE ENTRANCE/EXIT

DECORATIVE PAVING AT DRIVEWAY, typical

CUSTOMER PARKING

ACCESSIBLE PARKING STALL, typical

CUSTOMER PARKING

LOW EMITTING FUEL EFFICIENT CARPOOL/ VANPOOL PARKING

26'-0"

16'-0"

117'-0" 15'-0" MIN. PARKING SETBACK

67'-0"

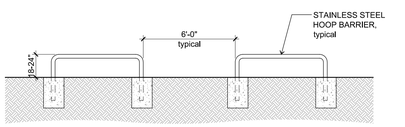
50'-0" BUILDING SETBACK

SHORT-TERM BICYCLE PARKING

BUILDING SETBACK

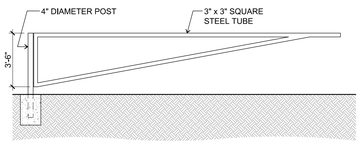
ACCESSIBLE PATH OF TRAVEL

15'-0" PARKING SETBACK



STEEL HOOP BARRIER

SCALE: 1/4" = 1'-0"



SWING BARRIER GATE

SCALE: 1/4" = 1'-0"

LOT AREA (GROSS):	269,708 sf (6.19 acres)
LOT AREA (NET):	267,510 sf (6.14 acres)
PARCEL 7:	117,180 sf (2.69 acres)
PARCEL 8:	150,330 sf (3.45 acres)
BUILDING AREA:	41,511 sf
FIRST FLOOR:	32,727 sf
SECOND FLOOR:	10,490 sf
CAR WASH:	856 sf
SERVICE RECEPTION:	2,562 sf
COVERAGE (ON NET):	12.55%
PARCEL 7:	0%
PARCEL 8:	22.34%
FLOOR AREA RATIO (ON NET):	16.48%
PARCEL 7:	0%
PARCEL 8:	29.32%
PARKING REQUIRED:	23 spaces
44,073 s.f. at 1 / 2,000 s.f.	
PARKING PROVIDED	56 spaces
STANDARD:	52 spaces
HANDICAP ACCESSIBLE:	4 spaces
LANDSCAPE PROVIDED:	58,846 sf (22.00%)
PARCEL 7:	30,108 sf (25.69 %)
PARCEL 8:	28,738 sf (19.12%)

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30 May 2019

EXPANSION SITE PLAN

31 May 2019

Car Pros Kia
Moreno Valley, California

SCALE: 1" = 30'

True North

Project North

A-2.1

Carlile Coatsworth Architects, Inc
2495 Campus Dr. - Second Floor - Irvine, CA 92612 - Phone: 949.833.1930 - Fax: 949.833.1140

Notice of PUBLIC HEARING

This may affect your property. Please Read. Notice is hereby given that a Public Hearing will be held by the Planning Commission of the City of Moreno Valley on the following item(s):

Project: PEN19-0047 – Plot Plan with Hearing; PEN19-0102 – Expanded Environmental Review
Applicant: MV Holdings, LLC
Property Owner: MV Holdings, LLC
Representative: Andrea Arcilla, EPD Solutions Inc.
Location: Northeast corner of Moreno Beach Drive and Auto Mall Drive
APN's: 488-390-015 and 488-390-016

Proposal: The applicant is requesting a Plot Plan with hearing and Expanded Environmental Review for a 41,511 square foot Kia sales and service facility on 2 vacant parcels within Specific Plan 209 (SP209 Planning Area C). Phase 1 includes a 23,858 square foot, two story, sales facility, 13 bay service center, and carwash. Phase 2 will include a 17,653 square foot expansion of the facility including the addition of 10 service bays.

Council District: 3

Environmental Determination: The City of Moreno Valley has reviewed the above project and has prepared an Initial Study in accordance with California Environmental Quality Act (CEQA) Guidelines Section 15070. The Mitigated Negative Declaration represents the City's independent judgment and analysis. The proposed project will not have a significant effect on the environment with the implementation of mitigation measures.

The Draft IS/MND is being circulated for review and comment by interested agencies, organizations, and persons for 20 days in accordance with Section 21091 of the State CEQA Guidelines. A 20-day public review period to solicit comments on the Draft IS/MND starts **June 21, 2019** and ends **July 11, 2019**.

A public hearing before the Planning Commission is scheduled for the proposed project. Any person interested in the proposal may speak at the hearing or provide written testimony at or prior to the hearing. The application file and environmental documents may be inspected at the Community Development Department at 14177 Frederick Street, Moreno Valley, California during normal business hours (7:30 a.m. to 5:30 p.m., Monday through Thursday and 7:30 a.m. to 4:30 p.m. on Fridays), or you may telephone (951) 413-3206 for further information.

In the case of Public Hearing items, any person may also appear and be heard in support of or opposition to the project or recommendation of adoption of the Environmental Determination at the time of the Hearing.

The Planning Commission, at the Hearing or during deliberations, could approve changes or alternatives to the proposal.

If you challenge any of these items in court, you may be limited to raising only those items you or someone else raised at the Public Hearing described in this notice, or in written correspondence delivered to the Planning Commission at, or prior to, the Public Hearing.

LOCATION N ↑

PLANNING COMMISSION HEARING

City Council Chamber, City Hall
14177 Frederick Street
Moreno Valley, Calif. 92553

DATE AND TIME: July 11, 2019 at 7 PM
CONTACT PLANNER: Jerry Guarracino
PHONE: (951) 413-3206

Upon request and 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 Guy Pegan, ADA Coordinator, at 951.413.3120 at least 48 hours before the meeting. The 48-hour notification will enable the City to make reasonable arrangements to en to this meeting.

300' Radius Map
488-390-015-4 AND 488-390-016-5