Initial Study and Mitigated Negative Declaration

Sweetwater Mesa Tank and Waterline Project

Prepared for

Los Angeles County Waterworks District No. 29, Malibu, through the County of Los Angeles Department of Public Works
900 South Fremont Avenue
Alhambra, California 91803

Prepared by

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5 Hutton Centre Drive, Suite 300
Santa Ana, California 92707
Contact: Jennifer Marks
714.481.8041

November 2024

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APPENDICES

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SECTION 1.0 INTRODUCTION

1.1 PURPOSE OF THE INITIAL STUDY

The purpose of this Initial Study (IS) is to (1) describe the proposed Sweetwater Mesa Tank and Waterline Project (hereinafter referred to as the "Project"), which would occur in the City of Malibu and (2) provide an evaluation of potential environmental effects associated with the Project's construction and operation. This IS has been prepared pursuant to the California Environmental Quality Act (CEQA), as amended (*Public Resources Code* §21000 et seq.) and in accordance with the State CEQA Guidelines (*California Code of Regulations* §15000 et seq.).

Pursuant to Section 15367 of the State CEQA Guidelines, the Los Angeles County Waterworks District No. 29, Malibu (District) is the lead agency for the Project. The lead agency is the public agency that has the principal responsibility for carrying out or approving a project that may have a significant effect on the environment. The District, as the lead agency, has the authority for Project approval and certification of the accompanying environmental documentation. The Los Angeles County Board of Supervisors is the governing body of the District.

The purpose of this document is to evaluate the proposed Project which consists of three water main replacements in Serra Road, Sweetwater Mesa Road, and Pacific Coast Highway (PCH); one new 1.12-million-gallon (MG) tank at the end of Sweetwater Mesa Road; a pump station; and three pressure regulating station locations totaling up to 6 stations.

1.2 SUMMARY OF FINDINGS

Based on the environmental checklist form prepared for the Project (see Section 4, below) and supporting environmental analysis (Section 5), the proposed Project would have no impact or less than significant impacts in the following environmental areas: aesthetics, agriculture and forest resources, air quality, energy, greenhouse gas emissions, hazards and hazardous materials, , land use and planning, mineral resources, population and housing, public services, noise, recreation, transportation, utilities and service systems, and wildfire. The proposed Project has the potential to have significant impacts on the following topics unless the mitigation measures recommended herein are incorporated into the Project: biological resources, cultural resources, geology and soils, hydrology and water quality, and tribal cultural resources. If incorporated, these impacts would be reduced to less than significant levels.

In accordance with the State CEQA Guidelines, a Mitigated Negative Declaration (MND) is the appropriate environmental document for the proposed Project because, after incorporation of the recommended mitigation measures, potentially significant environmental impacts would be eliminated or reduced to a level considered less than significant.

1.3 PROJECT APPROVAL

This IS/MND has been submitted to potentially responsible and affected agencies and individuals. A notice of the availability of the IS/MND for review and comment as well as the environmental documentation are available on the District's website (https://lacounty.pw/smtank and https://lacounty.pw/sweetwater-mesa-waterline) for review.

This IS/MND will be available for public review for a period of 30 days, in accordance with Section 15073 of the State CEQA Guidelines. During review of the IS/MND, affected public agencies and the interested public have an opportunity to focus on the document's adequacy in identifying and analyzing the potential environmental impacts and the ways in which the potentially significant

effects of the Project can be avoided or mitigated. Comments on the IS/MND herein should be submitted by email or in writing and must be received by 5:00 PM on December 6th, 2024. Comments should be addressed to:

Eduardo Maguino
County of Los Angeles Department of Public Works
Waterworks Division
P.O. Box 1460
Alhambra, California 91802-1460
Email: waterworksprojects@dpw.lacounty.gov

Following receipt and evaluation of comments from agencies, organizations, and/or individuals, the District will determine whether any substantial new environmental issues have been raised. The IS/MND will be submitted to the Los Angeles County Board of Supervisors for consideration when the Project is recommended for approval.

1.4 ORGANIZATION OF THE INITIAL STUDY

The IS/MND is organized as described below.

- **Section 1: Introduction.** This section provides an introduction and overview of the conclusions in the IS/MND.
- **Section 2: Project Location and Environmental Setting.** This section provides a brief description of the Project location, relevant background information, and a description of the existing conditions of the Project site and vicinity.
- **Section 3: Project Description.** This section provides a description of the proposed Project, a statement of purpose and need, and necessary discretionary actions from all involved public agencies.
- **Section 4: Environmental Checklist.** The completed Environmental Checklist Form from Appendix G of the State CEQA Guidelines provides an overview of the potential impacts that may or may not result from Project implementation. The Environmental Checklist Form also includes “mandatory findings of significance”, as required by CEQA.
- **Section 5: Discussion of Environmental Checklist Questions.** This section contains an analysis of environmental impacts identified in the environmental checklist from Appendix G of the State CEQA Guidelines and identifies standard conditions and regulations (SC) and mitigation measures (MM) that have been recommended to eliminate any potentially significant effects or to reduce them to a level considered less than significant.
- **Section 6: Report Preparers.** This section lists the authors, including staff from the District, who contributed information for the preparation and review of the IS/MND.
- **Section 7: References.** This section identifies the references used to prepare the IS/MND.

SECTION 2.0 PROJECT LOCATION AND ENVIRONMENTAL SETTING

2.1 PROJECT LOCATION

The Project site encompasses several areas within the Sweetwater Mesa system consisting of two gravity storage tanks and associated water mains, in the City of Malibu, Los Angeles County, California. The regional and local vicinity of the Project site is depicted on Exhibit 1, Regional Location, and Exhibit 2a, Aerial Photograph, respectively. As shown in Exhibits 2b through 2d, a new water main would be constructed in Serra Road from PCH to Sweetwater Mesa Road with three options for the final routing of Water Main Project No. 1 identified as WP1.1, WP1.2, and WP1.3 and as discussed further in Section 3.1.2, Water Main Replacements. The water main would continue along Sweetwater Mesa Road from Serra Road to the new domestic water tank to be constructed at the end of Sweetwater Mesa Road. The new Sweetwater Mesa Tank would be located at an undeveloped District owned property (APN 4452-025-901) just north of 3311 Sweetwater Mesa Road in the City of Malibu, California. An additional water main would be constructed in PCH from Serra Road to the beginning of the Malibu Lagoon Bridge.

2.2 EXISTING SITE DESCRIPTION AND PROJECT BACKGROUND

The existing Sweetwater Mesa system is currently served by two gravity storage tanks. The Sweetwater Mesa Tank and the Serra Tank operate in the 380-foot and 160-foot pressure zones (PZs), respectively. These two tanks provide water storage for approximately 137 service connections. The existing Sweetwater Mesa Tank, constructed in 1962, is fed by two 40 -horsepower pumps at the Serra Tank site through approximately 2,600 linear feet of 4-inch asbestos-concrete water line along Sweetwater Mesa Road, has an operational capacity of 0.093 MG, and serves approximately 75 customers. The existing concrete Serra Tank, constructed in 1937, has an operational capacity of 0.13 MG and services approximately 62 customers. The cumulative operational storage for both tanks is 0.22 MG. Currently, the 380-foot PZ cannot back-feed or flow into the 160-feet PZ. This portion of the system receives its water directly from the Malibu 30-inch transmission water main along PCH via two pressure-regulating valves. These connections also serve as the system's required fire protection. The Project site is bounded by open space and residential uses. Sensitive receptors including residential uses closest to the Project site are described in Table 10 and in Section XIII, Noise, of this IS/MND.

A hydraulic analysis conducted by the District's Design Unit found the required gravity storage[1] for the Sweetwater Mesa system to be 1.92 MG, including all approved developments such as the La Paz Ranch and Lumber Yard. This amount includes approximately 1.2 MG for maximum day demand[2] and 0.72 MG for fire protection. The current fire flow[3] requirement for all proposed developments is 3,000 gallons per minute for 4 hours equaling 0.72 MG of storage. The existing water system has a deficiency of 1.70 MG, making the existing storage capacity far below current District standards. This required storage, coupled with the undersized water mains in Sweetwater Mesa Road and PCH, do not provide sufficient capacity to provide fire flow protection for the service area.

1 Gravity water systems use gravity to transport water from the source to the user through a pipe network.
2 The maximum daily demand is the total amount of water consumed in a day.
3 Fire flow is the quantity of water available (as in a city) for fire-protection purposes in excess of that required for other purposes.

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Regional Location

Exhibit 1

Sweetwater Mesa Tank and Waterline Project

N
W E
S

10 5 0 10 Miles

PSOMAS

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Aerial Photograph

Exhibit 2a

Sweetwater Mesa Tank and Waterline Project

N
W E
S

500 250 0 500

Feet

PSOMAS

(Rev: 3-13-2024 PLO) R:\Projects\CAN\3CAN020100\Graphics\ISMND\ex_Aerial.pdf

Aerial Source: Esri, Maxar 2022

D:\Projects\3CAN\Civic_Center\PRO\Civic_Center.aprx\ex_Aerial_WP1.1

Aerial Photograph – Option WP1.1

Exhibit 2b

Sweetwater Mesa Tank and Waterline Project

N
W E
S

500 250 0 500

Feet

PSOMAS

(Rev: 3-13-2024 PLO) R:\Projects\CAN\3CAN020100\Graphics\ISMND\ex_Aerial_WP1.1.pdf

Aerial Source: Esri, Maxar 2022

Aerial Photograph – Option WP1.2

Exhibit 2c

Sweetwater Mesa Tank and Waterline Project

N
W E
S

500 250 0 500

Feet

PSOMAS

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Aerial Source: Esri, Maxar 2022

D:\Projects\3CAN\Civic_Center\PRO\Civic_Center.aprx\ex_Aerial_WP1.3

Aerial Photograph – Option WP1.3

Exhibit 2d

Sweetwater Mesa Tank and Waterline Project

N
W E
S

500 250 0 500

Feet

PSOMAS

(Rev: 3-13-2024 PLO) R:\Projects\CAN\3CAN020100\Graphics\ISMND\ex_Aerial_WP1.3.pdf

Final design plans were previously prepared in 1994 for the installation of a 12-inch steel water main along Sweetwater Mesa Road from Serra Road to the existing Sweetwater Mesa Tank. This portion of the alignment was designated as Phase II of the original Serra Road Water Improvements (Spec 29-425). Phase I was completed in 1994; however, Phase II was never constructed.

SECTION 3.0 PROJECT DESCRIPTION

3.1 PHYSICAL CHARACTERISTICS

The proposed Project includes construction of a new 12-inch water main in Serra Road from PCH to Sweetwater Mesa Road. The water main would continue along Sweetwater Mesa Road from Serra Road to the new 1.12 MG tank located at the end of Sweetwater Mesa Road. A second 12-inch water main would be constructed in PCH from Serra Road to the beginning of the Malibu Lagoon Bridge. The new Sweetwater Mesa Tank would be located at an undeveloped District owned property just north of 3311 Sweetwater Mesa Road as discussed in more detail below.

3.1.1 NEW SWEETWATER MESA TANK

In order to address the existing water system's deficiency of 1.70 MG, the District proposes to construct a new approximately 1.0 MG domestic water tank at the New Sweetwater Mesa Tank site and retain the existing tank, Sweetwater Mesa Tank, as an emergency back-up facility. Due to existing physical constraints of the site, including buildable area and limitations on height, the largest tank that can be constructed is 1.12 MG, which is intended to serve existing and approved future development in the service area when combined with the existing Sweetwater Mesa Tank to be retained and kept in service as an emergency back-up facility. The maximum height allowed for any structure by the City of Malibu's Local Coastal Program (LCP), zoned Residential, is 24 feet.

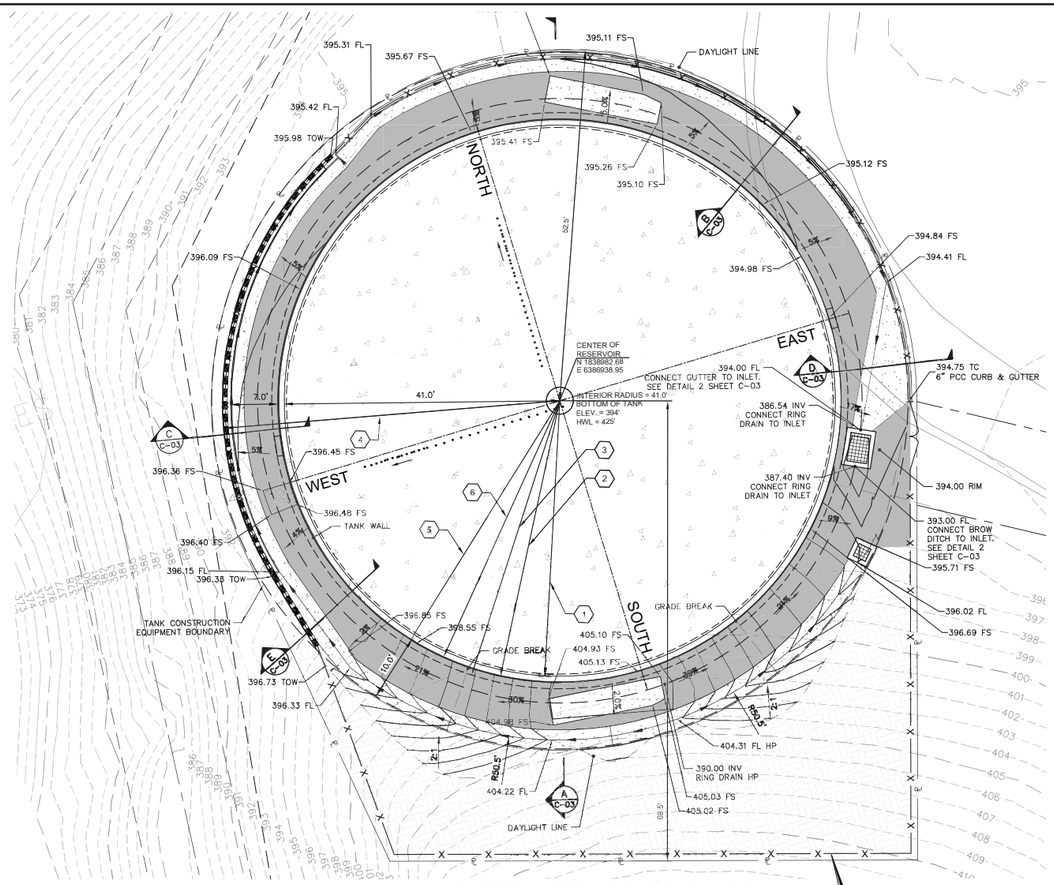
The New Sweetwater Mesa Tank would be partially buried, approximately 10 feet, with a diameter of 82-feet and height of 40 feet. The new tank would increase the gravity storage capacity from 0.22 MG to approximately 1.12 MG and would raise the 380-foot PZ to the new 418-foot PZ. The new tank would no longer be filled with a pumping system, but rather by pressure from the District's 30-inch transmission water main along the PCH. The new 418-foot PZ tank would improve storage capacity for domestic and fire protection water demands. The Waterworks Design Unit completed a hydraulic analysis of the proposed system and confirmed that the various system upgrades would improve the Sweetwater Mesa system to better serve existing and approved development in the service area. A site plan showing the proposed Sweetwater Mesa Tank is included as Exhibit 3, Site Plan.

3.1.2 WATER MAIN REPLACEMENTS

The new water mains included in this Project are separated into three distinct reaches as shown in Exhibit 4, Key Map.

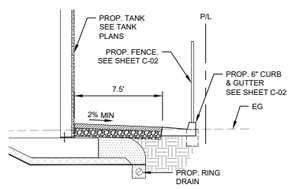
Water Main Project No. 1

Water Main Project No.1 (WP1) would replace the existing undersized 4-inch main through construction of approximately 3,140 feet of 12-inch steel concrete mortar coated (CMC) and concrete mortar lined (CML) water main in Sweetwater Water Mesa Road, beginning at the Serra Tank site at Sweet Water Mesa Road and extending to the New Sweetwater Mesa Tank at the end of Sweetwater Mesa Road. There are currently three options for the final routing of WP1; they are designated as WP1.1, WP1.2, and WP1.3, and are subsequently separated into three distinct reaches as described below. Each option is fully evaluated in Section 5.0, Impact Analysis. Selection of final routing of WP1 would be decided upon determination of the District's easement. The permanent easement would be acquired to allow future access for the purpose of construction, operation, and maintenance associated with the new waterline.



SWEETWATER MESA GRADING PLAN

SCALE: 1"=10'



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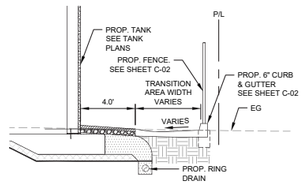
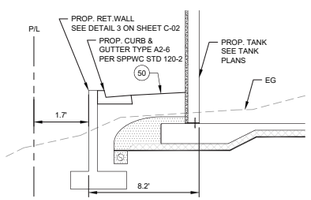
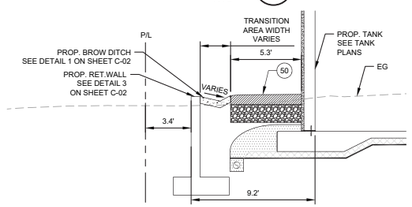


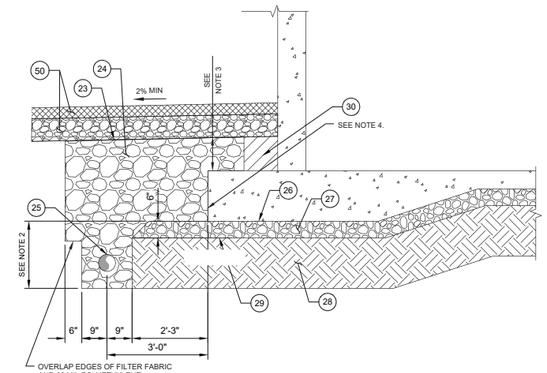
SECTION D C-03 NTS



SECTION C C-03 NTS



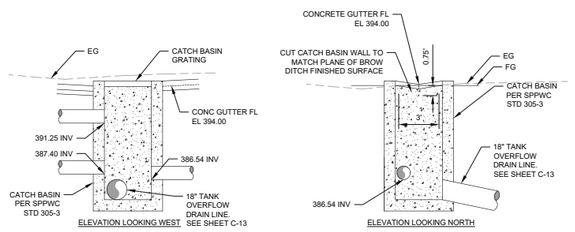
SECTION E C-03 NTS



SUBGRADE PREPARATION AND RING DRAIN DETAIL

1 C-03

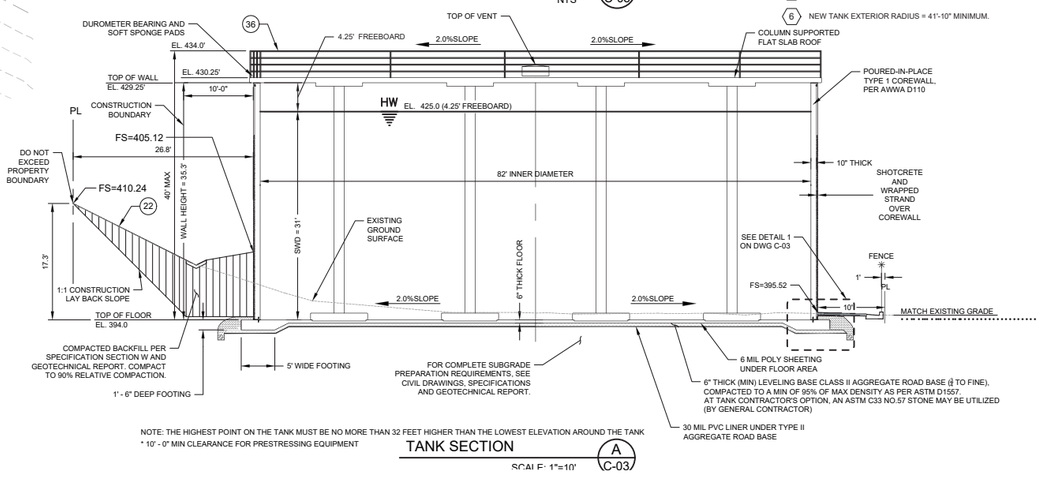
NTS



BROW DITCH AND INLET CONNECTION DETAIL

2 C-03

NTS



NOTE: THE HIGHEST POINT ON THE TANK MUST BE NO MORE THAN 32 FEET HIGHER THAN THE LOWEST ELEVATION AROUND THE TANK
* 10' - 0" MIN CLEARANCE FOR PRESTRESSING EQUIPMENT

TANK SECTION

A C-03

SCALE: 1"=10'

NOTES:

1. THE SOILS ENGINEER OF RECORD WILL INSPECT AND APPROVE THE FOUNDATION EXCAVATIONS BEFORE STEEL OR CONCRETE IS PLACED. THE CONTRACTOR SHALL NOT PLACE ANY MATERIALS FOR THE NEW FOUNDATION WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER.
2. RING DRAIN PIPE: SLOPE PIPE AT 1% MIN. TOP OF RING DRAIN PIPE SHALL BE AT OR BELOW THE BOTTOM OF CLASS II AGGREGATE BASE LAYER. RING DRAIN TRENCH MUST BE 18" WIDE AND FILLED WITH DRAIN ROCK, EXTEND 30 MIL LINER INTO AND OUT OF TRENCH. CONNECT PIPE TO OVERFLOW CATCH BASIN.
3. THE EXCAVATION BOTTOM SHOULD BE EVALUATED BY THE PROJECT GEOTECHNICAL CONSULTANT DURING THE EXCAVATION WORK. THE EXPOSED SUBGRADE SHOULD BE SCARIFIED TO A DEPTH OF APPROXIMATELY 8 INCHES, MOISTURE-CONDITIONED, AND COMPACTED PRIOR TO THE PLACEMENT OF FILL. ON-SITE AND IMPORTED SOILS PLACED TO BACKFILL THE EXCAVATION SHOULD BE COMPRISED OF LOW EXPANSION POTENTIAL, GRANULAR SOIL COMPACTED TO 95 PERCENT RELATIVE COMPACTION AS EVALUATED BY ASTM INTERNATIONAL (ASTM) D 1557.
4. TOP OF DRAIN ROCK TO EXTEND 12" MINIMUM ABOVE TOP OF FOUNDATION OR TO BOTTOM OF CLASS II AGGREGATE BASE, WHICHEVER IS LOWER.
5. SECURE VAPOR BARRIER TO TANK FOUNDATION PER SPECIFICATION T-312300.

MATERIALS LIST:

- (22) NATIVE FILL WITH JUTE NETTING. REFER TO GEOTECHNICAL REPORT FOR FURTHER DETAIL.
- (23) FILTER FABRIC PER SPECIFICATION SECTION T-312300
- (24) DRAIN ROCK PER SPECIFICATION SECTION T-312300
- (25) 6" DIAMETER SCH 80 PVC PERFORATED DRAIN PIPE (SEE NOTE 2 ON SHEET C-03)
- (26) 6 MIL POLYETHYLENE SHEETING, VAPOR BARRIER
- (27) AGGREGATE BASE PER SPEC SECTION T-312300. COMPACTED TO 95% RC
- (28) COMPACTED FILL MATERIAL PER GEOTECHNICAL REPORT AND SPECIFICATION SECTION W, COMPACTED TO 95% RC.
- (29) 30 MIL POLYETHLENE SHEETING MEMBRANE LINER
- (30) DRAIN PANEL PER SPECIFICATION SECTION T-331620
- (36) 45" HIGH HANDRAIL PER DETAIL 1 ON SHEET C-10, HANDRAIL SHALL EXTEND THE ENTIRE PERIMETER OF THE TANK - ALSO REFER TO LACWWD STD PLAN W-24
- (50) 4" A.C. PAVEMENT OVER 8" CRUSHED AGGREGATE BASE. C2-PG 64-10.

CONSTRUCTION NOTES:

(THIS SHEET ONLY)

1. FOUNDATION INTERIOR RADIUS = 39' MINIMUM.
2. NEW TANK INTERIOR RADIUS = 41' MINIMUM.
3. FOUNDATION OUTSIDE RADIUS = 43'-10" MINIMUM.
4. OVEREXCAVATION AND RECOMPACTION LIMITS, PER GEOTECHNICAL REPORT.
5. TANK CONSTRUCTION WILL REQUIRE 10' CLEARANCE FROM THE OUTSIDE OF THE PRE-STRESSED CONCRETE TANK.
6. NEW TANK EXTERIOR RADIUS = 41'-10" MINIMUM.

Source: Cannon, 2023

Site Plan

Sweetwater Mesa Tank and Waterline Project

Exhibit 3

PSOMAS

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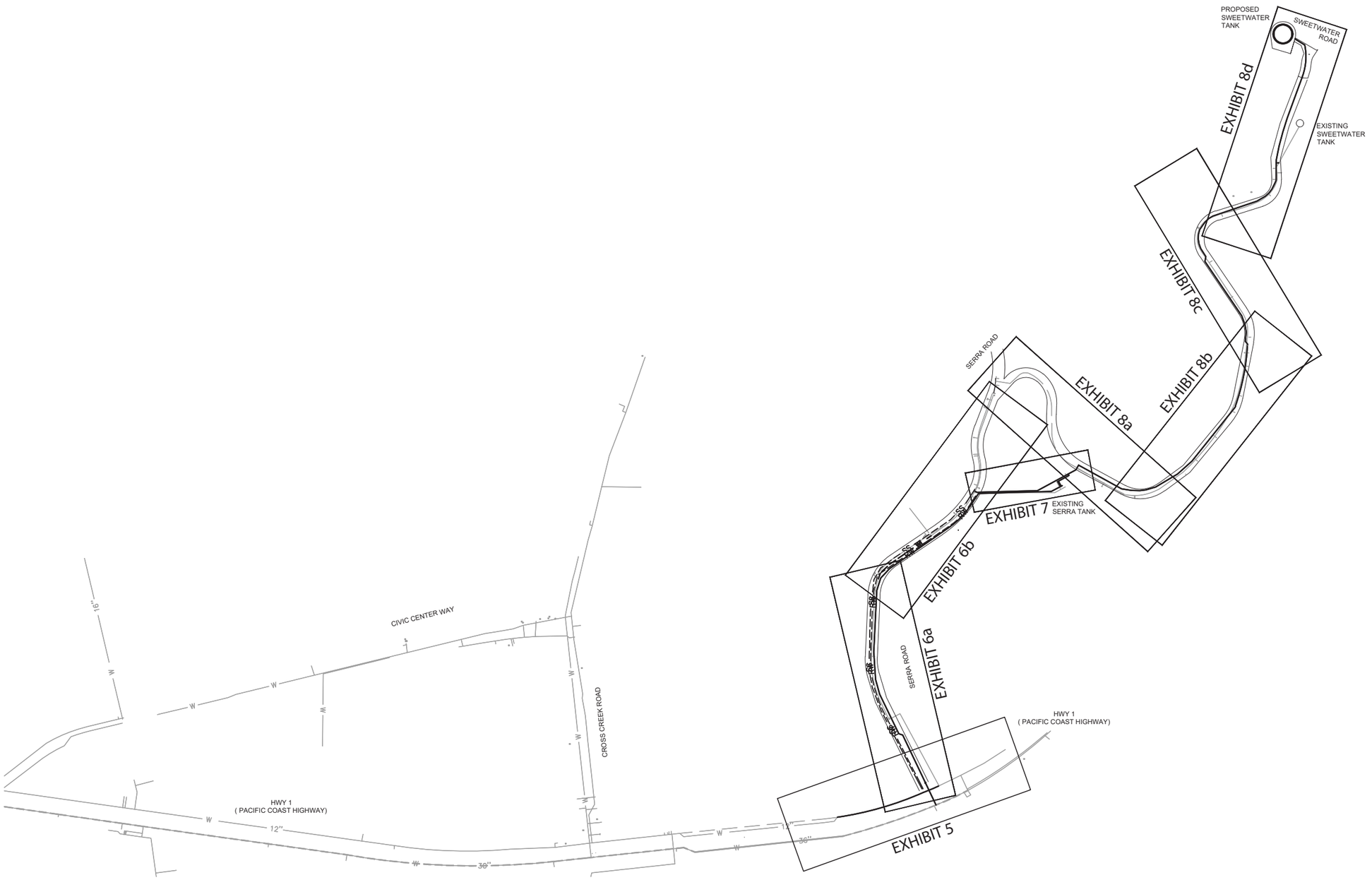

Source: Cannon, 2020

Key Map

Sweetwater Mesa Tank and Waterline Project

N W E S

0 250 500 1000 Feet

Exhibit 4

PSOMAS

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Water Main WP1.1

Under the WP1.1 option, a new 500-foot PZ 12-inch water main would be constructed in Serra Road from PCH to and within an existing 10 feet easement to the Serra Tank, upstream of a new pump/regulating station — (WP3 and WP3.1). The 418-foot PZ 12-inch water main would connect to the downstream side of a new pump/pressure regulating station at the Serra Tank site. WP1.1 would then be routed upslope to Sweetwater Mesa Road (adjacent the area of the existing 4-inch pipe to be replaced) and extend up to the 418-foot PZ tank and down to Serra Road where there currently is no water main. The new 12-inch water main would also connect to the existing 380-foot PZ 6-inch water main at the Serra Tank site and located in a 10-feet wide water main easement.

Water Main WP1.2

Under the WP1.2 option, a new 500-foot PZ water main would be constructed in Serra Road from PCH to and within a new easement to the Serra Tank, upstream of a new pump/regulating station — (WP3 and WP3.2). The 418-foot PZ 12-inch water main would connect to the downstream side of a new pump/pressure regulating station at the Serra Tank site. WP1.2 would be routed upslope to Sweetwater Mesa Road (adjacent the area of the existing 4-inch pipe to be replaced) and extend to the 418-foot PZ tank. Under the WP1.2 option, the 418-foot PZ 12-inch water main would also extend down Sweetwater Mesa Road to Serra Road and connect to the existing 12-inch 380-foot PZ water main. Unlike WP1.1, the new 12-inch water main would not connect to the existing 6-inch water main (to be abandoned) in the 380-foot PZ located in a 10-foot easement to the Serra Tank off Serra Road. Abandonment would involve cutting, capping, and filing pipe with sand and slurry cement.

Water Main WP1.3

Under the WP1.3 option, a new 500-foot PZ water main would be constructed in Serra Road from PCH to Sweetwater Mesa Road up to a new easement in a slope down to the Serra Tank, upstream of a new pump/regulating station — (WP3 and WP3.3). The 418-foot PZ the 12-inch water main would connect to the downstream side of a new pump/pressure regulating station at the Serra Tank site. Under the WP1.3 option, the 418-foot PZ 12-inch water main would be routed upslope to Sweetwater Mesa Road (adjacent the area of the existing 4-inch pipe to be replaced) and extend to the 418-foot PZ tank. Identical to WP1.2, the 418-foot PZ 12-inch water main would also extend down Sweetwater Mesa Road to Serra Road, and would connect to the existing 12-inch water main in the 380-foot PZ water main, and would not connect to the existing 6-inch water main (to be abandoned) in the 380-foot PZ located in a 10-foot easement to the Serra Tank off Serra Road. Abandonment would involve cutting, capping, and filing pipe with sand and slurry cement.

It should be noted that Sweetwater Mesa Road is a private, 14-foot wide, winding, concrete road with very little to no shoulder area. Although records show that a 40-foot easement exists for road and utility purposes, the homes along the road have a concentrated amount of landscaping directly adjacent to the roadway and within the existing easement, making it very difficult to install the 12-inch diameter water line within the area adjacent to the road, as recommended by the previously approved Serra Road Water Systems Improvements Project plans. All landscaping that would be removed or damaged during construction activities would be cataloged and replaced in kind in coordination with and to the satisfaction of the private property owners.

Water Main Project No.2

Water Main Project No.2 (WP2) involves construction of approximately 445 feet of 12-inch diameter steel CMC and CML and epoxy coated water main in PCH from Serra Road to the Malibu Lagoon Bridge. This 12-inch main would replace the existing 6-inch water main.

Water Main Project No.3

Water Main Project No.3 (WP3) includes construction of approximately 1,837 feet of parallel 12-inch diameter steel CMC and CML water main along Serra Road between PCH and the Serra Tank.

Water Main WP3.1

Water Main Project WP3.1 crosses an existing 10-foot-wide easement.

Water Main WP3.2

Water Main Project WP3.2 crosses a new access easement over an existing access road to the Serra Tank.

Water Main WP3.3

Water Main Project WP3.3 is routed up Sweetwater Mesa Road and crosses a new easement down slope behind the Serra Tank.

A profile view of the water main replacements is shown on Exhibit 5 (Pacific Coast Highway), Exhibits 6a–b (Serra Road), Exhibit 7 (Serra Tank), and Exhibits 8a–c (Sweetwater Mesa Road).

The exact termination of the Serra Road water main and the beginning of the Sweetwater Mesa Road water main are unknown at this time because the District does not have the easements for the District operated and maintained Serra Tank site. The District is currently working with the property owner to obtain the easement, and Project implementation would be contingent on obtaining this easement. This Project details and analyzes what is understood to be the maximum extent and disturbance areas of the water mains.

3.1.3 PUMP STATION

The Serra Tank site has an existing pump station, which would be replaced with a new skid-mounted modern pump station approximately 50 square feet in size. The pump station would only be used in an emergency condition — when gradient in the 500-foot PZ is below the height of the Sweetwater Mesa Tank. The new pump station would be quieter than the existing free-standing pumps and would include an enclosure for weather protection and sound attenuation.

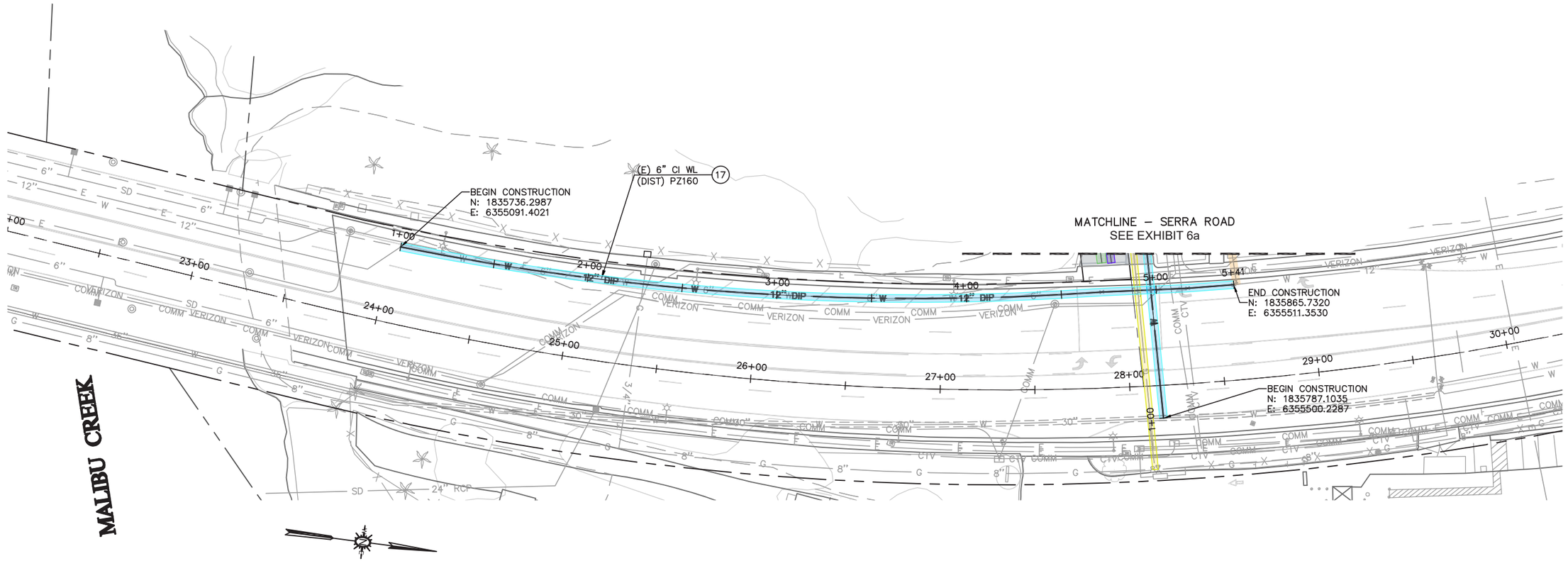
3.1.4 PRESSURE REGULATING STATIONS

The Project would construct three new Pressure Regulating Stations (PRS).

- **Palm Canyon Lane and Serra Road:** The first PRS is planned at the southwest corner of Palm Canyon Lane and Serra Road.
- **Mariposa De Oro Street and Serra Road:** The second PRS is planned on the west side of the intersection at the Mariposa De Oro Street and Serra Road.

HWY 1 (PACIFIC COAST HIGHWAY)

MALIBU CREEK



Source: Cannon, 2020

Pacific Coast Highway – Profile View

Exhibit 5

Sweetwater Mesa Tank and Waterline Project

0 40 80 160 Feet

PSOMAS

(09/17/2020 MMD) R:\Projects\CAN\3CAN020100\Graphics\ISMND\ex_Profile_PCH.pdf

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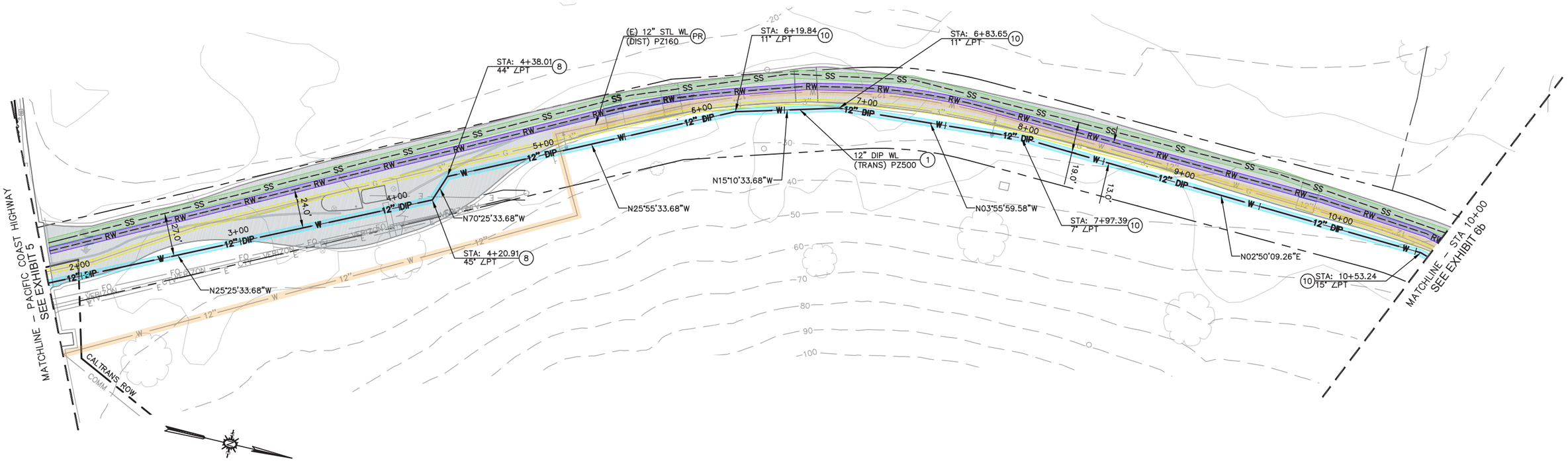

Source: Cannon, 2020

Serra Road – Profile View

Exhibit 6a

Sweetwater Mesa Tank and Waterline Project

0 40 80 160 Feet

PSOMAS

(09/17/2020 MMD) R:\Projects\CAN\3CAN020100\Graphics\ISMND\ex_Profile_Serra.pdf

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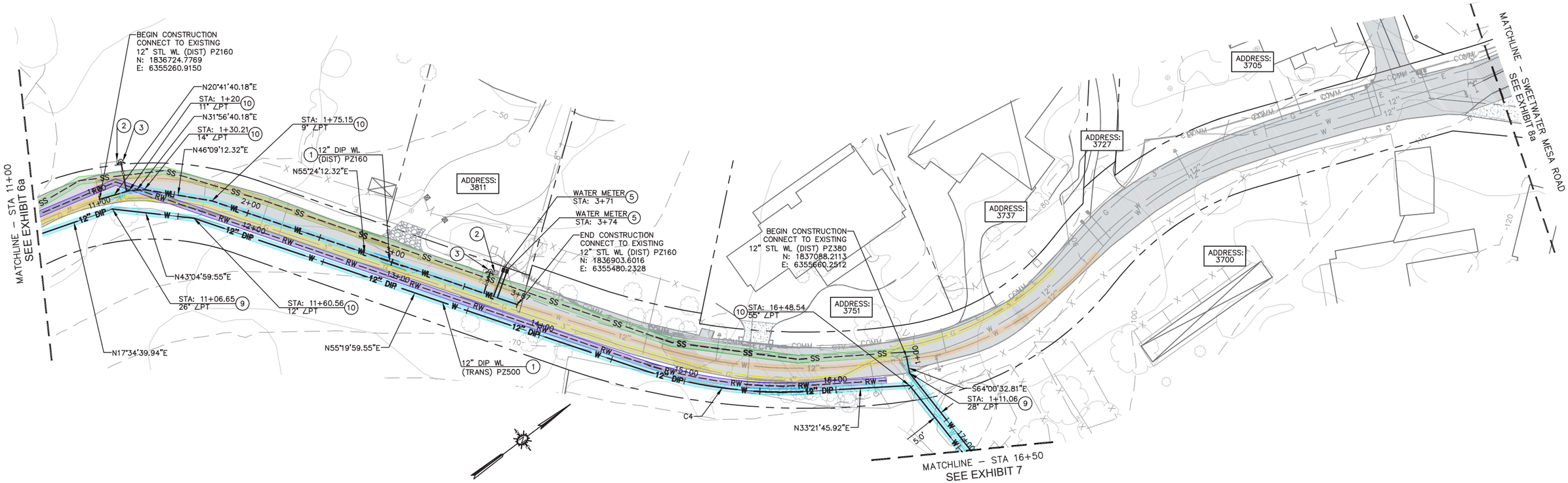


Source: Cannon, 2020

Serra Road – Profile View

Exhibit 6b

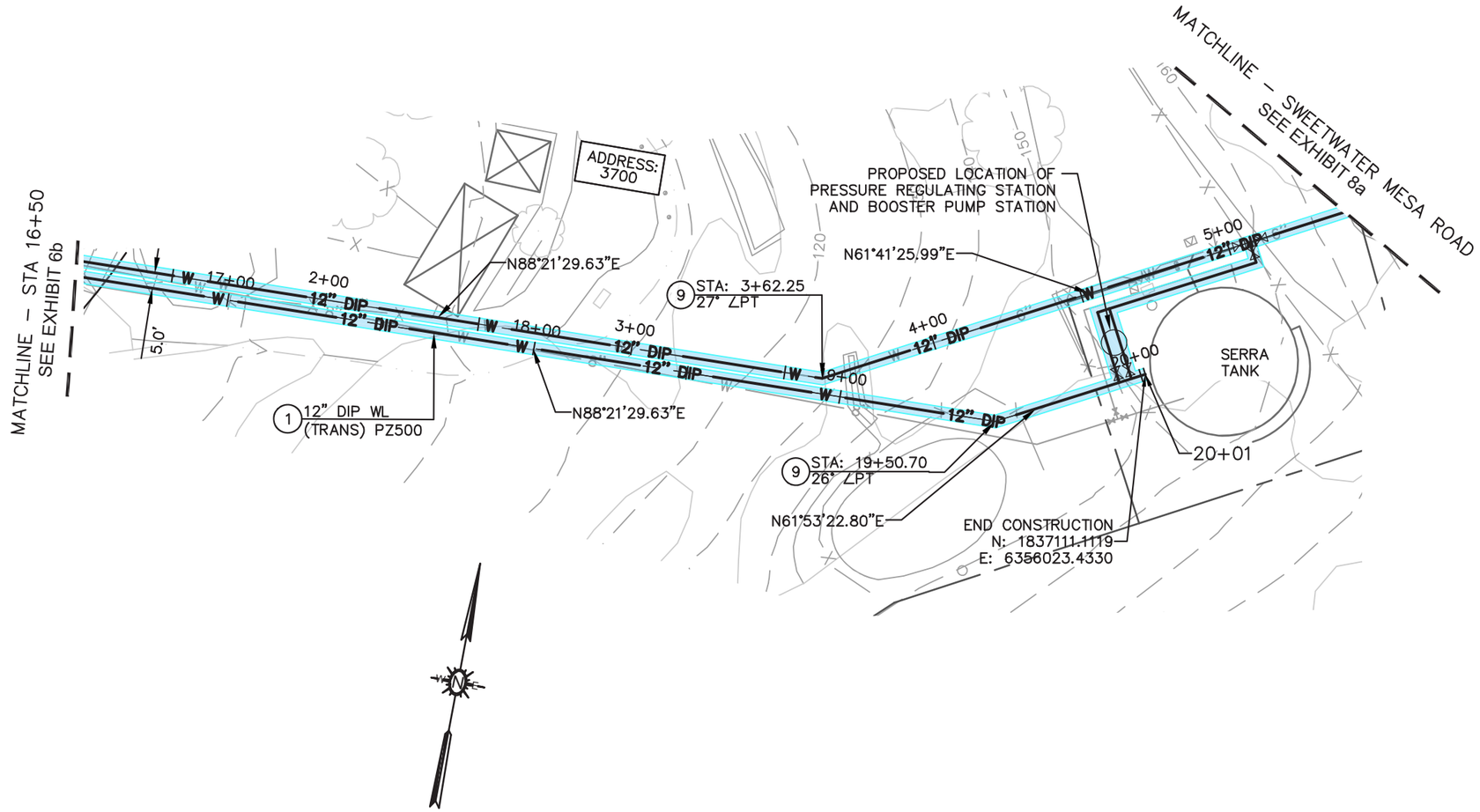
Sweetwater Mesa Tank and Waterline Project

0 40 80 160 Feet

PSOMAS

(09/17/2020 MMD) R:\Projects\CAN\3CAN020100\Graphics\ISMND\ex_Profile_Serra.pdf

D:\Projects\3CAN\020100\GRAPHICS\ISMND\ex_Profile_Serra_2_20200917.ai



Source: Cannon, 2020

Serra Tank – Profile View

Exhibit 7

Sweetwater Mesa Tank and Waterline Project

N W E S

0 40 80 160 Feet

PSOMAS

(09/17/2020 MMD) R:\Projects\CAN\3CAN020100\Graphics\ISMND\ex_Profile_Serra_Tank.pdf

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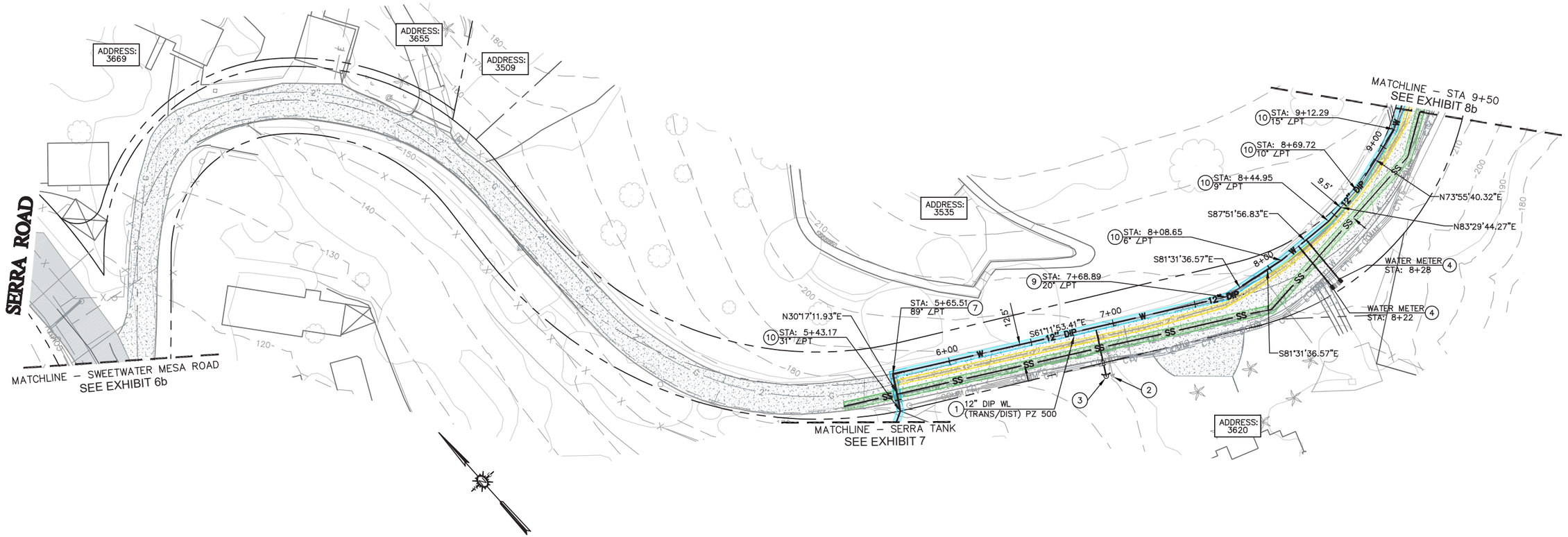


Source: Cannon, 2020

Sweetwater Mesa Road – Profile View

Exhibit 8a

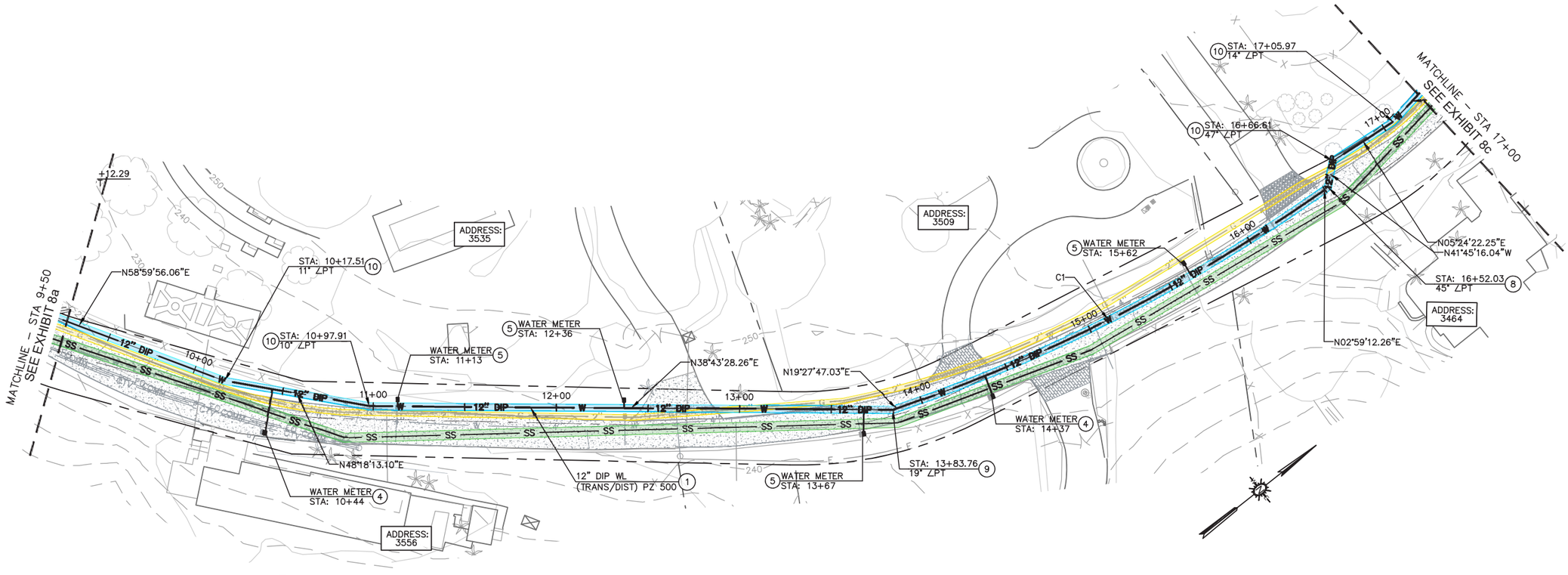
Sweetwater Mesa Tank and Waterline Project

0 40 80 160 Feet

PSOMAS

(09/17/2020 MMD) R:\Projects\CAN\3CAN020100\Graphics\ISMND\ex_Profile_Sweetwater.pdf

D:\Projects\3CAN\020100\GRAPHICS\ISMND\ex_Profile_Sweetwater_1_20200917.ai



Source: Cannon, 2020

Sweetwater Mesa Road – Profile View

Exhibit 8b

Sweetwater Mesa Tank and Waterline Project

0 40 80 160 Feet

PSOMAS

(09/17/2020 MMD) R:\Projects\CAN\3CAN020100\Graphics\ISMND\ex_Profile_Sweetwater.pdf

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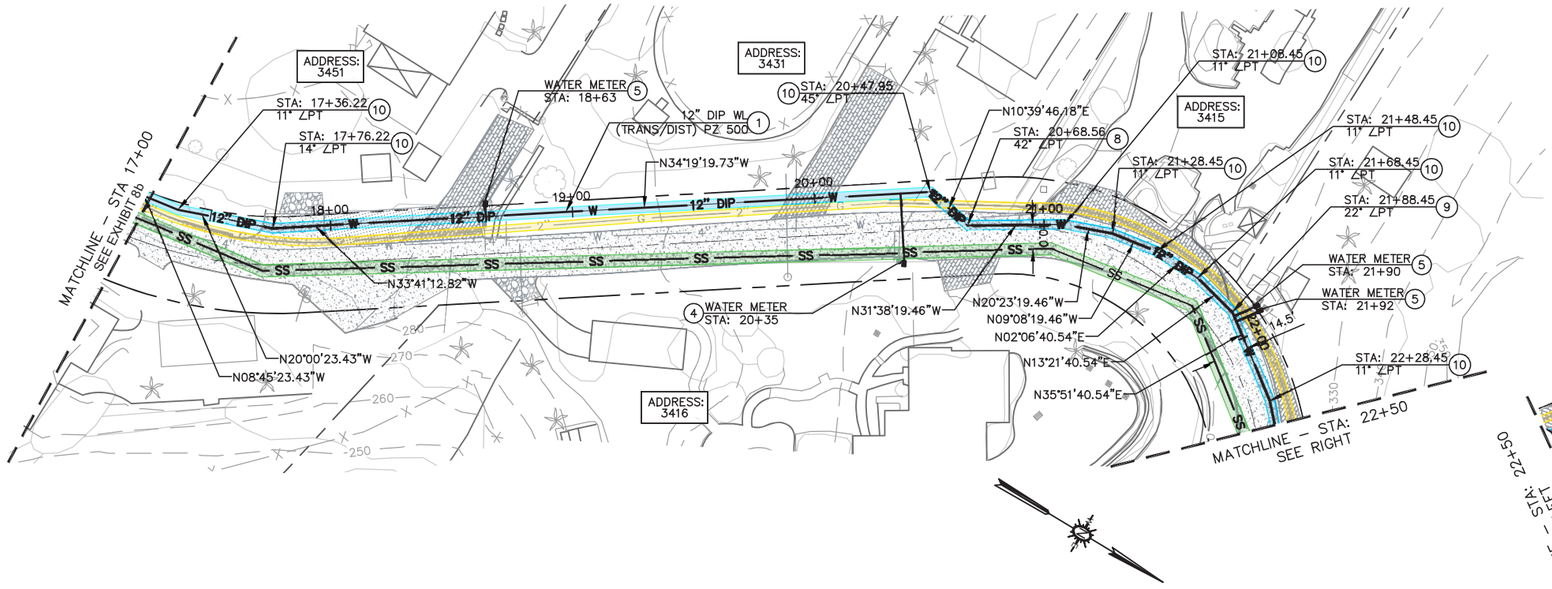

Source: Cannon, 2020

Sweetwater Mesa Road – Profile View

Exhibit 8c

Sweetwater Mesa Tank and Waterline Project

0 40 80 160 Feet

PSOMAS

(09/17/2020 MMD) R:\Projects\CAN\3CAN020100\Graphics\ISMND\ex_Profile_Sweetwater.pdf

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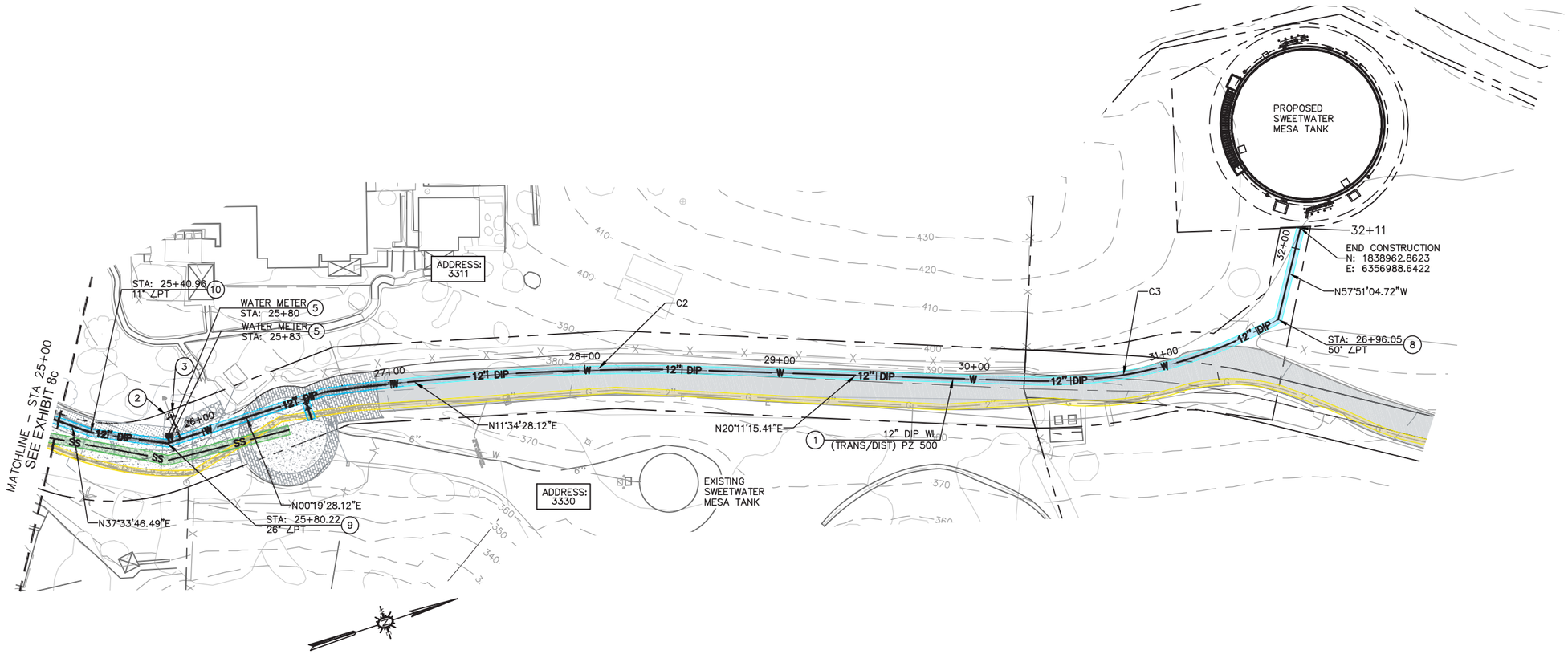

Source: Cannon, 2020

Sweetwater Mesa Road – Profile View

Exhibit 8d

Sweetwater Mesa Tank and Waterline Project

0 40 80 160 Feet

PSOMAS

(09/17/2020 MMD) R:\Projects\CAN\3CAN020100\Graphics\ISMND\ex_Profile_Sweetwater.pdf

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- **Serra Tank-PRV:** Up to 4 PRS are planned on the Serra Tank site.

3.2 CONSTRUCTION PHASES

The proposed Project would be constructed in two phases: the water mains installation and the construction of the new Sweetwater Mesa Tank. The water mains installation is estimated to occur over a 12-month period from September 2028 to September 2029. The Sweetwater Mesa Tank construction is estimated to occur over a 12-month period from May 2027 through May 2028. Temporary construction easements would be established for the storage of construction materials, supplies, and equipment. The property alongside the New Sweetwater Tank property would be rented from the property owner as a staging area for construction materials and equipment for both the water main and tank projects; if this location is not available, an alternate staging area would be used at a nearby storage yard located at 3637 Winter Canyon Road. Additionally, construction crews would temporarily use Sweetwater Mesa Road to access the tank site during the construction period. The same staging area is proposed for each of the three options.

3.3 PURPOSE

The purpose of this document is to evaluate environmental impacts from construction and operation of the proposed Project consisting of three water mains replacements in Serra Road, Sweetwater Mesa Road, and PCH, respectively; one new 1.0 MG tank at the end of Sweetwater Mesa Road; a pump station; and three pressure regulating stations.

3.4 ANTICIPATED DISCRETIONARY APPROVALS

This IS/MND is intended to serve as the primary CEQA environmental document for all actions associated with the proposed Project, including all discretionary approvals requested or required to implement the Project. In addition, this is the primary reference document for the formulation and implementation of a mitigation monitoring program for the proposed Project.

A responsible agency is a public agency other than the lead agency that has responsibility for carrying out or approving a project (CEQA Guidelines § 15381 and PRC § 21069). Responsible agencies with potential involvement in the Project include the following:

- **City of Malibu.** A Coastal Development Permit, Encroachment Permit, Notice of Exemption – Local Coastal Commission, and Malibu Local Implementation Program (LIP) Height Variance.
- **State Water Resources Control Board, Division of Drinking Water.** An Operational Permit for the new tank.
- **California Department of Transportation (Caltrans).** An Encroachment Permit and approval of the Traffic Management Plan.

In addition to coordination with the permitting agencies to acquire the appropriate permit or exemptions, the Project would be coordinated with the two homeowner associations (HOAs), Serra Canyon HOA and Sweetwater Mesa HOA, and individual property owners to obtain easements to access the Serra Tank site, as needed.

SECTION 4.0 ENVIRONMENTAL CHECKLIST

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

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

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

DETERMINATION: (To be completed by the Lead Agency.)

On the basis of this initial evaluation:

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

☒ I find that although the proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the Project have been made by or agreed to be 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 al 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 — October 30, 2024 — Date

Grace Komjakraphan-Tek — Printed Name

County of Los Angeles Public Works — 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: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analysis," as described in (5) below, may be cross-referenced).

5) Earlier analyses 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 I(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 explanation of each issue should identify:

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

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

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 Environmental 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 each discussion are mitigation measures, as appropriate, that are recommended for implementation as part of the proposed Project.

Fish and Wildlife Determination

(Per Section 21089(b) of the Public Resources Code, all project applicants and public agencies subject to the California Environmental Quality Act shall pay a Fish and Game filing fee for each proposed project that would adversely affect wildlife resources.)*

Based on the responses contained in this Environmental Checklist, there is no evidence that the project has a potential for a change that would adversely affect wildlife resources or the habitat upon which the wildlife depends. Has the presumption of adverse effect set forth in 14 CCR 753.5 (d) been rebutted by substantial evidence?

__ Yes (Certificate of Fee Exemption and County Administrative fee required)

_X_ No (Pay fee)

***Note:** Fish and Game Code Section 711.4(c)(2)(A) states that projects that are Categorically Exempt from CEQA are also exempt from filing fee.

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SECTION 5.0 DISCUSSION OF ENVIRONMENTAL CHECKLIST QUESTIONS

As discussed previously in Section 3.1.2, there are currently three options for the final routing of WP1; they are designated as WP1.1, WP1.2, and WP1.3, and are subsequently separated into three distinct reaches. The following impact analysis is applicable, and identical, for all three WP1 routing options.

Where appropriate, cumulative construction and development projects have been taken into consideration for purposes of analysis, based on the topic being analyzed. The cumulative study can generally be defined as the City of Malibu, but also varies from topic to topic and is discussed further in Section XXI. Mandatory Findings of Significance.

I. AESTHETICS

ENVIRONMENTAL ISSUES (See attachments for information sources)	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
AESTHETICS. 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 nonurbanized 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?	☐	☐	☒	☐

IMPACT ANALYSIS

Would the Project:

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

Less Than Significant Impact. According to the City of Malibu General Plan (1995) Conservation Element, officially recognized scenic resources include existing portions of the Coastal Slope Trail, which are located well to the north and west of the Project site. Due to intervening topography and distance, those locations would offer highly impaired views of the Project site. Additionally, views of the Project site from the informal scenic viewpoint on Malibu Canyon Road (approximately 0.8 miles west of the Project site) and from the Malibu Creek Trail would also be impaired due to intervening topography and distance. The City of Malibu Local Coastal Implementation Plan, Chapter 6.5.B.6 requires all new water tanks visible from scenic areas or scenic roads to be partially below-grade where feasible and incorporate colors that are compatible with the surrounding landscape and landscape screening to minimize visual impacts (of which the proposed Sweetwater Mesa tank would adhere to). The Malibu LIP is operated under the authority of the State of California Coastal Commission. As such, the Project is required to comply with the LIP and the proposed LCP Amendment and zoning text amendment (LCPA/ZTA), which limits

the maximum height of new structures to 24 feet (for flat roofs), and requires siting, design, and landscape measures to minimize the facility's design appearance. It also imposes lighting and color restrictions on the Project to ensure that the development is compatible with its design setting.

Construction: Project construction would occur over a limited time period. Any visual impacts would be temporary and short-term in nature, and thus would not result in a substantial adverse effect on a scenic vista. Construction-related impacts would be less than significant, and no mitigation is required.

Operation: The Project includes several elements detailed in Section 3.0, Project Description, each of which would comply with applicable LIP requirements through project design with the exception of tank height. The tank would be constructed of concrete and finished with a neutral color coating to blend with the surrounding hillsides and vegetation (refer to Exhibits 9a–c, Renderings). All other project components would also be color coated to blend with the surroundings. The tank would be partially buried with an 82-foot diameter and will be 40 feet high, which would exceed the 24-foot maximum height limit in height. As part of the Project, a variance is requested to allow for construction of the tank at the proposed height of 40 feet. The variance memorandum would be subject to review by the City of Malibu. Approval of the memorandum and granting of the requested variance would be required for approval of, and prior to initiation of, the overall Project. Therefore, the Project would not result in a significant impact on a scenic vista. Impacts would be less than significant, and no mitigation is required.

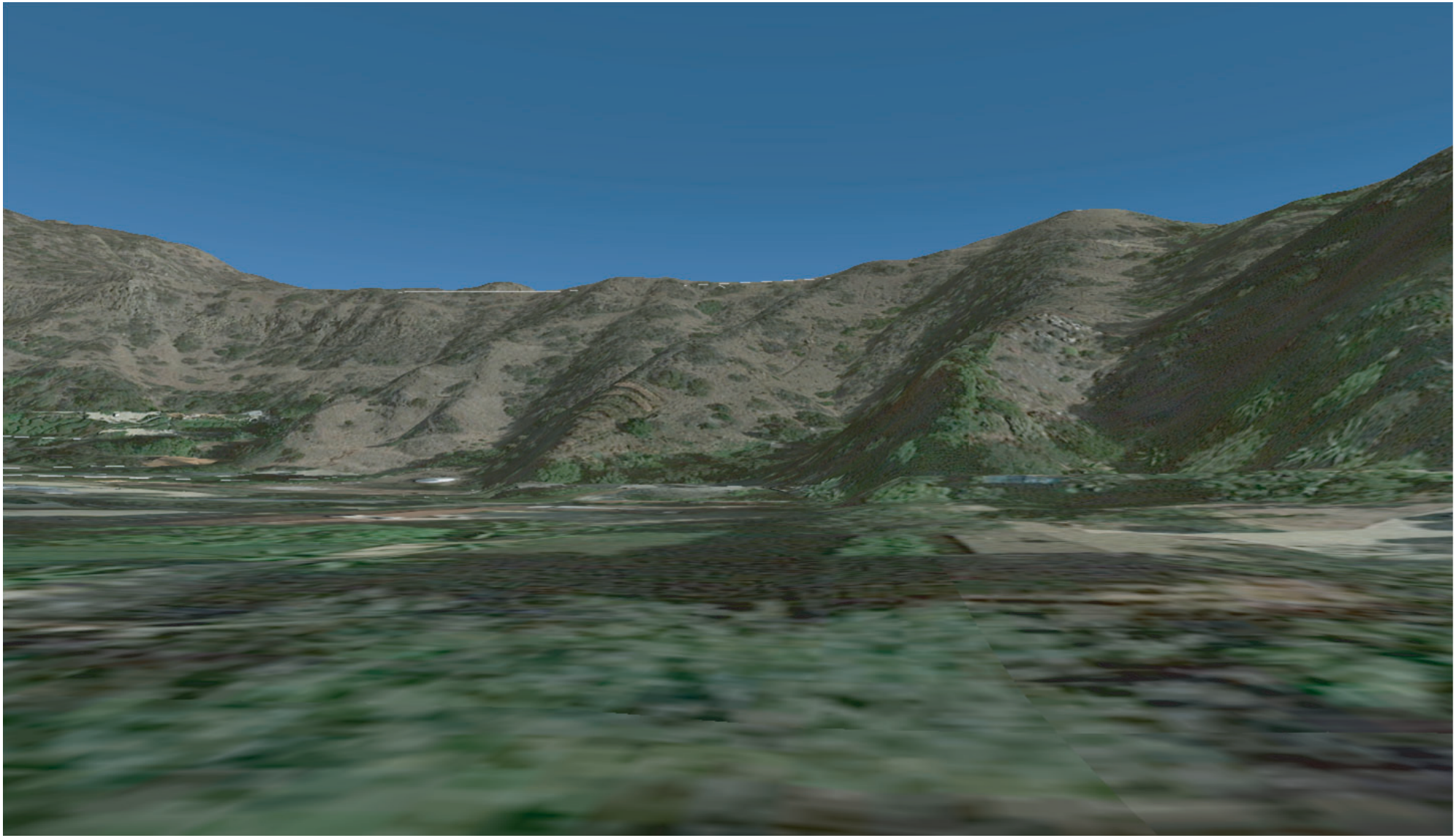
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

Less Than Significant Impact. According to Caltrans' California Scenic Highway Mapping System (Caltrans 2020), scenic highways in the vicinity of the Project site include PCH and Malibu Canyon Road.

Construction and Operation. Malibu Canyon Road is located approximately 0.8 miles west of the Project site and views of the Project site would be obstructed due to intervening topography. PCH borders the Project site on the south. Direct views from PCH are limited to motorists and bicyclists traveling along the highway (due to the absence of a sidewalk along the north side of the highway). Additionally, dense but non-continuous landscape acts as a visual buffer along the highway and would also serve to screen out direct views of the proposed improvements. Due to the limited visual access to the Project site from PCH, and compliance with LCP development standards (both existing and those in the proposed LCPA/ZTA), the potential of the Project to affect views of scenic resources is minimal. Therefore, the Project would not result in a significant impact on scenic resource within a scenic highway. Impacts would be less than significant, and no mitigation is required.

c) In nonurbanized 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. As discussed in Section 2.0, Project Location and Environmental Setting, the existing Sweetwater Mesa Tank site is too small to provide the recommended space for a new 1.0 MG volume tank. A new Sweetwater Mesa tank site property has been acquired near the end of the paved section of Sweetwater Mesa Road. The property is an approximately 10,713 square foot lot adjacent to a residential property. The perimeter of the property is open



Source: Cannon, 2023

Renderings

Exhibit 9a

Sweetwater Mesa Tank and Waterline Project

PSOMAS

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Source: Cannon, 2023

Renderings

Exhibit 9b

Sweetwater Mesa Tank and Waterline Project

PSOMAS

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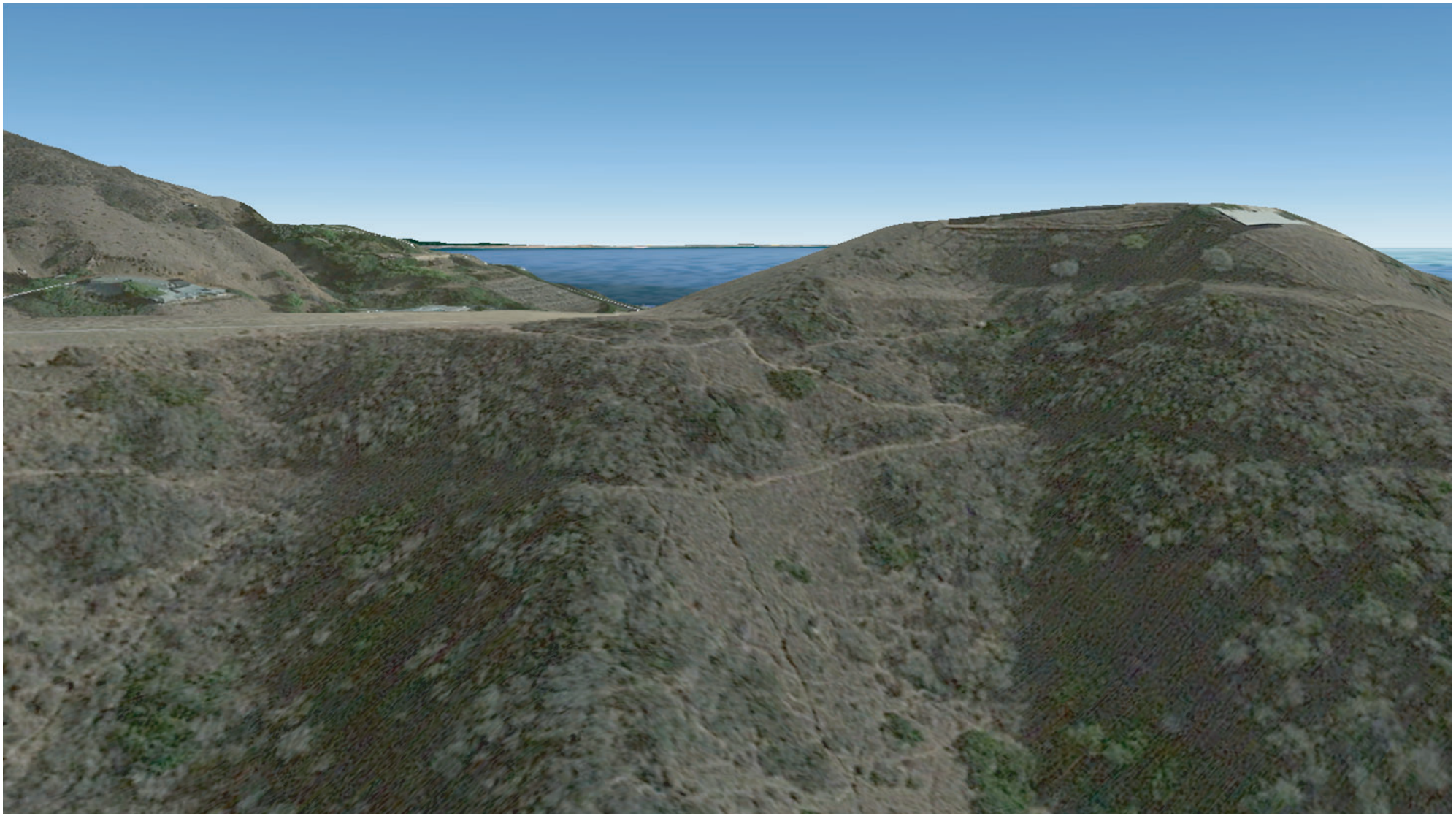

Source: Cannon, 2023

Renderings

Exhibit 9c

Sweetwater Mesa Tank and Waterline Project

PSOMAS

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and contains no trees to screen it. Exhibit 10, Site Photographs, illustrates the existing visual character of the site, which is located approximately 550 feet southeast of the existing Sweetwater Mesa Tank site.

- **View 1 – View of the laydown area/location of the new Sweetwater Mesa tank facing south.** This view depicts the visual character of the laydown area/new Sweetwater Mesa tank site for those traveling south along Sweetwater Mesa Road. The foreground view is dominated by a dirt lot with sparse vegetation. As shown in the background of the photograph, a chain-link fence can be seen surrounding the existing structure. Views of the Pacific Ocean are also visible from this vantage point.
- **View 2 – View of the existing Serra Tank facing south.** This view depicts the visual character of the existing Serra Tank site facing south. As shown in the photograph, views predominately include mature vegetation and trees that shield the majority of the Serra Tank from sight. Residences can be seen in the distance in addition to a view of the Pacific Ocean.

As discussed in Section 3.0, Project Description, the proposed Project consists of three water mains in Serra Road, Sweetwater Mesa Road, and PCH, respectively; one new 1.0 MG tank at the end of Sweetwater Mesa Road; a pump station; and three pressure regulating stations. The existing Sweetwater Mesa Tank would be maintained and kept in service as an emergency back-up facility.

Construction. Project construction would occur over a limited time period. Any visual impacts would be temporary and short-term in nature, and thus would not result in significant impact related to visual character and quality of the site. Construction-related impacts would be less than significant, and no mitigation is required.

Operation: The new Sweetwater Tank would be located at a higher elevation (418 feet above mean sea level [msl]) than the existing Sweetwater Mesa Tank, with an elevation of 380 feet above msl, and would be 40 feet tall. The maximum height allowed for any zoned residential structure by the City of Malibu's LCP is 24 feet. As part of the Project, a variance is requested to allow for construction of the tank at the proposed height of 40 feet. The variance memorandum would be subject to review by the City of Malibu. Approval of the memorandum and granting of the requested variance would be required for approval of, and prior to initiation of the Project. Therefore, the Project would not conflict with this requirement. The District has preliminarily sized the tank diameter at 82 feet to allow for approximately 10 feet of clearance from the easement/property line. Some landscaping would need to be removed during construction activities; however, all landscaping would be cataloged and restored to existing conditions once construction is complete. Project impacts regarding the visual character and quality of the site would be less than significant, and no mitigation is required.

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. Under existing conditions, the Sweetwater Mesa Tank has no on-site lighting.

Construction. Project construction would require limited lighting due to the majority of construction activities occurring during daylight hours. To the extent that lighting is required, it would be properly directed and shielded to minimize overspill beyond the physical limits of construction. Any security lighting would also be properly directed and shielded to minimize overspill. Any impacts related to construction lighting would be temporary and short-term in

View 1 – View of the laydown area/location of the new Sweetwater Mesa tank facing south.

View 2 – View of the existing Serra Tank facing south.

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Site Photographs

Exhibit 10

Sweetwater Mesa Tank and Waterline Project

PSOMAS

(03/24/2021 MMD) R:\Projects\CAN\3CAN020100\Graphics\ISMND\ex_SP.pdf

nature, and thus would not result in significant impact related to light or glare. Construction-related impacts would be less than significant, and no mitigation is required.

Operation. As proposed, the Project would install up to five lights located at the vehicle entrance, inlet piping, outlet piping, and two hatches on top of the tank roof. Lights would either be mounted on poles or mounted to the top of the tank with manual activation by maintenance and operation staff. Lighting would only be used as needed when maintenance staff are on-site and would be shielded to minimize overspill beyond the physical limits of the facilities. Project impacts pertaining to light or glare would be less than significant, and no mitigation is required.

MITIGATION PROGRAM

No mitigation measures are required.

II. AGRICULTURE AND FOREST RESOURCES

ENVIRONMENTAL ISSUES (See attachments for information sources)	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
AGRICULTURE AND FOREST RESOURCES. In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of forestry and Fire Protection regarding the State's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
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 nonagricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

IMPACT ANALYSIS

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?

No Impact. Data from the State of California Department of Conservation, Farmland Mapping and Monitoring Program (2016) indicates that the Project site contains no land designated as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance, nor is it zoned for agricultural use. Rather, the site is designated as "Urban and Built-Up Land" and "Other Land".

Construction and Operation. No current agricultural operations exist on the Project site. No other designated farmland exists in the Project vicinity, and the Project site is not subject to any California Land Conservation Act (Williamson Act) contracts. No current agricultural operations exist in the vicinity of the Project site. Implementation of the proposed Project would not result in conversion of farmland to nonagricultural uses. The Project site is not considered to be farmland of significance or land in agricultural use. No impacts to agricultural resources would result from Project implementation, and no mitigation is required.

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

No Impact. As stated above, no current agricultural operations exist on the Project site. No other designated farmland exists in the Project vicinity, and the Project site is not subject to any California Land Conservation Act (Williamson Act) contracts. No current agricultural operations exist in the vicinity of the Project site.

Construction and Operation. Implementation of the proposed Project would not result in conversion of farmland to nonagricultural uses. The Project site is not considered to be farmland of significance or land in agricultural use. No impacts to agricultural resources would result from Project implementation, and no mitigation is required.

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. According to Section 12220(g) of the *California Public Resources Code*, "forest land is land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits".

Construction and Operation. The Project site does not meet the definition of forest land; therefore, no impacts would occur, and no mitigation is required.

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

No Impact. According to Section 12220(g) of the *California Public Resources Code*, "forest land is land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits".

Construction and Operation. The Project site does not meet the definition of forest land; therefore, no impacts would occur, and no mitigation is required.

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 discussed previously, the proposed Project site is not designated as farmland of significance and is not being used for agricultural production. No other designated farmland exists in the Project vicinity, and the Project site is not subject to any California Land Conservation Act (Williamson Act) contracts.

Construction and Operation. No current agricultural operations exist in the vicinity of the Project site. Further, there are no forest lands in the vicinity of the Project site; therefore, the Project would not convert forest land to non-forest use. No impacts would occur, and no mitigation is required.

MITIGATION PROGRAM

No mitigation measures are required.

III. AIR QUALITY

ENVIRONMENTAL ISSUES (See attachments for information sources)	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
AIR QUALITY. Where available, the significance criteria established by the applicable air quality management 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) adversely affecting a substantial number of people?	☐	☐	☒	☐

IMPACT ANALYSIS

Would the Project:

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

No Impact. Air quality in Los Angeles County is regulated by the South Coast Air Quality Management District (SCAQMD), which is the agency principally responsible for comprehensive air pollution control in the South Coast Air Basin (SoCAB). The SCAQMD develops rules and regulations; establishes permitting requirements for stationary sources; inspects emissions sources; and enforces such measures through educational programs or fines, when necessary. The SCAQMD is directly responsible for reducing emissions from stationary (area and point), mobile, and indirect sources. It has responded to this requirement by preparing a sequence of Air Quality Management Plans (AQMPs).

On December 2, 2022, the SCAQMD adopted the 2022 AQMP, which is a regional and multi-agency effort (SCAQMD, California Air Resources Board [CARB], Southern California Association of Governments [SCAG], and the U.S. Environmental Protection Agency [USEPA]). The 2022 AQMP incorporates the latest scientific and technical information and planning assumptions, including the SCAG 2020–2045 Regional Transportation Plan/Sustainable Communities Strategy; updated emission inventory methodologies for various source categories; and SCAG's latest growth forecasts. The main purpose of an AQMP is to bring an area into compliance with the requirements of federal and State air quality standards.

The two principal criteria for conformance to an AQMP are:

1. Whether the project would result in an increase in the frequency or severity of existing air quality violations; cause or contribute to new violations; or delay timely attainment of air quality standards and
2. Whether the project would exceed the assumptions in the AQMP.

With respect to the first criterion, the following analyses demonstrate that the Project would not (1) generate short-term or long-term emissions of volatile organic compounds (VOCs), oxides of nitrogen (NOx), which are ozone (O_3) precursors, respirable particulate matter with a diameter of 10 microns or less (PM10), or fine particulate matter with a diameter of 2.5 microns or less (PM2.5) that could potentially cause an increase in the frequency or severity of existing air quality violations; (2) cause or contribute to new violations; or (3) delay timely attainment of air quality standards.

The SCAQMD has developed significance thresholds to determine whether State and federal air quality standards would be violated or whether a substantial contribution to a violation would occur. These significance thresholds have been developed for the construction and operations phases of a Project and are used in this analysis to examine the potential impacts of the Project's emissions on both regional and local contexts.

Existing Conditions

The Project site is located within the SoCAB and is under the jurisdiction of the SCAQMD. Both the State of California and the USEPA have established health-based Ambient Air Quality Standards (AAQS) for air pollutants, which are known as "criteria pollutants". The AAQS are designed to protect the health and welfare of the populace within a reasonable margin of safety. The AAQS for O_3, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), PM10, PM2.5, lead, and other pollutants are shown in Table 1.

TABLE 1
CALIFORNIA AND FEDERAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards	Federal Standards	
			Primary[a]	Secondary[b]
O_3	1 Hour	0.09 ppm (180 µg/m^3)	–	–
	8 Hour	0.070 ppm (137 µg/m^3)	0.070 ppm (137 µg/m^3)	Same as Primary
PM10	24 Hour	50 µg/m^3	150 µg/m^3	Same as Primary
	AAM	20 µg/m^3	–	Same as Primary
PM2.5	24 Hour	–	35 µg/m^3	Same as Primary
	AAM	12 µg/m^3	12.0 µg/m^3	15.0 µg/m^3
CO	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	–
	8 Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	–
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)	–	–
NO_2	AAM	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as Primary
	1 Hour	0.18 ppm (339 µg/m^3)	0.100 ppm (188 µg/m^3)	–
SO_2	24 Hour	0.04 ppm (105 µg/m^3)	0.14 ppm	–
	3 Hour	–	–	0.5 ppm (1,300 µg/m^3)
	1 Hour	0.25 ppm (655 µg/m^3)	0.075 ppm (196 µg/m^3)	–
Lead	30-day Avg.	1.5 µg/m^3	–	–
	Calendar Quarter	–	1.5 µg/m^3	Same as Primary
	Rolling 3-month Avg.	–	0.15 µg/m^3	
Visibility Reducing Particles	8 hour	Extinction coefficient of 0.23 per km – visibility ≥ 10 miles (0.07 per km – ≥30 miles for Lake Tahoe)	**No Federal Standards**	
Sulfates	24 Hour	25 µg/m^3		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)		
Vinyl Chloride	24 Hour	0.01 ppm (26 µg/m^3)		

O_3: ozone; ppm: parts per million; µg/m^3: micrograms per cubic meter; PM10: respirable particulate matter; AAM: Annual Arithmetic Mean; –: No Standard; PM2.5: fine particulate matter; CO: carbon monoxide; mg/m^3: milligrams per cubic meter; NO_2: nitrogen dioxide; SO_2: sulfur dioxide; km: kilometer.

[a] *National Primary Standards:* The levels of air quality necessary, within an adequate margin of safety, to protect the public health.

[b] *National Secondary Standards:* The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

Note: More detailed information in the data presented in this table can be found at the CARB website (www.arb.ca.gov).

Source: CARB 2016

Regional air quality is defined by whether the area has attained or not attained State and federal air quality standards, as determined by air quality data from various monitoring stations. Areas that are considered in “nonattainment” are required to prepare plans and implement measures that will bring the region into “attainment”. When an area has been reclassified from nonattainment

to attainment for a federal standard, the status is identified as “maintenance”, and there must be a plan and measures established that will keep the region in attainment for the following ten years.

For CARB, an “Unclassified” designation indicates that the air quality data for the area are incomplete and do not support a designation of attainment or nonattainment. Table 2 summarizes the attainment status of the SoCAB for the criteria pollutants.

TABLE 2
CRITERIA POLLUTANT DESIGNATIONS
IN THE SOUTH COAST AIR BASIN

Pollutant	State	Federal
O_3 (1-hour)	Nonattainment	No standard
O_3 (8-hour)		Extreme Nonattainment
PM10	Nonattainment	Attainment/Maintenance
PM2.5	Nonattainment	Serious Nonattainment
CO	Attainment	Attainment/Maintenance
NO_2	Attainment/Nonattainment[c]	Attainment/Maintenance
SO_2	Attainment	Attainment
Lead	Attainment	Nonattainment/Attainment[a]
Visibility-Reducing Particles	Unclassified[b]	No Standards
Sulfates	Attainment	
Hydrogen Sulfide	Unclassified	

O_3: ozone; PM10: respirable particulate matter with a diameter of 10 microns or less; PM2.5: fine particulate matter with a diameter of 2.5 microns or less; CO: carbon monoxide; NO_2: nitrogen dioxide; SO_2: sulfur dioxide.

[a] Los Angeles County is classified as nonattainment for lead; the remainder of the SoCAB is in attainment of federal standards.

[b] “Unclassified” designation indicates that the air quality data for the area are incomplete and do not support a designation of attainment or nonattainment.

[c] The near-road portion of CA-60 in San Bernardino, Riverside, and Los Angeles Counties is classified as nonattainment for NO_2; the remainder of the SoCAB is in attainment of State standards.

Source: CARB 2021; USEPA 2021

O_3 is formed by photochemical reactions between NOx and VOCs rather than being directly emitted. O_3 is the principal component of smog. Elevated O_3 concentrations cause eye and respiratory infection; reduce resistance to lung infection; and may aggravate pulmonary conditions in persons with lung disease. O_3 is also damaging to vegetation and untreated rubber.

CO is formed by the incomplete combustion of fossil fuels, almost entirely from automobiles. It is a colorless, odorless gas that can cause dizziness, headaches, and fatigue. The SoCAB is designated as an attainment area for federal CO standards.

NO_2 (a “whiskey brown”-colored gas) and nitric oxide (NO) (a colorless, odorless gas) are formed from combustion devices. These compounds are referred to as NOx. NOx is a primary component of the photochemical smog reaction. The severity of health effects of NOx depends primarily on the concentration inhaled. Acute symptoms can include coughing, difficulty breathing, vomiting, headache, and eye irritation. Respiratory symptoms may also increase in severity after prolonged exposure.

SO_2 is a corrosive gas that is primarily formed from the combustion of fuels containing sulfur (e.g., from power plants) and heavy industry that use coal or oil as fuel. SO_2 irritates the respiratory

tract and can result in lung disease and breathing problems for asthmatics. Atmospheric SO_2 also contributes to acid rain.

Lead is found in old paints and coatings, plumbing, and a variety of other materials including gasoline anti-knock additives. Once in the blood stream, lead can cause damage to the brain, nervous system, and other body systems. Children are highly susceptible to the effects of lead. However, lead emissions have significantly decreased due to the near elimination of the use of leaded gasoline.

Particulate matter is the term used for a mixture of solid particles and liquid droplets found in the air. Respirable particulate matter (i.e., PM10) derives from a variety of sources including road dust from paved and unpaved roads; diesel soot; combustion products; tire and brake abrasion; construction operations; and fires. Fuel combustion and certain industrial processes are primarily responsible for fine particle (i.e., PM2.5) levels. Coarse particles (PM10) can accumulate in the respiratory system and aggravate health problems such as asthma. PM2.5 can deposit itself deep in the lungs and may contain substances that are harmful to human health.

Toxic air contaminants (TACs) are a diverse group of air pollutants that may cause or contribute to an increase in deaths or in serious illness or that may pose a present or potential hazard to human health. TACs may be emitted from a variety of common sources, including motor vehicles, gasoline stations, dry cleaners, industrial operations, painting operations, and research and teaching facilities. TACs are different than the “criteria” pollutants previously discussed in that AAQS have not been established for them. TACs occurring at extremely low levels may still affect health, and it is typically difficult to identify levels of exposure that do not produce adverse health effects. TAC impacts on human health are described by having carcinogenic risk and being chronic (i.e., of long duration) or acute (i.e., severe but of short duration). Diesel particulate matter (diesel PM) is a TAC and is responsible for the majority of California’s known cancer risk from outdoor air pollutants.

The effects from air pollution can be significant, both in the short-term during smog alerts, but also from long-term exposure to pollutants. While most of the populace can overcome short-term air quality health concerns, selected segments of the population are more vulnerable to its effects. Specifically, young children, the elderly, and persons with existing health problems are most susceptible to respirator complications.

The nearest air quality monitoring to the Project site is the Los Angeles-Westchester Parkway monitoring station located at 7201 West Westchester Parkway. The monitoring station is located approximately 15.7 miles southeast of the Project site. Pollutants measured at the Los Angeles-Westchester Parkway Monitoring Station include O_3, PM10, and NO_2. The monitoring data presented in Table 3, Air Quality Levels Measured at the Los Angeles-Westchester Parkway Monitoring Station, were obtained from CARB (CARB 2023). Federal and State air quality standards are presented with the frequency that these standards were exceeded.

TABLE 3
AIR QUALITY LEVELS MEASURED AT THE
LOS ANGELES-WESTCHESTER PARKWAY MONITORING STATION

Pollutant	California Standard	National Standard	Year	Max. Level[a]	Days State Standard Exceeded	Days National Standard Exceeded
O_3 (1 hour)	0.09 ppm	None	2020	0.117	1	
			2021	0.059	0	
			2022	NA	NA	
O_3 (8 hour)	0.070 ppm	0.070 ppm	2020	0.074	2	2
			2021	0.049	0	0
			2022	NA	NA	NA
PM10 (24 hour)	50 µg/m^3	150 µg/m^3	2020	55.6	1	0
			2021	33.3	0	0
			2022	NA	NA	NA
NO_2 (1 Hour)	0.18 ppm (180 ppb)	0.100 ppm (100 ppb)	2020	59.7	0	
			2021	62.8	0	
			2022	NA	NA	

O_3: ozone; ppm: parts per million; PM10: respirable particulate matter with a diameter of 10 microns or less; µg/m^3: micrograms per cubic meter; NO_2: nitrogen dioxide; ppb: parts per billion. N/A indicates that there is no applicable standard.

[a] California maximum levels were used.
[b] Estimated number of days

Source: CARB 2023.

Sensitive Receptors

Sensitive persons include, but are not limited to, children, the elderly, persons with preexisting respiratory or cardiovascular illness. Thus, sensitive air quality receptors include, but are not limited to, schools, residential areas, parks, hospitals, and convalescent homes.

Significance Criteria

Appendix G of the State CEQA Guidelines states that the significance criteria established by the applicable air quality management district may be relied upon to make significance determinations. The SCAQMD has established significance thresholds to assess the regional and localized impacts of Project-related air pollutant emissions; Table 4 presents the current significance thresholds.

TABLE 4
SCAQMD AIR QUALITY SIGNIFICANCE THRESHOLDS

Mass Daily Thresholds[a]		
Pollutant	**Construction**	**Operation**
NOx	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM10	150 lbs/day	150 lbs/day
PM2.5	55 lbs/day	55 lbs/day
SOx	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
TACs, Odor, and GHG Thresholds		
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic & Acute Hazard Index ≥ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
GHG	10,000 MT/yr CO_2e for industrial facilities	
Ambient Air Quality Standards for Criteria Pollutants[b, c]		
NO_2 1-hour average annual arithmetic mean	The SCAQMD is in attainment; the Project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (State) 0.03 ppm (State) and 0.0534 ppm (federal)	
PM10 24-hour average annual average	 10.4 µg/m^3 (construction)[c] & 2.5 µg/m^3 (operation) 1.0 µg/m^3	
PM2.5 24-hour average	 10.4 µg/m^3 (construction)[c] & 2.5 µg/m^3 (operation)	
SO_2 1-hour average 24-hour average	 0.25 ppm (State) & 0.075 ppm (federal – 99th percentile) 0.04 ppm (State)	
Sulfate 24-hour average	 25 µg/m^3 (State)	
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20.0 ppm (State) and 35 ppm (federal) 9.0 ppm (State/federal)	
Lead 30-day average Rolling 3-month average	 1.5 µg/m^3 (State) 0.15 µg/m^3 (federal)	

NOx: nitrogen oxides; lbs/day: pounds per day; VOC: volatile organic compound; PM10: respirable particulate matter with a diameter of 10 microns or less; PM2.5: fine particulate matter with a diameter of 2.5 microns or less; SOx: sulfur oxides; CO: carbon monoxide; TACs: toxic air contaminants; GHG: greenhouse gases; SCAQMD: South Coast Air Quality Management District; MT/yr CO_2e: metric tons per year of carbon dioxide equivalents; NO_2: nitrogen dioxide; ppm: parts per million; µg/m^3: micrograms per cubic meter; SO_2: sulfur dioxide.

[a] Source: SCAQMD CEQA Handbook (SCAQMD 1993)
[b] Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table 2 unless otherwise stated
[c] Ambient air quality threshold is based on SCAQMD Rule 403

Source: SCAQMD 2019

Construction Emissions – Regional

Criteria pollutant emissions would occur from operation of construction equipment; grading and earth-moving activities, which would generate fugitive dust; export of excavated soil; import of construction materials; and operation of vehicles driven to and from the site by construction workers. Emissions would vary from day to day, depending on the level of activity; the specific type of construction activity occurring; and, for fugitive dust, prevailing weather conditions.

A construction-period mass emissions inventory was compiled based on an estimate of construction equipment as well as scheduling and Project phasing assumptions. More specifically, the mass emissions analysis considers the following:

- Combustion emissions from operating on-site stationary and mobile construction equipment;
- Fugitive dust emissions from demolition, site preparation, and grading phases; and
- Mobile-source combustion emissions and fugitive dust from worker commute and truck travel.

Project emissions were estimated using the California Emissions Estimator Model (CalEEMod) version 2022.1.1.20 computer program (CAPCOA 2022). CalEEMod is designed to model construction and operational emissions for land development projects and allows for the input of project- and County-specific information. CalEEMod has separate databases for specific counties and air districts, and the Los Angeles County database was used for the proposed Project.

The mass emissions significance thresholds (see Table 4) are based on the rate of emissions (i.e., pounds of pollutants emitted per day). Therefore, the quantity, duration, and the intensity of construction activity are important in ensuring the analysis of worst case (i.e., maximum daily emissions) scenarios. The Project activities (e.g., grading, building) are identified by start date and duration. Each activity has associated off-road equipment (e.g., excavators, loaders,) and on-road vehicles (e.g., haul trucks, concrete trucks, worker commute vehicles).

For the purpose of estimating emissions associated with Project construction activities, calculations were made for each of the two phases, the water mains installation and the construction of the new Sweetwater Mesa tank. The water mains installation is estimated to occur over a 12-month period from September 2028 to September 2029. The Sweetwater Mesa Tank construction is estimated to occur over a 12-month period from May 2027 through May 2028. Construction hauling truck trips were estimated based on the phase length and amount of debris or soil to export and import. Project-specific inputs can be found in the CalEEMod output data, located in Appendix A of this IS/MND.

Dust control by watering was assumed for grading activity, consistent with the requirements of SCAQMD Rule 403 as noted in regulatory requirement **(RR) AQ-1**.

Maximum daily emissions for the peak workday are shown in Table 5, Estimated Maximum Daily Construction Emissions. If construction is delayed or occurs over a longer time period, emissions could be reduced because of (1) a more modern and cleaner-burning construction equipment fleet mix and/or (2) a less intensive buildout schedule (i.e., fewer daily emissions occurring over a longer time interval). As shown in Table 5, the maximum daily construction emissions would occur in early 2028 if water main installation and tank site work were to occur concurrently. All criteria pollutant emissions would be substantially less than their respective thresholds.

Construction emissions for the replacement pump station at the Serra Tank site and the three Pressure Regulating Stations have not been quantified. These efforts would require less equipment and would be less emissions intensive than the water main installations and the new tank construction and therefore would not add substantively to the emissions shown in Table 5. Emissions shown in Table 5 are substantially below the SCAQMD's significance thresholds. Thus, impacts would be less than significant, and no mitigation is required for the Project. Emissions associated with construction activities at the Serra Tank site would likewise have less than significant impacts due to less equipment usage than the Project.

TABLE 5
ESTIMATED MAXIMUM DAILY CONSTRUCTION EMISSIONS (LBS/DAY)

Activity - Year	VOC	NOx	CO	SOx	PM10	PM2.5
Sweetwater Mesa Tank – 2027	<1	2	5	<1	<1	<1
Sweetwater Mesa Tank – 2028	<1	2	3	<1	<1	<1
Water Mains 2028	<1	2	4	<1	<1	<1
Water Mains – 2029	<1	2	4	<1	<1	<1
Maximum	**1**	**4**	**7**	<1	**<1**	**<1**
SCAQMD Daily Thresholds *(Table 4)*	***75***	***100***	***550***	***150***	***150***	***55***
Exceeds SCAQMD Thresholds?	**No**	**No**	**No**	**No**	**No**	**No**

lbs/day: pounds per day; VOC: volatile organic compound(s); NOx: nitrogen oxides; CO: carbon monoxide; SOx: sulfur oxides; PM10: inhalable particulate matter with a diameter of 10 microns or less; PM2.5: fine particulate matter with a diameter of 2.5 microns or less; SCAQMD: South Coast Air Quality Management District.

Source: CalEEMod data in Appendix A.

Construction Emissions – Local/Ambient Air Quality

The localized effects from the on-site portion of daily emissions were evaluated at receptor locations potentially impacted by the Project according to the SCAQMD's localized significance threshold (LST) method, which utilizes on-site emissions rate look up tables and Project-specific modeling, where appropriate (SCAQMD 2008a). LSTs are applicable to the following criteria pollutants: NO_2, CO, PM10, and PM2.5. LSTs 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 standard and are developed based on the ambient concentrations of that pollutant for each source receptor area and distance to the nearest receptor. For the LST CO and NO_2 exposure analysis, receptors who could be exposed for one hour or more are considered. For PM10 and PM2.5 exposure analysis, receptors who could be exposed for 24 hours are considered. The mass rate look-up tables were developed for each source receptor area and can be used to determine whether a project may generate significant adverse localized air quality impacts. The SCAQMD provides LST mass rate look-up tables for projects that are less than or equal to five acres, which means this is the appropriate method for the Project. When quantifying mass emissions for localized analysis, only emissions that occur on site are considered. Consistent with the SCAQMD's LST method guidelines, emissions related to off-site delivery/haul truck activity and employee trips are not considered in the evaluation of localized impacts.

For the water mains installation, the closest receptors that could be exposed are residences approximately 20 to 65 feet from the Project alignment (Table 6). The emissions screening

thresholds used in this analysis are for receptors within 25 meters (82 feet)[4] of the Project site; the thresholds for receptors farther away would be higher, and the Project emissions would be a smaller fraction of the thresholds. For the Sweetwater Mesa tank construction, the closest receptor is approximately 250 feet from the Project site. Both analyses use factors for a one-acre site, which is the most conservative.

As shown in Table 6, localized emissions for all criteria pollutants would be less than their respective SCAQMD LSTs for all pollutants. Localized emissions for the pump station and pressure regulating stations construction would be less than shown for the water main installation. Thus, impacts would be less than significant, and no mitigation is required.

TABLE 6
LOCALIZED CONSTRUCTION POLLUTANT EMISSIONS (LBS/DAY)

	NOx	CO	PM10	PM2.5
Maximum Daily Onsite Emissions-Water Mains	2	4	<1	<1
SCAQMD LSTs-Water Mains[a]	103	562	4	3
Exceeds SCAQMD Thresholds?	No	No	No	No
Maximum Daily Onsite Emissions–Sweetwater Mesa Tank	2	4	<1	<1
SCAQMD LSTs-Sweetwater Mesa Tank[b]	113	1,043	20	6
Exceeds SCAQMD Thresholds?	No	No	No	No

lbs/day: pounds per day; NOx: nitrogen oxides; CO: carbon monoxide; PM10: respirable particulate matter with a diameter of 10 microns or less; PM2.5: fine particulate matter with a diameter of 2.5 microns or less; SCAQMD: South Coast Air Quality Management District; LST: Localized Significance Threshold.

[a] Thresholds for Source Receptor Area 2, Northwest Coastal LA County, 1-acre site, 25-meter receptor distance
[b] Thresholds for Source Receptor Area 2, Northwest Coastal LA County, 1-acre site, 75-meter receptor distance

Source: SCAQMD 2009.

Long-Term Operational Emissions

There would be no operational activity associated with the water mains or pressure relief stations that would generate air pollutants. Current operational/maintenance visits to the Serra Tank and Sweetwater Tank sites, typically daily, would not change. Therefore, the Project would not generate new operational air pollutant emissions. Therefore, there would be no operational air quality impact.

As stated above, with respect to the first criterion for conformance to the AQMP, the construction and operational emissions analyses demonstrate that the Project would not (1) generate short-term or long-term emissions of VOCs, NOx, or PM2.5 that could potentially cause an increase in the frequency or severity of existing air quality violations; (2) cause or contribute to new violations; or (3) delay timely attainment of air quality standards.

With respect to the second criterion, the Project would not increase or modify SCAG's population, housing, or employment projections. The Project would accommodate the projected growth in population accounted for in the 2022 AQMP emissions forecast and would provide storage capacity to provide improved storage capacity and adequate distribution capacity for domestic

[4] The SCAQMD LST protocol recommends that when sensitive receptors are located nearer than 25 meters (82 feet) from the Project site, the minimum 25 meter/82-foot distance threshold should be used.

and fire protection water demands. Therefore, the Project would be consistent with the region's AQMP. No impact related to this threshold would occur, and no mitigation is required.

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.

Construction. As identified in Table 2, the Los Angeles County portion of the SoCAB is a nonattainment area for O_3, PM10, and PM2.5. The Project would generate PM10, PM2.5, and O_3 precursors (NOx and VOC) during short-term construction activities. SCAQMD's policy with respect to cumulative impacts associated with the above referenced pollutants and their precursors is that impacts that would be directly less than significant would also be cumulatively less than significant (SCAQMD 2003). As shown in Question (a), short-term construction emissions would be less than significant. Therefore, consistent with SCAQMD policy, the cumulative construction impact of criteria pollutants would be less than significant, and no mitigation is required.

Operation. As discussed in the Response to Question (a), long-term emissions would be negligible and therefore would not be cumulatively considerable; the long-term cumulative impact would be less than significant. No mitigation is required.

c) Expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact. Exposure of sensitive receptors is addressed for the following situations: CO hotspots; criteria pollutants from on-site construction; and TACs from on-site construction.

Carbon Monoxide Hotspot

A CO hotspot is an area of localized CO pollution caused by severe vehicle congestion on major roadways, typically near intersections. If a project increases average delay at signalized intersections operating at level of service (LOS) E or F or causes an intersection that would operate at LOS D or better without the project to operate at LOS E or F with the project, a quantitative screening is required. As discussed in the Response to Question (a), operational traffic would be negligible. Thus, it may be inferred that the Project would neither cause new severe congestion nor significantly worsen existing congestion. There would be no potential for a CO hotspot or exposure of sensitive receptors to substantial, Project-generated local CO emissions. The impact would be less than significant, and no mitigation is required.

Criteria Pollutants from On-Site Construction

Exposure of persons to NO_2, CO, PM10, and PM2.5 emissions is discussed in the LST analysis under Response (a) above. As discussed, there would be a less than significant impact, and no mitigation is required.

Toxic Air Contaminant (Diesel PM) Emissions from On-Site Construction

Construction activities would result in short-term, Project-generated emissions of diesel PM from the exhaust of off-road, heavy-duty diesel equipment used for site preparation (e.g., demolition, excavation, and grading); paving; and building construction. CARB identified diesel PM as a TAC in 1998. The dose to which receptors are exposed is the primary factor used to determine health

risk. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer time period. According to the Office of Environmental Health Hazard Assessment, health risk assessments—which determine the exposure of sensitive receptors to TAC emissions—should be based on a 40-year exposure period; however, such assessments should be limited to the period/duration of activities associated with a project.

Construction and Operation. For the Project, there would be few pieces of off-road, heavy-duty diesel equipment in operation, and the construction period would be short when compared to a 40-year exposure period. When considering these facts combined with the highly dispersive properties of diesel PM and additional reductions in particulate emissions from newer construction equipment, as required by USEPA and CARB regulations, it can be concluded that TAC emissions during construction of the Project would not expose sensitive receptors to substantial emissions of TACs. There would be a less than significant impact, and no mitigation is required.

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

Less than Significant Impact. The Project would not result in other emissions that would affect a substantial number of people. Objectionable odors are generally associated with agricultural activities; landfills and transfer stations; the generation or treatment of sewage; the use or generation of chemicals; food processing; or other activities that generate unpleasant odors (SCAQMD 1993). The proposed Project would involve the installation of new or replacement water mains, a new water tank, pressure regulation stations and replacement of a pump station with a new pump station. These Project components are developed for the storage and transfer of water. Treated water does not generate odors. As such, none of the proposed Project elements would generate emissions that would lead to objectionable odors. There would be a less than significant impact, and no mitigation is required.

During construction, the proposed Project would operate equipment that may generate odors resulting from on-site construction equipment's diesel exhaust emissions or paving operations. However, these odors would be temporary and would dissipate rapidly from the source with an increase in distance and consequently would not result in odors that reach the level of a public nuisance. The Project would also be regulated from nuisance odors and other objectionable emissions by the requirements of SCAQMD Rule 402 (included in **RR AQ-1**). Rule 402 prohibits discharge from any source of air contaminants or other material which would cause injury, detriment, nuisance, or annoyance to people or the public. Therefore, Project odors would be considered less than significant, and no mitigation is required.

REGULATORY REQUIREMENT

RR AQ-1 During construction of the Project, the City of Malibu and its contractors shall be required to comply with regional rules, which would assist in reducing short-term air pollutant emissions. SCAQMD Rule 402 requires that air pollutant emissions not be a nuisance off site. SCAQMD Rule 403 requires that fugitive dust be controlled 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.

MITIGATION PROGRAM

No mitigation measures are required.

IV. BIOLOGICAL RESOURCES

ENVIRONMENTAL ISSUES (See attachments for information sources)	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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 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 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?	☐	☐	☐	☒

Information in this section is derived from the *Biological Assessment Report for the Civic Center Improvement Project, Los Angeles, California* prepared by Psomas and dated April 2024 (Appendix B-1) and the *Tree Assessment Report for the Sweetwater Mesa Tank and Waterline Improvements Projects, City of Malibu, Los Angeles, California* prepared by Psomas and dated February 2024 (Appendix B-2).

An initial biological resource literature review was conducted based on existing records for the region, The California Native Plant Society's (CNPS's) Inventory of Rare and Endangered Vascular Plants of California and the California Department of Fish and Wildlife's (CDFW's) California Natural Diversity Database were reviewed to identify special status plants, wildlife, and habitats known to occur within the Project vicinity. Database searches included the U.S. Geological Survey's (USGS') Malibu Beach, Topanga, Point Dume 7.5-minute quadrangles (Psomas 2023).

Psomas Biologist Sarah Thomas conducted field surveys on October 14, 2019, and November 24, 2020, to evaluate the potential of habitats on the site to support special status plant and wildlife species. Vegetation was mapped in the field on a 1-inch equals 200 feet (1″ = 200′) scale color aerial. In the event the tree canopy covered another vegetation type (e.g., oak canopy over a

road) the vegetation was mapped as the corresponding vegetation type for the canopy. Nomenclature for vegetation types generally follows that of *The Vegetation Classification and Mapping Program: List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database* (Psomas 2023). Potentially impacted vegetation types are shown for each of the three final routing options of WP1 in Exhibits 11-1a–e, Impacts to Biological Resources – Option WP1.1; Exhibits 11-2a–e, Impacts to Biological Resources – Option WP1.2; and Exhibits 11-3a–e, Impacts to Biological Resources – Option WP1.3.

Focused special status plant surveys were conducted on April 20 and July 12, 2021. Botanical surveys were floristic in nature and consistent with the protocols created by the CDFW. The purpose of the survey was to document all special status plant species including those plant and tree species regulated by the City of Malibu. Prior to the field surveys, a literature search was conducted to identify special status plant species reported from the vicinity of the proposed Project site. Sources reviewed include the USGS 7.5-minute quadrangles for Malibu Beach, Topanga, Point Dume in the CNPS' Locational Inventory of Rare and Endangered Vascular Plants of California and the CDFW's California Natural Diversity Database (Psomas 2023).

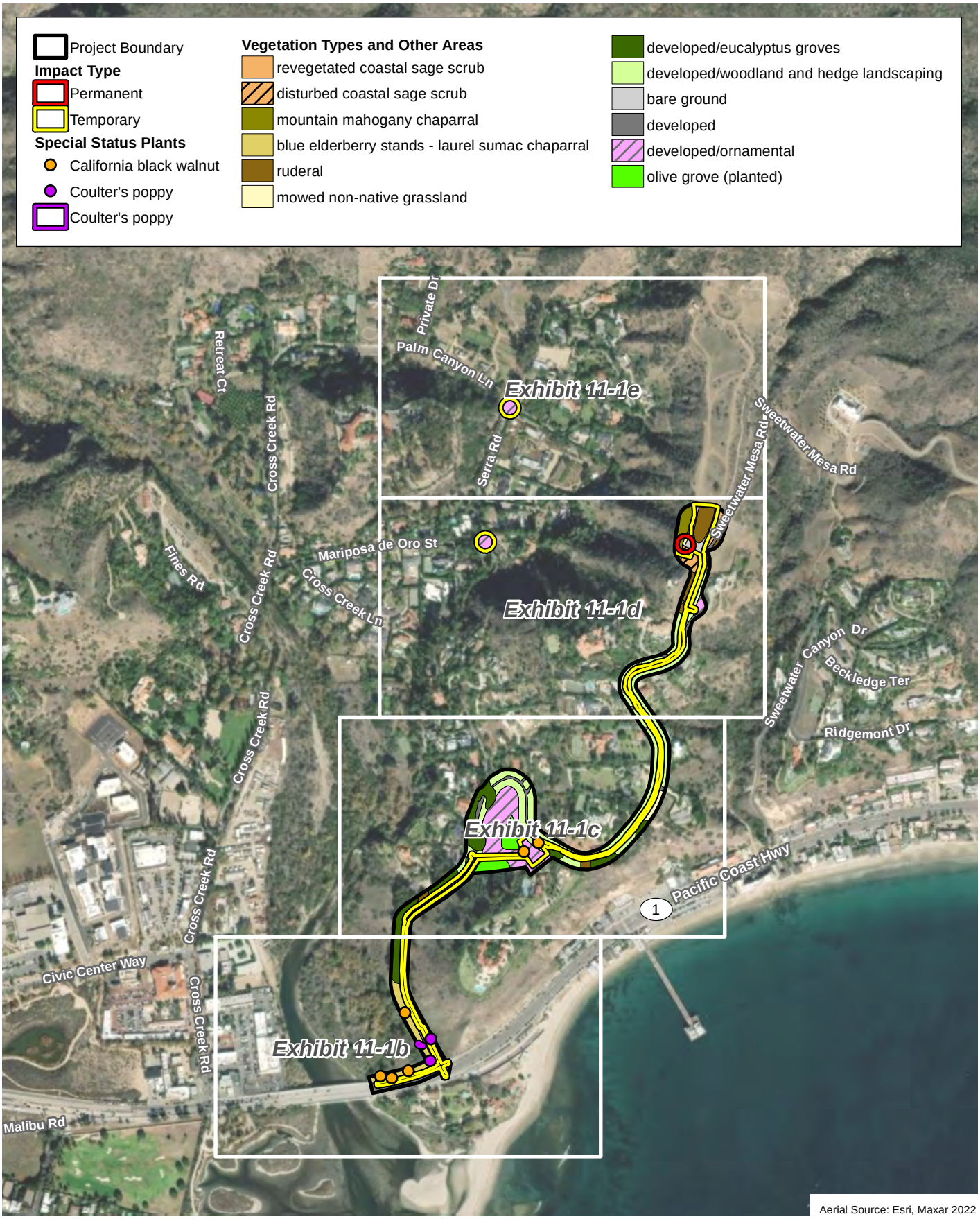
In general, the Project site provides limited habitat value for wildlife as it is comprised mostly of developed areas and ornamental vegetation. However, a portion of the non-native ornamental woodland and the native scrub and chaparral habitat provides moderate habitat value for plants and wildlife. The groves of eucalyptus (*Eucalyptus* sp.) within the survey area may provide overwintering habitat for the monarch butterfly (*Danaus plexippus*). Amphibian and reptile species expected to occur in the vicinity include western fence lizard (*Sceloporus occidentalis*), side-blotched lizard (*Uta stansburiana*), alligator lizard (*Elgaria multicarinata*), gopher snake (*Pituophis catenifer*), and southern pacific rattlesnake (*Crotalus oreganus helleri*). Bird species observed during the survey included mourning dove (*Zenaida macroura*), Allen's hummingbird (*Selasphorus sasin*), Nuttall's woodpecker (*Picoides nuttallii*), common raven (*Corvus corax*), bushtit (*Psaltriparus minimus*), Bewick's wren (*Thryomanes bewickii*), northern mockingbird (*Mimus polyglottos*), phainopepla (*Phainopepla nitens*), spotted towhee (*Pipilo maculatus*), house finch (*Carpodacus mexicanus*), and lesser goldfinch (*Spinus psaltria*). Eucalyptus trees and large ornamental trees within the survey area provide suitable habitat for nesting raptors such as Cooper's hawk (*Accipiter cooperii*) and red-tailed hawk (*Buteo jamaicensis*). Small mammal species expected to occur in the vicinity include the California ground squirrel (*Spermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), and deer mouse (*Peromyscus* sp.). Medium- to large-sized mammals expected to occur in the vicinity include coyote (*Canis latrans*), northern raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), and bobcat (*Lynx rufus*). Bat species expected to occur in the vicinity include big brown bat (*Eptesicus fuscus*), California myotis (*Myotis californicus*), and Brazilian free-tailed bat (*Tadarida brasiliensis*) (Psomas 2023).

IMPACT ANALYSIS

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 Wildlife or U.S. Fish and Wildlife Service?

Less Than Significant With Mitigation Incorporated. Two special status plant species were documented within the Project study area during focused special status plant surveys: California black walnut (*Juglans californica*), and Coulter's matilija poppy (*Romneya coulteri*), both of which are California Rare Plant Rank List 4 species. The walnut is also protected by the Malibu LCP Native Tree Protection Ordinance (Psomas 2023). Coulter's matilija poppy is located adjacent to



Aerial Source: Esri, Maxar 2022

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Impacts to Biological Resources – Option WP1.1

Exhibit 11-1a

Sweetwater Mesa Tank and Waterline Project

N W E S

800 400 0 800

Feet

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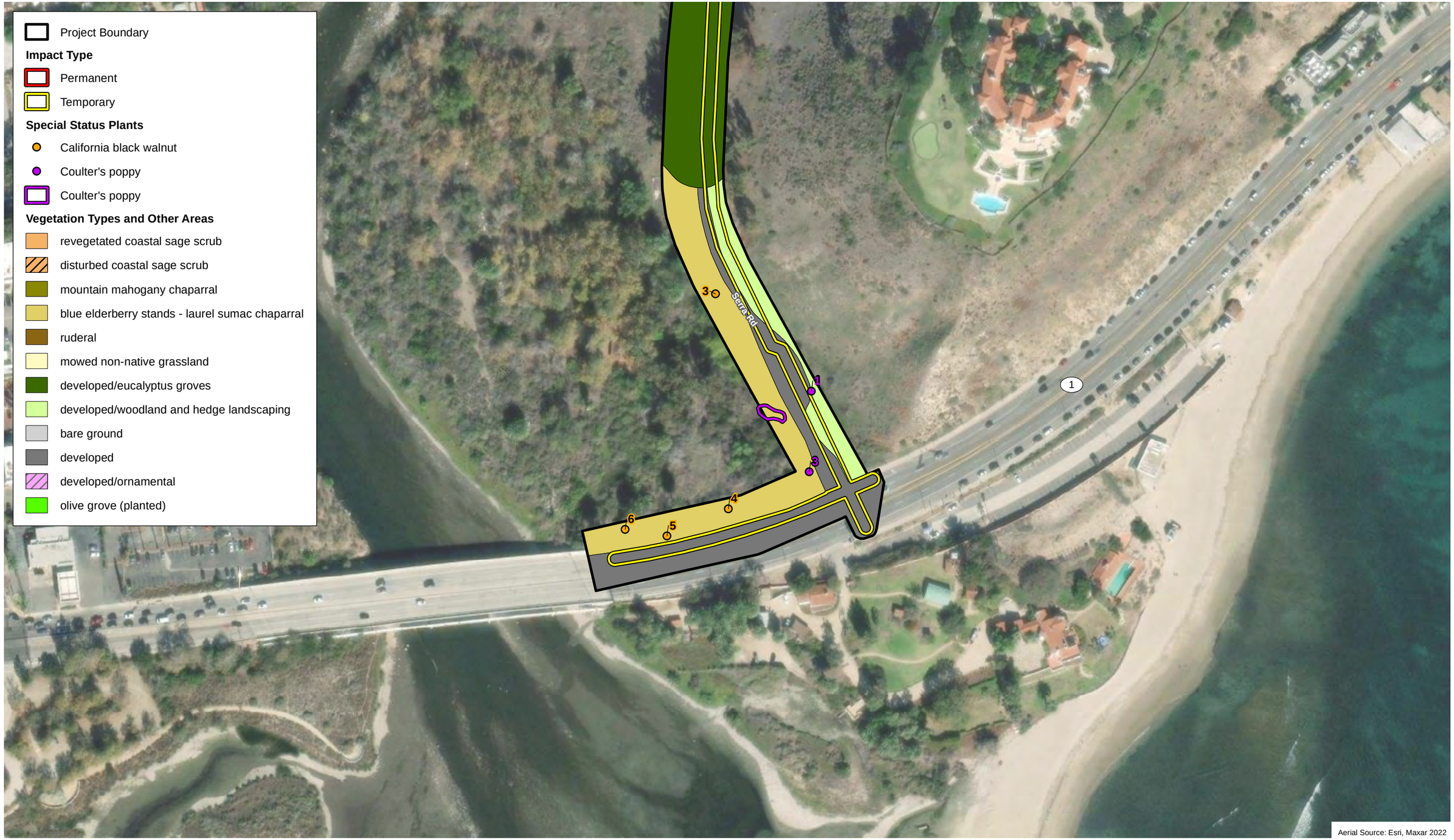

Aerial Source: Esri, Maxar 2022

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Impacts to Biological Resources – Option WP1.1

Exhibit 11-1b

Sweetwater Mesa Tank and Waterline Project

N W E S

150 75 0 150 Feet

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Impacts to Biological Resources – Option WP1.1

Exhibit 11-1c

Sweetwater Mesa Tank and Waterline Project

N W E S

150 75 0 150

Feet

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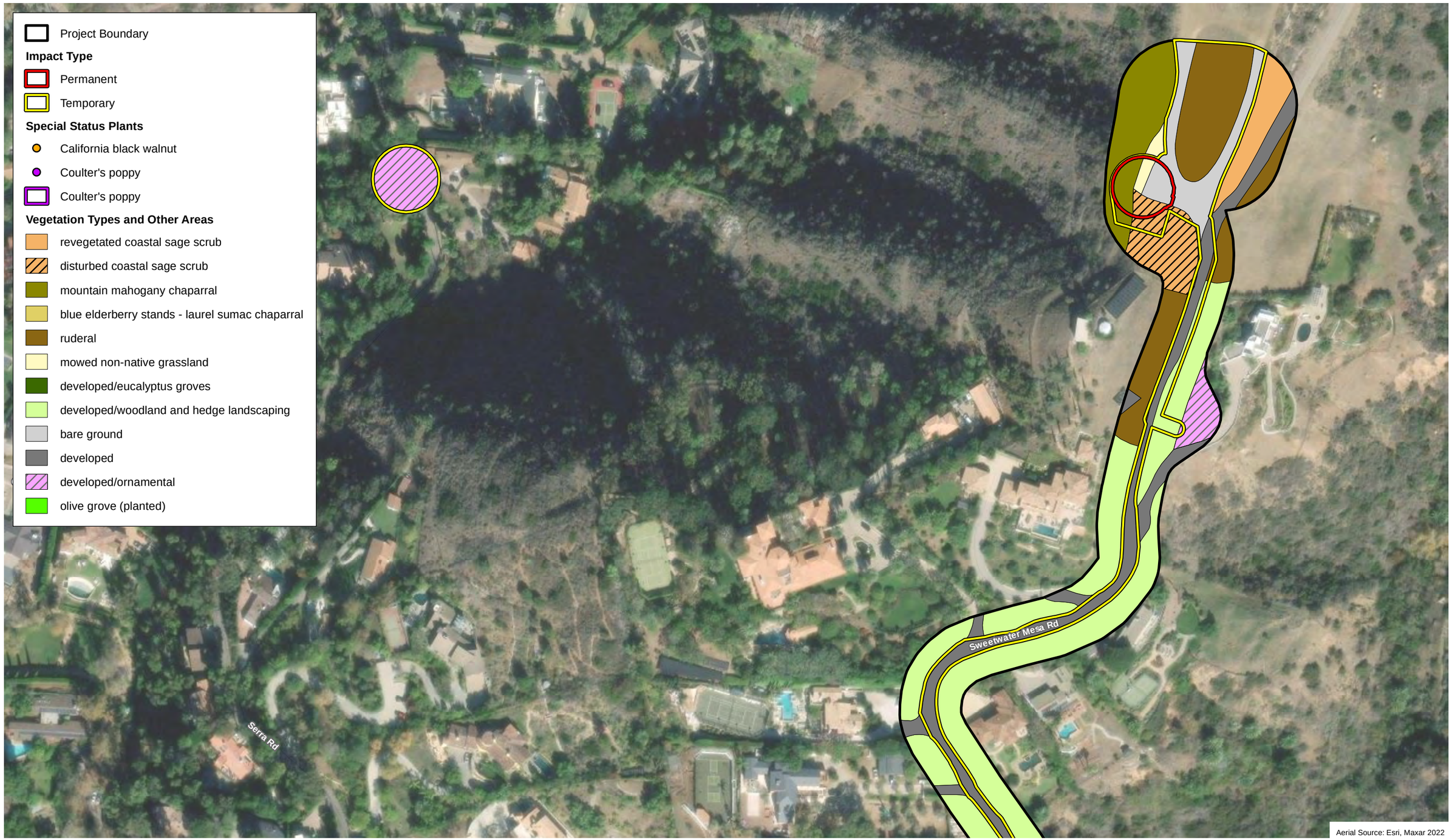

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Impacts to Biological Resources – Option WP1.1

Exhibit 11-1d

Sweetwater Mesa Tank and Waterline Project

N W E S

150 75 0 150

Feet

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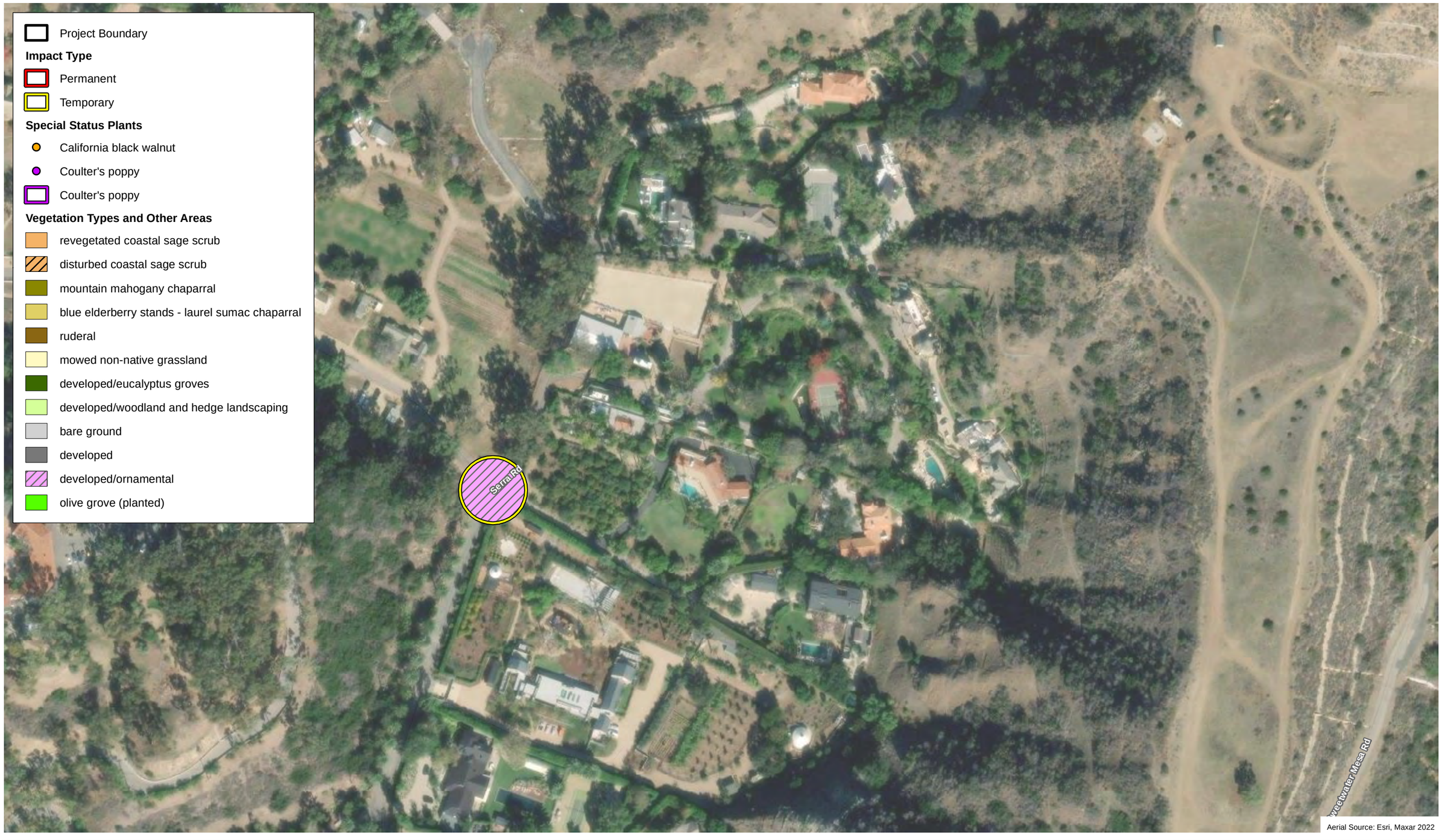

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Impacts to Biological Resources – Option WP1.1

Exhibit 11-1e

Sweetwater Mesa Tank and Waterline Project

N W E S

150 75 0 150

Feet

PSOMAS

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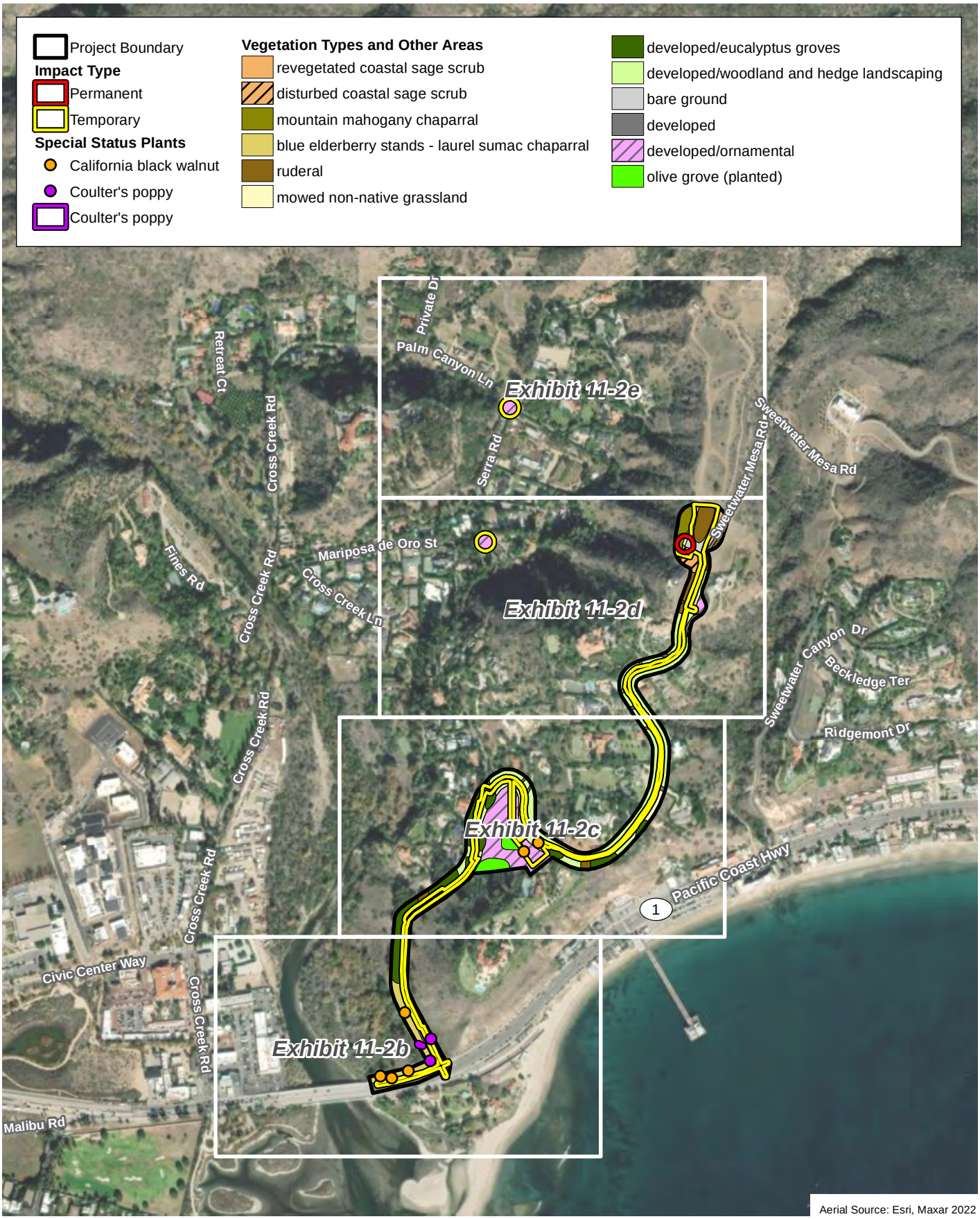

Aerial Source: Esri, Maxar 2022

Impacts to Biological Resources – Option WP1.2

Exhibit 11-2a

Sweetwater Mesa Tank and Waterline Project

N W E S

800 400 0 800 Feet

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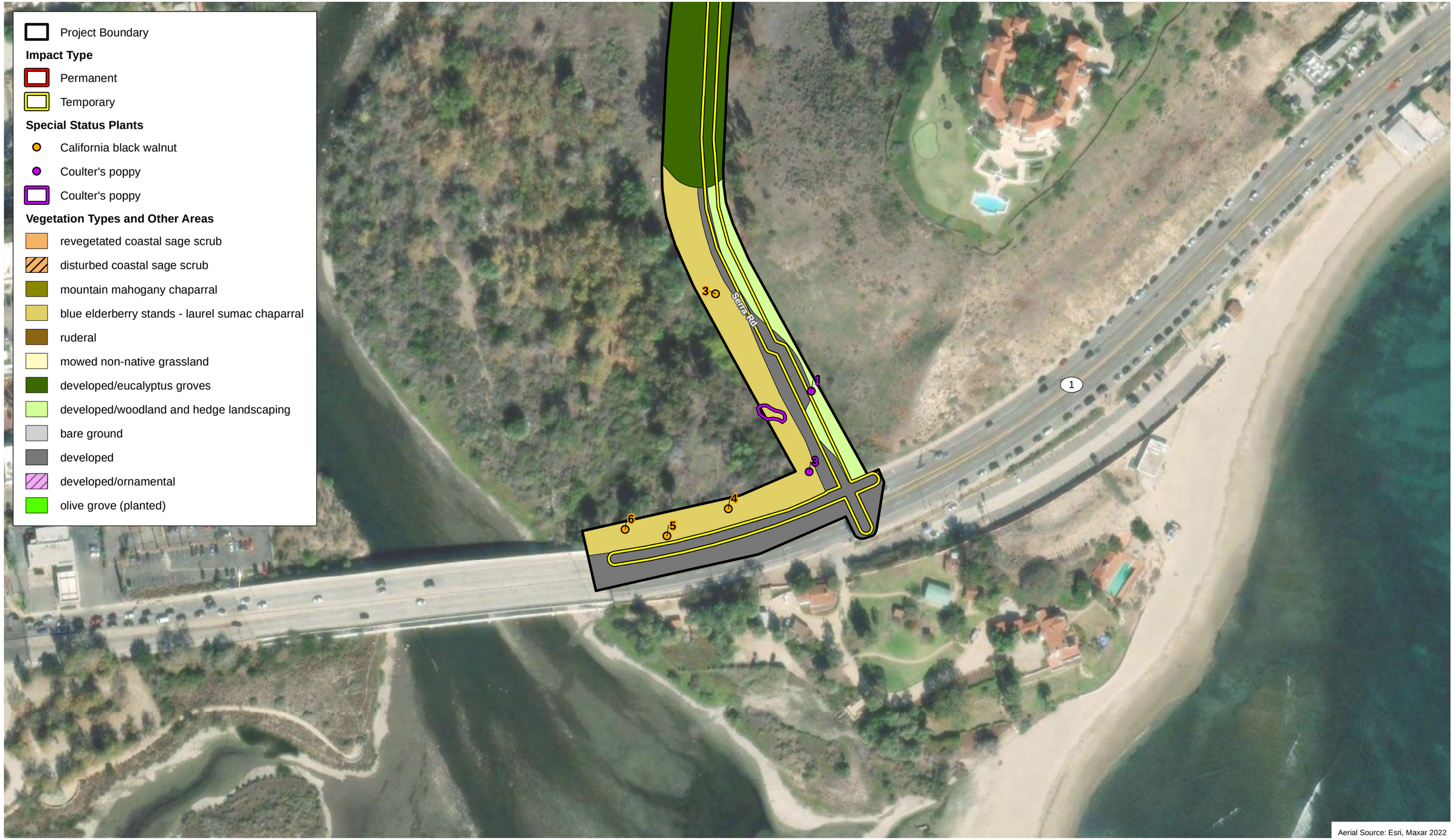

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Impacts to Biological Resources – Option WP1.2

Exhibit 11-2b

Sweetwater Mesa Tank and Waterline Project

N W E S

150 75 0 150 Feet

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Impacts to Biological Resources – Option WP1.2

Exhibit 11-2c

Sweetwater Mesa Tank and Waterline Project

N W E S

150 75 0 150

Feet

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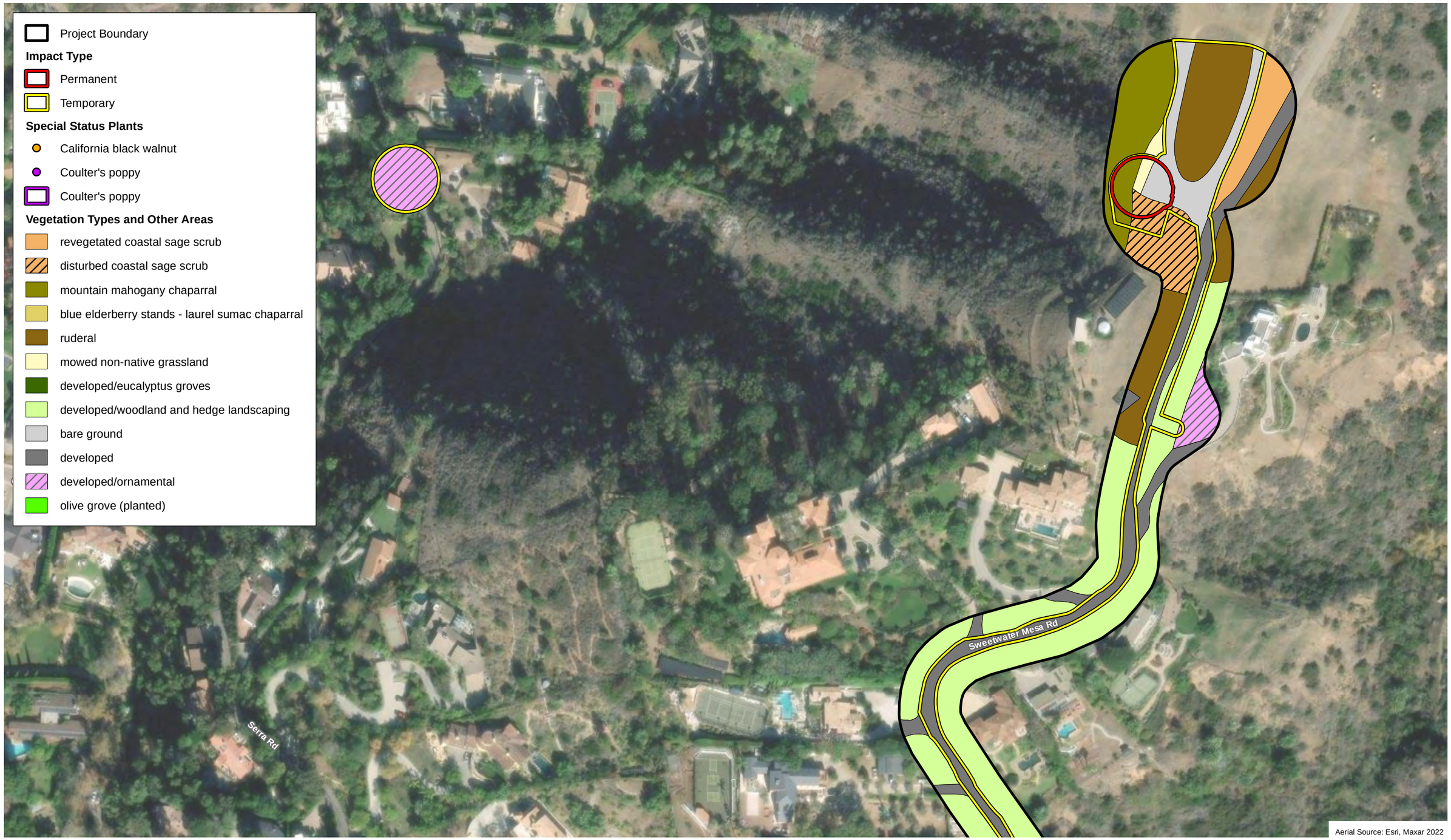

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Impacts to Biological Resources – Option WP1.2

Exhibit 11-2d

Sweetwater Mesa Tank and Waterline Project

N W E S

150 75 0 150

Feet

PSOMAS

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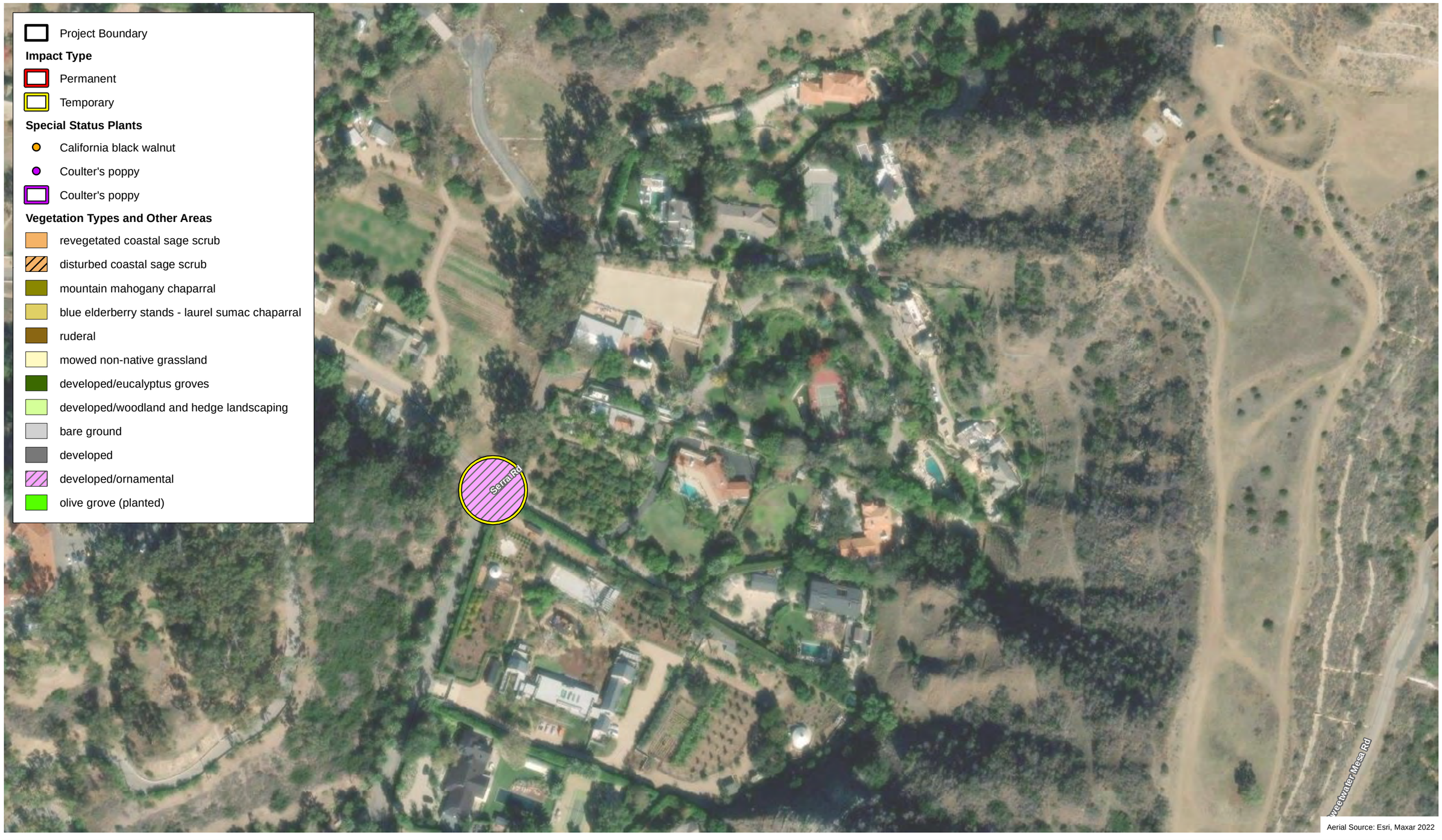

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Impacts to Biological Resources – Option WP1.2

Exhibit 11-2e

Sweetwater Mesa Tank and Waterline Project

N W E S

150 75 0 150

Feet

PSOMAS

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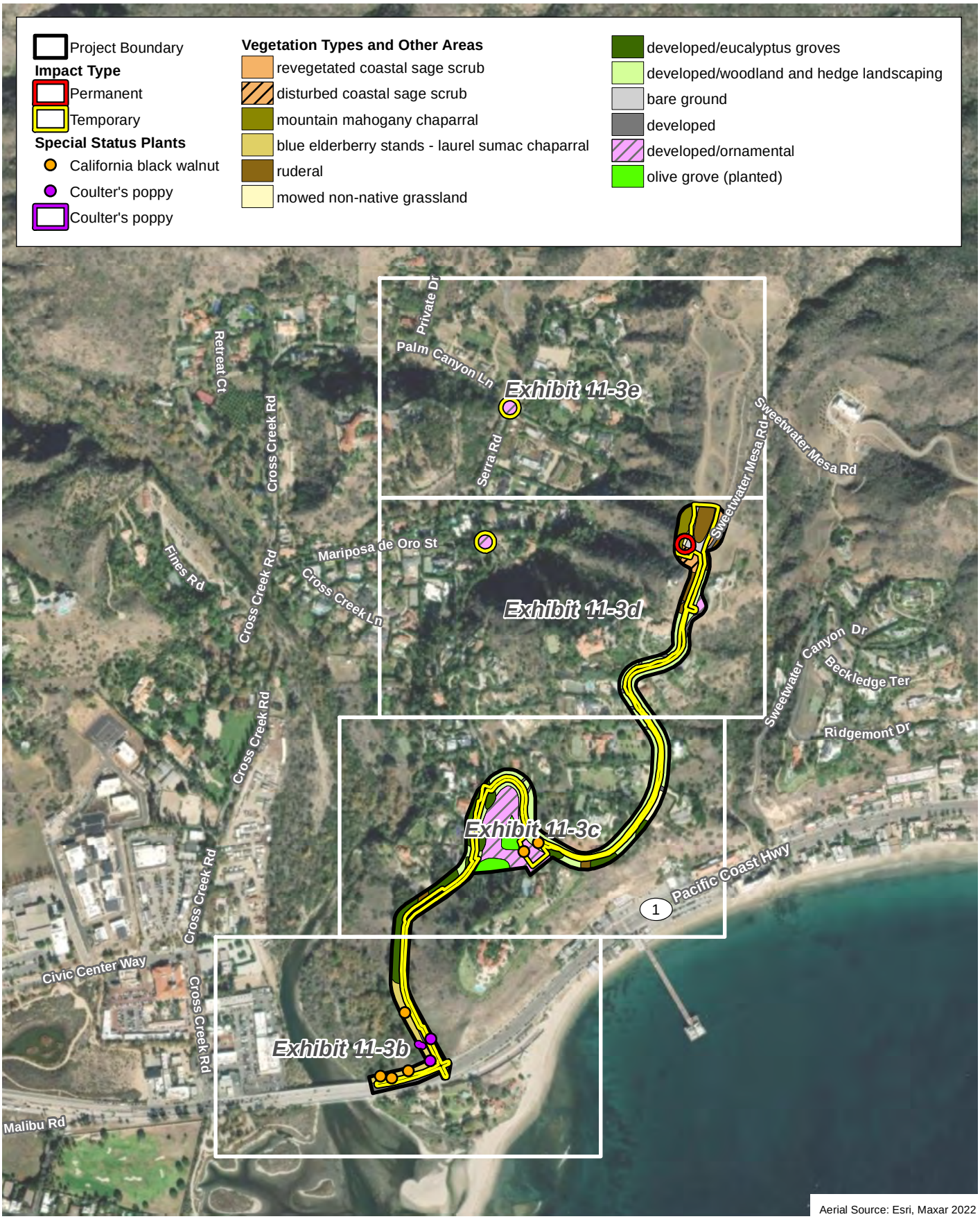

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Impacts to Biological Resources – Option WP1.3

Exhibit 11-3a

Sweetwater Mesa Tank and Waterline Project

N W E S

800 400 0 800 Feet

PSOMAS

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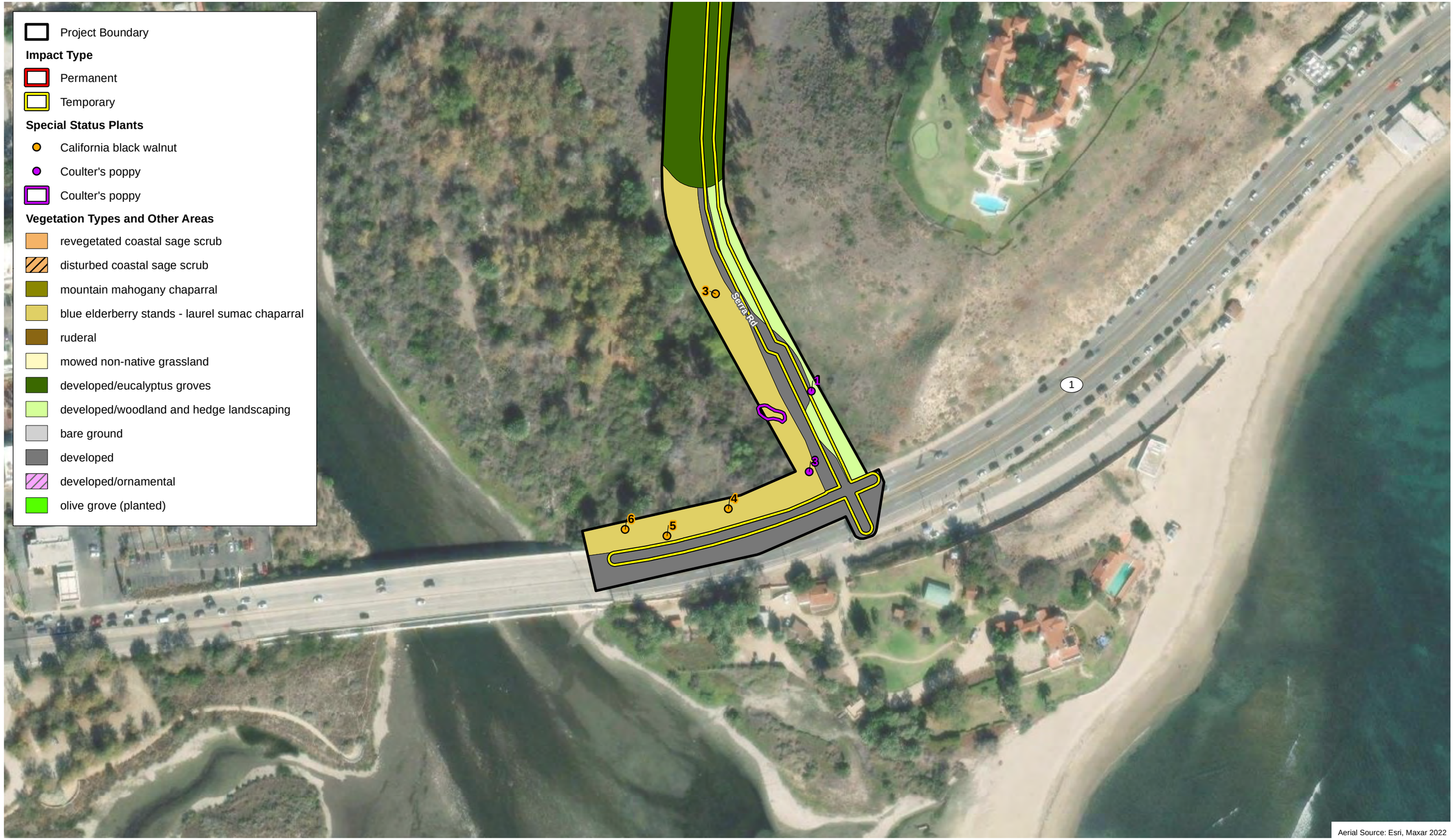

Aerial Source: Esri, Maxar 2022

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Impacts to Biological Resources – Option WP1.3

Exhibit 11-3b

Sweetwater Mesa Tank and Waterline Project

N W E S

150 75 0 150

Feet

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Impacts to Biological Resources – Option WP1.3

Exhibit 11-3c

Sweetwater Mesa Tank and Waterline Project

N W E S

150 75 0 150

Feet

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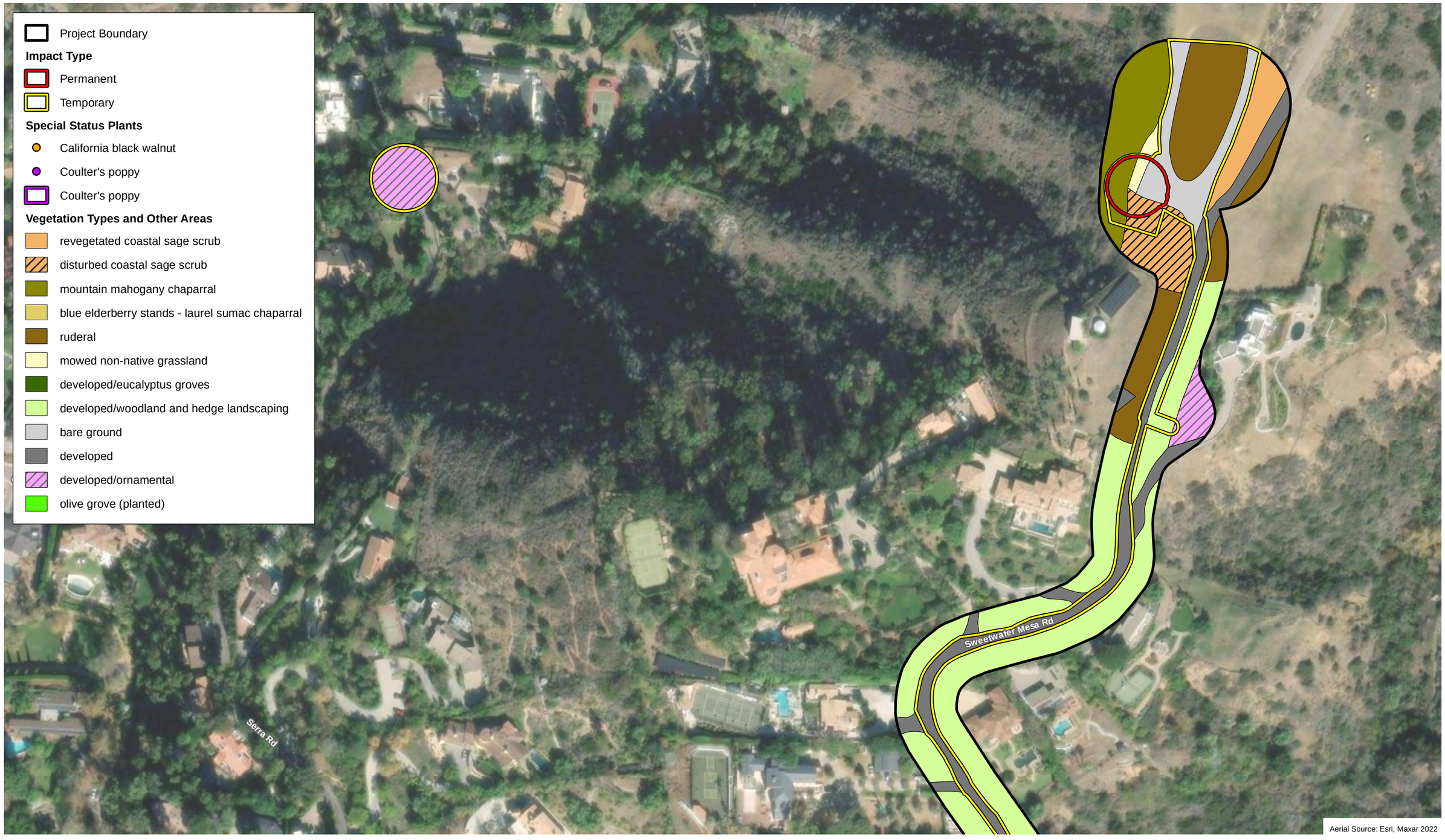

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Impacts to Biological Resources – Option WP1.3

Exhibit 11-3d

Sweetwater Mesa Tank and Waterline Project

N W E S

150 75 0 150

Feet

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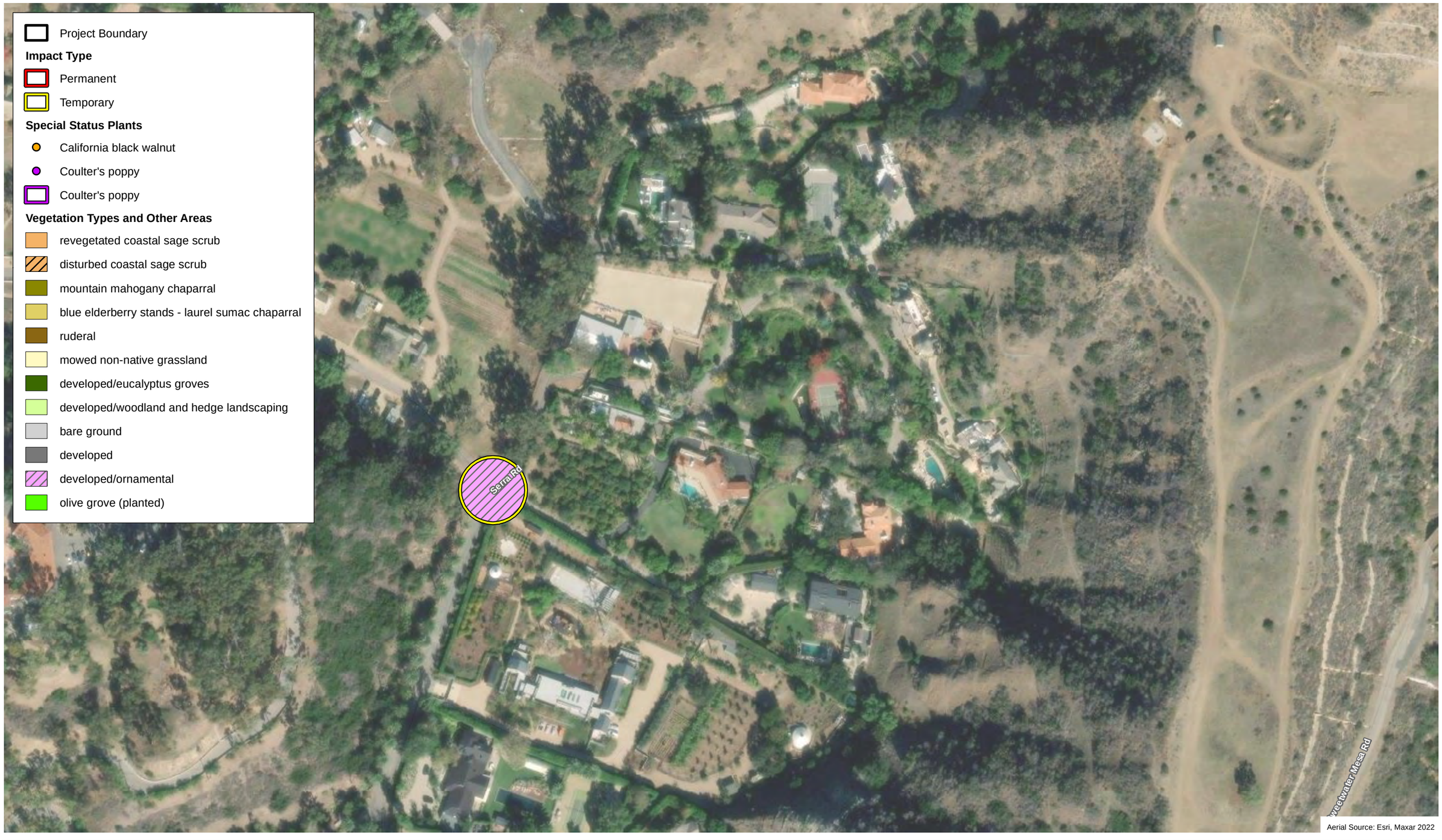

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Impacts to Biological Resources – Option WP1.3

Exhibit 11-3e

Sweetwater Mesa Tank and Waterline Project

N W E S

150 75 0 150

Feet

PSOMAS

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Serra Road outside the impact area and are not expected to be directly impacted. Similarly, the California black walnut trees are located outside the Project work area and would not be directly impacted. Indirect impacts from nearby Project activities, such as increased dust accumulation on leaves, are expected to be minimal due to the short duration and limited soil excavation activities. Therefore, Project impacts on special status plants are considered less than significant, and no mitigation would be required. Potential indirect impacts to California black walnut would be reduced through adherence with the Malibu LCP Native Tree Protection Ordinance and implementation of the required Tree Protection Plan (Psomas 2024), which can be found in Appendix B-2 of the IS/MND.

Eucalyptus groves within the Project study area have the potential to support overwintering monarch butterflies, a Candidate State Endangered species. Monarch butterfly overwintering sites are known from within the Project study area in recent history and are presumed extant according to the California Natural Diversity Database (Psomas 2023). Impacts to overwintering monarch roost sites would be considered potentially significant. **MM BIO-1** would be required to ensure that this species is not impacted by construction. Impacts would be less than significant with mitigation.

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 US Fish and Wildlife Services?

Less Than Significant Impact. No CDFW or locally sensitive vegetation communities occur in the Project study area, therefore, no impacts to sensitive habitats are anticipated during Project implementation.

The Project site is located adjacent to an Environmentally Sensitive Habitat Area (ESHA) as designated in the Malibu Local Coastal Plan by the California Coastal Commission (Psomas 2023). The location of each of the three final routing options of WP1 in relation to the ESHA are shown in Exhibits 12-1a–e, Environmentally Sensitive Habitat Area – Option WP1.1; Exhibits 12-2a–e, Environmentally Sensitive Habitat Area – Option WP1.2; and Exhibits 12-3a–e, Environmentally Sensitive Habitat Area – Option WP1.3. No direct impacts to the ESHA are expected because it is located outside the Project footprint and indirect impacts would be limited to temporary dust and noise. Biological resources within the ESHA are tolerant to a level of dust and noise since they are adjacent to an active roadway and developed area, which both generate dust and noise regularly. As discussed in Section, 3.2, Construction Phases, given the Project would be constructed in two phases (the water main installation and the construction of the new Sweetwater Mesa Tank), the quantity of dust generated by construction at any one time would be a small fraction of the total disturbance in the area. Based on the construction activities indicated in the Project description, increases in dust over baseline are expected to be negligible and unlikely to affect ESHA function to any measurable degree.)

Construction activities would occur during daytime hours when ambient noise levels are higher. Based on the noise level projections found within the Noise Element of the General Plan (City of Malibu 2021), noise levels along PCH are shown in Table 6-3 for existing conditions as of 1992. Noise levels at PCH west of Serra Road, east of Cross Creek were measured to be 75 A-weighted decibel scale (dBA) Community Noise Equivalent Level (CNEL), a weighted average of noise level over time, at the edge of the roadway, and 70 dBA CNEL at approximately 50 feet from the edge of the roadway. Noise levels for construction activities are predicted to range from 71–83 dBA depending on the construction phase with demolition being the highest. As such, noise occurring at the closest point to ESHA will generally not result in a substantial increase in noise over the existing traffic generated ambient noise levels. In addition, the Project is developed in a linear fashion so construction activities and associated noise will occur along small segments for

Aerial Source: Esri, Maxar 2022

Environmentally Sensitive Habitat Area – Option WP1.1

Exhibit 12-1a

Sweetwater Mesa Tank and Waterline Project

N
W E
S

700 350 0 700

Feet

PSOMAS

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Project Boundary

Environmentally Sensitive Habitat Area (ESHA)

Impact Type

Permanent

Temporary

Serra Rd

1

Aerial Source: Esri, Maxar 2022

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Environmentally Sensitive Habitat Area – Option WP1.1

Exhibit 12-1b

Sweetwater Mesa Tank and Waterline Project

N W E S

150 75 0 150

Feet

PSOMAS

(Rev: 2-14-2024 MMD) R:\Projects\CAN\3CAN020100\Graphics\ISMND\ex_ESHA.pdf

Project Boundary

Environmentally Sensitive Habitat Area (ESHA)

Impact Type

Permanent

Temporary

See Detail

Sweetwater Mesa Rd

Serra Rd

1

Aerial Source: Esri, Maxar 2022

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Environmentally Sensitive Habitat Area – Option WP1.1

Exhibit 12-1c

Sweetwater Mesa Tank and Waterline Project

N W E S

150 75 0 150

Feet

PSOMAS

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Environmentally Sensitive Habitat Area – Option WP1.1

Exhibit 12-1d

Sweetwater Mesa Tank and Waterline Project

N W E S

150 75 0 150

Feet

PSOMAS

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Environmentally Sensitive Habitat Area – Option WP1.1

Exhibit 12-1e

Sweetwater Mesa Tank and Waterline Project

N W E S

150 75 0 150

Feet

PSOMAS

(Rev: 2-14-2024 MMD) R:\Projects\CAN\3CAN020100\Graphics\ISMND\ex_ESHA.pdf

Aerial Source: Esri, Maxar 2022

Environmentally Sensitive Habitat Area – Option WP1.2

Exhibit 12-2a

Sweetwater Mesa Tank and Waterline Project

N
W E
S

700 350 0 700

Feet

PSOMAS

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Environmentally Sensitive Habitat Area – Option WP1.2

Exhibit 12-2b

Sweetwater Mesa Tank and Waterline Project

N W E S

150 75 0 150

Feet

PSOMAS

(Rev: 2-14-2024 MMD) R:\Projects\CAN\3CAN020100\Graphics\ISMND\ex_ESHA.pdf

Project Boundary

Environmentally Sensitive Habitat Area (ESHA)

Impact Type

Permanent

Temporary

See Detail

Serra Rd

Sweetwater Mesa Rd

1

Aerial Source: Esri, Maxar 2022

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Environmentally Sensitive Habitat Area – Option WP1.2

Exhibit 12-2c

Sweetwater Mesa Tank and Waterline Project

N W E S

150 75 0 150

Feet

PSOMAS

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Environmentally Sensitive Habitat Area – Option WP1.2

Exhibit 12-2d

Sweetwater Mesa Tank and Waterline Project

N W E S

150 75 0 150

Feet

PSOMAS

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Environmentally Sensitive Habitat Area – Option WP1.2

Exhibit 12-2e

Sweetwater Mesa Tank and Waterline Project

N W E S

150 75 0 150

Feet

PSOMAS

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Environmentally Sensitive Habitat Area – Option WP1.3

Exhibit 12-3a

Sweetwater Mesa Tank and Waterline Project

N
W E
S

700 350 0 700

Feet

PSOMAS

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Environmentally Sensitive Habitat Area – Option WP1.3

Exhibit 12-3b

Sweetwater Mesa Tank and Waterline Project

N W E S

150 75 0 150

Feet

PSOMAS

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Project Boundary

Environmentally Sensitive Habitat Area (ESHA)

Impact Type

Permanent

Temporary

See Detail

Sweetwater Mesa Rd

Serra Rd

1

Aerial Source: Esri, Maxar 2022

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Environmentally Sensitive Habitat Area – Option WP1.3

Exhibit 12-3c

Sweetwater Mesa Tank and Waterline Project

N W E S

150 75 0 150

Feet

PSOMAS

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Environmentally Sensitive Habitat Area – Option WP1.3

Exhibit 12-3d

Sweetwater Mesa Tank and Waterline Project

N W E S

150 75 0 150

Feet

PSOMAS

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Environmentally Sensitive Habitat Area – Option WP1.3

Exhibit 12-3e

Sweetwater Mesa Tank and Waterline Project

N W E S

150 75 0 150

Feet

PSOMAS

(Rev: 2-14-2024 MMD) R:\Projects\CAN\3CAN020100\Graphics\ISMND\ex_ESHA.pdf

the areas selected for trenching. As such, construction noise exposure will occur for relatively brief periods as trenching moves along Serra Road and will not expose a single location to noise for the totality of the short construction duration. As a result, increase in noise is expected to have minimal effect on resources associated with the ESHA. Therefore, these impacts are expected to be less than significant, and no mitigation is required.

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. No State or federally protected wetlands or other jurisdictional drainage features occur in the Project footprint. The nearest jurisdictional feature to the Project footprint, Malibu Lagoon, occurs approximately 150 feet west of Water Main Project No.2 in PCH. The Project would not disturb any State or federally protected wetlands or other jurisdictional drainage features. No impacts would occur, and no mitigation is required.

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 With Mitigation Incorporated. The Project site does not support habitat for any fish species and does not represent a native wildlife corridor; however, native bird species may breed on the Project site (Psomas 2023). The Project site is not within any documented regional wildlife corridors (Penrod et al. 2006) and there are no landscape features typically associated with regional wildlife corridors which would facilitate regional movement in the Project footprint. The site is expected to be used by wildlife for local movement only. Raptor species (i.e., birds of prey) have potential to nest on structures and in ornamental trees within and adjacent to the Project site. Potential roost trees within the Project boundary include Peruvian pepper (*Schinus molle*), pine (*Pinus* spp.), and gum (*Eucalyptus* spp.). If construction occurs during the raptor nesting season (i.e., February 1 to June 30), the loss of an active nest of any raptor species, including common raptor species, would be considered a violation of Sections 3503, 3503.5, and 3513 of the *California Fish and Game Code* and would be a significant impact. Implementation of **MM BIO-2** and **MM BIO-3** would reduce this impact to a level of less than significant with mitigation.

Other birds also have potential to nest on structures and in ornamental trees and shrubs within and adjacent to the Project site. The Migratory Bird Treaty Act (MBTA) protects the taking of migratory birds and their nests and eggs. Bird species protected under the provisions of the MBTA are identified by the List of Migratory Birds (*Code of Federal Regulations,* Title 50, §10.13). Any impact on an active bird nest would be considered a violation of the MBTA and would be considered significant. Implementation of **MM BIO-2** and **MM BIO-3** would be required to reduce this impact to a level of less than significant.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Less Than Significant Impact. The provisions of the Malibu LCP Native Tree Protection Ordinance (NTPO) protect five native trees species, oak (*Quercus* species), California walnut (*Juglans californica*), western sycamore (*Platanus racemosa*), alder (*Alnus rhombifolia*), and toyon (*Heteromeles arbutifolia*), that have at least one trunk measuring six inches or more in diameter, or a combination of any two trunks measuring a total of eight inches or more in diameter (City of Malibu 2002). Results of a Tree Assessment Report of the Project area, conducted January 2024, is provided in Appendix B-2. No native trees that are subject to the protections of

the NTPO are proposed for removal or disturbance. However, twelve western sycamores subject to the protections of the NTPO occur adjacent to the Project disturbance footprint. Indirect impacts on adjacent trees resulting from nearby Project activities, such as increased dust accumulation on leaves, may occur during soil excavation and other activities. Indirect impacts on NTPO protected and other trees would be reduced through adherence with the Malibu LCP Native Tree Protection Ordinance and implementation of the required Tree Protection Plan. The Project's Tree Assessment Report includes a Tree Protection Plan that incorporates the requirements of the NTPO (Appendix B-2). With adherence to the Malibu LCP Native Tree Protection Ordinance, impacts on trees would be considered less than significant, would not conflict with any local policies or ordinances, and no mitigation would be required.

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 is located within the City of Malibu LCP jurisdiction. The Project shall be designed in a manner consistent with, in adherence to, the Malibu LCP. Therefore, the Project would not conflict with any local plan. The Project is not located within an adopted Habitat Conservation Plan; therefore, the Project would not conflict with any Habitat Conservation Plan and mitigation would not be required. The Project is not located within a Natural Community Conservation Plan; therefore, the Project would not conflict with any Natural Community Conservation Plan and mitigation would not be required. The Project is not located within any other approved local, regional, or State habitat conservation plan; therefore, the Project would not conflict with any other approved local, regional, or State habitat conservation plan, and mitigation would not be required.

MITIGATION PROGRAM

MM BIO-1 Should construction occur between November 1 and March 1, a pre-construction monarch overwintering roost survey shall be conducted by a qualified Biologist in the Eucalyptus groves on, and immediately adjacent to, the Project site. If a roosting population is detected, and the Biologist determines that roosting activities may be disrupted by increased Project activity in the area, the Biologist will determine an appropriate protective buffer depending on the nature of the construction activity. Any protective buffers will be mapped on construction plans and designated as "Environmentally Sensitive Areas". Construction can proceed within the protective buffer when the qualified Biologist has determined that the roost is no longer active.

MM BIO-2 To the extent possible, vegetation removal will be conducted during the non-breeding season (September 1 to February 28) in order to minimize direct impacts on nesting birds and raptors. If construction activities would be initiated during the breeding season for nesting birds/raptors (March 1–August 31), a pre-construction survey will be conducted by a qualified Biologist as needed. If the Biologist does not find any active nests in or immediately adjacent to the impact area, construction activities can proceed.

If the Biologist detects an active nest within or immediately adjacent to the construction area and determines that the nest may be impacted or breeding activities substantially disrupted by increased activity around the nest, the Biologist will determine an appropriate protective buffer around the nest depending on the sensitivity of the species and the nature of the construction activity. Any protective buffers will be mapped on construction plans and designated as "Environmentally

Sensitive Areas". Construction can proceed within the protective buffer when the qualified Biologist has determined that the nest is no longer active (i.e., fledglings have left the nest, or the nest has failed).

MM BIO-3 To the extent possible, vegetation removal will be conducted during the non-breeding season (September 1 to February 28) in order to minimize direct impacts on owls. If construction activities would be initiated during the breeding season for owls (March 1–August 31) and there is appropriate habitat for owls on site, a pre-construction survey will be conducted by a qualified Biologist during the period immediately before nightfall as needed. If the Biologist does not find any active nests in or immediately adjacent to the impact area, construction activities can proceed.

If the Biologist detects an active nest within or immediately adjacent to the construction area and determines that the nest may be impacted or breeding activities substantially disrupted by increased activity around the nest, the Biologist will determine an appropriate protective buffer around the nest depending on the sensitivity of the species and the nature of the construction activity. Any protective buffers will be mapped on construction plans and designated as "Environmentally Sensitive Areas". Construction can proceed within the protective buffer when the qualified Biologist has determined that the nest is no longer active (i.e., fledglings have left the nest, or the nest has failed).

V. CULTURAL RESOURCES

ENVIRONMENTAL ISSUES (See attachments for information sources)	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §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 dedicated cemeteries?	☐	☒	☐	☐

Information in this section is derived from the South Central Coastal Information Center (SCCIC) 2019 literature review and records search and Native American Heritage Commission (NAHC) 2019 sacred lands file database search (Appendix C), and an archaeological field survey conducted in 2019 and 2020 (see below for results from the field surveys).

South Central Coastal Information Center Literature Review and Records Search

Past Studies

A literature review of documents on file at the SCCIC at California State University, Fullerton was completed on July 9, 2019. The results of the record search revealed that 147 cultural resource studies (Table 7) have been conducted within 1-mile of the Project site. Additionally, if prior studies occurred within ½-mile of the proposed Project site it is noted in the table below. The studies consist of archaeological record searches and assessments, field surveys, evaluations of archaeological resources, technical analyses, Phase II excavations, compliance monitoring, proposals for archaeological investigations, and environmental impact reports (EIRs). The studies were conducted between 1964 and 2014. Eight of the 147 studies traversed the Project site. These studies — LA-00743, LA-00995, LA-01876, LA-02833, LA-03006, LA-03298, LA-04815, LA-07609 — consist of archaeological field surveys and evaluations. The high frequency of cultural resource studies for the area are a testament to the archaeological sensitivity for the region and the City of Malibu.

TABLE 7
CULTURAL RESOURCE STUDIES WITHIN ONE MILE OF THE PROJECT SITE

Report No.	Year	Author(s)	Affiliation	Type of Study	Title of Study	Proximity to Project site
LA-00010	1973	Nelson Leonard III	University of California, Los Angeles Archaeological Survey	Archaeological, Field Study, Literature Search	3469 Crosscreek Road Survey	1 Mile
LA-00081	1975	Martin Rosen	University of California, Los Angeles Archaeological Survey	Evaluation Study	Evaluation of the Archaeological Resources for the Areawide Facilities Plan for the Las Virgenes Municipal District, (Malibu Coast, Western Santa Monica Mountains, Southern Simi Hills), Los Angeles and Ventura Counties.	0.5 Mile
LA-00183	1988	Clay Singer and John Atwood	C.A. Singer & Associates, Inc.	Archaeological, Field Study, Literature Search	Cultural Resources Survey and Impact Assessment for the Proposed John Paul Jones Residence, an 8 Acre Property Located on the North End of Sweetwater Mesa Road in Malibu, Los Angeles County, California	0.5 Mile
LA-00203	1981	Clay Singer	C.A. Singer & Associates, Inc.	Archaeological, Field Study, Literature Search	Cultural Resource Survey and Impact Assessment for the Connoleenolley Parcel, Sweetwater Mesa, Malibu, Los Angeles County, California	0.5 Mile
LA-00723	1973	Judy Suchey, Walter Wood, and Stewart Shermis	CSU Fullerton & Long Beach	Technical Analysis/ Biological Profile	Analysis of Human Skeletal Material from Malibu, California (LAN-264)	1 Mile
LA-00738	1965	Mike Glassow	University of California, Los Angeles Archaeological Survey	Technical Analysis	An Analysis of Faunal Remains from the Site of Malibu (LAN-264), Los Angeles County, California	1 Mile
LA-00743	1967	Chester King	University of California, Los Angeles Archaeological Survey	Archaeological Study	The Sweetwater Mesa Site (LAN-267) and its Place in Southern California Prehistory	Inside Located within the southern side of the Project site
LA-00975	1981	Michael McIntyre and John Foster	Greenwood and Associates	Archaeological, Field Study	Cultural Resource Reconnaissance: Parcel No.24, Tentative Parcel Map No. 12597, 23838 Harbor Vista Drive, Malibu, Los Angeles County	1 Mile
LA-00995	1981	Clay Singer	C.A. Singer & Associates, Inc	Archaeological, Field Study	Cultural Resource Survey and Impact Assessment for Tentative Tract No. 40724, in Malibu, Los Angeles County, California	Inside Encompasses the entire Project site

TABLE 7
CULTURAL RESOURCE STUDIES WITHIN ONE MILE OF THE PROJECT SITE

Report No.	Year	Author(s)	Affiliation	Type of Study	Title of Study	Proximity to Project site
LA-01022	1981	Matthew Boxt	Matthew Boxt	Archaeological, Field Study	An Archaeological Assessment of a Proposed Project site Located at 23903 Malibu Knolls Road, Malibu, California, Case Number Pm 13422	1 Mile
LA-01049	1981	Matthew Boxt	Matthew Boxt	Archaeological, Field Study, Literature Search	An Archaeological Assessment of a Proposed Project site Located at 3415 Cross Creek Road, Malibu, California, Property Designated As Tentative Minor Land Division on Number 6381	1 Mile
LA-01286	1983	David Whitley	University of California, Los Angeles Archaeological Survey	Archaeological, Field Study, Literature Search	An Archaeological Assessment of Prehistoric Cultural Resources at 22917 Pacific Coast Highway, Malibu, Los Angeles County, CA	0.5 Mile
LA-01482	1985	Roberta Greenwood and John Parker	Greenwood and Associates	Archaeological, Field Study	Archaeological Investigation, Proposed Postal Facility in Malibu, California	1 Mile
LA-01538	1986	Brian Dillon	David Van Hom	Archaeological, Field Study	Malibu Wastewater Facilities Plan: Archaeological Analysis Survey Report	0.5 Mile
LA-01653	1987	Brian Dillon	University of California, Los Angeles Archaeological Survey	Technical Analysis	Preliminary Summary of Archaeological Boundary Test Investigations on the Malibu Coast: CA-LAN-19, 210, 226, 264, 311, and 1298 Los Angeles County, Ca	1 Mile
LA-01772	1981	William Clewlow	Ancient Enterprises, Inc.	Technical Analysis	Report on Preliminary Archaeological Testing and Recommendations for Mitigation at Site LAN-267, Locus C, Los Angeles County, California	0.5 Mile
LA-01780	1989	Mark Raab	Northridge Center for Public Archaeology, CSUN	Technical Analysis	Summary of Data From Site CA-LAN-264, Malibu Lagoon, California	1 Mile
LA-01790	1989	Clay Singer and John Atwood	C.A. Singer & Associates, Inc.	Archaeological, Field Study	Archaeological Investigations at CA-LAN-267b, a Portion of the Sweetwater Mesa Site in Malibu, Los Angeles County, California.	0.5 Mile
LA-01876	1989	Roberta Greenwood and John Foster	Greenwood and Associates	Evaluation Study	Evaluation of Condition: CA-LAN-471, CALAN-1105 and CA-LAN-1106, Malibu, Los Angeles County	Inside Northern portion of the Project site

TABLE 7
CULTURAL RESOURCE STUDIES WITHIN ONE MILE OF THE PROJECT SITE

Report No.	Year	Author(s)	Affiliation	Type of Study	Title of Study	Proximity to Project site
LA-01946	1990	John Foster	Greenwood and Associates	Archaeological, Field Study	Cultural Resource Investigation: Malibu Homes, T.t. 46999	1 Mile
LA-01983	1975	Donald Dawson and Rosalie Woodward	South Bay Engineering Company	Environmental Impact Report	Draft Environmental Impact Report Tentative 29164 Malibu, Los Angeles County	1 Mile
LA-02093	1990	Roy Salls	Northridge Center for Public Archaeology, CSUN	Archaeological, Field Study	Report of Archaeological Reconnaissance Survey of Proposed Main US Post Office Malibu, California	1 Mile
LA-02276	1990	John Atwood	C.A. Singer & Associates, Inc.	Archaeological, Field Study	Archaeological Survey for a Proposed Guest House at 3415 Sweetwater Mesa Road, Malibu, California.	0.5 Mile
LA-02401	1982	Virginia Bickford	California State University Long Beach Dept. of Anthropology	Technical Analysis	European Artifacts From a Chumash Cemetery CA-LAN-264.	1 Mile
LA-02411	1991	Kenneth Becker	RMW Paleo Associates, Inc.	Archaeological, Field Study	Cultural Resources Reconnaissance of Tract 46999, Malibu, Los Angeles County, California.	1 Mile
LA-02448	1991	John Romani, Dan Larson, Gwendolyn Romani	Greenwood and Associates	Technical Analysis	Archaeological Data Recovery at CA-LAN- 690, Pacific Coast Highway (Route LAN-1), Malibu, Los Angeles County, California	0.5 Mile
LA-02537	1991	Dan Larson	Greenwood and Associates	Monitoring Report	Archaeological Monitoring on Pacific Coast Highway, Near Carbon Beach, Malibu	0.5 Mile
LA-02558	1990	Jeffry Altschul	Statistical Research, Inc.	Archaeological, Field Study	Gateway Project	1 Mile
LA-02559	1992	Chester King	Topange Archaeological Consultants	Technical Analysis	Native American Placenames in the Santa Monica Mountains: First Draft	0.5 Mile
LA-02615	1992	Dan Larson	Greenwood and Associates	Monitoring Report	Archaeological Monitoring: Underground Utility Line on Pacific Coast Highway, Malibu	0.5 Mile
LA-02624	1992	Dan Larson	Greenwood and Associates	Monitoring Report	Archaeological Monitoring on Pacific Coast Highway for a Water Main Installation from Sierra Road to 22400 Pacific Coast Highway, Malibu	0.5 Mile

TABLE 7
CULTURAL RESOURCE STUDIES WITHIN ONE MILE OF THE PROJECT SITE

Report No.	Year	Author(s)	Affiliation	Type of Study	Title of Study	Proximity to Project site
LA-02729	1987	David Van Hom	David Van Hom	Technical Analysis	Trade and Subsistence in Humaliwu: A Focused Review of the Decades of Archaeology in the Conejo Corridor	1 Mile
LA-02812	1993	Clay Singer, John Atwood, Shelley Gomes	C.A. Singer & Associates, Inc.	Archaeological, Field Study	Archaeological Impact Assessment for the Serra Tank Site, Adjacent to Sweetwater Mesa Road in the City of Malibu, Los Angeles County, California.	0.5 Mile
LA-02823	1993	Clay Singer, John Atwood, Shelley Gomes	C.A. Singer & Associates, Inc	Archaeological, Field Study	Cultural Resources Survey and Impact Assessment for a 0.37 Acre Property at 22244 Pacific Coast Highway, in the City of Malibu, Los Angeles County, California	1 Mile
LA-02826	1993	Jay Frierman	Consulting Archaeologist	Archaeological, Field Study	Phase I Archaeological Survey of a Residential Lot at 22540 Carbon Mesa Road Malibu, California 90265	1 Mile
LA-02833	1993	Clay Singer, John Atwood, Shelley Gomes	C.A. Singer & Associates, Inc	Archaeological, Field Study	Cultural Resources Survey and Impact Assessment for the Serra Road Water Main Replacement Project, in the City of Malibu, Los Angeles County, California.	Inside Located along the southern portion of the Project site
LA-02840	1993	Clay Singer, John Atwood, Shelley Gomes	C.A. Singer & Associates, Inc	Archaeological, Field Study	Cultural Resources Survey and Impact Assessment for a Proposed Single-Family Residence at 23806 Malibu Crest Drive in the City of Malibu, Los Angeles County, California	1 Mile
LA-02854	1993	Robert Wlodarski	Historical, Environmental, Archaeological, Research, Team	Archaeological, Field Study	A Phase 1 Archaeological Study for a Parcel of Land (22224 Pacific Coast Highway), Malibu, Los Angeles County, California	1 Mile
LA-02883	1993	Chester King	Topanga Anthropological Consultants	Archaeological, Field Study	Archaeological Reconnaissance at a Parcel on Palm Canyon Road Malibu, California. City of Malibu File Number 93-162	0.5 Mile
LA-02898	1993	Robert Wlodarski	Historical, Environmental, Archaeological, Research, Team	Archaeological, Field Study	A Phase 1 Archaeological Study for a Parcel of Land (23267 Palm Canyon Lane), Malibu, Los Angeles County, California	0.5 Mile

TABLE 7
CULTURAL RESOURCE STUDIES WITHIN ONE MILE OF THE PROJECT SITE

Report No.	Year	Author(s)	Affiliation	Type of Study	Title of Study	Proximity to Project site
LA-02959	1993	Clay Singer, John Atwood, Shelley Gomes	C.A. Singer & Associates, Inc	Archaeological, Field Study	Cultural Resources Survey and Impact Assessment for a Single Family Residence at 23500 Malibu Colony Drive (no. 85), in the City of Malibu, Los Angeles County, California.	1 Mile
LA-03006	1993	Jay Frierman	Consulting Archaeologist	Archaeological, Field Study	Phase II Archaeological Survey of a Developed Residential Lot at 3415 Sweetwater Mesa Road Malibu, California 90265	Inside Northern portion of the Project site
LA-03009	1994	Albert Knight	Western Mojave Survey Association	Technical Analysis	Damages to and Losses of Cultural Resources in Los Angeles County, California During the Riots, Fire Storms and Earthquakes of 1992-1994	1 Mile
LA-03014	1994	Chester King	Topanga Anthropological Consultants	Archaeological, Field Study	Archaeological Reconnaissance at 23140 Mariposa De Oro Malibu, California.	0.5 Mile
LA-03031	1994	Chester King	Topanga Anthropological Consultants	Archaeological, Field Study	Archaeological Conditions for 3415 Sweetwater Mesa Road (ppr 93-182)	0.5 Mile
LA-03083	1994	Jeanette McKenna	McKenna et al.	Archaeological Study	Malibu Property Records Check – 22600 Pacific Coast Highway, Malibu	1 Mile
LA-03092	1994	Brian Dillon	Brian Dillon	Archaeological, Field Study	Archaeological Resources Survey and Impact Assessment of Tentative Minor Land Division 23897, a 35.8 Acre Parcel in Malibu, Los Angeles County, California	0.5 Mile
LA-03112	1994	Chester King	Topanga Anthropological Consultants	Archaeological, Field Study	Archaeological Reconnaissance at 3211 Colony View Circle Malibu, California.	1 Mile
LA-03113	1972	Judy Suchey, Walter Wood, Stewart Shermis	University of California Los Angeles Department of Anthropology	Technical Analysis/ Biological Profile	(Voided, added to LA-723) Analysis of Human Skeletal Material from Malibu, California (LAN-264)	1 Mile
LA-03191	1995	Chester King	Topanga Anthropological Consultants	Archaeological, Field Study	Archaeological Reconnaissance at 3700 La Paz Lane Malibu, California.	1 Mile

TABLE 7
CULTURAL RESOURCE STUDIES WITHIN ONE MILE OF THE PROJECT SITE

Report No.	Year	Author(s)	Affiliation	Type of Study	Title of Study	Proximity to Project site
LA-03294	1996	Carol Demcak	ARMC	Archaeological, Field Study	Cultural Resources Assessment for Malibu Civic Center Specific Plan, City of Malibu County of Los Angeles, California	1 Mile
LA-03296	1996	Chester King	Topanga Anthropological Consultants	Archaeological, Field Study	Archaeological Reconnaissance at 23722 Harbor Vista Drive Malibu, California	1 Mile
LA-03298	1996	Chester King	Topanga Anthropological Consultants	Archaeological, Field Study	Archaeological Reconnaissance at 3250 Serra Road Malibu, California.	Inside On the westside of the Project site
LA-03352	1994	Chester King	Topanga Anthropological Consultants	Archaeological, Field Study	Archaeological Reconnaissance at NW Corner Civic Center Way and Stuart Ranch Road Malibu, California	1 Mile
LA-03361	1987	Robert Gibson	Robert Gibson	Technical Analysis	A Preliminary Study of Beads from Humaliwo, 4-LAN-264 at Malibu State Park, Los Angeles County, California	1 Mile
LA-03388	1996	Chester King	Topanga Anthropological Consultants	Archaeological, Field Study	Archaeological Reconnaissance at 3728 Cross Creek Road, Malibu California	0.5 Mile
LA-03391	1994	Thomas Taylor	Southern California Edison Company	Monitoring Plan	Archaeological Monitoring Plan Pacific Coast Hwy Malibu Lagoon Bridge Electrical Utility Undergrounding Project, City of Malibu, California	1 Mile
LA-03480	1992	Chester King	Topanga Anthropological Consultants	Archaeological, Field Study	Report of Volunteer Archaeological Surveys in Malibu for Project Applications	0.5 Mile
LA-03488	1972	Anonymous	Unknown	Inventory	Malibu Lagoon State Beach Resource Inventory Report	0.5 Mile
LA-03512	1964	Keith Johnson	UCAS	Archaeological, Field Study	Ucas-035 Malibu Beach, LAN-264/h	1 Mile
LA-03532	1966	Chester King and Nelson Leonard	UCAS	Archaeological, Field Study	(duplicate of LA-02186) Ucas-224 Route 268 Mulholland Drive, Los Angeles	

TABLE 7
CULTURAL RESOURCE STUDIES WITHIN ONE MILE OF THE PROJECT SITE

Report No.	Year	Author(s)	Affiliation	Type of Study	Title of Study	Proximity to Project site
LA-03548	1967	Francis Riddell, Jams Toney, Joseph Charkoff, and Nelson Leonard III	UCAS	Archaeological, Field Study	Ucas-267 Salvage Project of 19-000264 in Malibu	1 Mile
LA-03551	1967	Chester King, Kames Toney, and Joseph Charkoff	UCAS	Archaeological, Field Study	Ucas-283 Big Sycamore VEN-89 Salvage Project (also VN-1447)	1 Mile
LA-03562	1969	Thomas King	UCAS	Archaeological, Field Study	Ucas-355 Salvage Excavation of LAN-386, Malibu Canyon, Los Angeles County	1 Mile
LA-03583	1974	Bonnie Bucknam	Archaeological Research, Inc.	Archaeological, Field Study	The Los Angeles Basin and Vicinity: A Gazetteer and Compilation of Archaeological Site Information	0.5 Mile
LA-03587	1994	Chester King	Topanga Anthropological Consultants	Technical Analysis	Prehistoric Native American Cultural Sites in the Santa Monica Mountains	0.5 Mile
LA-03606	1981	Chester King	University of California, Los Angeles Archaeological Survey	Archaeological, Field Study	Proposal for Salvage Excavation at the Site of Malibu (LAN-264)	1 Mile
LA-03764	1998	John Kelly	California Department of Parks and Recreation	Evaluation Study	The Following Is an Evaluation of Cultural Resources Near the Proposed Fill Zone at Malibu Creek State Park	0.5 Mile
LA-04035	1989	Chester King	Topanga Anthropological Consultants	Archaeological, Field Study	Report of Initial Archaeological Study at 3615 Serra Road, Malibu, California	0.5 Mile
LA-04041	1989	Diane Kane and John Romani	Unknown	Archaeological, Field Study	Malibu Bridge Replacement Project Route La- 1, in Malibu, California	1 Mile
LA-04092	1998	Chester King	Topanga Anthropological Consultants	Archaeological, Field Study	Archaeological Reconnaissance at 3551 Cross Creek Lane Malibu, California	0.5 Mile
LA-04334	1998	Chester King	Chester King	Archaeological, Field Study	Report of Initial Archaeological Study at 2509 Sweetwater Mesa Road, Malibu, California.	0.5 Mile
LA-04705	1999	Chester King	Chester King	Archaeological, Field Study	Report of Initial Archaeological Study at Malibu Road West of Webb Way, Malibu, California	1 Mile

TABLE 7
CULTURAL RESOURCE STUDIES WITHIN ONE MILE OF THE PROJECT SITE

Report No.	Year	Author(s)	Affiliation	Type of Study	Title of Study	Proximity to Project site
LA-04706	1999	Chester King	Chester King	Archaeological, Field Study	Report of Initial Archaeological Study at 23430 Malibu Colony Drive, Malibu, California	1 Mile
LA-04809	1999	Gary Stickel	Environmental Research Archaeologists	Archaeological, Field Study	An Archaeological Survey for the Civic Center Project, City of Malibu, California	1 Mile
LA-04811	1999	Chester King	Chester King	Archaeological, Field Study	Report of Initial Archaeological Study at 23225 Mariposa De Oro, Malibu, California	0.5 Mile
LA-04812	1999	Chester King	Chester King	Archaeological, Field Study	Report of Initial Archaeological Study at 23445 (92A) Malibu Colony Drive, Malibu Colony Drive, Malibu, California	1 Mile
LA-04813	2000	Chester King	Chester King	Archaeological, Field Study	Report of Initial Archaeological Study for a Road at APN #4452-025-011-012-014-016, Malibu, California	0.5 Mile
LA-04815	2000	Chester King	Chester King	Archaeological, Field Study	Report of Initial Archaeological Study At 3268 Serra Road, Malibu, California	Inside On the westside of the Project site
LA-05213	1999	Chester King	Chester King	Archaeological, Field Study	Report of Initial Archaeological Study at 3516 Sweetwater Mesa Road, Malibu, Ca. City of Malibu File Number 99-139	0.5 Mile
LA-05361	2001	Robert Wlodarski	Historical, Environmental, Archaeological, Research, Team	Archaeological, Field Study	A Phase I Archaeological Study for 23610 Malibu Colony Drive #58 City of Malibu, County of Los Angeles, California	1 Mile
LA-05371	2000	Chester King	TAC	Archaeological, Field Study	Archaeological Reconnaissance and Recommendations for Archaeological Studies at a Corral Canyon Road Project Malibu, Ca	1 Mile
LA-05373	2000	Chester King	TAC	Archaeological, Field Study	Report of Initial Archaeological Study at 3011 Malibu Canyon Road, Malibu, Ca	1 Mile

TABLE 7
CULTURAL RESOURCE STUDIES WITHIN ONE MILE OF THE PROJECT SITE

Report No.	Year	Author(s)	Affiliation	Type of Study	Title of Study	Proximity to Project site
LA-05385	2001	Clay Singer	C.A. Singer & Associates, Inc.	Archaeological, Field Study	Initial Evaluation of Soil Deposits at 3669A Sweetwater Mesa Road in the City of Malibu, Los Angeles County, Ca	0.5 Mile
LA-05387	1996	Carol Demcak	Archaeological Resource Management Corporation	Archaeological, Field Study	Cultural Resource Assessment for Malibu Civic Center Specific Plan (Revised), City of Malibu, County of Los Angeles, Ca	1 Mile
LA-05391	1999	Steven Potter	C.A. Singer & Associates, Inc.	Archaeological, Field Study	Archaeological Investigations at CA-LAN- 267a East: Phase II Testing at 3516 Sweetwater Mesa Road in the City of Malibu, Los Angeles County, Ca	0.5 Mile
LA-05655	2001	Jeanette McKenna and David Brunzell	McKenna et al.	Archaeological, Field Study	A Phase I Cultural Resource Investigation of the Malibu Bay Company Development Project site, Malibu, Los Angeles County, California	1 Mile
LA-05672	2001	Sylvia Barbara	Caltrans District 7	Archaeological, Field Study	Negative Archaeological Survey Report: Construct Curb Ramps at Various Locations on PCH From Cross Creek Road to Heathercliff Road in the Malibu Are.	1 Mile
LA-05808	2001	Robert Wlodarski	Historical, Environmental, Archaeological, Research, Team	Archaeological, Field Study	A Phase 1 Archaeological Study for Proposed Improvements to 22313 Carbon Mesa Drive (Salvator Trust) City of Malibu, Los Angeles County, California	1 Mile
LA-05809	1999	Curt Duke	LSA Associates, Inc.	Archaeological, Field Study	Cultural Resource Assessment for the AT&T Wireless Services Facility Number F001, County of Los Angeles, California	1 Mile
LA-05810	2001	Robert Wlodarski	Historical, Environmental, Archaeological, Research, Team	Archaeological, Field Study	A Phase 1 Archaeological Study for Improvements to 23700 Malibu Colony Drive #34 City of Malibu, County of Los Angeles, California	1 Mile

TABLE 7
CULTURAL RESOURCE STUDIES WITHIN ONE MILE OF THE PROJECT SITE

Report No.	Year	Author(s)	Affiliation	Type of Study	Title of Study	Proximity to Project site
LA-05811	2002	Robert Wlodarski	Historical, Environmental, Archaeological, Research, Team	Archaeological, Field Study	A Phase 1 Archaeological Study APN # 4458- 003-007 Encompassing Portions of Lots 11 and 12 #50 'a' Malibu Colony Drive [the Avondale Trust] City of Malibu, County of Los Angeles, California	1 Mile
LA-06080	2002	Robert Wlodarski	Historical, Environmental, Archaeological, Research, Team	Archaeological, Field Study	A Phase I Archaeological Study for Proposed Improvements to 3510 Cross Creek Road City of Malibu, Los Angeles County, California	0.5 Mile
LA-06531	2003	Robert Wlodarski	Historical, Environmental, Archaeological, Research, Team	Archaeological, Field Study	An Archaeological Evaluation of Property Located at 22965 Pacific Coast Highway City of Malibu, County of Los Angeles, California	0.5 Mile
LA-06533	2002	Robert Wlodarski	Historical, Environmental, Archaeological, Research, Team	Archaeological, Field Study	An Archaeological Evaluation of CA-LAN-2247, Located Within Lot 2 of Tentative Parcel Map 23879 County of Los Angeles,	0.5 Mile
LA-06534	2002	John Romani and Dan Larson	Compass Rose Archaeological, Inc.	Archaeological, Field Study	Phase I Archaeological Survey at 3520 Cross Creek Lane, Serra Retreat, Malibu, California	0.5 Mile
LA-06865	2003	Robert Wlodarski	Historical, Environmental, Archaeological, Research, Team	Archaeological, Field Study	A Phase I Archaeological Study for the "as Built" Existing Rock and Vegetation Malibu Creek Bank Stabilization Project City of Malibu, County of Los Angeles, California	1 Mile
LA-06890	2003	Robert Wlodarski	Historical, Environmental, Archaeological, Research, Team	Archaeological, Field Study	Results of an Extended Phase 1 Archaeological Investigation for CA-LAN- 3125 Located at 3311 Sweetwater Mesa Road (APN4452-016-003) City of Malibu, County of Los Angeles, California	0.5 Mile
LA-06891	2003	Gary Stickel	Environmental Research Archaeologists: A Scientific Consortium	Archaeological, Field Study	A Phase 3 (mitigation) of Archaeological Site CA-LAN-267a Located at 3516 Sweetwater Mesa Road, City of Malibu, California	0.5 Mile

TABLE 7
CULTURAL RESOURCE STUDIES WITHIN ONE MILE OF THE PROJECT SITE

Report No.	Year	Author(s)	Affiliation	Type of Study	Title of Study	Proximity to Project site
LA-06892	2003	Gary Stickel	Environmental Research Archaeologists: A Scientific Consortium	Archaeological, Field Study	A Phase 2 (test Phase) of Archaeological Site CA-LAN-267a Located at 3516 Sweetwater Mesa Road, City of Malibu,	0.5 Mile
LA-06893	2003	Robert Wlodarski	Historical, Environmental, Archaeological, Research, Team	Archaeological, Field Study	A Phase 1 Archaeological Study for Two Lots Within APN #4452-025-001 and 4452-025-002 West of Carbon Canyon, City of Malibu, Los Angeles County, California	1 Mile
LA-06918	2003	Robert Wlodarski	Historical, Environmental, Archaeological, Research, Team	Monitoring Report	Archaeological Monitoring Results for CALAN-2247 Located Within Lot 2 of Tentative Parcel Map 23879 County of Los Angeles, California	0.5 Mile
LA-07571	2005	Robert Wlodarski	Historical, Environmental, Archaeological, Research, Team	Archaeological, Field Study	A Phase I Archaeological Study for a Portion of Parcel 2 Within APN#4452-025-002 West of Carbon Canyon City of Malibu, Los Angeles County, California	1 Mile
LA-07573	2005	David Whitley	W & S Consultants	Archaeological, Field Study	Phase I Archaeological Survey for 23405 Malibu Colony Drive, City of Malibu, Los Angeles County, California	1 Mile
LA-07585	2005	Robert Wlodarski	Historical, Environmental, Archaeological, Research, Team	Archaeological, Field Study	A Phase I Archaeological Study for Proposed Improvements to 3270 Serra Road City of Malibu, County of Los Angeles, California	0.5 Mile
LA-07586	2005	Robert Wlodarski	Historical, Environmental, Archaeological, Research, Team	Archaeological, Field Study	A Phase I Archaeological Study for Proposed Improvements to 22407 Carbon Mesa Drive (APN# 4451-012-034 and 4451-012-035) City of Malibu, Loa Angeles County, California	1 Mile
LA-07589	2005	Robert Wlodarski	Historical, Environmental, Archaeological, Research, Team	Archaeological, Field Study	A Phase I Archaeological Study for the Construction of a Swimming Pool at 3464 Sweetwater Mesa Road (APN#4452-016-015) City of Malibu, County of Los Angeles, California	0.5 Mile

TABLE 7
CULTURAL RESOURCE STUDIES WITHIN ONE MILE OF THE PROJECT SITE

Report No.	Year	Author(s)	Affiliation	Type of Study	Title of Study	Proximity to Project site
LA-07592	2003	Wayne Bonner	Michael Brandman Associates	Archaeological, Field Study	Records Search and Site Visit for Sprint Telecommunications Facility La36xc587f (Cross Creek Road), 3200 Cross Creek Road, Malibu, Los Angeles County, California	1 Mile
LA-07595	2004	Robert Wlodarski	Historical, Environmental, Archaeological, Research, Team	Archaeological, Field Study	A Phase 1 Archaeological Study for 2930 Sweetwater Mesa Road (APN#4452-025-023) Site 4-vg Properties LLC, City of Malibu, County of Los Angeles, California	0.5 Mile
LA-07596	2004	Robert Wlodarski	Historical, Environmental, Archaeological, Research, Team	Archaeological, Field Study	A Phase 1 Archaeological Study For 2860 Sweetwater Mesa Road (APN#4452-025-021) Site 3-vg Estates LLC City of Malibu, County of Los Angeles, California	0.5 Mile
LA-07601	2004	Matthew Brady	Greenwood and Associates	Archaeological, Field Study	Archaeological Investigation for Sweetwater Mesa Water Line Construction Malibu, Los Angeles County, California	0.5 Mile
LA-07602	2002	Simon Joseph	W & S Consultants	Archaeological, Field Study	Phase I Archaeological Survey 3416 Sweetwater Mesa Road, Malibu, Los Angeles County, California	0.5 Mile
LA-07603	2005	Robert Wlodarski	Historical, Environmental, Archaeological, Research, Team	Archaeological, Field Study	A Phase 1 Archaeological Study for Portions of Parcels 3 and 4 Within APN#4452-025-001 and 4452-025-002 West of Carbon Canyon City of Malibu, Los Angeles County, California	1 Mile
LA-07604	2003	Robert Wlodarski	Historical, Environmental, Archaeological, Research, Team	Archaeological, Field Study	A Phase 1 Archaeological Study for 3311 Sweetwater Mesa Road (APN4452-016-003) City of Malibu, County of Los Angeles, California	0.5 Mile
LA-07608	2004	Robert Wlodarski	Historical, Environmental, Archaeological, Research, Team	Archaeological, Field Study	A Phase I Archaeological Study for Proposed Improvements to 23344 Palm Canyon Lane (APN#4452-014-004) City of Malibu, County of Los Angeles, California	1 Mile

TABLE 7
CULTURAL RESOURCE STUDIES WITHIN ONE MILE OF THE PROJECT SITE

Report No.	Year	Author(s)	Affiliation	Type of Study	Title of Study	Proximity to Project site
LA-07609	1992	Clay Singer, John Atwood, and Shelly Gomes	C.A. Singer & Associates, Inc.	Proposal	Proposal for a Phase II Archaeological Investigation at Parcel 16779, in the City of Malibu, Los Angeles County, California	Inside Northern portion of the Project site
LA-07610	1992	Clay Singer, John Atwood, and Shelly Gomes	C.A. Singer & Associates, Inc.	Proposal	Proposal for a Phase II Archaeological Investigation at Parcel 16779 in the City of Malibu, Los Angeles County, California	0.5 Mile
LA-07611	2004	Robert Wlodarski	Historical, Environmental, Archaeological, Research, Team	Archaeological, Field Study	A Phase I Archaeological Study for APN #4458-024-028, Harbor Vista Drive City of Malibu, Los Angeles County, California	1 Mile
LA-07916	1996	Lynn Gamble, Glenn Russell, Chester King, and Jean Hudson	American Indian Studies Center and Institute of Archaeology UCLA	Technical Analysis	Distribution of Wealth and Other Items at the Malibu Site, CA-LAN-264	1 Mile
LA-08281	2007	Robert Wlodarski	Historical, Environmental, Archaeological, Research, Team	Archaeological, Field Study	A Phase I Archaeological Study for Proposed Improvements to 3415 Sweetwater Mesa Road, City of Malibu, Los Angeles County, California	0.5 Mile
LA-08282	2007	Robert Wlodarski	Historical, Environmental, Archaeological, Research, Team	Archaeological, Field Study	A Phase I Archaeological Study for Proposed Improvements to 23681 Malibu Road, City of Malibu, Los Angeles County, California	1 Mile
LA-09147	2008	Robert Wlodarski	Historical, Environmental, Archaeological, Research, Team	Archaeological, Field Study	A Phase I Archaeological Study for Proposed Improvements to 22165 Carbon Mesa Road (APN#4451-021-024) City of Malibu, Los Angeles County, California	1 Mile
LA-09178	2008	Robert Wlodarski	Historical, Environmental, Archaeological, Research Team	Archaeological, Field Study	A phase I Archaeological Study for Proposed Improvements to 22201 Carbon Mesa Road (APN#4451-012-023) City of Malibu, Los Angeles County, California	1 Mile
LA-09294	2008	Patrick Tumamait	Compass Rose Archaeological, Inc.	Monitoring Report	Archaeological Monitoring Report: Cross Creek Road Improvements Project City of Malibu, Los Angeles County California	1 Mile

TABLE 7
CULTURAL RESOURCE STUDIES WITHIN ONE MILE OF THE PROJECT SITE

Report No.	Year	Author(s)	Affiliation	Type of Study	Title of Study	Proximity to Project site
LA-09308	2008	Dana Slawson	Greenwood and Associates	Archaeological, Field Study	Archaeological Survey Report 3314 Serra Road City of Malibu, Los Angeles County, California	0.5 Mile
LA-09384	2008	Robert Wlodarski	Historical, Environmental, Archaeological, Research Team	Archaeological, Field Study	A Phase 1 Archaeological Study for 3469 Cross Creek Road (APNs 4458-023-003, 4458-023-004, and 4458-024-028) City of Malibu, County of Los Angeles California	1 Mile
LA-09613	2008	Barbie Getchell and John Atwood	PAST, Inc.	Archaeological, Field Study	Initial Cultural Resources Evaluation of APN 4458-019-008, A Commercial Property, Located at 23614 Pacific Coast Highway in the City of Malibu, Los Angeles County, California	1 Mile
LA-09617	2009	Robert Wlodarski	Historical, Environmental, Archaeological, Research Team	Archaeological, Field Study	A Phase 1 Archaeological Study for Proposed Improvements to 22224 Pacific Coast Highway (PCH), APN#451-006-030, 22230 PCH, 22234 PCH, and 22240 Pacific Coast Highway, City of Malibu, County of Los Angeles, California	1 Mile
LA-10371	2009	Robert Wlodarski	Historical, Environmental, Archaeological, Research Team	Archaeological, Field Study	A Phase 1 Archaeological Study for Proposed Improvements to 23038 Pacific Coast Highway (APN# 4452-005-001), City of Malibu, County of Los Angeles, California	0.5 Mile
LA-10377	2008	Robert Wlodarski	Historical, Environmental, Archaeological, Research Team	Archaeological, Field Study	A Phase 1 Archaeological Study for Proposed Improvements to 22931-33 Pacific Coast Highway (ANP#4452-019-008), 22935 Pacific Coast Highway (4452-019-010), 22941 Pacific Coast Highway (APN#4452-019-009), City of Malibu, County of Los Angeles, California	0.5 Mile
LA-10409	2006	Mark Robinson	Jones and Stokes	Environmental Impact Report	Malibu Lagoon Restoration and Enhancement Plan Final Environmental Impact Report (EIR)	1 Mile

TABLE 7
CULTURAL RESOURCE STUDIES WITHIN ONE MILE OF THE PROJECT SITE

Report No.	Year	Author(s)	Affiliation	Type of Study	Title of Study	Proximity to Project site
LA-10410	2009	Robert Wlodarski	Historical, Environmental, Archaeological, Research Team	Archaeological, Field Study	A Phase 1 Archaeological Study for Proposed Improvements to 23676-23712 Malibu Road, City of Malibu, Los Angeles County, California	1 Mile
LA-10411	2010	Robert Wlodarski	Historical, Environmental, Archaeological, Research Team	Archaeological, Field Study	A Phase 1 Archaeological Study for the Proposed Whole Foods Development Project located on the Northwest corner of Civic Center Way and Cross Creek Road City of Malibu, County of Los Angeles, California	1 Mile
LA-10425	1995	Lynn Gamble, Glenn Russell, and Jean Hudson	UCLA	Technical Analysis	Archaeological Site Mapping and Collections Assessment of Humaliwu (CA-LAN-264) and Muwu (CA-VEN-11)	1 Mile
LA-10514	2010	Robert Wlodarski	Historical, Environmental, Archaeological, Research Team	Archaeological, Field Study	A Phase I Archaeological Study for 3240 Cross Creek Road (APN#4457-002-038) City of Malibu, County of Los Angeles, California	0.5 Mile
LA-11151	2003	John Romani and Dan Larson	Compass Rose	Archaeological, Field Study	Results of a Cultural Resource Phase I Assessment and Extended Phase I Shovel Test Program for the Proposed Heart-of-the- Park Shuttle Demonstration Project, Santa Monica Mountains National Recreation Area.	1 Mile
LA-11152	2002	Roger Mason	Parsons	Archaeological, Field Study	Santa Monica Mountains National Recreation Area, Heart-of-the-Park Shuttle Demonstration Project Draft Environmental Assessment/Initial Study	1 Mile
LA-11530	2012	Robert Wlodarski	Historical, Environmental, Archaeological, Research Team	Archaeological, Field Study	A Phase I Archaeological Study for 23847 Stuart Ranch Road-Malibu Racquet Club- City of Malibu, County of Los Angeles, California	1 Mile
LA-11652	2012	Gwen Romani	Compass Rose	Archaeological, Field Study	Initial Archaeological Evaluation: 3511 Cross Creek Lane, City of Malibu, Los Angeles County, California	0.5 Mile

TABLE 7
CULTURAL RESOURCE STUDIES WITHIN ONE MILE OF THE PROJECT SITE

Report No.	Year	Author(s)	Affiliation	Type of Study	Title of Study	Proximity to Project site
LA-12480	2013	Robert Wlodarski	Historical, Environmental, Archaeological, Research Team	Archaeological, Field Study	A Phase I Archaeological Study for 3763 Sweetwater Canyon Drive (APN#4452-020-067) City of Malibu, County of Los Angeles, California	0.5 Mile
LA-12481	2013	George Toren and Gwen Romani	Compass Rose	Archaeological, Field Study	Phase I Archaeological Study 3535 Cross Creek Lane, City of Malibu, Los Angeles County, California	0.5 Mile
LA-12780	2014	George Toren and Gwen Romani	Compass Rose	Archaeological, Field Study	Phase I Archaeological Study: 1.7 Acre Parcel Located at 3350 Serra Road, City of Malibu, Los Angeles County, California	0.5 Mile
LA-12781	2014	George Toren and Gwen Romani	Compass Rose	Archaeological, Field Study	Phase I Archaeological Study: Surfrider Hotel 23033 Pacific Coast Highway, City of Malibu, Los Angeles County, California	0.5 Mile
LA-12782	2014	George Toren and Gwen Romani	Compass Rose	Archaeological, Field Study	Phase I Archaeological Study: 23314 Malibu Colony Drive, City of Malibu, Los Angeles County, California	1 Mile
LA-13039	1970	Thomas King	University of California, Los Angeles	Archaeological, Field Study	NEWCOMER CAVE (Lan-386), Report on a salvage excavation by the University of California Archaeological Survey, Los Angeles; a part of the Santa Monica Mountains Research Project	1 Mile
LA-13041	1988	Dan Larson	Dan Larson	Technical Analysis	Archaeological Analysis of Lithic Materials from A Portion of CA-LAN- 1449	0.5 Mile
LA-13042	1989	Dan Larson	Dan Larson	Archaeological, Field Study	Results of Archaeological Monitoring at CA-LAN-264, CA-LAN-690 And CA-LAN-1449, As A Result of Utility Trenching on Pacific Coast Highway, In Malibu, California	0.5 Mile

Source: Psomas 2021.

Previously Recorded Cultural Resources

The 2019 SCCIC records search identified 22 cultural resources within the 1-mile search radius of the Project site. Additionally, if previously recorded cultural resources occurred within ½-mile of the proposed Project site, it is noted in the table below to highlight the cultural resource sensitivity in proximity of the proposed Project site. Ten of the 22 resources are located within ½-mile of the Project site. Sixteen of the cultural resources are precontact (before the arrival of Europeans) or include a precontact component. These include sites with shell middens, habitation debris, milling features (food processing stations), lithic scatters (discarded debris from the manufacturing of stone tools), rock shelters, and the site of the Chumash village Humaliwo, which included more than 200 Chumash burials. The remaining cultural resources date to the Historic-era (A.D. 1769–1961) and include trash scatters, the Adamson House, Malibu Pier, Stevens House, and the Malibu Point Historic District, and the foundations of the Tadia Ranch. Two of the 22 resources are located within the boundaries the Project site (refer to Table 8). These include the Chumash village site of Humaliwo (CA-LAN-264/H) and a precontact rock shelter with documented habitation debris (CA-LAN-267). LAN-264/H is listed in the National Register of Historic Places (NRHP) and is considered a historic property.

TABLE 8
CULTURAL RESOURCE WITHIN ONE MILE OF THE PROJECT SITE

Primary No.	Trinomial No.	Resource Description	Year Recorded/Updated	Recorded by Author/Affiliation	Proximity to Project site
P-19-000264	CA-LAN-264/H	Multicomponent: Humaliwo village site; cemetery; burials; habitation debris	1959; 1963; 1975; 1976; 2001	Watson; Blackburn; Meighan; Judge; Zepeda	Within
P-19-000267	CA-LAN-267	Prehistoric: lithic scatter; rock shelter/cave; habitation debris	1961; 1972; 1981; 1999; 2003	King and Glassow; Coleman; Singer; Wlodarski and Larson	Within
P-19-000386	CA-LAN-386	Prehistoric: rock shelter/cave; habitation debris	1969	Newcomer and King	1 Mile
P-19-000387	CA-LAN-387	Historic: Tadia Ranch; foundations/structures; landscaping; privies/dumps/trash scatters; standing structures	1969	King	0.5 Mile
P-19-000404	CA-LAN-404	Prehistoric: habitation debris	1969	Chartkoff; Gutman	1 Mile
P-19-000471	CA-LAN-471	Prehistoric: lithic scatter	1972; 1981	Coleman and Taggart; Singer	0.5 Mile
P-19-000690	CA-LAN-690	Prehistoric: lithic scatter; habitation debris	1983; 1987	Aycock; Singer	1 Mile
P-19-001105	CA-LAN-001105	Prehistoric: lithic scatter; hearth/pits; habitation debris	1981	Singer and Romani	0.5 Mile
P-9-001106	CA-LAN-1106	Prehistoric: lithic scatter; bedrock milling feature	1981	Singer and Romani	0.5 Mile

TABLE 8
CULTURAL RESOURCE WITHIN ONE MILE OF THE PROJECT SITE

Primary No.	Trinomial No.	Resource Description	Year Recorded/Updated	Recorded by Author/Affiliation	Proximity to Project site
P-19-001417	CA-LAN-1417	Prehistoric: lithic scatter, petroglyphs; habitation debris	1988	Wlodarski and Larson	1 Mile
P-19-001449	CA-LAN-1449	Prehistoric: lithic scatter; habitation debris	1988	Larson, Romani, and Lotah	0.5 Mile
P-19-001991	CA-LAN-1991	Prehistoric: habitation debris	1991	Becker	1 Mile
P-19-002247	CA-LAN-2247	Prehistoric: habitation debris	1994; 2003	Dillon; Wlodarski	0.5 Mile
P-19-002811	CA-LAN-2811	Prehistoric: habitation debris	1999	King	1 Mile
P-19-002936	CA-LAN-2936/H	Multicomponent: lithic scatter; habitation debris; privies/dumps/trash scatters	2001	Shabel and Zepeda	0.5 Mile
P-19-003766	CA-LAN-3766	Prehistoric: lithic scatter; habitation debris; shellfish remains	2003	Parker	0.5 Mile
P-19-004429	CA-LAN-4429H	Historic: water conveyance system	2013	Tejada, Ruiz, Weisberg	1 Mile
P-19-004468	CA-LAN-4468	Prehistoric: lithic scatter; habitation debris	2014	King	0.5 Mile
P-19-177472	–	Historic: Adamson House	1976	Merrick	1 Mile
P-19-186261	–	Historic: Malibu Pier	1985	Briner	0.5 Mile
P-19-189451	–	Historic: Stevens House	2011	McAvoy and Charnov	1 Mile
P-19-192413	–	Historic: Malibu Point Historic District	2017	Bevil	1 Mile

Source: Psomas 2021.

Native American Heritage Commission Sacred Lands File Search

The NAHC completed a Sacred Lands File (SLF) search on October 17, 2019. The SLF Search produced negative results; however, the absence of specific site information in the SLF does not indicate the absence of Native American cultural resources within the Project site; especially since the area is considered sensitive for precontact archaeological and tribal cultural resources. Tribal representatives from the local Native American community should be consulted on all project activities that involve ground disturbance (see Section XVIII Tribal Cultural Resources below for results from consultation).

Field Survey

Psomas surveyed the Project site, including the proposed alignment for the water main along Serra Road to Sweetwater Mesa Road on November 6, 2019, and November 24, 2020. The entire

Project site was surveyed by Psomas Senior Archaeologist, Charles Cisneros, walking evenly spaced transects spaced no more than 10 meters (32 feet) apart. Survey transect accuracy was maintained using compasses, field maps, and a submeter-accurate global positioning system (GPS) receiver. Each GPS receiver was uploaded with share files depicting the Project site. The ground surface was examined for the presence of precontact (before the arrival of Europeans) cultural resources and historic-era cultural resources. The results of the field survey were negative for archaeological resources. However, it should be noted that the negative results only include an examination of the surface. Because of the cultural resource sensitivity of the area there is a possibility that intact cultural resources may be present in undisturbed sediment below the surface.

IMPACT ANALYSIS

Would the Project:

a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?

Less than Significant With Mitigation Incorporated. A historical resource pursuant to Section 15064.5 includes any resource listed in, or determined eligible by the State of California, including resources listed as historic properties in the NRHP. These types of resources include both built environment resources (e.g., buildings, bridges, homes) and archaeological resources (e.g., village sites, rock shelters, shell middens), including unique and non-unique archaeological sites. Previously documented historical-era resources (built environment and historical-era archaeological sites) related to both the residential and economic development of Malibu, are located nearby and include structural pads, foundations, refuse scatters, single-family properties, water conveyance features, the Adamson House (P-19-177472), Stevens House (P-19-189451), Malibu Pier (P-19-186261), and the Malibu Point Historic District (P-19-192413). Many of these historical-era resources are listed in the NRHP because each resource has made significant contributions to local history and to the history of the State of California. Specifically, the Malibu Point Historic District has been identified as a cultural landscape associated with the history of surfing in Southern California from 1927 to 1968. In regards, to the precontact history of the area, archaeological site CA-LAN-264/H is the Chumash village Humaliwo, which included more than 200 Chumash burials and was an important center of Chumash life in this region in precontact and early historic times. This archaeological site also has a documented historic-era cemetery dating from 1775 to 1825. CA-LAN-246/H is listed on the NRHP. See Threshold Question (b) below for more information on CA-LAN-264/H.

Construction and Operation. None of the built environment resources listed on a register are present within the Project site. Due to proximity of the known resources CA-LAN-264/H, implementation of **MM CULT-1**, which describes procedures to be followed if cultural resources are discovered, is recommended. **MM CULT-1** would reduce this potentially significant impact to a less than significant level with mitigation.

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

Less than Significant With Mitigation Incorporated. Two archaeological resources — CA-LAN-264/H and CA-LAN-267 — have been identified within the Project site.

As noted above under Threshold Question V (a), CA-LAN-264/H is a multicomponent archaeological site (precontact and historical-era site) that includes the Chumash village, Humaliwo, which was originally recorded in 1959 by R.S. Watson and may have been occupied

as early 1,000 B.C. and as recent as the middle of the 19th Century. CA-LAN-264/H is listed in the NRHP and is considered a historic property. Historically, data from the site suggests that *Humaliwo* was the capital village of the Chumash political province that encompassed the Santa Monica Mountain region. More than 200 human burials have been removed from the site. The precontact component of the site would be impacted from ground disturbing activities, thus requiring mitigation. The historic component of the site, the historical-era cemetery, is outside of the proposed Project site and would not be impacted from ground disturbing activities.

CA-LAN-267 is known as the Sweetwater Mesa site and was originally recorded by C. King and M. Glassow in 1961. The site consists of three loci (distinct portion of an archaeological site separated from other parts of the site) and consists of lithic artifacts, including choppers, hammerstones, debitage (waste products from the manufacturing of tools), blade fragments, projectile points, and ground stone fragments (manos and metates). The site is characteristic of archaeological sites typically assigned to the Early Period (3050 B.C. – 550 B.C.); however, archaeological excavations at the site suggest the site was occupied/utilized by the Chumash throughout multiple periods of prehistory, including up to the founding of the village site of *Humaliwo.*

Construction. While no additional archaeological resources were identified from the field surveys, there is a possibility that archaeological material would be uncovered during ground-disturbing activities for the proposed Project. Therefore, considering the importance of the location to the Chumash, as well as known and documented Chumash archaeological resources nearby (see Table 8 above), and the presence of human remains from CA-LAN-264/H, mitigation is required and tribal representatives from the local Native American community should be consulted on all ground disturbance within the Project site (see Section XVIII Tribal Cultural Resources below for results from consultation).

Furthermore, implementation of **MM CULT-1**, which was approved by the tribal government requesting consultation for the Project and the District, describes procedures to be followed if cultural resources are discovered. **MM CULT-1** would reduce this potentially significant impact to a less than significant level with mitigation.

Operation: Impacts related to operation of the proposed Project would be less than significant, and no mitigation is required.

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

Less than Significant Impact With Mitigation Incorporated. As noted above, more than 200 human burials dating to the precontact-era have been documented from CA-LAN-264/H. A historical-era cemetery has also been documented from this archaeological site. Therefore, there is always a possibility additional human remains may be found below the surface.

Construction. Project-related earth disturbance has the potential to unearth previously undiscovered remains, resulting in a potentially significant impact. However, compliance with existing regulations, including Regulatory Requirement (**RR) CUL-1** and implementation of protocols and **MM CULT-1** to be followed in the event of the discovery of human remains, would ensure that impacts would be reduced to a less than significant level with mitigation.

Operation: Impacts related to operation of the proposed Project would be less than significant, and no mitigation is required.

REGULATORY REQUIREMENT

RR CUL-1 If human remains are found during ground-disturbing activities, no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains shall occur, in accordance with Section 7050.5 of the California Health and Safety Code. The County Coroner shall be notified of the discovery immediately. If the County Coroner determines that the remains are or believed to be Native American, the coroner shall notify the NAHC in Sacramento within 24 hours of the discovery. In accordance with Section 5097.98 of the California Public Resources Code, the NAHC must immediately notify those persons it believes to be the most likely descended from the deceased Native American. The descendants shall complete their inspection within 48 hours of being granted access to the site by the Project Engineer. The Project Engineer would meet and confer with the most likely descendant regarding their recommendations prior to disturbing the site by further construction activity.

MITIGATION PROGRAM

MM CULT-1 The District shall retain a qualified Project Archaeologist who meets the Secretary of the Interior's Standards and Guidelines for Archaeology and a professional Native American Monitor (Tribal Representative) approved by the Tribe that requested AB 52 consultation prior to the initiation of ground-disturbing activities to observe all ground-disturbing activities within native sediment at the Project site. If cultural resources are encountered, the qualified archaeologist and Native American monitor, in consultation with the Project Engineer, will have the authority to halt ground disturbing activities within a minimum 100-foot buffer of the find and for a reasonable period of time to assess and document potential finds in real time as approved by the Project Engineer.

In the event that archaeological resources are discovered at the Project site, the handling of the discovered resources shall occur, as described below. All artifacts discovered shall be inventoried and analyzed by the Project Archaeologist. If any artifacts of Native American origin are discovered, the Project Archaeologist shall notify the Engineer and property owner and all activities in the immediate vicinity of the find shall halt, in consultation with the Engineer, within a minimum 100-foot buffer of the find and for a reasonable period of time as determined by the Project Archaeologist and Tribal Representative. The Project Archaeologist and Tribal Representative will analyze the Native American artifacts for identification as everyday life and/or religious or sacred items, cultural affiliation, temporal placement, and function, as deemed possible. The significance of Native American resources shall be evaluated in accordance with the provisions of CEQA and shall consider the religious beliefs, customs, and practices of the affiliated tribes. All items found in association with Native American human remains shall be considered grave goods or sacred in origin and subject to special handling.

Non-Native American artifacts shall be inventoried, assessed, and analyzed for cultural affiliation, personal affiliation (prior ownership), function, and temporal placement. After analysis and reporting, these artifacts shall be subjected to curation or returned to the property owner, as deemed appropriate.

Once grading activities have ceased or the Project Archaeologist, in consultation with the lead agency and Tribal Representative, determines that monitoring is no longer necessary, monitoring activities can be discontinued. A report of findings,

including an itemized inventory of recovered artifacts, shall be prepared upon completion of the steps outlined above. A copy of the report shall also be filed with the SCCIC.

VI. ENERGY

ENVIRONMENTAL ISSUES (See attachments for information sources)	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☒	☐

IMPACT ANALYSIS

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?

Less than Significant Impact.

Construction. Project construction-related energy demand includes energy and fuel used by construction equipment, construction worker vehicles, and construction vendor/hauling vehicles. The construction equipment, use of electricity, and fuel for the Project would be typical for water main installations and reservoir tank construction because there are no aspects of the proposed construction process that are unusual or energy intensive. Construction equipment would conform to applicable CARB emissions standards, which promote equipment fuel efficiencies. Construction contractors would be required to comply with the provisions of California Code of Regulations Title 13 Section 2485, which prohibits diesel-fueled commercial motor vehicles and off-road diesel vehicles from idling for more than five minutes and would minimize unnecessary fuel consumption. Gasoline and diesel fuel would be supplied by local and regional commercial vendors. It should be noted that fuel efficiencies are improving for on- and off-road vehicle engines due to more stringent government requirements. Construction energy consumption would represent a “single-event” demand and would not require ongoing or permanent commitment of energy resources. The Project would also not necessitate the use of construction equipment or processes that are less energy efficient than at comparable construction sites. Thus, construction energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary. Impacts would be less than significant, and no mitigation is required.

Operation. Operationally, there would be no increase in vehicle trips compared to current operations. New energy requirements would be minimal, related primarily to energy efficient LED lighting at the new Sweetwater Mesa Tank site which is anticipated to require approximately 8,600 kilowatt-hours per year. Additionally, construction of the new water main from PCH and the addition of the proposed PRSs would require less pumping when the hydraulic gradient is high enough, thus resulting in a reduction in pumping requirements. As such, operational energy

consumption would not be considered inefficient, wasteful, or otherwise unnecessary. Impacts would be less than significant, and no mitigation is required.

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

Less than Significant Impact. The Conservation Element of the Malibu General Plan includes Goal 3, Energy Conserved, with the following policies:

> CON Policy 3.1.1: The City shall educate the community regarding the importance of and techniques for energy conservation.
>
> CON Policy 3.1.2: The City shall encourage state-of-the-art energy efficiency standards for all new construction design.
>
> CON Policy 3.1.3: The City shall protect solar access.
>
> CON Policy 3.1.4: The City shall encourage uses of solar and other nonpolluting, renewable energy sources.

Construction and Operation. The Project would develop water storage capacity and associated water mains to increase the ability to provide required fire flows and storage of domestic water. The Project would not develop facilities that would reduce incentives to provide renewable energy and would not conflict with or obstruct a State or local plan for renewable energy. Because the operation of the proposed Project would result in a minimal increase in energy consumption, the Project would not conflict with or obstruct a State or the General Plan policies for energy efficiency. Impacts would be less than significant, and no mitigation is required.

MITIGATION PROGRAM

No mitigation measures are required.

VII. GEOLOGY AND SOILS

ENVIRONMENTAL ISSUES (See attachments for information sources)	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☒	☐	☐

Information in this section is derived from the *Geotechnical Evaluation, Sweetwater Mesa Tank, Civic Center Improvement Project, Los Angeles County Waterworks, Malibu, California* (Geotechnical Evaluation) prepared by Ninyo & Moore and dated October 9, 2020 (Ninyo & Moore 2020a; Appendix D1) and the *Updated Geotechnical Evaluation, Sweetwater Mesa Water Main Replacements, Civic Center Improvement Project, Los Angeles County Waterworks, Malibu, California* (Geotechnical Evaluation) prepared by Ninyo & Moore and dated October 9, 2020 (Ninyo & Moore 2020b; Appendix D2).

IMPACT ANALYSIS

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.

Less than Significant Impact.

Construction and Operation. According to the Geotechnical Evaluation, the Project site is not located within a State of California Earthquake Fault Zone (formerly known as Alquist-Priolo Special Studies Zone) and the probability of surface fault rupture is considered low (Ninyo & Moore 2020a, 2020b). Therefore, impacts would be less than significant, and no mitigation is required.

ii) Strong seismic ground shaking?

Less than Significant With Mitigation Incorporated. The Project site is located in a seismically active area, as is the majority of southern California, and there is potential for strong ground motion in the project areas during the design life of the proposed improvements. The nearest mapped active fault is the Malibu Coast fault located approximately 0.3 mile south of the site (Ninyo & Moore 2020a, 2020b). The level of ground shaking at a given location depends on many factors, including the size and type of earthquake, distance from the earthquake, and subsurface geologic conditions.

Construction and Operation. Earthquake events from one of the regional active or potentially active faults near the site could result in strong ground shaking which could affect the Project area, representing a significant impact. However, implementation of **MM GEO-1** requires that the specific recommendations of the Geotechnical Evaluation prepared for the Project, including Seismic Design Considerations, are fully incorporated in the design and construction of the Project. Therefore, implementation of **MM GEO-1** would reduce impacts related to strong seismic ground shaking to less than significant levels with mitigation.

iii) Seismic-related ground failure, including liquefaction?

Less Than Significant With Mitigation Incorporated. Liquefaction is the phenomenon in which loosely deposited, saturated granular soils (located below the water table) undergo rapid loss of shear strength due to development of excess pore pressure during strong earthquake-induced ground shaking. Ground shaking of sufficient duration results in the loss of grain-to-grain contact due to rapid rise in pore water pressure and it eventually causes the soil to behave as a fluid for a short period of time.

Construction and Operation. According to the Geotechnical Evaluation, the portions of the pipeline alignment along PCH, along the southern portion of Serra Road, and at the site of the future pressure regulating station are mapped by the State of California as being susceptible to liquefaction (Ninyo & Moore 2020b). Therefore, the potential for seismic-related ground failure, including liquefaction, represents a significant impact. However, implementation of **MM GEO-1** requires that the specific recommendations of the Geotechnical Evaluation prepared for the Project, including Seismic Design Considerations, are fully incorporated in the design and

construction of the Project. Therefore, implementation of **MM GEO-1** would reduce impacts related to strong seismic ground shaking to less than significant levels with mitigation.

iv) Landslides?

Less Than Significant With Mitigation Incorporated. Landslides may be induced by strong vibratory motion produced by earthquakes. According to the Geotechnical Evaluation, a relatively small portion of the pipeline alignment in the easement between Serra Road and Sweetwater Mesa Road is located in a State of California seismic hazard zone for landslides. Additionally, many of the adjacent hillsides along the pipeline alignment on Serra Road and Sweetwater Mesa Road may be susceptible to earthquake-induced landslides (Ninyo & Moore 2020a, 2020b).

Construction and Operation. Since the purpose of the Project is to replace an existing water line in the roadway using relatively shallow cut-and-cover trenching (generally less than 5 feet), it is anticipated that the proposed construction and pipeline would have negligible impact on the existing stability of the adjacent slopes (Ninyo & Moore 2020 a, 2020b). However, the presence of areas susceptible to landslides represents a significant impact. Implementation of **MM GEO-1** requires that the specific recommendations of the Geotechnical Evaluation prepared for the Project, including Seismic Design Considerations, are fully incorporated in the design and construction of the Project. Therefore, implementation of **MM GEO-1** would reduce impacts related to strong seismic ground shaking to less than significant levels with mitigation.

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

Less Than Significant with Mitigation Incorporated. The largest source of erosion and topsoil loss is uncontrolled drainage during construction. As discussed in more detail in Section XI, Hydrology and Water Quality, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into "waters of the U.S." Construction activities shall be conducted in compliance with the statewide NPDES General Permit for Storm Water Discharges Associated with the Construction and Land Disturbance Activities (Order No 2012-0006-DWQ, NPDES No. CAS000002), adopted by the State Water Resources Control Board on July 17, 2012.

Construction: In compliance with the NPDES permit, erosion potential during construction of the proposed Project would be managed with Best Management Practices (BMPs) implemented on the Project site as part of a Storm Water Pollution Prevention Plan (SWPPP) during construction activities in accordance with NPDES requirements. Implementation of the BMPs would reduce construction-related erosion impacts to less than significant levels. Therefore, compliance with NPDES Permit requirements and implementation of **RR HYDRO-1** and **MM HYDRO-1** would reduce impacts on soil erosion to less than significant with mitigation.

Operation: Impacts related to operation of the proposed Project would be less than significant, and no mitigation is required.

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?

Less Than Significant With Mitigation Incorporated. Lateral spread of the ground surface during an earthquake usually takes place along weak shear zones that have formed within a liquefiable soil layer. Lateral spread has generally been observed to take place in the direction of a free-face (i.e., retaining wall, slope, channel, etc.) but has also been observed to a lesser extent on ground surfaces with gentle slopes. For sites located in proximity to a free-face, the amount of

lateral ground displacement is correlated with the distance of the site from the free-face. Other factors such as earthquake magnitude, distance from the causative fault, thickness of the liquefiable layers, and the fines content and particle sizes of the liquefiable layers also influence the amount of lateral ground displacement.

Construction and Operation: According to the Geotechnical Evaluation, since the site is generally level and away from any free-face, lateral spread is not a design concern and does not represent a significant impact (Ninyo & Moore 2020b).

As a result of liquefaction (as discussed previously in the Response to Question VI.a (iii)), the proposed pipeline alignment on PCH may be subject to liquefaction induced settlement. The amount of settlement associated with liquefaction and dynamic settlement along the southern end of Serra Road would vary due to these varying depths, but generally decrease to the north and be less than the settlements calculated along PCH where alluvium is anticipated to be deepest along the alignment (Ninyo & Moore 2020b). Implementation of **MM GEO-1** requires that the specific recommendations of the Geotechnical Evaluation prepared for the Project, including the following: Geologic Hazards including fault rupture and liquefaction potential, and seismically induced settlement); Earthwork including pre-construction conference, clearing and site preparation, tank pad and retaining wall foundation preparation, excavation characteristics, temporary excavations, shoring, excavation bottom stability, fill material, fill placement and compaction; Pipe Bedding, Pipe Anchors, and Backfill Stabilizers; Seismic Design Considerations; Foundations; Tank Slab-On-Grade; Retaining Walls; Underground Utilities including excavation bottom stability, pipe bedding, trench backfill, lateral earth pressures for thrust blocks, modulus of soil reaction, pavement reconstruction; Corrosivity; Concrete; and Drainage are fully incorporated in the design and construction of the Project. Therefore, implementation of **MM GEO-1** would reduce impacts related to seismically induced settlement to less than significant with mitigation.

Additionally, potential impacts related to liquefaction and landslides subsequent lateral spreading would be less than significant at the Project site as discussed previously in the Response to Question VI.a (iii and iv). As discussed, impacts related to liquefaction and landslides would be significant and implementation of **MM GEO-1** would reduce impacts to less than significant with mitigation.

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

Less Than Significant With Mitigation Incorporated. According to the Geotechnical Evaluation, the pipeline alignment is underlain by volcanic rocks of the Conejo Volcanics, sedimentary rock of the Topanga Formation and Monterey Shale, terrace deposits, alluvial sediments, undifferentiated colluvium/residual soils, undocumented fills associated with roadway construction, and pavements (Ninyo & Moore 2020b). Undocumented fill was encountered in borings at the ground surface of the Sweetwater Tank site to depths of up to 2 feet, and other areas of the site ranging from approximately 1 to 4 feet. The undocumented fill generally consisted of brown to light brown, moist, medium dense, silty sand and clayey sand with scattered gravel and cobble-sized pieces of concrete. Bedrock of the Conejo Volcanics was encountered in borings beneath the fill to the total depth explored of 60 feet below the ground surface (Ninyo and Moore 2020a).

Construction and Operation: The presence of undocumented fill results in a potentially significant impact associated with expansive soils. However, implementation of **MM GEO-1** requires that the specific recommendations of the Geotechnical Evaluation prepared for the Project, including Tank Pad and Retaining Wall Foundation Preparation and Fill Material, are fully

incorporated in the design and construction of the Project. Therefore, implementation of **MM GEO-1** would reduce impacts related to strong seismic ground shaking to less than significant with mitigation.

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.

Construction and Operation. The proposed Project would not involve the use of septic tanks or alternative wastewater disposal systems. No impacts would occur, and no mitigation is required.

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

Less than Significant With Mitigation Incorporated. Information in this section is derived from an online records search and literature review conducted for the geologic formation underlying the Project site, which produced negative results for paleontological resources. While the majority of the Conejo Volcanics are composed of igneous rocks that do not preserve fossils, the sedimentary interbeds have produced a variety of marine fossils. Mollusks, foraminifera, and fish fossils have been documented throughout the sedimentary interbeds of the Conejo Volcanics and other submarine volcanics in the area. A paleobotany locality was discovered within the volcaniclastic sediments of the upper Conejo Volcanics in Thousand Oaks.

Psomas surveyed the Project site, including the proposed alignment for the water main along Serra Road to Sweetwater Mesa Road on November 6, 2019, and November 24, 2020. The results of the field survey were negative for paleontological resources. However, the negative results only include an examination of the surface.

Construction. Because the findings from the paleontological resources field survey only documented negative results on the surface there is a possibility that intact paleontological resources may be present below the surface. A significant impact could occur if grading or excavation activities associated with the Project were to disturb paleontological resources that may exist within the Project site. These potential effects may be mitigated to a less than significant level with the implementation of **MM GEO-2**, which requires retention of a qualified Paleontologist to be available "on-call" throughout the duration of grading activities, would reduce potential impacts to less than significant with mitigation.

Operation. Impacts related to operation of the proposed Project would be less than significant, and no mitigation is required.

MITIGATION PROGRAM

MM GEO-1 Prior to approval of final plans and specifications for the proposed Project, the Engineer, or the engineer's designee, shall review the Project plans to confirm that recommendations in the *Geotechnical Evaluation, Sweetwater Mesa Tank, Civic Center Improvement Project, Los Angeles County Waterworks, Malibu, California* (dated October 9, 2020 and prepared by Ninyo & Moore) and the *Updated Geotechnical Evaluation, Sweetwater Mesa Water Main Replacements, Civic Center Improvement Project, Los Angeles County Waterworks, Malibu, California* (dated October 9, 2020 and prepared by Ninyo & Moore) in addition to any future geotechnical reports have been fully and appropriately incorporated.

MM GEO-2 Prior to the initiation of grading, the District shall retain a qualified Paleontologist to be available "on-call" throughout the duration of grading activities in previously undisturbed soil, the extent of which will be determined based on review of the geotechnical reports. In the event that paleontological resources are discovered during ground-disturbing activities, work will be halted, and the Lead Agency will consult with the qualified Paleontologist to assess the significance of the find according to Section 15064.5 of the California Environmental Quality Act (CEQA) Guidelines. If any find is determined to be significant, the Lead Agency and the Paleontologist will determine the appropriate avoidance measures or other appropriate mitigation. The Lead Agency will make the final determination. All significant paleontological materials recovered will be reviewed, evaluated, and documented according to current professional standards by the consulting Paleontologist and discussed with the Lead Agency. The Lead Agency will make the final determination. Based on observations, monitoring may be reduced or discontinued if the qualified Paleontologist determines that the possibility of encountering fossiliferous deposits is low.

VIII. GREENHOUSE GAS EMISSIONS

ENVIRONMENTAL ISSUES (See attachments for information sources)	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

Climate change refers to any significant change in climate, such as the average temperature, precipitation, or wind patterns, over a period of time. Climate change may result from natural factors, natural processes, and/or human activities that change the composition of the atmosphere and alter the surface and features of the land. Significant changes in global climate patterns have been associated with global warming, which is an average increase in the temperature of the atmosphere near the Earth's surface; this is attributed to an accumulation of greenhouse gas (GHG) emissions in the atmosphere. GHGs trap heat in the atmosphere, which in turn increases the Earth's surface temperature. Some GHGs occur naturally and are emitted into the atmosphere through natural processes, while others are created and emitted solely through human activities. The majority of climate scientists attribute climate change to the increase in GHG emissions generated by human activities.

GHGs, as defined under California's Assembly Bill (AB) 32, include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). General discussions on climate change often include water vapor, O_3, and aerosols in the GHG category. Water vapor and atmospheric O_3 are not gases that are formed directly in the construction or operation of development projects, nor can they be controlled in these projects. Aerosols are not gases. While these elements have a role in climate change, they are not considered by regulatory bodies, such as CARB, or climate change groups, such as The Climate Registry, as gases to be reported or analyzed for control. Therefore, no further discussion of water vapor, O_3, or aerosols is provided herein.

GHGs vary widely in the power of their climatic effects; therefore, climate scientists have established a unit called global warming potential (GWP). The GWP of a gas is a measure of both its potency and lifespan in the atmosphere as compared to CO_2. For example, since CH_4 and N_2O are approximately 25 and 298 times more powerful than CO_2, respectively, in their ability to trap heat in the atmosphere, they have GWPs of 25 and 298, respectively (CO_2 has a GWP of 1). Carbon dioxide equivalent (CO_2e) is a quantity that enables all GHG emissions to be considered as a group despite their varying GWP. The GWP of each GHG is multiplied by the emission rate of that gas to produce the CO_2e emissions.

Regulatory Background

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order (EO) S-3-05, which proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce snowpack in the Sierra Nevada Mountains, could further exacerbate California's air quality problems, and could potentially cause a rise in sea levels. In an effort to avoid or reduce the impacts of climate change, EO S-3-05 calls for a reduction in GHG emissions

to the year 2000 level by 2010, to year 1990 levels by 2020, and to 80 percent below 1990 levels by 2050.

AB 32, the California Global Warming Solutions Act of 2006 (*California Health and Safety Code* §38501), recognizes that California is the source of substantial amounts of GHG emissions. The statute states that:

> *Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.*

In order to avert these consequences, AB 32 establishes a State goal of reducing GHG emissions to 1990 levels by the year 2020, which is a reduction of approximately 16 percent from forecasted emission levels, with further reductions to follow (CARB 2011). To help achieve this reduction, on November 17, 2008, Governor Arnold Schwarzenegger signed EO S-14-08 raising California's renewable energy goals to 33 percent by 2020.

California EO B-30-15 (April 29, 2015) set an "interim" statewide emission target to reduce GHG emissions to 40 percent below 1990 levels by 2030 and directed State agencies with jurisdiction over GHG emissions to implement measures pursuant to statutory authority to achieve this 2030 target and the 2050 target of 80 percent below 1990 levels.

On September 8, 2016, the Governor signed Senate Bill 32 (SB 32) to codify the GHG reduction goals of EO B-30-15, requiring the State to reduce GHG emissions by 40 percent below 1990 levels by 2030 (Health and Safety Code Section 38566). This goal is expected to keep the State on track to meeting the goal set by EO S-3-05 of reducing GHG emissions by 80 percent below 1990 levels by 2050 (California Legislative Information 2017a). SB 32's findings state that CARB will "achieve the state's more stringent greenhouse gas emission reductions in a manner that benefits the State's most disadvantaged communities and is transparent and accountable to the public and the Legislature."

The City of Malibu does not have a Climate Action Plan. However, in January 2020, the City requested bids to prepare "a complete Community Resilience and Adaptation Plan with resilience, adaptation, and climate action policy recommendation" (Malibu 2020). The Conservation Element of the Malibu General Plan includes Goal 3, Energy Conserved, with the following policies:

> CON Policy 3.1.1: The City shall educate the community regarding the importance of and techniques for energy conservation.
>
> CON Policy 3.1.2: The City shall encourage state-of-the-art energy efficiency standards for all new construction design.
>
> CON Policy 3.1.3: The City shall protect solar access.
>
> CON Policy 3.1.4: The City shall encourage uses of solar and other nonpolluting, renewable energy sources.

Los Angeles County has not formally adopted a quantitative GHG emissions significance criterion to date. Beginning in April 2008, the SCAQMD convened a Working Group to provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents. On December 5, 2008, the SCAQMD Governing Board adopted its staff proposal for an interim CEQA GHG significance threshold of 10,000 metric tons of CO_2 equivalent per year ($MTCO_2e$/yr) for projects where the SCAQMD is the lead agency (SCAQMD 2008a). In September 2010, the Working Group proposed that the 10,000 $MTCO_2e$/yr threshold be expanded to apply to industrial projects where SCAQMD is not the lead agency (SCAQMD 2010). The Working Group has not convened since the fall of 2010. As of March 2021, the proposal has not been considered or approved for use by the SCAQMD Board. However, the use of the industrial threshold is appropriate considering that the majority of emissions is associated with electricity use related to the operation of machinery (pumps) and consequently is selected by the City of Malibu as appropriate for the proposed Project.

IMPACT ANALYSIS

Would the Project:

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

Less Than Significant Impact.

Proposed Project Greenhouse Gas Emissions

Construction

Construction GHG emissions are generated by vehicle engine exhaust from construction equipment, on-road hauling trucks, vendor trips, and worker commuting trips. Construction GHG emissions were calculated concurrently with air quality criteria pollutant emissions by using CalEEMod Version 2022.1.1.20 and the Project information as described in Section III, Air Quality.

The results are output in $MTCO_2e$ for each year of construction. The estimated construction GHG emissions for the Project are shown in Table 9.

TABLE 9
ESTIMATED ANNUAL GREENHOUSE GAS EMISSIONS FROM CONSTRUCTION

Activity – Year	Emissions ($MTCO_2e$)
Sweetwater Mesa Tank – 2027	51
Sweetwater Mesa Tank – 2028	17
Water Mains – 2028	27
Water Mains – 2029	64
Total	159
Annual Emissions*	**5**

$MTCO_2e$: metric tons of carbon dioxide equivalent
* Combined total amortized over 30 years
Source: CalEEMod data in Appendix A.

GHG emissions generated from construction activities are finite and occur for a relatively short-term period. Unlike the numerous opportunities available to reduce a project's long-term GHG emissions through design features, operational restrictions, use of green-building materials, and other methods, GHG emissions-reduction measures for construction equipment are relatively limited. Therefore, SCAQMD staff recommend that construction emissions be amortized over a 30-year project lifetime, so that GHG reduction measures will address construction GHG emissions as part of the operational GHG reduction strategies (SCAQMD 2008b). As shown in Table 9, Estimated Annual Greenhouse Gas Emissions from Construction, the 30-year amortized construction emissions would be 5 $MTCO_2e$/yr.

Operations

There would be no operational activity associated with the water mains or pressure relief stations that would generate GHG emissions. Current operational/maintenance visits to the Serra Tank and Sweetwater Tank sites, typically daily, would not change significantly. The Project would add energy efficient LED lighting to the new Sweetwater Mesa Tank site. Energy consumption is estimated at 8,600 kilowatt-hours per year. Based on Southern California Edison GHG intensity factors, the CalEEMod model estimates annual GHG emissions at approximately 2 $MTCO_2e$/yr.

Combining the amortized construction GHG emission of 2 $MTCO_2e$/yr with the operational GHG emissions of 4 $MTCO_2e$/yr results in a total calculated Project GHG emissions of 6 $MTCO_2e$/yr. This value would be substantially less than the 10,000 $MTCO_2e$/yr threshold for industrial projects. There would be a less than significant impact, and no mitigation measures are required.

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

No Impact. As discussed above, the principal State plan and policy adopted for the purpose of reducing GHG emissions is the AB 32 Scoping Plan. The goals of AB 32 include reducing GHG emissions to 1990 levels by 2020 and adapting to climate change. The increased occurrence of wildfires and droughts is one effect of climate change. The provision of increased water storage to support fire flow and potable water storage supports the State policy to adapt to climate change.

Construction and Operation. Implementation of the Project would not conflict with the Conservation Element of the Malibu General Plan. Thus, the Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. There would be no impact, and no mitigation is required.

MITIGATION PROGRAM

No mitigation measures are required.

IX. HAZARDS AND HAZARDOUS MATERIALS

ENVIRONMENTAL ISSUES (See attachments for information sources)	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☒	☐

IMPACT ANALYSIS

Would the Project:

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.

Construction. Project construction activities would require the transport and use of standard construction equipment and materials, some of which may include a hazardous component such as transport and storage of fuels. These activities would be conducted in compliance with existing federal, State, and local regulations. Impacts would be less than significant, and no mitigation is required.

Operation. Daily Project operations would not involve the use or transport of hazardous materials. The Project site is located near Serra Road and PCH. These roadways may be used to transport hazardous materials; however, the proposed Project would neither increase the frequency of

transport, nor would it introduce hazards that would increase the likelihood for accidental release of hazardous materials into the environment. Additionally, improvements to the Sweetwater Mesa system would not require any new or additional chemical storage or transport beyond existing operational activities. As such, a less than significant impact related to the release of hazardous materials into the environment would occur, and no mitigation is required.

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 stated above, Project construction activities would require the transport and use of standard construction equipment and materials, some of which may include a hazardous component such as transport and storage of fuels. These activities would be conducted in compliance with existing federal, State, and local regulations. Impacts would be less than significant, and no mitigation is required.

Operation. Daily Project operations would not involve the use or transport of hazardous materials. The Project site is located near Serra Road and PCH. These roadways may be used to transport hazardous materials; however, the proposed Project would neither increase the frequency of transport, nor would it introduce hazards that would increase the likelihood for accidental release of hazardous materials into the environment. Additionally, improvements to the Sweetwater Mesa system would not require any new or additional chemical storage or transport beyond existing operational activities. As such, a less than significant impact related to the release of hazardous materials into the environment would occur. Impacts would be less than significant, and no mitigation is required.

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

Less Than Significant Impact. The nearest school to the proposed Project site is Colin McEwan High School, located approximately 0.8 mile southwest of the new Sweetwater Mesa Tank.

Construction. Temporary construction activities may require the use of materials listed as hazardous; however, these materials would be routine construction materials and would not be required in large quantities. Therefore, the potential impacts associated with the transport and use of hazardous materials during construction would be less than significant, and no mitigation is required.

Operation. Daily Project operations would not involve the use or transport of hazardous materials. Impacts would be less than significant, and no mitigation is required.

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. An EDR Radius Map™ with Geocheck® Report was prepared for the Project by Environmental Data Resources, Inc. (EDR 2020). Search parameters were based on a one-mile radius of the Project site and consisted of a search of federal, State, local, tribal, and other databases. The complete list of databases and additional information regarding the identified sites

can be found in Appendix E. According to the EDR Radius Maps, the following site is listed within ¼-mile of the proposed Project:

- **Allie Burns (22866 Beckledge Terrace, Malibu).** This is a cluster of three sites identified in the Resource Conservation and Recovery Act (RCRA) Non-Generators/No Longer Regulated database. This database includes selective information on sites, which generate, transport, store, treat, and/or dispose of hazardous waste as defined by the RCRA. Non-Generators do not presently generate hazardous waste. According to the EDR Report, no violations have been reported.

Construction and Operation. According to the EDR Radius Map, no hazardous material sites were identified within the boundaries of the Project site (EDR 2020). Of the hazardous materials sites identified, none pose a hazard to the proposed Project. Based on a search of hazardous materials sites compiled pursuant to Section 65962.5 of the *California Government Code,* no sites qualifying for the Cortese List, or subject to corrective action, are identified proximate to the Project site. No impacts related to known hazardous materials sites would occur, and no mitigation is required.

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 for people residing or working in the project area?

No Impact. The Project site is not located within an adopted Airport Land Use Plan or in the vicinity of a private airstrip, heliport, or helistop. The nearest airport is Santa Monica Airport, located approximately 13 miles southeast of the Project site.

Construction and Operation. The Project would be located outside the airport influence area and would not expose additional people to safety hazards related to airport operations. Implementation of the proposed Project would not impact the airport facilities or their operation. There would be no impact and no mitigation would be required.

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

Less Than Significant Impact.

Construction. As part of the proposed Project (see Section XVII, Transportation, of the MND), a Traffic Control Plan, which would contain strategies for maintaining emergency access during construction, would be developed. Specifically, police, fire, and other emergency service providers, as well as facility owners and administrators of surrounding sensitive land uses, would be notified of the timing, location, and duration of the construction activities and the location of detours and lane closures. Implementation of the Traffic Control Plan would ensure that potential emergency vehicle access impacts during construction would be minimized and would be less than significant.

Operation. Once construction is completed, operation of the proposed Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Therefore, the impacts of the proposed Project on emergency response plans and emergency vehicle access would be less than significant, and no mitigation is required.

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

Less Than Significant Impact. The Project site is located within an area subject to major wildfires classified in Fire Zone 4 or in the Very High Fire Hazard Zone (VHFHSZ) (California State Geoportal 2020).

Construction and Operation. All Project construction and operation would be in compliance with the goals, policies, and implementation measures of the City of Malibu's General Plan Safety Element; LCP; Los Angeles County Fire Department (LACFD); Department of Public Works, Building and Safety Division; Fire Zone 4; and VHFHSZ requirements. Examples of protective building construction measures include Fuel Modification Zones (areas with drought-tolerant, low-fuel-volume plants); 26 foot-wide LACFD-compliant access driveway development with specific building materials, such as fire-retardant roofing; and the installation of sprinkler systems. The proposed Project would comply with all applicable measures and regulations and be designed to ensure public safety, even in the event of a fire. Impacts would be less than significant, and no mitigation is required.

MITIGATION PROGRAM

No mitigation measures are required.

X. HYDROLOGY AND WATER QUALITY

ENVIRONMENTAL ISSUES (See attachments for information sources)	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
HYDROLOGY AND WATER QUALITY. Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater 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?	☐	☒	☐	☐

IMPACT ANALYSIS

Would the Project:

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

Less Than Significant With Mitigation Incorporated.

Construction. Potential impacts of construction on water quality focus on sediments, turbidity, and pollutants associated with sediments. Construction-related earth-disturbing activities, such as grading, are primarily responsible for sediment releases by exposing soils to potential mobilization by rainfall, runoff, and wind. Non-sediment-related pollutants of concern during construction include waste construction materials and chemicals, liquid products, and petroleum products used in building construction or the maintenance of heavy equipment. Since the proposed Project includes earth-disturbing activities, may generate construction waste, and use liquid or petroleum products onsite, construction and operation of the proposed Project would increase the potential for storm water runoff to transport these pollutants into the storm drain

system, thus contributing to the degradation of water quality and the potential violation of water quality standards or waste discharge requirements.

Based on **RR HYDRO-1** and with implementation of **MM HYDRO-1**, construction impacts from implementation of the proposed Project would be minimized through compliance with the NPDES General Permit for Storm Water Discharges Associated with the Construction and Land Disturbance Activities (Order No 2022-0057-DWQ, NPDES No. CAS000002) adopted on September 8, 2022 (Construction General Permit), as referenced in Section VII, Geology and Soils. Regulations under the federal Clean Water Act and the State require construction activity that disturbs greater than one acre, or that disturbs less than one acre but is part of a larger common plan of development, to comply with the NPDES State General Construction Permit. Therefore, compliance with the NPDES Permit would be required for development of the proposed Project. This permit requires the development and implementation of a SWPPP. The SWPPP would be designed and implemented to address site-specific conditions related to Project construction; identify and describe the sources of sediment and other pollutants; and ensure the implementation and maintenance of BMPs to reduce or eliminate sediment, pollutants adhering to sediment, and other non-sediment pollutants in storm water and non-storm water discharges.

The SWPPP must include erosion- and sediment-control BMPs that meet or exceed measures required by the NPDES Construction General Permit. Erosion-control BMPs are designed to prevent erosion, whereas sediment controls are designed to trap sediment once it has been mobilized. Compliance with the NPDES Construction General Permit and the preparation of a SWPPP would ensure that any impacts to downstream waters resulting from construction activities on the Project site would be less than significant. Erosion-control and treatment-control BMPs would be implemented per NPDES requirements.

In accordance with the standard urban water mitigation plan (SUSMP) requirements, the Malibu Municipal Code Section 13.04.110.B.1 states: “An applicant for a new development or a redevelopment project identified in subsection A of this section shall incorporate into the applicant’s project plans a Storm Water Mitigation Plan, which includes those best management practices necessary to control storm water pollution from construction activities and facility operations, as set forth in the SUSMP applicable to the applicant’s project. Structural or treatment control BMPs (including, as applicable, post-construction treatment control BMPs) set forth in project plans shall meet the design standards set forth in the SUSMP and the current municipal NPDES Permit.” Required compliance with this ordinance would further reduce temporary water quality impacts resulting from onsite construction.

Compliance with applicable local, State, and federal regulations, including **RR HYDRO-1** and implementation of **MM HYDRO-1**, would reduce any potential impacts to downstream waters resulting from construction activities on the Project site to less than significant with mitigation.

Operation. As stated previously, the Serra Tank would remain in place and operational. The new 1.0 MG tank and additional upgrades to undersized water mains and valves would provide improved storage capacity and adequate distribution capacity for domestic and fire protection water demands. As shown on Exhibit 13, Drain Line Key Map, permeant site drainage from the proposed Sweetwater tank site would be routed to the District’s existing drainage system on the existing tank site via a new storm drain. Development of the Project would not introduce substantial amounts of urban pollutants to the storm water runoff beyond existing conditions. Therefore, impacts related to long-term operational water quality impacts would be less than significant, and no mitigation is required.

Source: Cannon, 2020

Drain Line Key Map

Exhibit 13

Sweetwater Mesa Tank and Waterline Project

PSOMAS

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

No Impact.

Construction and Operation. Implementation of the proposed Project would not substantially change the nature of existing facilities that act as water storage facilities; The Project would not create an increased demand for water supplies and thus would not require accessing additional groundwater to accommodate water demand. Further, the Project would not involve a substantial increase in impervious area that would impact the site's ability to contribute to groundwater recharge through infiltration. Therefore, impacts related to groundwater supplies and groundwater recharge would not represent a significant impact. Additionally, implementation of the Project would make water supplies available to a greater number of existing and future District customers which would reduce demands for domestic water supplies, and thereby reduce the dependence on groundwater sources. No impact would occur, and no mitigation is required.

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 With Mitigation Incorporated.

Construction. As previously discussed, erosion-control and treatment-control BMPs would be implemented per NPDES requirements during Project construction. In addition, in compliance with the NPDES Construction General Permit, a SWPPP would be prepared and maintained by the Project developer, which would outline strategies to prevent erosion, manage sediment, and control pollution during construction activities. As required by the Construction General Permit, routine inspections performed by qualified personnel would ensure that erosion-control and related measures remain effective. Based on **RR HYDRO-1** and with implementation of **MM HYDRO-1**, construction impacts from implementation of the proposed Project would be minimized through compliance with the NPDES Construction General Permit. Therefore, Project implementation would not alter the existing drainage pattern nor would it result in a substantial increase in erosion or siltation on- or off-site. Compliance with applicable local, State, and federal regulations, including **RR HYDRO-1** and implementation of **MM HYDRO-1**, would reduce any potential impacts related to erosion and siltation resulting from construction activities on the Project site to less than significant with mitigation.

Operation. As part of the Project, site drainage from the proposed Sweetwater tank site would be routed to the District's existing drainage system on the existing tank site via a new storm drain. For other portions of the Project site, stormwater runoff would continue to sheet flow to existing storm drain inlets in this area, consistent with existing conditions. Development of the Project would not introduce new areas of unvegetated soil; therefore, impacts related to erosion and siltation during Project operations would be less than significant, and no mitigation is required.

ii) substantially increase the rate or amount of surface runoff in a manner in which would result in flooding on- or off-site?

Less Than Significant Impact.

Construction and Operation. A minor expansion of the District's easement would be requested as part of this Project; however, this expansion would be for ingress and egress and would follow the path of an existing and regularly utilized dirt access road. As previously discussed, erosion-control and treatment-control BMPs would be implemented per NPDES requirements during Project construction. Retention basins and detention basins would be implemented to temporarily store stormwater, as required by the Construction General Permit, which would reduce the rate of water flow and ultimately prevent sudden surges that could cause flooding. In addition, the SWPPP developed for the Project would outline strategies to manage runoff effectively, all of which would be enforced and monitored by qualified personnel to ensure compliance. Therefore, Project implementation would not alter the existing drainage pattern by substantially increasing the rate or amount of surface runoff or altering the course of a stream or river. Impacts would be less than significant, and no mitigation is required.

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?

Less Than Significant Impact.

Construction and Operation. A minor expansion of the District's easement would be requested as part of this Project; however, this expansion would be for ingress and egress and would follow the path of an existing dirt access road. Stormwater runoff would continue to sheet flow in this area, consistent with existing conditions, and the volume of runoff would not be impacted because the Project would not involve a substantial increase in impervious surface area. Therefore, Project implementation would not alter the existing drainage pattern, and thus would not result in an increase in the volume or pollutant load of runoff from the site beyond existing conditions, or beyond the capacity of the existing stormwater drainage system. Impacts would be less than significant, and no mitigation is required.

iv) impede or redirect flood flows?

Less Than Significant Impact.

Construction and Operation. A minor expansion of the District's easement would be requested as part of this Project; however, this expansion would be for ingress and egress and would follow the path of an existing dirt access road. Flood flows in this area would be consistent with existing conditions and the Project would not involve a substantial increase in impervious surface area. Flood flows would not be impeded or redirected during construction or operation. Therefore, Project implementation would not alter the existing drainage pattern by substantially increasing the rate or amount of surface runoff or altering the course of a stream or river. Impacts would be less than significant, and no mitigation is required.

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

Less Than Significant Impact.

Construction and Operation. The Project site is located within a Federal Emergency Management Area (FEMA) flood zone. More specifically, the site is located within Zone D (Undetermined Risk Area), which is defined as an area with possible, but undetermined flood hazards. The southwestern portion of the proposed pipeline is located adjacent to a mapped tsunami hazard zone (i.e., Malibu Creek). However, due to the pipeline being located below grade, the potential for pipeline damage resulting from tsunamis is considered low (Ninyo & Moore 2020b). Further, although there is an undetermined potential for flooding to occur within the Project area, including the proposed pipeline, tank, pump station, and regulating stations, Project features would be constructed according to standard design practices intended to withstand common and extreme weather circumstances. Although the Project elements may sustain damage during a flooding event, standard design would provide protection against the accidental release of pollutants. The proposed Project would not introduce any uses that would expose people or structures to hazards associated with a seiche or mudflows. Therefore, less than significant impacts are anticipated, and no mitigation is required.

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

Less Than Significant With Mitigation Incorporated.

Construction and Operation. As discussed under Question (a), Project-related impacts to water quality or groundwater management would be mitigated through implementation of **MM HYDRO-1** requiring compliance with the NPDES Construction General Permit and implementation of appropriate water quality BMPs. As such, the proposed Project would not obstruct implementation of a water quality control plan or sustainable groundwater management plan, and impacts would be less than significant with mitigation.

REGULATORY REQUIREMENT

RR HYDRO-1 Prior to initiation of construction, the District shall verify that the requirements issued by the Los Angeles Regional Water Quality Control Board for the Construction General Permit (Order No. 2022-0057-DWQ, NPDES No. CAS000002) are in effect and shall govern discharges from construction dewatering and water line/sprinkler line testing should they occur during construction. The District shall comply with these regulations, including provisions requiring notification, testing, and reporting of dewatering and testing-related discharges, which shall mitigate any impacts of such discharges.

MITIGATION PROGRAM

MM HYDRO-1 Prior to initiation of construction, the Lead Agency shall review and if determined necessary, will comply with the requirements of the Construction General Permit (Order No. 2022-0057-DWQ, NPDES No. CAS000002), which may include the development and implementation of an SWPPP for the proposed Project site.

XI. LAND USE AND PLANNING

ENVIRONMENTAL ISSUES (See attachments for information sources)	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☒	☐

IMPACT ANALYSIS

Would the Project:

a) Physically divide an established community?

No Impact.

Construction. Construction and implementation of the proposed Project would not physically divide any residential communities in the surrounding area. The proposed pump station, located near the existing pump station, will be constructed on undeveloped District-owned property (APN 4452-025-901), and all water mains would be installed underground. No significant impacts would occur, and no mitigation is required.

Operation. Operation and maintenance of the Project would require routine truck traffic to the facilities as well as inspections of the equipment which currently occurs daily and would not change. These operation and maintenance activities would not require any limitations on access along local roads such that a temporary division of the community would occur. No significant impacts would occur, and no mitigation is required.

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?

Less Than Significant Impact. The Project site has a General Plan designation of Rural Residential and is currently zoned RR1 – Rural Residential (1 dwelling unit per acre). The Project does not propose to change the existing land use designation of the site, and, pursuant to Government Code Section 53091, the proposed Project would be exempt from city zoning ordinances because it involves the construction of facilities for the production, generation, storage, treatment, or transmission of water.

Construction and Operation. As stated in Section I, Aesthetics, the tank would be buried (~10 feet) with an 82-foot diameter and will be 40 feet high, which would exceed the 24-foot maximum height limit. As part of the Project, a variance is requested to allow for construction of the tank at the proposed height of 40 feet. The variance memorandum would be subject to review by the City of Malibu. Approval of the memorandum and granting of the requested variance would be required for approval of, and prior to initiation of, the overall Project. With the approval, impacts would be less than significant, and no mitigation is required.

MITIGATION PROGRAM

No mitigation measures are required.

XII. MINERAL RESOURCES

ENVIRONMENTAL ISSUES (See attachments for information sources)	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. MINERAL RESOURCES. Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
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?	☐	☐	☐	☒

IMPACT ANALYSIS

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?

No Impact. According to the California Department of Conservation, the proposed Project site is not located on a known oil, gas, or geothermal field (DOC 2001). According to the City of Malibu General Plan, sand and gravel resources are the only mineral resources that have been mapped in western Los Angeles County. To date, the State Division of Mines and Geology has not mapped these resources or other mineral resources in the Malibu area.

Construction and Operation. No known mineral resources are associated with any land within the City of Malibu Prohibition Zone; therefore, no impacts to mineral resources are anticipated from the proposed Project. There are no locally important mineral resources identified within the City of Malibu Prohibition Zone, and the proposed Project does not include facilities or activities that would result in the loss or availability of any known mineral resources within the prohibition zone or its surroundings. In addition, the proposed Project would be constructed on previously disturbed land where there are no known mineral resources of value. Accordingly, there is little potential for the Project to result in the loss of availability of any known State or locally important mineral resources. No impact would occur, and no mitigation is required.

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?

No Impact. As stated above, the proposed Project site is not located on a known oil, gas, or geothermal field (DOC 2001). According to the City of Malibu General Plan, sand and gravel resources are the only mineral resources that have been mapped in western Los Angeles County. To date, the State Division of Mines and Geology has not mapped these resources or other mineral resources in the Malibu area.

Construction and Operation. No known mineral resources are associated with any land within the City of Malibu Prohibition Zone[5]; therefore, no impacts to mineral resources are anticipated from the proposed Project. There are no locally important mineral resources identified within the City of Malibu Prohibition Zone and the proposed Project does not include facilities or activities that would result in the loss or availability of any known mineral resources within the prohibition zone or its surroundings. No impact would occur, and no mitigation is required.

MITIGATION PROGRAM

No mitigation measures are required.

[5] The Prohibition applies to the "Malibu Civic Center Area," defined as portions of the lower Winter Canyon watershed, Malibu Valley watershed and adjacent coastal strips between and including Amarillo Beach and Surfrider Beach, and also known as the Prohibition Zone.

XIII. NOISE

ENVIRONMENTAL ISSUES (See attachments for information sources)	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

"Sound" is a vibratory disturbance created by a moving or vibrating source and is capable of being detected. "Noise" is defined as sound that is loud, unpleasant, unexpected, or undesired and may therefore be classified as a more specific group of sounds. The effects of noise on people can include general annoyance; interference with speech communication; sleep disturbance; and, in the extreme, hearing impairment (Caltrans 2013a).

Noise Descriptors

Sound pressure levels are described in units called the decibel (dB). Decibels are measured on a logarithmic scale. A doubling of the energy of a noise source (such as doubling of traffic volume) would increase the noise level by 3 dB. The human ear is not equally sensitive to all frequencies within the sound spectrum. To accommodate this phenomenon, the A-scale was devised; the dBA approximates the frequency response of the average healthy ear when listening to most ordinary everyday sounds and is used in this analysis.

Human perception of noise has no simple correlation with acoustical energy. Due to subjective thresholds of tolerance, the annoyance of a given noise source is perceived very differently from person to person. The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at 3 feet is approximately 60 dBA, while loud jet engine noises at 1,000 feet equate to 100 dBA, which can cause serious discomfort.

Several rating scales (or noise "metrics") exist to analyze the effects of noise on a community. These scales include the equivalent noise level (L_{eq}) and the CNEL. Average noise levels over a period of minutes or hours are usually expressed as dBA L_{eq}, which is the equivalent noise level for that period of time. The period of time averaging may be specified; $L_{eq(3)}$ would be a 3-hour average. When no period is specified, a one-hour average is assumed. Noise of short duration (i.e., substantially less than the averaging period) is averaged into ambient noise during the period of interest. Thus, a loud noise lasting many seconds or a few minutes may have minimal effect on the measured sound level averaged over a one-hour period.

Several statistical descriptors are also often used to describe noise, including maximum noise levels (L_{max}) and minimum noise levels (L_{min}). L_{max} and L_{min} are the highest and lowest A-weighted sound levels that occur during a noise event, respectively.

Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration is normally associated with activities such as railroads or vibration-intensive stationary sources, but can also be associated with construction equipment such as jackhammers, pile drivers, and hydraulic hammers.

Construction generally includes a wide range of activities that can generate groundborne vibration. In general, blasting and demolition of structures generate the highest vibrations. Heavy trucks can also generate groundborne vibrations, which vary depending on vehicle type, weight, and pavement conditions. Potholes, pavement joints, discontinuities, differential settlement of pavement, and other anomalies all increase the vibration levels from vehicles passing over a road surface. Construction vibration is normally of greater concern than vibration of normal traffic on streets and freeways with smooth pavement conditions.

The peak particle velocity (ppv) or the root mean square (rms) velocity is usually used to describe vibration amplitudes. The ppv is defined as the maximum instantaneous peak of the vibration signal and the rms is defined as the square root of the average of the squared amplitude of the signal. The ppv is more appropriate for evaluating potential building damage and is also used for evaluating human response. The units for ppv velocity are normally inches per second (in/sec).

Regulatory Background

General Plan Noise Element

The Noise Element of the Malibu General Plan (1995 with updates) primarily addresses transportation and other operational noise to existing and proposed land uses. There are no regulatory requirements in the Noise Element applicable to the Project.

Municipal Code

Chapter 8.24 of the Malibu Municipal Code is titled Noise and, in this section, is called the Noise Ordinance (Malibu 2021). Section 8.24.040, Prohibited noises, includes the following:

> No person shall make, or cause or suffer, or permit to be made upon any premises owned, occupied or controlled by such person, any unnecessary noises, sounds or vibrations which are physically annoying to reasonable persons of ordinary sensitivity or which are so harsh or so prolonged or unnatural or unusual in their use, time, or place as to occasion unnecessary discomfort to any persons within the neighborhood from which the noises emanate or which interfere with the peace and comfort of the residents or their guests, or the operators or customers in places of business in the vicinity, or which may detrimentally or adversely affect such residences or places of business.

Section 8.24.050, Prohibited acts, subsection G, prohibits construction on weekdays between 7:00 PM and 7:00 AM, on Saturdays before 8:00 AM and after 5:00 PM, or at any time on Sundays or holidays.

Noise-Sensitive Receptors

Noise-sensitive land uses typically include residences, hospitals, convalescent and day care facilities, schools, and libraries, which could all be adversely affected by an increase in noise levels. The noise sensitive receptors (residential uses) closest to the Project work areas include

residential uses. Existing noise levels proximate to the Project site are considered quiet due to the lack of nearby noise sources.

TABLE 10
NOISE SENSITIVE RECEPTORS

Water Mains				
Street	**From**	**To**	**Receptor**	**Distance from Work to Receptor (feet)[a]**
PCH	400 feet west of Serra Road	45 feet east of Serra Road	No noise sensitive air quality receptors within 400 feet	
Serra Road	PCH	Sweetwater Mesa Road	1 – Large home on hill to the east, approximately 150 feet above road elevation	400 to pool; 450 to house
			2 – Home at 3751 Serra Road	40
None	Serra Road	Serra Tank	Building address 3700 Serra Road; Stable or barn? Possibly not noise sensitive	Adjacent to work area
Sweetwater Mesa Road	Serra Tank	New Sweetwater Mesa Tank Site	1– Home at 3750 Sweetwater Mesa Road	60
			2– Home at 3556 Sweetwater Mesa Road slightly below road	20
			3 – Home at 3464 Sweetwater Mesa Road pool to north	55 to home, 25 to pool
			4 – Home at 3416 Sweetwater Mesa Road possible ADU closer	55 to home, 25 to ADU
			5 – Home at 3362 Sweetwater Mesa Road	55
			6 – Home at 3311 Sweetwater Mesa Road with possible ADU	65
Pump Station (PS) and Pressure Regulating Stations (PRS)				
Location			**Receptor**	**Distance from Work to Receptor (feet)**
—S – Serra Road and Palm Canyon Road			Home near southeast corner	170
—S – Serra Road and Mariposa de Oro Road			Home on east side of Serra Road	60
PS and —S – Serra Tank Site			Home south of the Tank	120
New Sweetwater Mesa Tank				
New Sweetwater Mesa Tank Site			Home northeast of existing tank	250[b]
			Home northwest of home at 3311 Sweetwater Mesa Rd.	340[b]

ADU – Accessory dwelling unit

[a] Some distances approximate where work area has not been specified.
[b] Topography- a ridge – blocks line of sight from tank site to receptor.

IMPACT ANALYSIS

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?

Less than Significant Impact. Construction and operational noise associated with the Project would result in impacts that are less than significant, as described below.

Construction Noise

Construction noise levels reported in the USEPA's Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances were used to estimate future construction noise levels for the Project (USEPA 1971). Typically, the estimated construction noise levels are governed primarily by equipment that produces the highest noise levels. Construction noise levels for each generalized construction phase (ground-clearing/demolition, excavation, foundation construction, building construction, paving, and site cleanup) are based on a typical construction equipment mix for a mixed-use project and do not include use of atypical, very loud, and vibration-intensive equipment (e.g., pile drivers).

Project construction activities would not occur between 7:00 PM and 7:00 AM on weekdays or before 8:00 AM or after 5:00 PM on Saturdays, or at any time on Sundays or federal holidays, consistent with the Noise Ordinance as discussed above. Noise would be generated by construction equipment along the water main alignments, at the Serra Tank site, the New Sweetwater Mesa tank site, and at each of the pressure regulating station sites. Construction activities may require use of a variety of equipment including, but not limited to backhoes, loaders, trucks, and rollers. No pile driving, blasting, or high-impact demolition is anticipated.

Local residents located near the Project site would be subject to elevated noise levels due to construction equipment. Construction activities are carried out in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise levels surrounding the construction site as work progresses. Typically, the estimated construction noise levels are governed primarily by equipment that produces the highest noise levels. Construction noise levels for each generalized construction phase (trenching, excavation, foundation construction, pipe and equipment installation, grading, and paving) are based on a typical construction equipment mix and do not include use of atypical, very loud, and vibration-intensive equipment (e.g., pile drivers). The degree to which noise-sensitive receptors are affected by construction activities depends heavily on their proximity.

Water Mains

The installation of water mains would be a linear process requiring pavement demolition, trenching, pipe installation, backfill, and paving. Each of these activities, except for paving, would require the use of a loader/backhoe and a truck for export or import of materials. Estimated noise levels attributable to the proposed Project are shown in Table 11, and calculations are included in Appendix F, Noise Calculations. Table 11 shows Maximum noise levels (L_{max}) when equipment is at full power and average noise levels (Leq) because equipment is not at full power all the time. For the equipment considered in this analysis, the typical part of the operating cycle at full power is 40 percent.

Noise levels at the receptors shown in Table 11 from water main construction activities would range from 66 to 92 dBA L_{max} and 62 to 89 dBA L_{eq}. Installation of water mains is a linear activity, and the execution of each phase would occur near each receptor for a few hours to one day. Thus, although construction noise levels would be audible at nearby homes and may occasionally be loud enough to interfere with normal conversation or be otherwise annoying, the duration of impact would be relatively short.

There are no quantitative construction noise limits in the City's General Plan or Noise Ordinance. Construction would occur within the hours prescribed by the Noise Ordinance. Because exposure to the louder noise levels would be of short duration and would occur during the least noise sensitive portions of the day, it is concluded that the installation of the water mains would not result in the generation of a substantial temporary increase in ambient noise levels, nor would the allowed operational hours detailed in of the Noise Ordinance be exceeded. The impact would be less than significant, and no mitigation is required.

TABLE 11
CONSTRUCTION NOISE LEVELS AT NOISE-SENSITIVE USES
WATER MAINS AND PRESSURE REGULATING STATIONS

Receptor[a]	Distance from work area – feet	Noise Level at Receptor, dBA			
		All activities except paving[b]		Paving	
		L_{max}	L_{eq}	L_{max}	L_{eq}
Water Mains					
Serra Rd 1	400	66	63	66	62
Serra Rd 2	40	86	83	86	82
Sweetwater Mesa Rd 1	60	82	80	82	79
Sweetwater Mesa Rd 2	20	92	89	92	88
Sweetwater Mesa Rd 3	55	83	81	83	80
Sweetwater Mesa Rd 4-home	55	83	81	83	80
Sweetwater Mesa Rd 4-ADU	25	90	87	90	86
Sweetwater Mesa Rd 5	55	83	81	83	80
Sweetwater Mesa Rd 6	65	82	79	82	78
Pressure Regulating Stations					
Serra Rd/Palm Canyon Rd	170	73	71	73	70
Serra Rd/Mariposa de Oro Rd	60	82	80	82	79
Serra Tank Site	120	76	74	76	73

dBA: A-weighted decibel scale; Lmax: Maximum noise levels; L_{eq} dBA: Average noise energy level.

[a] See Table 10 for receptor identification
[b] Pavement demolition, trenching/excavation, equipment installation, backfill

Pressure Regulating Stations

Noise levels at the receptors shown in Table 11 from pressure regulating station construction activities would range from 73 to 82 dBA L_{max} and 70 to 80 dBA L_{eq}. Installation of pressure regulating stations is a relatively minor effort and would last no more than a few days. Thus, although construction noise levels would be audible at nearby homes and may occasionally be loud enough to interfere with normal conversation or be otherwise annoying, the duration of impact would be relatively short and would occur during the least noise sensitive portions of the day.

There are no quantitative construction noise limits in the City's General Plan or Noise Ordinance. Construction would occur within the hours prescribed by the Noise Ordinance. Because exposure to the louder noise levels would be of short duration and would occur during the least noise sensitive portions of the day, it is concluded that the pressure regulating station installation would not result in the generation of a substantial temporary increase in ambient noise levels nor would the allowed operational hours detailed in the Noise Ordinance be exceeded. The impact would be less than significant.

New Sweetwater Mesa Tank

Table 12 shows estimated noise levels from construction equipment at the nearest receptors assuming a "hard," or non-absorptive surface and no intervening topography or structures. Under these conditions, noise levels from general Project-related construction activities would range from 70 to 75 dBA L_{eq}. There is topography that blocks the line of sight between the tank site and the nearest homes, and the ground is vegetated, providing a "soft," absorptive surface. Thus, construction noise levels are likely to be 9 to 15 dBA less than shown in Table 12.

Noise levels from construction of the new Sweetwater Mesa Tank would be audible at nearby receptors but would occur during the least noise sensitive portions of the day are not anticipated to be annoying or interfere with normal conversation. The impact would be less than significant.

TABLE 12
CONSTRUCTION NOISE LEVELS AT NOISE SENSITIVE USES
NEW SWEETWATER MESA TANK

Construction Phase	Noise Levels (L_{eq} dBA) Home approx. 250 ft. SE of tank site
Ground Clearing	70
Excavation	75
Tank Construction	70
Paving and Site Cleanup	75

L_{eq} dBA: Average noise energy level; ft.: feet.

Note: Noise levels from construction activities do not take into account attenuation provided by intervening terrain or ground cover.

Source: USEPA 1971.

Roadway Noise

Demolition debris and excavated soils from the Project site would be removed by truck and backfill and construction materials would be transported by trucks. It is estimated that four one-way truck trips per day would occur along Serra Road and Sweetwater Mesa Road during water main construction and during some periods of the tank construction. Noise impacts related to Project related truck trips would be less than significant due to the relatively small number of average daily truck trips occurring during the construction period and because construction traffic would be limited to the least noise sensitive hours of the day.

Therefore, because construction noise would occur during the least noise-sensitive portions of the day, as required by the Noise Ordinance, and would occur for a relatively short duration at receptors where the noise impact would be the greatest, noise associated with Project-related construction would result in less than significant impacts, and no mitigation is required.

Operational Noise

There would be no additional operational activity, including maintenance activities, associated with the water mains that would generate noise. Current operational/maintenance visits to the Serra Tank and Sweetwater Tank sites, typically daily, would not change after the Project is completed. Noise generated by the proposed pump would be enclosed for weather protection and noise attenuation and is required to comply with the noise limits established within Section 8.24.050, which could be achieved through the noise enclosure. Noise generated by water flow and valve operation at the pressure regulating stations would not be audible at noise-sensitive receptors. Therefore, the operational noise impact would be less than significant, and no mitigation would be required.

b) Generation of excessive ground borne vibration or ground borne noise levels?

Less than Significant Impact.

Construction and Operation. The proposed Project would not generate or expose persons or structures to excessive groundborne vibration from the construction. There are no applicable City standards for vibration-induced annoyance or structural damage from vibration. Caltrans vibration damage potential guideline thresholds are shown in Table 13. These thresholds represent the vibration limits for structural damage to uses proximate to the Project site from continuous sources of vibration. The vibration-sensitive receptors nearest the Project site are residences; therefore, Building Class III from Table 13 is selected as the appropriate damage threshold.

TABLE 13
VIBRATION RELATED BUILDING DAMAGE THRESHOLDS

Building Class	Continuous Source PPV (in/sec)	Single-Event Source PPV (in/sec)
Class I: buildings in steel or reinforced concrete, such as factories, retaining walls, bridges, steel towers, open channels, underground chambers, and tunnels with and without concrete alignment	0.5	1.2
Class II: buildings with foundation walls and floors in concrete, walls in concrete or masonry, stone masonry retaining walls, underground chambers and tunnels with masonry alignments, conduits in loose material	0.3	0.7
Class III: buildings as mentioned above but with wooden ceilings and walls in masonry	0.2	0.5
Class IV: construction very sensitive to vibrations; objects of historic interest	0.12	0.3
ppv: peak particle velocity; in/sec: inch(es) per second Source: Caltrans 2013b.		

The Caltrans vibration annoyance potential guideline thresholds are shown in Table 14. Based on the guidance in Table 14, the “strongly perceptible” vibration level of 0.9 ppv in/sec is considered as a threshold for a potentially significant vibration impact for human annoyance.

TABLE 14
VIBRATION ANNOYANCE CRITERIA

Average Human Response	ppv (in/sec)
Severe	2.0
Strongly perceptible	0.9
Distinctly perceptible	0.24
Barely perceptible	0.035
ppv: peak particle velocity; in/sec: inch(es) per second Source: Caltrans 2013b.	

Pile driving and blasting are generally the sources of the most severe vibration during construction. Neither pile driving nor blasting would be used during Project construction. Piles for the Sweetwater Mesa Tank foundation, if required, would be drilled and cast in place. Conventional construction equipment would be used for demolition and grading activities. Table 15 summarizes typical vibration levels measured during construction activities for various vibration-inducing pieces of equipment.

TABLE 15
VIBRATION LEVELS FOR CONTRUCTION EQUIPMENT

Equipment		ppv at 25 ft (in/sec)
Pile driver (impact)	upper range	1.518
	Typical	0.644
Pile driver (sonic)	upper range	0.734
	Typical	0.170
Vibratory roller		0.210
Large bulldozer		0.089
Caisson drilling		0.089
Loaded trucks		0.076
Jackhammer		0.035
Small bulldozer		0.003
ppv: peak particle velocity; ft: feet; in/sec: inches per second. Source: Caltrans 2013b; FTA 2006.		

Table 16, Vibration Annoyance Criteria at Sensitive Uses, shows the vibration annoyance criteria from construction-generated vibration activities proposed at the Project site. Table 16 shows the ppv generated by Project-related construction activities at the nearest homes to the Project site. As shown in Table 16, construction vibration may be barely perceptible at the closest receptor to water mains construction and would not be perceptible at other receptors. Because vibration levels would be below the annoyance significance threshold, vibration generated by the Project's construction equipment would result in less than significant vibration impacts related to vibration annoyance.

TABLE 16
VIBRATION ANNOYANCE CRITERIA AT SENSITIVE USES

	Vibration Levels (ppv)		
	Water Mains Nearest Receptor	**Pressure Regulating Stations Nearest Receptor**	**New Sweetwater Mesa Tank Nearest Receptor**
Equipment	**ppv@20 ft.**	**ppv@60 ft.**	**ppv@250 ft.**
Vibratory roller	NA	NA	0.01
Large bulldozer	NA	NA	<0.005
Small bulldozer	0.04	0.001	<0.005
Jackhammer	0.05	0.01	<0.005
Loaded trucks	0.11	0.02	<0.005
Criteria*	**0.900**	**0.900**	**0.900**
Exceeds Criteria?	**No**	**No**	**No**

ppv: peak particle velocity; ft: feet.

NA: Not Applicable. This heavier equipment would not be used for water mains or pressure regulating stations construction.

* Criteria derived from "Strongly Perceptible" vibration annoyance criteria, as shown in Table N-7.

Source: Caltrans 2013b (Calculations can be found in Attachment B).

Table 17, Structural Damage Criteria at Sensitive Uses, shows the ppv levels relative to building damage to nearby uses from the Project's construction activities.

TABLE 17
BUILDING DAMAGE CRITERIA AT SENSITIVE USES

	Vibration Levels (ppv)		
	Water Mains Nearest Receptor	**Pressure Regulating Stations Nearest Receptor**	**New Sweetwater Mesa Tank Nearest Receptor**
Equipment	**ppv@20 ft.**	**ppv@60 ft.**	**ppv@250 ft.**
Vibratory roller	NA	NA	0.01
Large bulldozer	NA	NA	<0.005
Small bulldozer	0.04	0.001	<0.005
Jackhammer	0.05	0.01	<0.005
Loaded trucks	0.11	0.02	<0.005
Criteria*	**0.200**	**0.200**	**0.200**
Exceeds Criteria?	**No**	**No**	**No**

ppv: peak particle velocity; ft: feet.

NA: This heavier equipment would not be used for water mains or pressure regulating stations construction.

* Criteria derived from Building Class III, Table 16.

Source: Caltrans 2013b (Calculations can be found in Attachment B).

As shown in Table 17, all vibration levels would be below the building damage threshold at the nearest offsite homes. As such, impacts related to the potential for cosmetic building damage would be less than significant, and no mitigation is required.

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

No Impact.

Construction and Operation. The nearest airport is Santa Monica Airport, located approximately 13 miles southeast of the Project site. The Project is not located within an Airport Land Use Plan area or in the vicinity of a private airstrip. There may be private heliports within two miles of the Project site. However, the Project would not add residents or permanent workers to the area. Therefore, the Project would not expose people to excessive noise levels associated with airport operations or aircraft travel. No impacts would result, and no mitigation is required.

MITIGATION PROGRAM

No mitigation measures are required.

XIV. POPULATION AND HOUSING

ENVIRONMENTAL ISSUES (See attachments for information sources)	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
POPULATION AND HOUSING. Would the project:				
a) Induce substantial 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?	☐	☐	☐	☒

IMPACT ANALYSIS

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)?

No Impact. As stated previously, the proposed Project consists of three water main replacements in Serra Road, Sweetwater Mesa Road, and PCH; one new 1.0 MG tank at the end of Sweetwater Mesa Road; a pump station; and three pressure regulating stations.

Construction and Operation. Implementation of the Project would not increase employment and population in the area because the Project is intended to serve existing District customers or new customers within established or planned areas of the City of Malibu. The Project would not extend water service into an area that is not currently developed or approved for future development; therefore, the Project would not result in either direct or indirect population growth. Additionally, as described in Section XI, Land Use and Planning, the Project would not displace existing housing or population, resulting in construction of replacement housing elsewhere. Therefore, no impacts would occur, and no mitigation is required.

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

No Impact. As stated above, implementation of the Project would not increase employment and population in the area because the Project is intended to serve existing District customers or new customers within established or planned areas of the City of Malibu. Additionally, the water main replacements, which will be located underground, and the new proposed tank will be constructed on undeveloped District owned property (APN 4452-025-901).

Construction and Operation. The Project would not extend water service into an area that is not currently developed or approved for future development; therefore, the Project would not result in either direct or indirect population growth. Additionally, as described in Section XI, Land Use and Planning, the Project would not displace existing housing or population, resulting in construction of replacement housing elsewhere. Therefore, no impacts would occur, and no mitigation is required.

MITIGATION PROGRAM

No mitigation measures are required.

XV. PUBLIC SERVICES

ENVIRONMENTAL ISSUES (See attachments for information sources)	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
PUBLIC SERVICES. Would the project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire Protection?	☐	☐	☐	☒
Police Protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other Public Facilities?	☐	☐	☐	☒

IMPACT ANALYSIS

Would the Project:

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

No Impact. The proposed Project consists of three water main replacements in Serra Road, Sweetwater Mesa Road, and PCH; one new 1.0 MG tank at the end of Sweetwater Mesa Road; a pump station; and three pressure regulating stations. Additionally, the Project is intended to serve existing District customers or new customers within established or planned areas of the City of Malibu. The Project would not extend water service into an area that is not currently developed or approved for future development and would not result in either direct or indirect population growth.

Construction and Operation. Due to the nature of the proposed Project (to address existing system deficiencies), no new demand for public services such as fire protection, police protection, schools, parks, libraries, or other public facilities would occur. Operation and maintenance of the proposed facilities would be the responsibility of the District. No impact would occur, and no mitigation is required.

MITIGATION PROGRAM

No mitigation measures are required.

XVI. RECREATION

ENVIRONMENTAL ISSUES (See attachments for information sources)	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
RECREATION. Would the project:				
a) 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) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

IMPACT ANALYSIS

Would the Project:

a) 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?

No Impact. The proposed Project consists of three water main replacements in Serra Road, Sweetwater Mesa Road, and PCH; one new 1.0 MG tank at the end of Sweetwater Mesa Road; a pump station; and three pressure regulating stations.

Construction and Operation. As mentioned previously, the Project is not anticipated to induce population growth because the Project is intended to serve existing District customers or new customers within established or planned areas of the City of Malibu; therefore, it would not directly or indirectly impact any local existing recreational facilities through increase of use such that substantial physical deterioration of the facility would occur or be accelerated. No impacts related to the demand or use of recreational facilities would occur, and no mitigation is required.

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

No Impact. The proposed Project consists of three water main replacements in Serra Road, Sweetwater Mesa Road, and PCH; one new 1.0 MG tank at the end of Sweetwater Mesa Road; a pump station; and three pressure regulating stations. There are no recreational facilities proposed as part of this Project.

Construction and Operation. As mentioned previously, the Project is not anticipated to induce population growth because the Project is intended to serve existing District customers or new customers within established or planned areas of the City of Malibu; therefore, it would not directly or indirectly impact any local recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. No impacts related to the demand or use of recreational facilities would occur, and no mitigation is required.

MITIGATION PROGRAM

No mitigation measures are required.

XVII. TRANSPORTATION

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

IMPACT ANALYSIS

Would the Project:

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. Implementation of the proposed Project is expected to generate short-term traffic impacts during construction. Vehicle trips would be generated by trucks hauling materials and supplies and workers commuting to and from the Project site. As discussed previously in Section XIII, Noise, it is estimated that four one-way truck trips per day would occur along Serra Road and Sweetwater Mesa Road during water main construction and during some periods of the tank construction. It is anticipated that these trips would occur throughout the day and would not be

concentrated during traffic peak hours. Project construction would also result in temporary lane closures along PCH. Typically, with temporary closures that do not change the roadway geometry or other features, the assumption is that traffic will return to normal after the temporary closures end. As part of the Project, a Traffic Management Plan would be prepared according to the current Traffic Management Plan Guidelines published by Caltrans and would provide for ways to minimize impacts related to transit, roadway, bicycle, and pedestrian facilities through use of detours, routing signage, and other features. The Traffic Management Plan would be subject to review and approval by Caltrans prior to project initiation. With implementation of all requirements set forth in the Traffic Management Plan, short-term construction-related impacts would be less than significant, and no mitigation is required.

Operation. Under existing conditions, a small number of vehicle trips are associated with routine inspection and maintenance at the existing Sweetwater Mesa System. It is anticipated that routine inspection and maintenance trips would continue as current, and no new operational trips would occur with implementation of the proposed Project. Therefore, because there would be no increase in daily trips associated with operation, no Project related traffic impacts are anticipated.

The proposed Project would not result in any long-term trip generation or associated traffic impacts, as the proposed Project involves replacement of the existing aged Sweetwater Mesa System and equipment and construction of a new replacement tank at the existing Sweetwater Mesa Tank site. Additionally, the proposed Project does not involve any activities that would conflict with non-vehicular modes of transportation. Impacts would be less than significant, and no mitigation is required.

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

No Impact. The 2010 Congestion Management Program designated by the Los Angeles County Metropolitan Transportation Authority states that “while much of Pacific Coast Highway (Route 1) operates efficiently, there are pockets of substantial congestion in both AM and PM peak periods between the cities of Santa Monica and Malibu, and in the South Bay area west of the Harbor Freeway (Route 110).”

CEQA Section 15064.3(b) also states “generally, projects within one-half mile of either an existing major transit stop… should be presumed to cause a less than significant transportation impact.” The southernmost portion of the Project (Serra Road) is approximately 0.3 miles to the nearest bus stop located at 23017 PCH.

Construction. Despite the temporary closures anticipated along PCH to accommodate construction, these actions would be short-term in nature and would not result in long-term or permanent impacts related to vehicle miles traveled. Temporary closures or construction are not inconsistent with the CEQA Guidelines because they do not have any effect on the long-term/permanent travel characteristics. There is generally not a threshold to compare to with this type of work, just a statement that the Project will not have a long-term or permanent effect on traffic. That being said, we can compare the construction traffic to the OPR threshold of 110 daily trips — anything less can be considered to have a less-than-significant impact.

Operation. The Project would involve improvements along an active water infrastructure system that is currently subject to regular inspection; therefore, no new inspection routes would be added, and no additional vehicle trips would be expected during Project operation. Due to the nominal amount of traffic generated by the proposed Project, no impact would occur, and no mitigation is required.

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

No Impact. The Project consists of improvements to an existing active infrastructure system (three water mains, one new 1.0 MG tank located at the same site as an existing tank, a pump station, and three pressure regulating stations).

Construction and Operation. The Project does not propose any modifications to the existing circulation system in the Project vicinity. Further, traffic patterns and the types of vehicles traveling along the roads near the Project site would not be significantly affected. Therefore, no impact would occur related to hazards due to a design feature or incompatible uses. No impact would occur, and no mitigation is required.

d) Result in inadequate emergency access?

Less Than Significant Impact. As discussed in Section 3.0, Project Description, the proposed Project consists of three water main replacements in Serra Road, Sweetwater Mesa Road, and PCH; one new 1.0 MG tank at the end of Sweetwater Mesa Road; a pump station; and three pressure regulating stations.

Construction and Operation. During construction, existing access routes would be maintained at the Project site. Furthermore, emergency access routes are already in place at the Project site, and proposed Project actions would not alter access. Therefore, no impact to local or regional emergency access routes would occur, and no mitigation is required.

MITIGATION PROGRAM

No mitigation measures are required.

XVIII. TRIBAL CULTURAL RESOURCES

ENVIRONMENTAL ISSUES (See attachments for information sources)	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XVIII. 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), or	☐	☐	☐	☒
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.	☐	☒	☐	☐

Section V of this IS/MND provides an evaluation of cultural resources and human remains. As noted in that section, a cultural resource record search and literature review was conducted at the California Historical Resources Information System (CHRIS), which maintains records and literature regarding cultural resources within California. The SCCIC is a designated branch of the CHRIS and houses records recorded in San Bernardino, Los Angeles, Orange, and Ventura Counties. The CHRIS office for Los Angeles County is located at the SCCIC at California State University, Fullerton. The results of the records search identified 147 prior cultural resources studies, surveyed by qualified archaeologists between 1964 and 2014, within the search area including the Project site. Twenty-two previously recorded cultural resources have been identified within the search radius: 14 prehistoric sites, 6 historical sites, and 2 multicomponent sites. Additionally, the NAHC conducted a SLF search for the Project. The search results for the SLF are negative.

Consistent with requirements of AB 52, on April 26, 2021, the District sent formal AB 52 notification letters via certified mail to the following tribes that have expressed an interest in being consulted for projects being undertaken by the District.

- Fernandeño Tataviam Band of Mission Indians
- Gabrieleño Band of Mission Indians – Kizh Nation
- San Gabriel Band of Mission Indians
- San Manuel Band of Mission Indians
- Tejon Indian Tribe

On June 2, 2021, the Fernandeño Tataviam Band of Mission Indians responded via email and requested consultation. The District (Mr. Eduardo Maguino) and Fernandeño Tataviam Band of Mission Indians (Jairo Avila, Tribal Historic and Cultural Preservation Officer) held an initial telephone consultation on July 6, 2021. Additional correspondence and follow-up emails were exchanged and on October 21, 2021, the Fernandeño Tataviam Band of Mission Indians provided mitigation measures to the District. The County of Los Angeles Department of Public Works

(LACDPW) sent a letter to the Fernandeño Tataviam Band of Mission Indians (Sarah Brunzell) on February 26, 2024. The purpose of this letter was to summarize and conclude the AB 52 consultation between the lead agency, the District, acting through LACDPW, and the Fernandeño Tataviam Band of Mission Indians. No other tribes responded or requested consultation.

IMPACT ANALYSIS

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).

No Impact. For purposes of impact analysis, a tribal cultural resource is considered a site, feature, place, cultural landscape, sacred place, or object which is of cultural value to a California Native American Tribe and is either eligible for the California Register of Historical Resources (CRHR) or a local register. As indicated in Section V of this IS/MND, based on a 2020 SCCIC record search results, there are no resources on the Project site that are currently listed on the CRHR. Therefore, the proposed Project would not have an impact on a tribal cultural resource that is listed or eligible for listing on the CRHR or a local register. There would be no impacts, and mitigation is not required.

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 Resources 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. As noted previously, 22 previously recorded cultural resources have been identified within the search radius: 14 prehistoric sites, 6 historical sites, and 2 multicomponent sites. Two of the 22 resources are located within the boundaries the Project site. These include the Chumash village site of Humaliwo (CA-LAN-264/H) and a precontact rock shelter with documented habitation debris (CA-LAN-267). LAN-264/H is listed in the NRHP and is considered a historic property. It is likely that native populations used the Project area in prehistoric times, as supported by information provided by the Fernandeño Tataviam Band of Mission Indians during tribal consultation. While unlikely, buried resources, such as prehistoric artifacts relating to village sites, historic artifacts, and human remains could exist on the Project site and be damaged by ground disturbing activities associated with the Project construction, which would represent a significant impact. To avoid impacts to tribal resources, MMs TCR-1 through TCR-4, which were drafted based on consultation with tribal representatives, would reduce impacts to a less than significant level.

MITIGATION PROGRAM

MM TCR-1: If cultural resources are encountered, the Native American monitor, in conjunction with a qualified archaeologist, who meets the Secretary of the Interior's Standards and Guidelines for Archaeology, will have the authority to halt ground disturbing activities, in consultation with the Engineer, within a minimum 100-foot buffer of

the find and for a reasonable period of time to assess and document potential finds in real time as approved by the Engineer.

MM TCR-2: If human remains or funerary objects are encountered during any activities associated with the Project, work in the immediate vicinity (within a 100-foot buffer of the find) shall cease and the County Coroner shall be contacted pursuant to State Health and Safety Code §7050.5 and that code enforced for the duration of the Project.

MM TCR3-1: The Lead Agency and/or applicant shall, in good faith, consult with the tribe that requested AB 52 consultation and interested Tribes on the disposition and treatment of any tribal cultural resource encountered during all ground disturbing activities.

MM TCR-4: Any and all archaeological/cultural documents created as a part of the Project (isolate records, site records, survey reports, testing reports, and monitoring reports) shall be provided to the tribe that requested AB 52 consultation.

XIX. UTILITIES AND SERVICE SYSTEMS

ENVIRONMENTAL ISSUES (See attachments for information sources)	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
UTILITIES AND SERVICE SYSTEMS. Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
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 statutes and regulations related to solid waste?	☐	☐	☒	☐

IMPACT ANALYSIS

Would the Project:

a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

Less than Significant Impact. As discussed in Section 3.0, Project Description, the proposed Project consists of three water main replacements in Serra Road, Sweetwater Mesa Road, and PCH; one new 1.0 MG tank at the end of Sweetwater Mesa Road; a pump station; and three pressure regulating stations.

Construction and Operation. The Project would not require any further relocation or construction of new or expanded facilities beyond what is currently proposed and analyzed as part of this IS/MND. Impacts would be less than significant, and no mitigation is required.

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

No Impact.

Construction and Operation. The proposed Project is designed to increase storage capacity and would have no impact on the District's water supplies. No impacts would occur, and no mitigation is required.

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. The proposed Project consists of three water main replacements in Serra Road, Sweetwater Mesa Road, and PCH; one new 1.0 MG tank at the end of Sweetwater Mesa Road; a pump station; and three pressure regulating stations.

Construction and Operation. Due to the nature of the Project as a utility improvement project, the Project would not generate significant quantities of wastewater during construction or operations. No impacts to wastewater treatment capacity would occur, and no mitigation is required.

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. Solid waste disposal in the City of Malibu is presently handled by private hauling companies (in which the City of Malibu issues permits), one of which is under contract to service Los Angeles County/Malibu Garbage Disposal District. The Simi Valley Landfill and Recycling Center and Calabasas Landfill are the primary disposal facilities of non-recyclable solid waste for the City of Malibu. The Simi Valley landfill has a permitted capacity of 9,250 tons per day (tpd) with an estimated remaining capacity of 19.6 million tons with a projected closure date of 2063. The Calabasas landfill has an estimated remaining capacity of 5.6 million tons and is projected to reach its capacity around 2025. Further, several other landfill facilities in the County, including the Lancaster Landfill and Recycling Center and the Sunshine Canyon City/County Landfill would accept solid waste generated by the proposed Project (County of Los Angeles 2020).

Construction and Operation. Operation of the Project would result in the generation of solid waste; however, levels would be in compliance with State and local standards. Construction activities would also generate solid waste; however, the generation of solid waste during construction would be short-term and would not result in a significant impact to local solid waste management infrastructure. With regards to operation, as discussed above, landfills available to solid waste haulers serving the Project site have adequate capacity to serve the Project within the existing capacity of local infrastructure, and a less than significant impact would result. Impacts would be less than significant, and no mitigation is required.

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

Less Than Significant Impact.

Construction and Operation. During construction and operation of the Project, the District would comply with all applicable federal, State, and local management and reduction statutes on solid waste diversion, reduction, and recycling mandates, including compliance with the City of Malibu's Source Reduction and Recycling Element, and the Malibu Municipal Code. Full compliance with **RR UTIL-1 and RR UTIL-2,** in addition to these above-mentioned regulations and mandates,

would assist in reducing the amount of waste deposited in local landfills. Impacts related to solid waste would be less than significant, and no other mitigation is required.

REGULATORY REQUIREMENTS

The City of Malibu applies the following regulatory requirements from the LCP to applicable projects to minimize impacts to utilities.

RR UTIL-1 Prior to the issuance of a building/demolition permit, an Affidavit and Certification to implement a Waste Reduction and Recycling Plan (WRRP) shall be signed by the Owner or Contractor and submitted to the Environmental Sustainability Department. The WRRP shall indicate the agreement of the applicant to divert at least 50 percent of all construction waste generated by the Project.

RR UTIL-2 Prior to a final Building inspection, the applicant shall provide a final Waste Reduction and Recycling Summary Report (Summary Report) and obtain the approval from the Environmental Sustainability Department. The final Summary Report shall designate all material that were land filled or recycled, broken down by material types.

MITIGATION PROGRAM

No mitigation measures are required.

XX. WILDFIRE

ENVIRONMENTAL ISSUES (See attachments for information sources)	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
WILDFIRE. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
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?	☐	☐	☒	☐

IMPACT ANALYSIS

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?

Less Than Significant Impact. The Project site is located within an area subject to major wildfires classified in Fire Zone 4 or in the VHFHSZ (California State Geoportal 2020).

Construction and Operation. All Project construction and operation would be in compliance with the goals, policies, and implementation measures of the City of Malibu's General Plan Safety Element; LCP; LACFD; Department of Public Works, Building and Safety Division; Fire Zone 4; and VHFHSZ requirements. Examples of protective building construction measures include Fuel Modification Zones (areas with drought-tolerant, low-fuel-volume plants); 26 foot-wide LACFD-compliant access driveway development with specific building materials, such as fire-retardant roofing; and the installation of sprinkler systems.

As part of the proposed Project (see Section XVII, Transportation, of the MND), a Traffic Control Plan, which would contain strategies for maintaining emergency access during construction, would be developed. Specifically, police, fire, and other emergency service providers, as well as facility owners and administrators of surrounding sensitive land uses, would be notified of the timing, location, and duration of the construction activities and the location of detours and lane closures. Implementation of the Traffic Control Plan would ensure that potential emergency vehicle access impacts during construction would be minimized and would be less than significant. Once construction is completed, operation of the proposed Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency

evacuation plan. Therefore, the impacts of the proposed Project on adopted emergency response plan or emergency evacuation plan would be less than significant, and no mitigation is required.

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. The proposed facilities are for utility uses only and are not intended for occupancy for people; therefore, the Project would not expose project occupants to pollutant concentrations from a wildfire due to slope, prevailing winds, or other factors.

Construction and Operation. The proposed Project would comply with all applicable measures and regulations and be designed to ensure public safety, even in the event of a fire, and no additional mitigation measures are necessary. Impacts would be less than significant, and no mitigation is required.

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?

Less Than Significant Impact. As discussed in Section 3.0, Project Description, the proposed Project consists of three water main replacements in Serra Road, Sweetwater Mesa Road, and PCH; one new 1.0 MG tank at the end of Sweetwater Mesa Road; a pump station; and three pressure regulating stations.

Construction and Operation. Due to the nature of the Project, it would not require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities). The proposed Project would comply with all applicable measures and regulations and be designed to ensure public safety, even in the event of a fire and no additional mitigation measures are necessary. Impacts would be less than significant, and no mitigation is required.

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?

Less Than Significant Impact. As discussed in XX (B) above, the proposed facilities are for utility uses only and are not intended for occupancy for people; therefore, the Project would not 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.

Construction and Operation. The proposed Project would comply with all applicable measures and regulations and be designed to ensure public safety, even in the event of a fire and no additional mitigation measures are necessary. Impacts would be less than significant, and no mitigation is required.

MITIGATION PROGRAM

No mitigation measures are required.

XXI. MANDATORY FINDINGS OF SIGNIFICANCE

ENVIRONMENTAL ISSUES (See attachments for information sources)	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
MANDATORY FINDINGS OF SIGNIFICANCE. Does the project:				
a) Have the potential to 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, reduce the number or restrict the range of rare or endangered plants or animals, or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) 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) Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

IMPACT ANALYSIS

Does the Project:

a) Have the potential to 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, 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. As described throughout the analysis in Section 5.0, with the incorporation of mitigation measures **MM BIO-1 through MM BIO-3**, implementation of the proposed Project would not degrade the quality of the environment, would not substantially reduce the habitats of fish or wildlife species, would not cause a fish or wildlife population to drop below self-sustaining levels, and would not threaten to eliminate a plant or animal. Implementation of **MM CULT-1, MM GEO-2, and MM TCR-1 through TCR-4** would not eliminate important examples of major periods of California history or prehistory. Additionally, **MM HYDRO-1**, which requires implementation of appropriate water quality BMPs consistent with the NPDES Construction General Permit, would reduce water quality impacts to a less than significant level and reduce potential to degrade the quality of the environment. With respect to the quality of the environment, the Project would not preclude the ability to achieve long-term environmental goals. Impacts are less than significant with mitigation.

b) Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental efforts 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 probably future projects)?

Less Than Significant With Mitigation Incorporated. While the Project may have the potential to impact the environment on a Project-specific basis as detailed throughout Section 5.0 of this IS/MND, construction impacts would be short-term and limited in nature and compliance with regulatory requirements and implementation of mitigation measures (**MM BIO-1** through **MM BIO-3**, **MM CULT-1**, **MM GEO-1** and **MM GEO-2**, **MM HYDRO-1**, and **MM TCR-1** through **MM TCR-4**) would reduce any potential impacts to less than significant levels.

While the cumulative study area can vary according to environmental topic, the Project site and immediate surrounding areas, including the residential communities accessed from Serra Road and Sweetwater Mesa Road and commercial development along PCH, can generally be defined as the cumulative study area. Within this area, the City of Malibu Capital Improvement Projects list, the Los Angeles County Public Works Infrastructure Projects website, and the Southern California Edison (SCE) Capital Improvements map do not identify any large-scale cumulative projects that are on-going or planned (Malibu 2022; LAPW 2023; SCE 2023). The only projects noted include minor SCE work related to undergrounding of power lines along Serra Road and Sweetwater Mesa Road; construction schedules for these efforts are currently undefined.

In accordance with Section 15064(h)(2), because all Project-related impacts would be reduced to less than significant levels, the Project's contribution to a significant cumulative impact would be less than significant. This finding is supported by the analyses presented above in subsections I. Aesthetics, through XX. Wildfire. Specifically, mitigation measures have been identified to reduce impacts to less than significant levels. Where appropriate, analyses specifically address cumulative impacts by the very nature of the impact topic, including Air Quality, GHG Emissions, Land Use and Planning, Noise, Population and Housing, Public Services, Recreation, Transportation, Tribal Cultural Resources, and Utilities. Further, this Project and all cumulative projects would be subject to all applicable local, regional, and statewide regulatory requirements. Therefore, the Project's contribution to a cumulative impact are less than significant with mitigation.

c) Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

and **MM HYDRO-1**, which would reduce water quality impacts to a less than significant level, all potential impacts would be reduced to less than significant levels. After construction of the proposed Project, which consists of improvements to the Sweetwater Mesa system to better serve existing and approved development in the service area, the facilities will operate under existing conditions and will not result in substantial adverse effects on human beings, either directly or indirectly. Impacts are less than significant with mitigation.

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Appendix A

CalEEMod Calculations

Malibu Civic Tank

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.40	18,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	448	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Malibu Civic Tank - Los Angeles-South Coast County, Annual

Project Characteristics - SCE CO2 Intensity for 2024

Land Use - Lot acreage estimated from site plan

Construction Phase - Schedule per client

Off-road Equipment - Drill rig for piles

Off-road Equipment - No saws needed

Off-road Equipment - Client provided data

Off-road Equipment - Client provided data

Off-road Equipment - Client provided data

Off-road Equipment - Client provided data

Trips and VMT - Backfill import trips by client

Grading -

Energy Use - Estimate 8600 kwh/yr for pump station and tank site lighting

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	1.00	23.00
tblConstructionPhase	NumDays	2.00	10.00
tblConstructionPhase	NumDays	2.00	20.00
tblConstructionPhase	NumDays	100.00	158.00
tblConstructionPhase	NumDays	5.00	26.00
tblEnergyUse	LightingElect	0.00	0.48
tblGrading	AcresOfGrading	0.00	11.50
tblGrading	MaterialImported	0.00	345.00
tblLandUse	LandUseSquareFeet	0.00	18,000.00
tblLandUse	LotAcreage	0.00	0.40
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.36	0.36

tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Cement and Mortar Mixers
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	1.00	8.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	448
tblTripsAndVMT	HaulingTripNumber	43.00	70.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0603	0.5741	0.4061	1.3400e-003	0.0180	0.0211	0.0391	3.8700e-003	0.0195	0.0233			117.5377	0.0325	0.0000	118.3495
Maximum	**0.0603**	**0.5741**	**0.4061**	**1.3400e-003**	**0.0180**	**0.0211**	**0.0391**	**3.8700e-003**	**0.0195**	**0.0233**			**117.5377**	**0.0325**	**0.0000**	**118.3495**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0603	0.5741	0.4061	1.3400e-003	0.0147	0.0211	0.0357	3.5000e-003	0.0195	0.0230			117.5376	0.0325	0.0000	118.3494
Maximum	**0.0603**	**0.5741**	**0.4061**	**1.3400e-003**	**0.0147**	**0.0211**	**0.0357**	**3.5000e-003**	**0.0195**	**0.0230**			**117.5376**	**0.0325**	**0.0000**	**118.3494**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**18.64**	**0.00**	**8.60**	**9.56**	**0.00**	**1.54**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-2-2023	4-1-2023	0.1488	0.1488
2	4-2-2023	7-1-2023	0.1835	0.1835
3	7-2-2023	9-30-2023	0.1858	0.1858
		Highest	0.1858	0.1858

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0734	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000			2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			1.7557	1.1000e-004	2.0000e-005	1.7656
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total	**0.0734**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**1.7558**	**1.1000e-004**	**2.0000e-005**	**1.7656**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0734	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000			2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			1.7557	1.1000e-004	2.0000e-005	1.7656
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total	**0.0734**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**1.7558**	**1.1000e-004**	**2.0000e-005**	**1.7656**

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

3.0 Construction Detail

Construction Phase

Malibu Civic Tank - Los Angeles-South Coast County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/2/2023	2/1/2023	5	23	
2	Excavation	Grading	2/2/2023	2/15/2023	5	10	
3	Backfill and foundation piles	Grading	2/16/2023	3/15/2023	5	20	
4	Trenching	Trenching	3/16/2023	4/7/2023	5	17	
5	Tank construction	Building Construction	4/8/2023	11/15/2023	5	158	
6	Paving	Paving	11/16/2023	12/21/2023	5	26	

Acres of Grading (Site Preparation Phase): 11.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

OffRoad Equipment

Malibu Civic Tank - Los Angeles-South Coast County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	0	8.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Excavation	Concrete/Industrial Saws	0	0.00	81	0.73
Excavation	Rubber Tired Dozers	0	8.00	247	0.40
Excavation	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Tank construction	Cranes	1	4.00	231	0.29
Tank construction	Forklifts	0	6.00	89	0.20
Tank construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Paving	Pavers	0	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Backfill and foundation piles	Bore/Drill Rigs	1	8.00	221	0.50
Backfill and foundation piles	Concrete/Industrial Saws	0	0.00	81	0.73
Backfill and foundation piles	Plate Compactors	2	8.00	8	0.43
Backfill and foundation piles	Rollers	0	8.00	80	0.38
Backfill and foundation piles	Rubber Tired Dozers	0	1.00	247	0.40
Backfill and foundation piles	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Rubber Tired Loaders	1	8.00	203	0.36
Excavation	Rubber Tired Loaders	1	8.00	203	0.36
Trenching	Rubber Tired Loaders	1	8.00	203	0.36
Tank construction	Rubber Tired Loaders	1	8.00	203	0.36
Tank construction	Cement and Mortar Mixers	1	8.00	9	0.56

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Excavation	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Tank construction	3	8.00	3.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Backfill and foundation piles	4	10.00	0.00	70.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.1000e-003	0.0000	6.1000e-003	6.6000e-004	0.0000	6.6000e-004			0.0000	0.0000	0.0000	0.0000
Off-Road	4.8700e-003	0.0483	0.0431	1.1000e-004		1.9000e-003	1.9000e-003		1.7500e-003	1.7500e-003			9.4954	3.0700e-003	0.0000	9.5722
Total	**4.8700e-003**	**0.0483**	**0.0431**	**1.1000e-004**	**6.1000e-003**	**1.9000e-003**	**8.0000e-003**	**6.6000e-004**	**1.7500e-003**	**2.4100e-003**			**9.4954**	**3.0700e-003**	**0.0000**	**9.5722**

3.2 Site Preparation - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	2.2000e-004	1.6000e-004	1.8400e-003	1.0000e-005	6.3000e-004	0.0000	6.3000e-004	1.7000e-004	0.0000	1.7000e-004			0.5286	1.0000e-005	0.0000	0.5289
Total	**2.2000e-004**	**1.6000e-004**	**1.8400e-003**	**1.0000e-005**	**6.3000e-004**	**0.0000**	**6.3000e-004**	**1.7000e-004**	**0.0000**	**1.7000e-004**			**0.5286**	**1.0000e-005**	**0.0000**	**0.5289**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.7400e-003	0.0000	2.7400e-003	3.0000e-004	0.0000	3.0000e-004			0.0000	0.0000	0.0000	0.0000
Off-Road	4.8700e-003	0.0483	0.0431	1.1000e-004		1.9000e-003	1.9000e-003		1.7500e-003	1.7500e-003			9.4954	3.0700e-003	0.0000	9.5722
Total	**4.8700e-003**	**0.0483**	**0.0431**	**1.1000e-004**	**2.7400e-003**	**1.9000e-003**	**4.6400e-003**	**3.0000e-004**	**1.7500e-003**	**2.0500e-003**			**9.4954**	**3.0700e-003**	**0.0000**	**9.5722**

3.2 Site Preparation - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	2.2000e-004	1.6000e-004	1.8400e-003	1.0000e-005	6.3000e-004	0.0000	6.3000e-004	1.7000e-004	0.0000	1.7000e-004			0.5286	1.0000e-005	0.0000	0.5289
Total	**2.2000e-004**	**1.6000e-004**	**1.8400e-003**	**1.0000e-005**	**6.3000e-004**	**0.0000**	**6.3000e-004**	**1.7000e-004**	**0.0000**	**1.7000e-004**			**0.5286**	**1.0000e-005**	**0.0000**	**0.5289**

3.3 Excavation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Off-Road	1.9300e-003	0.0191	0.0160	4.0000e-005		7.3000e-004	7.3000e-004		6.7000e-004	6.7000e-004			3.7865	1.2200e-003	0.0000	3.8171
Total	**1.9300e-003**	**0.0191**	**0.0160**	**4.0000e-005**	**0.0000**	**7.3000e-004**	**7.3000e-004**	**0.0000**	**6.7000e-004**	**6.7000e-004**			**3.7865**	**1.2200e-003**	**0.0000**	**3.8171**

3.3 Excavation - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	7.0000e-005	8.0000e-004	0.0000	2.7000e-004	0.0000	2.8000e-004	7.0000e-005	0.0000	7.0000e-005			0.2298	1.0000e-005	0.0000	0.2300
Total	**9.0000e-005**	**7.0000e-005**	**8.0000e-004**	**0.0000**	**2.7000e-004**	**0.0000**	**2.8000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**			**0.2298**	**1.0000e-005**	**0.0000**	**0.2300**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Off-Road	1.9300e-003	0.0191	0.0160	4.0000e-005		7.3000e-004	7.3000e-004		6.7000e-004	6.7000e-004			3.7865	1.2200e-003	0.0000	3.8171
Total	**1.9300e-003**	**0.0191**	**0.0160**	**4.0000e-005**	**0.0000**	**7.3000e-004**	**7.3000e-004**	**0.0000**	**6.7000e-004**	**6.7000e-004**			**3.7865**	**1.2200e-003**	**0.0000**	**3.8171**

3.3 Excavation - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	7.0000e-005	8.0000e-004	0.0000	2.7000e-004	0.0000	2.8000e-004	7.0000e-005	0.0000	7.0000e-005			0.2298	1.0000e-005	0.0000	0.2300
Total	**9.0000e-005**	**7.0000e-005**	**8.0000e-004**	**0.0000**	**2.7000e-004**	**0.0000**	**2.8000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**			**0.2298**	**1.0000e-005**	**0.0000**	**0.2300**

3.4 Backfill and foundation piles - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Off-Road	4.0900e-003	0.0369	0.0413	1.3000e-004		1.4200e-003	1.4200e-003		1.3300e-003	1.3300e-003			10.9819	3.4100e-003	0.0000	11.0672
Total	**4.0900e-003**	**0.0369**	**0.0413**	**1.3000e-004**	**2.0000e-005**	**1.4200e-003**	**1.4400e-003**	**0.0000**	**1.3300e-003**	**1.3300e-003**			**10.9819**	**3.4100e-003**	**0.0000**	**11.0672**

3.4 Backfill and foundation piles - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.8000e-004	5.9000e-003	2.0300e-003	3.0000e-005	6.0000e-004	1.0000e-005	6.1000e-004	1.7000e-004	1.0000e-005	1.8000e-004			2.5265	1.7000e-004	0.0000	2.5308
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	3.8000e-004	2.7000e-004	3.2000e-003	1.0000e-005	1.1000e-003	1.0000e-005	1.1000e-003	2.9000e-004	1.0000e-005	3.0000e-004			0.9192	2.0000e-005	0.0000	0.9198
Total	**5.6000e-004**	**6.1700e-003**	**5.2300e-003**	**4.0000e-005**	**1.7000e-003**	**2.0000e-005**	**1.7100e-003**	**4.6000e-004**	**2.0000e-005**	**4.8000e-004**			**3.4458**	**1.9000e-004**	**0.0000**	**3.4506**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Off-Road	4.0900e-003	0.0369	0.0413	1.3000e-004		1.4200e-003	1.4200e-003		1.3300e-003	1.3300e-003			10.9819	3.4100e-003	0.0000	11.0672
Total	**4.0900e-003**	**0.0369**	**0.0413**	**1.3000e-004**	**1.0000e-005**	**1.4200e-003**	**1.4300e-003**	**0.0000**	**1.3300e-003**	**1.3300e-003**			**10.9819**	**3.4100e-003**	**0.0000**	**11.0672**

3.4 Backfill and foundation piles - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.8000e-004	5.9000e-003	2.0300e-003	3.0000e-005	6.0000e-004	1.0000e-005	6.1000e-004	1.7000e-004	1.0000e-005	1.8000e-004			2.5265	1.7000e-004	0.0000	2.5308
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	3.8000e-004	2.7000e-004	3.2000e-003	1.0000e-005	1.1000e-003	1.0000e-005	1.1000e-003	2.9000e-004	1.0000e-005	3.0000e-004			0.9192	2.0000e-005	0.0000	0.9198
Total	**5.6000e-004**	**6.1700e-003**	**5.2300e-003**	**4.0000e-005**	**1.7000e-003**	**2.0000e-005**	**1.7100e-003**	**4.6000e-004**	**2.0000e-005**	**4.8000e-004**			**3.4458**	**1.9000e-004**	**0.0000**	**3.4506**

3.5 Trenching - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.6000e-003	0.0357	0.0319	8.0000e-005		1.4000e-003	1.4000e-003		1.2900e-003	1.2900e-003			7.0184	2.2700e-003	0.0000	7.0751
Total	**3.6000e-003**	**0.0357**	**0.0319**	**8.0000e-005**		**1.4000e-003**	**1.4000e-003**		**1.2900e-003**	**1.2900e-003**			**7.0184**	**2.2700e-003**	**0.0000**	**7.0751**

3.5 Trenching - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	1.6000e-004	1.2000e-004	1.3600e-003	0.0000	4.7000e-004	0.0000	4.7000e-004	1.2000e-004	0.0000	1.3000e-004			0.3907	1.0000e-005	0.0000	0.3909
Total	**1.6000e-004**	**1.2000e-004**	**1.3600e-003**	**0.0000**	**4.7000e-004**	**0.0000**	**4.7000e-004**	**1.2000e-004**	**0.0000**	**1.3000e-004**			**0.3907**	**1.0000e-005**	**0.0000**	**0.3909**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.6000e-003	0.0357	0.0319	8.0000e-005		1.4000e-003	1.4000e-003		1.2900e-003	1.2900e-003			7.0183	2.2700e-003	0.0000	7.0751
Total	**3.6000e-003**	**0.0357**	**0.0319**	**8.0000e-005**		**1.4000e-003**	**1.4000e-003**		**1.2900e-003**	**1.2900e-003**			**7.0183**	**2.2700e-003**	**0.0000**	**7.0751**

3.5 Trenching - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	1.6000e-004	1.2000e-004	1.3600e-003	0.0000	4.7000e-004	0.0000	4.7000e-004	1.2000e-004	0.0000	1.3000e-004			0.3907	1.0000e-005	0.0000	0.3909
Total	**1.6000e-004**	**1.2000e-004**	**1.3600e-003**	**0.0000**	**4.7000e-004**	**0.0000**	**4.7000e-004**	**1.2000e-004**	**0.0000**	**1.3000e-004**			**0.3907**	**1.0000e-005**	**0.0000**	**0.3909**

3.6 Tank construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0400	0.3906	0.2167	7.8000e-004		0.0145	0.0145		0.0134	0.0134			67.2611	0.0210	0.0000	67.7851
Total	**0.0400**	**0.3906**	**0.2167**	**7.8000e-004**		**0.0145**	**0.0145**		**0.0134**	**0.0134**			**67.2611**	**0.0210**	**0.0000**	**67.7851**

3.6 Tank construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Vendor	5.1000e-004	0.0168	5.3800e-003	6.0000e-005	1.4900e-003	2.0000e-005	1.5100e-003	4.3000e-004	2.0000e-005	4.5000e-004			5.6094	3.1000e-004	0.0000	5.6170
Worker	2.4000e-003	1.7300e-003	0.0203	6.0000e-005	6.9300e-003	5.0000e-005	6.9800e-003	1.8400e-003	5.0000e-005	1.8900e-003			5.8096	1.5000e-004	0.0000	5.8133
Total	**2.9100e-003**	**0.0185**	**0.0256**	**1.2000e-004**	**8.4200e-003**	**7.0000e-005**	**8.4900e-003**	**2.2700e-003**	**7.0000e-005**	**2.3400e-003**			**11.4190**	**4.6000e-004**	**0.0000**	**11.4303**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0400	0.3906	0.2167	7.8000e-004		0.0145	0.0145		0.0134	0.0134			67.2610	0.0210	0.0000	67.7850
Total	**0.0400**	**0.3906**	**0.2167**	**7.8000e-004**		**0.0145**	**0.0145**		**0.0134**	**0.0134**			**67.2610**	**0.0210**	**0.0000**	**67.7850**

3.6 Tank construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Vendor	5.1000e-004	0.0168	5.3800e-003	6.0000e-005	1.4900e-003	2.0000e-005	1.5100e-003	4.3000e-004	2.0000e-005	4.5000e-004			5.6094	3.1000e-004	0.0000	5.6170
Worker	2.4000e-003	1.7300e-003	0.0203	6.0000e-005	6.9300e-003	5.0000e-005	6.9800e-003	1.8400e-003	5.0000e-005	1.8900e-003			5.8096	1.5000e-004	0.0000	5.8133
Total	**2.9100e-003**	**0.0185**	**0.0256**	**1.2000e-004**	**8.4200e-003**	**7.0000e-005**	**8.4900e-003**	**2.2700e-003**	**7.0000e-005**	**2.3400e-003**			**11.4190**	**4.6000e-004**	**0.0000**	**11.4303**

3.7 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.7500e-003	0.0183	0.0211	3.0000e-005		1.0100e-003	1.0100e-003		9.3000e-004	9.3000e-004			2.6222	8.5000e-004	0.0000	2.6434
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total	**1.7500e-003**	**0.0183**	**0.0211**	**3.0000e-005**		**1.0100e-003**	**1.0100e-003**		**9.3000e-004**	**9.3000e-004**			**2.6222**	**8.5000e-004**	**0.0000**	**2.6434**

3.7 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	1.5000e-004	1.1000e-004	1.2500e-003	0.0000	4.3000e-004	0.0000	4.3000e-004	1.1000e-004	0.0000	1.2000e-004			0.3585	1.0000e-005	0.0000	0.3587
Total	**1.5000e-004**	**1.1000e-004**	**1.2500e-003**	**0.0000**	**4.3000e-004**	**0.0000**	**4.3000e-004**	**1.1000e-004**	**0.0000**	**1.2000e-004**			**0.3585**	**1.0000e-005**	**0.0000**	**0.3587**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.7500e-003	0.0183	0.0211	3.0000e-005		1.0100e-003	1.0100e-003		9.3000e-004	9.3000e-004			2.6222	8.5000e-004	0.0000	2.6434
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total	**1.7500e-003**	**0.0183**	**0.0211**	**3.0000e-005**		**1.0100e-003**	**1.0100e-003**		**9.3000e-004**	**9.3000e-004**			**2.6222**	**8.5000e-004**	**0.0000**	**2.6434**

3.7 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	1.5000e-004	1.1000e-004	1.2500e-003	0.0000	4.3000e-004	0.0000	4.3000e-004	1.1000e-004	0.0000	1.2000e-004			0.3585	1.0000e-005	0.0000	0.3587
Total	**1.5000e-004**	**1.1000e-004**	**1.2500e-003**	**0.0000**	**4.3000e-004**	**0.0000**	**4.3000e-004**	**1.1000e-004**	**0.0000**	**1.2000e-004**			**0.3585**	**1.0000e-005**	**0.0000**	**0.3587**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.545348	0.044620	0.206559	0.118451	0.015002	0.006253	0.020617	0.031756	0.002560	0.002071	0.005217	0.000696	0.000850

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000			1.7557	1.1000e-004	2.0000e-005	1.7656
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000			1.7557	1.1000e-004	2.0000e-005	1.7656
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	8640	1.7557	1.1000e-004	2.0000e-005	1.7656
Total		**1.7557**	**1.1000e-004**	**2.0000e-005**	**1.7656**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	8640	1.7557	1.1000e-004	2.0000e-005	1.7656
Total		**1.7557**	**1.1000e-004**	**2.0000e-005**	**1.7656**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0734	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000			2.0000e-005	0.0000	0.0000	3.0000e-005
Unmitigated	0.0734	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000			2.0000e-005	0.0000	0.0000	3.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	8.3400e-003					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0650					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000			2.0000e-005	0.0000	0.0000	3.0000e-005
Total	**0.0734**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**			**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	8.3400e-003					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0650					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000			2.0000e-005	0.0000	0.0000	3.0000e-005
Total	**0.0734**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**			**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Malibu Civic Tank

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.40	18,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	448	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Malibu Civic Tank - Los Angeles-South Coast County, Summer

Project Characteristics - SCE CO2 Intensity for 2024

Land Use - Lot acreage estimated from site plan

Construction Phase - Schedule per client

Off-road Equipment - Drill rig for piles

Off-road Equipment - No saws needed

Off-road Equipment - Client provided data

Off-road Equipment - Client provided data

Off-road Equipment - Client provided data

Off-road Equipment - Client provided data

Trips and VMT - Backfill import trips by client

Grading -

Energy Use - Estimate 8600 kwh/yr for pump station and tank site lighting

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	1.00	23.00
tblConstructionPhase	NumDays	2.00	10.00
tblConstructionPhase	NumDays	2.00	20.00
tblConstructionPhase	NumDays	100.00	158.00
tblConstructionPhase	NumDays	5.00	26.00
tblEnergyUse	LightingElect	0.00	0.48
tblGrading	AcresOfGrading	0.00	11.50
tblGrading	MaterialImported	0.00	345.00
tblLandUse	LandUseSquareFeet	0.00	18,000.00
tblLandUse	LotAcreage	0.00	0.40
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.36	0.36

tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Cement and Mortar Mixers
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	1.00	8.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	448
tblTripsAndVMT	HaulingTripNumber	43.00	70.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	0.5428	5.1733	4.6684	0.0164	0.5861	0.1842	0.7517	0.0721	0.1707	0.2244			1,596.9403	0.3975	0.0000	1,606.8787
Maximum	**0.5428**	**5.1733**	**4.6684**	**0.0164**	**0.5861**	**0.1842**	**0.7517**	**0.0721**	**0.1707**	**0.2244**			**1,596.9403**	**0.3975**	**0.0000**	**1,606.8787**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	0.5428	5.1733	4.6684	0.0164	0.2945	0.1842	0.4601	0.0466	0.1707	0.1999			1,596.9403	0.3975	0.0000	1,606.8787
Maximum	**0.5428**	**5.1733**	**4.6684**	**0.0164**	**0.2945**	**0.1842**	**0.4601**	**0.0466**	**0.1707**	**0.1999**			**1,596.9403**	**0.3975**	**0.0000**	**1,606.8787**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**49.76**	**0.00**	**38.80**	**35.41**	**0.00**	**10.92**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.4021	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Total	**0.4021**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.4021	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Total	**0.4021**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/2/2023	2/1/2023	5	23	
2	Excavation	Grading	2/2/2023	2/15/2023	5	10	
3	Backfill and foundation piles	Grading	2/16/2023	3/15/2023	5	20	
4	Trenching	Trenching	3/16/2023	4/7/2023	5	17	
5	Tank construction	Building Construction	4/8/2023	11/15/2023	5	158	
6	Paving	Paving	11/16/2023	12/21/2023	5	26	

Acres of Grading (Site Preparation Phase): 11.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

OffRoad Equipment

Malibu Civic Tank - Los Angeles-South Coast County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	0	8.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Excavation	Concrete/Industrial Saws	0	0.00	81	0.73
Excavation	Rubber Tired Dozers	0	8.00	247	0.40
Excavation	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Tank construction	Cranes	1	4.00	231	0.29
Tank construction	Forklifts	0	6.00	89	0.20
Tank construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Paving	Pavers	0	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Backfill and foundation piles	Bore/Drill Rigs	1	8.00	221	0.50
Backfill and foundation piles	Concrete/Industrial Saws	0	0.00	81	0.73
Backfill and foundation piles	Plate Compactors	2	8.00	8	0.43
Backfill and foundation piles	Rollers	0	8.00	80	0.38
Backfill and foundation piles	Rubber Tired Dozers	0	1.00	247	0.40
Backfill and foundation piles	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Rubber Tired Loaders	1	8.00	203	0.36
Excavation	Rubber Tired Loaders	1	8.00	203	0.36
Trenching	Rubber Tired Loaders	1	8.00	203	0.36
Tank construction	Rubber Tired Loaders	1	8.00	203	0.36
Tank construction	Cement and Mortar Mixers	1	8.00	9	0.56

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Excavation	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Tank construction	3	8.00	3.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Backfill and foundation piles	4	10.00	0.00	70.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	0.4232	4.2036	3.7486	9.4000e-003		0.1652	0.1652		0.1519	0.1519			910.1654	0.2944		917.5246
Total	**0.4232**	**4.2036**	**3.7486**	**9.4000e-003**	**0.5303**	**0.1652**	**0.6954**	**0.0573**	**0.1519**	**0.2092**			**910.1654**	**0.2944**		**917.5246**

3.2 Site Preparation - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0189	0.0120	0.1711	5.3000e-004	0.0559	4.3000e-004	0.0563	0.0148	3.9000e-004	0.0152			52.9241	1.3700e-003		52.9583
Total	**0.0189**	**0.0120**	**0.1711**	**5.3000e-004**	**0.0559**	**4.3000e-004**	**0.0563**	**0.0148**	**3.9000e-004**	**0.0152**			**52.9241**	**1.3700e-003**		**52.9583**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2386	0.0000	0.2386	0.0258	0.0000	0.0258			0.0000			0.0000
Off-Road	0.4232	4.2036	3.7486	9.4000e-003		0.1652	0.1652		0.1519	0.1519			910.1654	0.2944		917.5246
Total	**0.4232**	**4.2036**	**3.7486**	**9.4000e-003**	**0.2386**	**0.1652**	**0.4038**	**0.0258**	**0.1519**	**0.1777**			**910.1654**	**0.2944**		**917.5246**

3.2 Site Preparation - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0189	0.0120	0.1711	5.3000e-004	0.0559	4.3000e-004	0.0563	0.0148	3.9000e-004	0.0152			52.9241	1.3700e-003		52.9583
Total	**0.0189**	**0.0120**	**0.1711**	**5.3000e-004**	**0.0559**	**4.3000e-004**	**0.0563**	**0.0148**	**3.9000e-004**	**0.0152**			**52.9241**	**1.3700e-003**		**52.9583**

3.3 Excavation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3854	3.8197	3.1908	8.6200e-003		0.1462	0.1462		0.1345	0.1345			834.7713	0.2700		841.5209
Total	**0.3854**	**3.8197**	**3.1908**	**8.6200e-003**	**0.0000**	**0.1462**	**0.1462**	**0.0000**	**0.1345**	**0.1345**			**834.7713**	**0.2700**		**841.5209**

3.3 Excavation - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0189	0.0120	0.1711	5.3000e-004	0.0559	4.3000e-004	0.0563	0.0148	3.9000e-004	0.0152			52.9241	1.3700e-003		52.9583
Total	**0.0189**	**0.0120**	**0.1711**	**5.3000e-004**	**0.0559**	**4.3000e-004**	**0.0563**	**0.0148**	**3.9000e-004**	**0.0152**			**52.9241**	**1.3700e-003**		**52.9583**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3854	3.8197	3.1908	8.6200e-003		0.1462	0.1462		0.1345	0.1345			834.7713	0.2700		841.5209
Total	**0.3854**	**3.8197**	**3.1908**	**8.6200e-003**	**0.0000**	**0.1462**	**0.1462**	**0.0000**	**0.1345**	**0.1345**			**834.7713**	**0.2700**		**841.5209**

3.3 Excavation - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0189	0.0120	0.1711	5.3000e-004	0.0559	4.3000e-004	0.0563	0.0148	3.9000e-004	0.0152			52.9241	1.3700e-003		52.9583
Total	**0.0189**	**0.0120**	**0.1711**	**5.3000e-004**	**0.0559**	**4.3000e-004**	**0.0563**	**0.0148**	**3.9000e-004**	**0.0152**			**52.9241**	**1.3700e-003**		**52.9583**

3.4 Backfill and foundation piles - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.9500e-003	0.0000	1.9500e-003	3.0000e-004	0.0000	3.0000e-004			0.0000			0.0000
Off-Road	0.4089	3.6939	4.1273	0.0128		0.1424	0.1424		0.1326	0.1326			1,210.5444	0.3764		1,219.9537
Total	**0.4089**	**3.6939**	**4.1273**	**0.0128**	**1.9500e-003**	**0.1424**	**0.1444**	**3.0000e-004**	**0.1326**	**0.1329**			**1,210.5444**	**0.3764**		**1,219.9537**

3.4 Backfill and foundation piles - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0182	0.5754	0.1989	2.5800e-003	0.0612	1.0400e-003	0.0623	0.0168	1.0000e-003	0.0178			280.5477	0.0184		281.0085
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0377	0.0241	0.3422	1.0600e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304			105.8482	2.7300e-003		105.9166
Total	**0.0559**	**0.5994**	**0.5411**	**3.6400e-003**	**0.1730**	**1.8900e-003**	**0.1749**	**0.0464**	**1.7800e-003**	**0.0482**			**386.3959**	**0.0212**		**386.9250**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.8000e-004	0.0000	8.8000e-004	1.3000e-004	0.0000	1.3000e-004			0.0000			0.0000
Off-Road	0.4089	3.6939	4.1273	0.0128		0.1424	0.1424		0.1326	0.1326			1,210.5444	0.3764		1,219.9537
Total	**0.4089**	**3.6939**	**4.1273**	**0.0128**	**8.8000e-004**	**0.1424**	**0.1433**	**1.3000e-004**	**0.1326**	**0.1327**			**1,210.5444**	**0.3764**		**1,219.9537**

3.4 Backfill and foundation piles - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0182	0.5754	0.1989	2.5800e-003	0.0612	1.0400e-003	0.0623	0.0168	1.0000e-003	0.0178			280.5477	0.0184		281.0085
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0377	0.0241	0.3422	1.0600e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304			105.8482	2.7300e-003		105.9166
Total	**0.0559**	**0.5994**	**0.5411**	**3.6400e-003**	**0.1730**	**1.8900e-003**	**0.1749**	**0.0464**	**1.7800e-003**	**0.0482**			**386.3959**	**0.0212**		**386.9250**

3.5 Trenching - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4232	4.2036	3.7486	9.4000e-003		0.1652	0.1652		0.1519	0.1519			910.1654	0.2944		917.5246
Total	**0.4232**	**4.2036**	**3.7486**	**9.4000e-003**		**0.1652**	**0.1652**		**0.1519**	**0.1519**			**910.1654**	**0.2944**		**917.5246**

3.5 Trenching - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0189	0.0120	0.1711	5.3000e-004	0.0559	4.3000e-004	0.0563	0.0148	3.9000e-004	0.0152			52.9241	1.3700e-003		52.9583
Total	**0.0189**	**0.0120**	**0.1711**	**5.3000e-004**	**0.0559**	**4.3000e-004**	**0.0563**	**0.0148**	**3.9000e-004**	**0.0152**			**52.9241**	**1.3700e-003**		**52.9583**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4232	4.2036	3.7486	9.4000e-003		0.1652	0.1652		0.1519	0.1519			910.1654	0.2944		917.5246
Total	**0.4232**	**4.2036**	**3.7486**	**9.4000e-003**		**0.1652**	**0.1652**		**0.1519**	**0.1519**			**910.1654**	**0.2944**		**917.5246**

3.5 Trenching - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0189	0.0120	0.1711	5.3000e-004	0.0559	4.3000e-004	0.0563	0.0148	3.9000e-004	0.0152			52.9241	1.3700e-003		52.9583
Total	**0.0189**	**0.0120**	**0.1711**	**5.3000e-004**	**0.0559**	**4.3000e-004**	**0.0563**	**0.0148**	**3.9000e-004**	**0.0152**			**52.9241**	**1.3700e-003**		**52.9583**

3.6 Tank construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5063	4.9439	2.7429	9.8800e-003		0.1833	0.1833		0.1698	0.1698			938.5149	0.2924		945.8259
Total	**0.5063**	**4.9439**	**2.7429**	**9.8800e-003**		**0.1833**	**0.1833**		**0.1698**	**0.1698**			**938.5149**	**0.2924**		**945.8259**

3.6 Tank construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	6.3500e-003	0.2102	0.0651	7.4000e-004	0.0192	2.4000e-004	0.0195	5.5300e-003	2.3000e-004	5.7600e-003			79.1722	4.1600e-003		79.2762
Worker	0.0302	0.0193	0.2738	8.5000e-004	0.0894	6.8000e-004	0.0901	0.0237	6.3000e-004	0.0243			84.6786	2.1900e-003		84.7332
Total	**0.0365**	**0.2294**	**0.3388**	**1.5900e-003**	**0.1086**	**9.2000e-004**	**0.1096**	**0.0292**	**8.6000e-004**	**0.0301**			**163.8508**	**6.3500e-003**		**164.0094**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5063	4.9439	2.7429	9.8800e-003		0.1833	0.1833		0.1698	0.1698			938.5149	0.2924		945.8259
Total	**0.5063**	**4.9439**	**2.7429**	**9.8800e-003**		**0.1833**	**0.1833**		**0.1698**	**0.1698**			**938.5149**	**0.2924**		**945.8259**

3.6 Tank construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	6.3500e-003	0.2102	0.0651	7.4000e-004	0.0192	2.4000e-004	0.0195	5.5300e-003	2.3000e-004	5.7600e-003			79.1722	4.1600e-003		79.2762
Worker	0.0302	0.0193	0.2738	8.5000e-004	0.0894	6.8000e-004	0.0901	0.0237	6.3000e-004	0.0243			84.6786	2.1900e-003		84.7332
Total	**0.0365**	**0.2294**	**0.3388**	**1.5900e-003**	**0.1086**	**9.2000e-004**	**0.1096**	**0.0292**	**8.6000e-004**	**0.0301**			**163.8508**	**6.3500e-003**		**164.0094**

3.7 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1345	1.4089	1.6207	2.3000e-003		0.0775	0.0775		0.0713	0.0713			222.3442	0.0719		224.1420
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.1345**	**1.4089**	**1.6207**	**2.3000e-003**		**0.0775**	**0.0775**		**0.0713**	**0.0713**			**222.3442**	**0.0719**		**224.1420**

3.7 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0113	7.2200e-003	0.1027	3.2000e-004	0.0335	2.6000e-004	0.0338	8.8900e-003	2.3000e-004	9.1300e-003			31.7545	8.2000e-004		31.7750
Total	**0.0113**	**7.2200e-003**	**0.1027**	**3.2000e-004**	**0.0335**	**2.6000e-004**	**0.0338**	**8.8900e-003**	**2.3000e-004**	**9.1300e-003**			**31.7545**	**8.2000e-004**		**31.7750**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1345	1.4089	1.6207	2.3000e-003		0.0775	0.0775		0.0713	0.0713			222.3442	0.0719		224.1420
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.1345**	**1.4089**	**1.6207**	**2.3000e-003**		**0.0775**	**0.0775**		**0.0713**	**0.0713**			**222.3442**	**0.0719**		**224.1420**

3.7 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0113	7.2200e-003	0.1027	3.2000e-004	0.0335	2.6000e-004	0.0338	8.8900e-003	2.3000e-004	9.1300e-003			31.7545	8.2000e-004		31.7750
Total	**0.0113**	**7.2200e-003**	**0.1027**	**3.2000e-004**	**0.0335**	**2.6000e-004**	**0.0338**	**8.8900e-003**	**2.3000e-004**	**9.1300e-003**			**31.7545**	**8.2000e-004**		**31.7750**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.545348	0.044620	0.206559	0.118451	0.015002	0.006253	0.020617	0.031756	0.002560	0.002071	0.005217	0.000696	0.000850

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.4021	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			2.2000e-004	0.0000		2.3000e-004
Unmitigated	0.4021	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0457					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3564					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			2.2000e-004	0.0000		2.3000e-004
Total	**0.4021**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**			**2.2000e-004**	**0.0000**		**2.3000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0457					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3564					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			2.2000e-004	0.0000		2.3000e-004
Total	**0.4021**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**			**2.2000e-004**	**0.0000**		**2.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Malibu Civic Tank

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.40	18,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	448	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Malibu Civic Tank - Los Angeles-South Coast County, Winter

Project Characteristics - SCE CO2 Intensity for 2024

Land Use - Lot acreage estimated from site plan

Construction Phase - Schedule per client

Off-road Equipment - Drill rig for piles

Off-road Equipment - No saws needed

Off-road Equipment - Client provided data

Off-road Equipment - Client provided data

Off-road Equipment - Client provided data

Off-road Equipment - Client provided data

Trips and VMT - Backfill import trips by client

Grading -

Energy Use - Estimate 8600 kwh/yr for pump station and tank site lighting

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	1.00	23.00
tblConstructionPhase	NumDays	2.00	10.00
tblConstructionPhase	NumDays	2.00	20.00
tblConstructionPhase	NumDays	100.00	158.00
tblConstructionPhase	NumDays	5.00	26.00
tblEnergyUse	LightingElect	0.00	0.48
tblGrading	AcresOfGrading	0.00	11.50
tblGrading	MaterialImported	0.00	345.00
tblLandUse	LandUseSquareFeet	0.00	18,000.00
tblLandUse	LotAcreage	0.00	0.40
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.36	0.36

tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Cement and Mortar Mixers
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	1.00	8.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	448
tblTripsAndVMT	HaulingTripNumber	43.00	70.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	0.5468	5.1744	4.6465	0.0163	0.5861	0.1843	0.7517	0.0721	0.1707	0.2244			1,585.8898	0.3979	0.0000	1,595.8372
Maximum	**0.5468**	**5.1744**	**4.6465**	**0.0163**	**0.5861**	**0.1843**	**0.7517**	**0.0721**	**0.1707**	**0.2244**			**1,585.8898**	**0.3979**	**0.0000**	**1,595.8372**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	0.5468	5.1744	4.6465	0.0163	0.2945	0.1843	0.4601	0.0466	0.1707	0.1999			1,585.8898	0.3979	0.0000	1,595.8372
Maximum	**0.5468**	**5.1744**	**4.6465**	**0.0163**	**0.2945**	**0.1843**	**0.4601**	**0.0466**	**0.1707**	**0.1999**			**1,585.8898**	**0.3979**	**0.0000**	**1,595.8372**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**49.76**	**0.00**	**38.80**	**35.41**	**0.00**	**10.91**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.4021	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Total	**0.4021**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.4021	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Total	**0.4021**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/2/2023	2/1/2023	5	23	
2	Excavation	Grading	2/2/2023	2/15/2023	5	10	
3	Backfill and foundation piles	Grading	2/16/2023	3/15/2023	5	20	
4	Trenching	Trenching	3/16/2023	4/7/2023	5	17	
5	Tank construction	Building Construction	4/8/2023	11/15/2023	5	158	
6	Paving	Paving	11/16/2023	12/21/2023	5	26	

Acres of Grading (Site Preparation Phase): 11.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

OffRoad Equipment

Malibu Civic Tank - Los Angeles-South Coast County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	0	8.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Excavation	Concrete/Industrial Saws	0	0.00	81	0.73
Excavation	Rubber Tired Dozers	0	8.00	247	0.40
Excavation	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Tank construction	Cranes	1	4.00	231	0.29
Tank construction	Forklifts	0	6.00	89	0.20
Tank construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Paving	Pavers	0	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Backfill and foundation piles	Bore/Drill Rigs	1	8.00	221	0.50
Backfill and foundation piles	Concrete/Industrial Saws	0	0.00	81	0.73
Backfill and foundation piles	Plate Compactors	2	8.00	8	0.43
Backfill and foundation piles	Rollers	0	8.00	80	0.38
Backfill and foundation piles	Rubber Tired Dozers	0	1.00	247	0.40
Backfill and foundation piles	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Rubber Tired Loaders	1	8.00	203	0.36
Excavation	Rubber Tired Loaders	1	8.00	203	0.36
Trenching	Rubber Tired Loaders	1	8.00	203	0.36
Tank construction	Rubber Tired Loaders	1	8.00	203	0.36
Tank construction	Cement and Mortar Mixers	1	8.00	9	0.56

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Excavation	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Tank construction	3	8.00	3.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Backfill and foundation piles	4	10.00	0.00	70.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	0.4232	4.2036	3.7486	9.4000e-003		0.1652	0.1652		0.1519	0.1519			910.1654	0.2944		917.5246
Total	**0.4232**	**4.2036**	**3.7486**	**9.4000e-003**	**0.5303**	**0.1652**	**0.6954**	**0.0573**	**0.1519**	**0.2092**			**910.1654**	**0.2944**		**917.5246**

3.2 Site Preparation - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0211	0.0133	0.1559	5.0000e-004	0.0559	4.3000e-004	0.0563	0.0148	3.9000e-004	0.0152			49.8360	1.2800e-003		49.8681
Total	**0.0211**	**0.0133**	**0.1559**	**5.0000e-004**	**0.0559**	**4.3000e-004**	**0.0563**	**0.0148**	**3.9000e-004**	**0.0152**			**49.8360**	**1.2800e-003**		**49.8681**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2386	0.0000	0.2386	0.0258	0.0000	0.0258			0.0000			0.0000
Off-Road	0.4232	4.2036	3.7486	9.4000e-003		0.1652	0.1652		0.1519	0.1519			910.1654	0.2944		917.5246
Total	**0.4232**	**4.2036**	**3.7486**	**9.4000e-003**	**0.2386**	**0.1652**	**0.4038**	**0.0258**	**0.1519**	**0.1777**			**910.1654**	**0.2944**		**917.5246**

3.2 Site Preparation - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0211	0.0133	0.1559	5.0000e-004	0.0559	4.3000e-004	0.0563	0.0148	3.9000e-004	0.0152			49.8360	1.2800e-003		49.8681
Total	**0.0211**	**0.0133**	**0.1559**	**5.0000e-004**	**0.0559**	**4.3000e-004**	**0.0563**	**0.0148**	**3.9000e-004**	**0.0152**			**49.8360**	**1.2800e-003**		**49.8681**

3.3 Excavation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3854	3.8197	3.1908	8.6200e-003		0.1462	0.1462		0.1345	0.1345			834.7713	0.2700		841.5209
Total	**0.3854**	**3.8197**	**3.1908**	**8.6200e-003**	**0.0000**	**0.1462**	**0.1462**	**0.0000**	**0.1345**	**0.1345**			**834.7713**	**0.2700**		**841.5209**

3.3 Excavation - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0211	0.0133	0.1559	5.0000e-004	0.0559	4.3000e-004	0.0563	0.0148	3.9000e-004	0.0152			49.8360	1.2800e-003		49.8681
Total	**0.0211**	**0.0133**	**0.1559**	**5.0000e-004**	**0.0559**	**4.3000e-004**	**0.0563**	**0.0148**	**3.9000e-004**	**0.0152**			**49.8360**	**1.2800e-003**		**49.8681**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3854	3.8197	3.1908	8.6200e-003		0.1462	0.1462		0.1345	0.1345			834.7713	0.2700		841.5209
Total	**0.3854**	**3.8197**	**3.1908**	**8.6200e-003**	**0.0000**	**0.1462**	**0.1462**	**0.0000**	**0.1345**	**0.1345**			**834.7713**	**0.2700**		**841.5209**

3.3 Excavation - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0211	0.0133	0.1559	5.0000e-004	0.0559	4.3000e-004	0.0563	0.0148	3.9000e-004	0.0152			49.8360	1.2800e-003		49.8681
Total	**0.0211**	**0.0133**	**0.1559**	**5.0000e-004**	**0.0559**	**4.3000e-004**	**0.0563**	**0.0148**	**3.9000e-004**	**0.0152**			**49.8360**	**1.2800e-003**		**49.8681**

3.4 Backfill and foundation piles - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.9500e-003	0.0000	1.9500e-003	3.0000e-004	0.0000	3.0000e-004			0.0000			0.0000
Off-Road	0.4089	3.6939	4.1273	0.0128		0.1424	0.1424		0.1326	0.1326			1,210.5444	0.3764		1,219.9537
Total	**0.4089**	**3.6939**	**4.1273**	**0.0128**	**1.9500e-003**	**0.1424**	**0.1444**	**3.0000e-004**	**0.1326**	**0.1329**			**1,210.5444**	**0.3764**		**1,219.9537**

3.4 Backfill and foundation piles - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0187	0.5794	0.2074	2.5300e-003	0.0612	1.0700e-003	0.0623	0.0168	1.0300e-003	0.0178			275.6734	0.0190		276.1474
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0422	0.0266	0.3118	1.0000e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304			99.6721	2.5700e-003		99.7362
Total	**0.0609**	**0.6061**	**0.5192**	**3.5300e-003**	**0.1730**	**1.9200e-003**	**0.1749**	**0.0464**	**1.8100e-003**	**0.0482**			**375.3454**	**0.0215**		**375.8835**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.8000e-004	0.0000	8.8000e-004	1.3000e-004	0.0000	1.3000e-004			0.0000			0.0000
Off-Road	0.4089	3.6939	4.1273	0.0128		0.1424	0.1424		0.1326	0.1326			1,210.5444	0.3764		1,219.9537
Total	**0.4089**	**3.6939**	**4.1273**	**0.0128**	**8.8000e-004**	**0.1424**	**0.1433**	**1.3000e-004**	**0.1326**	**0.1327**			**1,210.5444**	**0.3764**		**1,219.9537**

3.4 Backfill and foundation piles - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0187	0.5794	0.2074	2.5300e-003	0.0612	1.0700e-003	0.0623	0.0168	1.0300e-003	0.0178			275.6734	0.0190		276.1474
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0422	0.0266	0.3118	1.0000e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304			99.6721	2.5700e-003		99.7362
Total	**0.0609**	**0.6061**	**0.5192**	**3.5300e-003**	**0.1730**	**1.9200e-003**	**0.1749**	**0.0464**	**1.8100e-003**	**0.0482**			**375.3454**	**0.0215**		**375.8835**

3.5 Trenching - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4232	4.2036	3.7486	9.4000e-003		0.1652	0.1652		0.1519	0.1519			910.1654	0.2944		917.5246
Total	**0.4232**	**4.2036**	**3.7486**	**9.4000e-003**		**0.1652**	**0.1652**		**0.1519**	**0.1519**			**910.1654**	**0.2944**		**917.5246**

3.5 Trenching - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0211	0.0133	0.1559	5.0000e-004	0.0559	4.3000e-004	0.0563	0.0148	3.9000e-004	0.0152			49.8360	1.2800e-003		49.8681
Total	**0.0211**	**0.0133**	**0.1559**	**5.0000e-004**	**0.0559**	**4.3000e-004**	**0.0563**	**0.0148**	**3.9000e-004**	**0.0152**			**49.8360**	**1.2800e-003**		**49.8681**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4232	4.2036	3.7486	9.4000e-003		0.1652	0.1652		0.1519	0.1519			910.1654	0.2944		917.5246
Total	**0.4232**	**4.2036**	**3.7486**	**9.4000e-003**		**0.1652**	**0.1652**		**0.1519**	**0.1519**			**910.1654**	**0.2944**		**917.5246**

3.5 Trenching - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0211	0.0133	0.1559	5.0000e-004	0.0559	4.3000e-004	0.0563	0.0148	3.9000e-004	0.0152			49.8360	1.2800e-003		49.8681
Total	**0.0211**	**0.0133**	**0.1559**	**5.0000e-004**	**0.0559**	**4.3000e-004**	**0.0563**	**0.0148**	**3.9000e-004**	**0.0152**			**49.8360**	**1.2800e-003**		**49.8681**

3.6 Tank construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5063	4.9439	2.7429	9.8800e-003		0.1833	0.1833		0.1698	0.1698			938.5149	0.2924		945.8259
Total	**0.5063**	**4.9439**	**2.7429**	**9.8800e-003**		**0.1833**	**0.1833**		**0.1698**	**0.1698**			**938.5149**	**0.2924**		**945.8259**

3.6 Tank construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	6.6800e-003	0.2092	0.0709	7.2000e-004	0.0192	2.6000e-004	0.0195	5.5300e-003	2.4000e-004	5.7700e-003			77.0224	4.4000e-003		77.1323
Worker	0.0338	0.0213	0.2494	8.0000e-004	0.0894	6.8000e-004	0.0901	0.0237	6.3000e-004	0.0243			79.7377	2.0500e-003		79.7890
Total	**0.0404**	**0.2305**	**0.3203**	**1.5200e-003**	**0.1086**	**9.4000e-004**	**0.1096**	**0.0292**	**8.7000e-004**	**0.0301**			**156.7600**	**6.4500e-003**		**156.9213**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5063	4.9439	2.7429	9.8800e-003		0.1833	0.1833		0.1698	0.1698			938.5149	0.2924		945.8259
Total	**0.5063**	**4.9439**	**2.7429**	**9.8800e-003**		**0.1833**	**0.1833**		**0.1698**	**0.1698**			**938.5149**	**0.2924**		**945.8259**

3.6 Tank construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	6.6800e-003	0.2092	0.0709	7.2000e-004	0.0192	2.6000e-004	0.0195	5.5300e-003	2.4000e-004	5.7700e-003			77.0224	4.4000e-003		77.1323
Worker	0.0338	0.0213	0.2494	8.0000e-004	0.0894	6.8000e-004	0.0901	0.0237	6.3000e-004	0.0243			79.7377	2.0500e-003		79.7890
Total	**0.0404**	**0.2305**	**0.3203**	**1.5200e-003**	**0.1086**	**9.4000e-004**	**0.1096**	**0.0292**	**8.7000e-004**	**0.0301**			**156.7600**	**6.4500e-003**		**156.9213**

3.7 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1345	1.4089	1.6207	2.3000e-003		0.0775	0.0775		0.0713	0.0713			222.3442	0.0719		224.1420
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.1345**	**1.4089**	**1.6207**	**2.3000e-003**		**0.0775**	**0.0775**		**0.0713**	**0.0713**			**222.3442**	**0.0719**		**224.1420**

3.7 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0127	7.9900e-003	0.0935	3.0000e-004	0.0335	2.6000e-004	0.0338	8.8900e-003	2.3000e-004	9.1300e-003			29.9016	7.7000e-004		29.9209
Total	**0.0127**	**7.9900e-003**	**0.0935**	**3.0000e-004**	**0.0335**	**2.6000e-004**	**0.0338**	**8.8900e-003**	**2.3000e-004**	**9.1300e-003**			**29.9016**	**7.7000e-004**		**29.9209**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1345	1.4089	1.6207	2.3000e-003		0.0775	0.0775		0.0713	0.0713			222.3442	0.0719		224.1420
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.1345**	**1.4089**	**1.6207**	**2.3000e-003**		**0.0775**	**0.0775**		**0.0713**	**0.0713**			**222.3442**	**0.0719**		**224.1420**

3.7 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0127	7.9900e-003	0.0935	3.0000e-004	0.0335	2.6000e-004	0.0338	8.8900e-003	2.3000e-004	9.1300e-003			29.9016	7.7000e-004		29.9209
Total	**0.0127**	**7.9900e-003**	**0.0935**	**3.0000e-004**	**0.0335**	**2.6000e-004**	**0.0338**	**8.8900e-003**	**2.3000e-004**	**9.1300e-003**			**29.9016**	**7.7000e-004**		**29.9209**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.545348	0.044620	0.206559	0.118451	0.015002	0.006253	0.020617	0.031756	0.002560	0.002071	0.005217	0.000696	0.000850

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.4021	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			2.2000e-004	0.0000		2.3000e-004
Unmitigated	0.4021	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0457					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3564					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			2.2000e-004	0.0000		2.3000e-004
Total	**0.4021**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**			**2.2000e-004**	**0.0000**		**2.3000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0457					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3564					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			2.2000e-004	0.0000		2.3000e-004
Total	**0.4021**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**			**2.2000e-004**	**0.0000**		**2.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Malibu Civic Watermains

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	15.12	1000sqft	0.35	15,123.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	460.6	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Malibu Civic Watermains - Los Angeles-South Coast County, Annual

Project Characteristics - SCE CO2 Intensity for 2023

Land Use - Area based on client 5,041 linear ft x 3 ft wide

Construction Phase - phases based on client input

Off-road Equipment - Equipment based on client input

Off-road Equipment - Equipment based on client input

Off-road Equipment - Equipment based on client input

Off-road Equipment - Equipment based on client input and engr judgment

Off-road Equipment - Equipment based on client input

Trips and VMT - Hauling trips based on client input
Trenching/backfill vendor trips are on-site material

Demolition -

Grading - Export and import based on client input

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	39.00
tblConstructionPhase	NumDays	10.00	38.00
tblConstructionPhase	NumDays	2.00	39.00
tblConstructionPhase	NumDays	2.00	38.00
tblConstructionPhase	NumDays	5.00	38.00
tblGrading	AcresOfGrading	0.00	0.50
tblGrading	MaterialExported	0.00	1,680.00
tblGrading	MaterialImported	0.00	413.00
tblLandUse	LandUseSquareFeet	15,120.00	15,123.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	4.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	1.00	0.00
tblOffRoadEquipment	UsageHours	1.00	0.00
tblOffRoadEquipment	UsageHours	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	460.6
tblTripsAndVMT	HaulingTripNumber	42.00	56.00
tblTripsAndVMT	HaulingTripNumber	210.00	336.00
tblTripsAndVMT	HaulingTripNumber	52.00	82.00
tblTripsAndVMT	VendorTripLength	6.90	2.00
tblTripsAndVMT	VendorTripLength	6.90	2.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	WorkerTripNumber	5.00	8.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0377	0.4001	0.4153	8.0000e-004	0.0165	0.0190	0.0354	3.8600e-003	0.0175	0.0213			72.8048	0.0162	0.0000	73.2097
2023	1.8800e-003	0.0158	0.0208	3.0000e-005	5.7000e-004	7.8000e-004	1.3400e-003	1.5000e-004	7.2000e-004	8.7000e-004			2.9406	7.5000e-004	0.0000	2.9594
Maximum	**0.0377**	**0.4001**	**0.4153**	**8.0000e-004**	**0.0165**	**0.0190**	**0.0354**	**3.8600e-003**	**0.0175**	**0.0213**			**72.8048**	**0.0162**	**0.0000**	**73.2097**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0377	0.4001	0.4153	8.0000e-004	0.0138	0.0190	0.0328	3.4600e-003	0.0175	0.0209			72.8048	0.0162	0.0000	73.2097
2023	1.8800e-003	0.0158	0.0208	3.0000e-005	5.7000e-004	7.8000e-004	1.3400e-003	1.5000e-004	7.2000e-004	8.7000e-004			2.9406	7.5000e-004	0.0000	2.9594
Maximum	**0.0377**	**0.4001**	**0.4153**	**8.0000e-004**	**0.0138**	**0.0190**	**0.0328**	**3.4600e-003**	**0.0175**	**0.0209**			**72.8048**	**0.0162**	**0.0000**	**73.2097**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**15.74**	**0.00**	**7.29**	**9.98**	**0.00**	**1.80**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**4-21-2022**	**7-20-2022**	0.1687	0.1687
2	**7-21-2022**	**10-20-2022**	0.1642	0.1642
3	**10-21-2022**	**1-20-2023**	0.1137	0.1137
		Highest	0.1687	0.1687

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.2100e-003	0.0000	1.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			3.8000e-004	0.0000	0.0000	4.0000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total	**1.2100e-003**	**0.0000**	**1.9000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**3.8000e-004**	**0.0000**	**0.0000**	**4.0000e-004**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.2100e-003	0.0000	1.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			3.8000e-004	0.0000	0.0000	4.0000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total	**1.2100e-003**	**0.0000**	**1.9000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**3.8000e-004**	**0.0000**	**0.0000**	**4.0000e-004**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	4/21/2022	6/13/2022	5	38	
2	Trenching	Grading	6/14/2022	8/5/2022	5	39	
3	Pipe installation	Building Construction	8/8/2022	9/29/2022	5	39	
4	Backfill	Grading	9/30/2022	11/22/2022	5	38	
5	Paving	Paving	11/23/2022	1/13/2023	5	38	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.35

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	0.00	81	0.73
Demolition	Rubber Tired Dozers	0	0.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Trenching	Concrete/Industrial Saws	0	0.00	81	0.73
Trenching	Graders	0	0.00	187	0.41
Trenching	Rubber Tired Dozers	0	0.00	247	0.40
Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Trenching	Trenchers	1	8.00	78	0.50
Pipe installation	Concrete/Industrial Saws	0	0.00	81	0.73
Pipe installation	Cranes	0	0.00	231	0.29
Pipe installation	Forklifts	2	6.00	89	0.20
Pipe installation	Rubber Tired Dozers	0	0.00	247	0.40
Pipe installation	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Backfill	Concrete/Industrial Saws	0	0.00	81	0.73
Backfill	Rubber Tired Dozers	0	0.00	247	0.40
Backfill	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	0	0.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	2	8.00	0.00	56.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	5.00	4.00	336.00	14.70	2.00	20.00	LD_Mix	HDT_Mix	HHDT
Pipe installation	4	6.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Backfill	2	5.00	4.00	82.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	3	10.00	2.00	0.00	14.70	2.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.4900e-003	0.0000	4.4900e-003	6.8000e-004	0.0000	6.8000e-004			0.0000	0.0000	0.0000	0.0000
Off-Road	4.6900e-003	0.0478	0.0638	9.0000e-005		2.5700e-003	2.5700e-003		2.3600e-003	2.3600e-003			7.7885	2.5200e-003	0.0000	7.8514
Total	**4.6900e-003**	**0.0478**	**0.0638**	**9.0000e-005**	**4.4900e-003**	**2.5700e-003**	**7.0600e-003**	**6.8000e-004**	**2.3600e-003**	**3.0400e-003**			**7.7885**	**2.5200e-003**	**0.0000**	**7.8514**

3.2 Demolition - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.2000e-004	7.1900e-003	1.7900e-003	2.0000e-005	4.8000e-004	2.0000e-005	5.0000e-004	1.3000e-004	2.0000e-005	1.5000e-004			2.1091	1.5000e-004	0.0000	2.1127
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	6.1000e-004	4.6000e-004	5.3000e-003	2.0000e-005	1.6700e-003	1.0000e-005	1.6800e-003	4.4000e-004	1.0000e-005	4.5000e-004			1.4503	4.0000e-005	0.0000	1.4513
Total	**8.3000e-004**	**7.6500e-003**	**7.0900e-003**	**4.0000e-005**	**2.1500e-003**	**3.0000e-005**	**2.1800e-003**	**5.7000e-004**	**3.0000e-005**	**6.0000e-004**			**3.5594**	**1.9000e-004**	**0.0000**	**3.5640**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.0200e-003	0.0000	2.0200e-003	3.1000e-004	0.0000	3.1000e-004			0.0000	0.0000	0.0000	0.0000
Off-Road	4.6900e-003	0.0478	0.0638	9.0000e-005		2.5700e-003	2.5700e-003		2.3600e-003	2.3600e-003			7.7885	2.5200e-003	0.0000	7.8514
Total	**4.6900e-003**	**0.0478**	**0.0638**	**9.0000e-005**	**2.0200e-003**	**2.5700e-003**	**4.5900e-003**	**3.1000e-004**	**2.3600e-003**	**2.6700e-003**			**7.7885**	**2.5200e-003**	**0.0000**	**7.8514**

3.2 Demolition - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.2000e-004	7.1900e-003	1.7900e-003	2.0000e-005	4.8000e-004	2.0000e-005	5.0000e-004	1.3000e-004	2.0000e-005	1.5000e-004			2.1091	1.5000e-004	0.0000	2.1127
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Worker	6.1000e-004	4.6000e-004	5.3000e-003	2.0000e-005	1.6700e-003	1.0000e-005	1.6800e-003	4.4000e-004	1.0000e-005	4.5000e-004			1.4503	4.0000e-005	0.0000	1.4513
Total	**8.3000e-004**	**7.6500e-003**	**7.0900e-003**	**4.0000e-005**	**2.1500e-003**	**3.0000e-005**	**2.1800e-003**	**5.7000e-004**	**3.0000e-005**	**6.0000e-004**			**3.5594**	**1.9000e-004**	**0.0000**	**3.5640**

3.3 Trenching - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.6000e-004	0.0000	3.6000e-004	4.0000e-005	0.0000	4.0000e-005			0.0000	0.0000	0.0000	0.0000
Off-Road	0.0103	0.0986	0.0943	1.3000e-004		6.4300e-003	6.4300e-003		5.9100e-003	5.9100e-003			11.1127	3.5900e-003	0.0000	11.2026
Total	**0.0103**	**0.0986**	**0.0943**	**1.3000e-004**	**3.6000e-004**	**6.4300e-003**	**6.7900e-003**	**4.0000e-005**	**5.9100e-003**	**5.9500e-003**			**11.1127**	**3.5900e-003**	**0.0000**	**11.2026**

3.3 Trenching - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3500e-003	0.0432	0.0107	1.3000e-004	2.8900e-003	1.2000e-004	3.0100e-003	7.9000e-004	1.2000e-004	9.1000e-004			12.6543	8.8000e-004	0.0000	12.6762
Vendor	1.4000e-004	5.2300e-003	1.3300e-003	1.0000e-005	1.4000e-004	1.0000e-005	1.5000e-004	4.0000e-005	0.0000	5.0000e-005			0.8391	8.0000e-005	0.0000	0.8410
Worker	3.9000e-004	2.9000e-004	3.4000e-003	1.0000e-005	1.0700e-003	1.0000e-005	1.0800e-003	2.8000e-004	1.0000e-005	2.9000e-004			0.9303	3.0000e-005	0.0000	0.9309
Total	**1.8800e-003**	**0.0487**	**0.0155**	**1.5000e-004**	**4.1000e-003**	**1.4000e-004**	**4.2400e-003**	**1.1100e-003**	**1.3000e-004**	**1.2500e-003**			**14.4237**	**9.9000e-004**	**0.0000**	**14.4481**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.6000e-004	0.0000	1.6000e-004	2.0000e-005	0.0000	2.0000e-005			0.0000	0.0000	0.0000	0.0000
Off-Road	0.0103	0.0986	0.0943	1.3000e-004		6.4300e-003	6.4300e-003		5.9100e-003	5.9100e-003			11.1127	3.5900e-003	0.0000	11.2026
Total	**0.0103**	**0.0986**	**0.0943**	**1.3000e-004**	**1.6000e-004**	**6.4300e-003**	**6.5900e-003**	**2.0000e-005**	**5.9100e-003**	**5.9300e-003**			**11.1127**	**3.5900e-003**	**0.0000**	**11.2026**

3.3 Trenching - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3500e-003	0.0432	0.0107	1.3000e-004	2.8900e-003	1.2000e-004	3.0100e-003	7.9000e-004	1.2000e-004	9.1000e-004			12.6543	8.8000e-004	0.0000	12.6762
Vendor	1.4000e-004	5.2300e-003	1.3300e-003	1.0000e-005	1.4000e-004	1.0000e-005	1.5000e-004	4.0000e-005	0.0000	5.0000e-005			0.8391	8.0000e-005	0.0000	0.8410
Worker	3.9000e-004	2.9000e-004	3.4000e-003	1.0000e-005	1.0700e-003	1.0000e-005	1.0800e-003	2.8000e-004	1.0000e-005	2.9000e-004			0.9303	3.0000e-005	0.0000	0.9309
Total	**1.8800e-003**	**0.0487**	**0.0155**	**1.5000e-004**	**4.1000e-003**	**1.4000e-004**	**4.2400e-003**	**1.1100e-003**	**1.3000e-004**	**1.2500e-003**			**14.4237**	**9.9000e-004**	**0.0000**	**14.4481**

3.4 Pipe installation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.1400e-003	0.0799	0.0992	1.4000e-004		4.6800e-003	4.6800e-003		4.3100e-003	4.3100e-003			11.9214	3.8600e-003	0.0000	12.0178
Total	**8.1400e-003**	**0.0799**	**0.0992**	**1.4000e-004**		**4.6800e-003**	**4.6800e-003**		**4.3100e-003**	**4.3100e-003**			**11.9214**	**3.8600e-003**	**0.0000**	**12.0178**

3.4 Pipe installation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Vendor	1.1000e-004	3.6600e-003	9.9000e-004	1.0000e-005	2.5000e-004	1.0000e-005	2.5000e-004	7.0000e-005	1.0000e-005	8.0000e-005			0.9529	6.0000e-005	0.0000	0.9543
Worker	4.7000e-004	3.5000e-004	4.0800e-003	1.0000e-005	1.2800e-003	1.0000e-005	1.2900e-003	3.4000e-004	1.0000e-005	3.5000e-004			1.1164	3.0000e-005	0.0000	1.1171
Total	**5.8000e-004**	**4.0100e-003**	**5.0700e-003**	**2.0000e-005**	**1.5300e-003**	**2.0000e-005**	**1.5400e-003**	**4.1000e-004**	**2.0000e-005**	**4.3000e-004**			**2.0693**	**9.0000e-005**	**0.0000**	**2.0715**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.1400e-003	0.0799	0.0992	1.4000e-004		4.6800e-003	4.6800e-003		4.3100e-003	4.3100e-003			11.9214	3.8600e-003	0.0000	12.0178
Total	**8.1400e-003**	**0.0799**	**0.0992**	**1.4000e-004**		**4.6800e-003**	**4.6800e-003**		**4.3100e-003**	**4.3100e-003**			**11.9214**	**3.8600e-003**	**0.0000**	**12.0178**

3.4 Pipe installation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Vendor	1.1000e-004	3.6600e-003	9.9000e-004	1.0000e-005	2.5000e-004	1.0000e-005	2.5000e-004	7.0000e-005	1.0000e-005	8.0000e-005			0.9529	6.0000e-005	0.0000	0.9543
Worker	4.7000e-004	3.5000e-004	4.0800e-003	1.0000e-005	1.2800e-003	1.0000e-005	1.2900e-003	3.4000e-004	1.0000e-005	3.5000e-004			1.1164	3.0000e-005	0.0000	1.1171
Total	**5.8000e-004**	**4.0100e-003**	**5.0700e-003**	**2.0000e-005**	**1.5300e-003**	**2.0000e-005**	**1.5400e-003**	**4.1000e-004**	**2.0000e-005**	**4.3000e-004**			**2.0693**	**9.0000e-005**	**0.0000**	**2.0715**

3.5 Backfill - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Off-Road	4.6900e-003	0.0478	0.0638	9.0000e-005		2.5700e-003	2.5700e-003		2.3600e-003	2.3600e-003			7.7885	2.5200e-003	0.0000	7.8514
Total	**4.6900e-003**	**0.0478**	**0.0638**	**9.0000e-005**	**2.0000e-005**	**2.5700e-003**	**2.5900e-003**	**0.0000**	**2.3600e-003**	**2.3600e-003**			**7.7885**	**2.5200e-003**	**0.0000**	**7.8514**

3.5 Backfill - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.3000e-004	0.0105	2.6200e-003	3.0000e-005	7.0000e-004	3.0000e-005	7.3000e-004	1.9000e-004	3.0000e-005	2.2000e-004			3.0883	2.1000e-004	0.0000	3.0936
Vendor	2.2000e-004	7.1300e-003	1.9200e-003	2.0000e-005	4.8000e-004	1.0000e-005	4.9000e-004	1.4000e-004	1.0000e-005	1.5000e-004			1.8569	1.1000e-004	0.0000	1.8597
Worker	3.8000e-004	2.9000e-004	3.3100e-003	1.0000e-005	1.0400e-003	1.0000e-005	1.0500e-003	2.8000e-004	1.0000e-005	2.8000e-004			0.9065	2.0000e-005	0.0000	0.9071
Total	**9.3000e-004**	**0.0180**	**7.8500e-003**	**6.0000e-005**	**2.2200e-003**	**5.0000e-005**	**2.2700e-003**	**6.1000e-004**	**5.0000e-005**	**6.5000e-004**			**5.8516**	**3.4000e-004**	**0.0000**	**5.8604**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Off-Road	4.6900e-003	0.0478	0.0638	9.0000e-005		2.5700e-003	2.5700e-003		2.3600e-003	2.3600e-003			7.7885	2.5200e-003	0.0000	7.8514
Total	**4.6900e-003**	**0.0478**	**0.0638**	**9.0000e-005**	**1.0000e-005**	**2.5700e-003**	**2.5800e-003**	**0.0000**	**2.3600e-003**	**2.3600e-003**			**7.7885**	**2.5200e-003**	**0.0000**	**7.8514**

3.5 Backfill - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.3000e-004	0.0105	2.6200e-003	3.0000e-005	7.0000e-004	3.0000e-005	7.3000e-004	1.9000e-004	3.0000e-005	2.2000e-004			3.0883	2.1000e-004	0.0000	3.0936
Vendor	2.2000e-004	7.1300e-003	1.9200e-003	2.0000e-005	4.8000e-004	1.0000e-005	4.9000e-004	1.4000e-004	1.0000e-005	1.5000e-004			1.8569	1.1000e-004	0.0000	1.8597
Worker	3.8000e-004	2.9000e-004	3.3100e-003	1.0000e-005	1.0400e-003	1.0000e-005	1.0500e-003	2.8000e-004	1.0000e-005	2.8000e-004			0.9065	2.0000e-005	0.0000	0.9071
Total	**9.3000e-004**	**0.0180**	**7.8500e-003**	**6.0000e-005**	**2.2200e-003**	**5.0000e-005**	**2.2700e-003**	**6.1000e-004**	**5.0000e-005**	**6.5000e-004**			**5.8516**	**3.4000e-004**	**0.0000**	**5.8604**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.6700e-003	0.0455	0.0534	8.0000e-005		2.4700e-003	2.4700e-003		2.2900e-003	2.2900e-003			6.6527	2.0500e-003	0.0000	6.7039
Paving	3.4000e-004					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total	**5.0100e-003**	**0.0455**	**0.0534**	**8.0000e-005**		**2.4700e-003**	**2.4700e-003**		**2.2900e-003**	**2.2900e-003**			**6.6527**	**2.0500e-003**	**0.0000**	**6.7039**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Vendor	5.0000e-005	1.8800e-003	4.8000e-004	0.0000	5.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	2.0000e-005			0.3012	3.0000e-005	0.0000	0.3019
Worker	5.6000e-004	4.2000e-004	4.8800e-003	1.0000e-005	1.5300e-003	1.0000e-005	1.5500e-003	4.1000e-004	1.0000e-005	4.2000e-004			1.3358	4.0000e-005	0.0000	1.3367
Total	**6.1000e-004**	**2.3000e-003**	**5.3600e-003**	**1.0000e-005**	**1.5800e-003**	**1.0000e-005**	**1.6000e-003**	**4.2000e-004**	**1.0000e-005**	**4.4000e-004**			**1.6371**	**7.0000e-005**	**0.0000**	**1.6387**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.6700e-003	0.0455	0.0534	8.0000e-005		2.4700e-003	2.4700e-003		2.2900e-003	2.2900e-003			6.6527	2.0500e-003	0.0000	6.7039
Paving	3.4000e-004					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total	**5.0100e-003**	**0.0455**	**0.0534**	**8.0000e-005**		**2.4700e-003**	**2.4700e-003**		**2.2900e-003**	**2.2900e-003**			**6.6527**	**2.0500e-003**	**0.0000**	**6.7039**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Vendor	5.0000e-005	1.8800e-003	4.8000e-004	0.0000	5.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	2.0000e-005			0.3012	3.0000e-005	0.0000	0.3019
Worker	5.6000e-004	4.2000e-004	4.8800e-003	1.0000e-005	1.5300e-003	1.0000e-005	1.5500e-003	4.1000e-004	1.0000e-005	4.2000e-004			1.3358	4.0000e-005	0.0000	1.3367
Total	**6.1000e-004**	**2.3000e-003**	**5.3600e-003**	**1.0000e-005**	**1.5800e-003**	**1.0000e-005**	**1.6000e-003**	**4.2000e-004**	**1.0000e-005**	**4.4000e-004**			**1.6371**	**7.0000e-005**	**0.0000**	**1.6387**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5600e-003	0.0151	0.0190	3.0000e-005		7.7000e-004	7.7000e-004		7.2000e-004	7.2000e-004			2.3773	7.3000e-004	0.0000	2.3956
Paving	1.2000e-004					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total	**1.6800e-003**	**0.0151**	**0.0190**	**3.0000e-005**		**7.7000e-004**	**7.7000e-004**		**7.2000e-004**	**7.2000e-004**			**2.3773**	**7.3000e-004**	**0.0000**	**2.3956**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	5.5000e-004	1.5000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005			0.1037	1.0000e-005	0.0000	0.1039
Worker	1.9000e-004	1.4000e-004	1.6000e-003	1.0000e-005	5.5000e-004	0.0000	5.5000e-004	1.5000e-004	0.0000	1.5000e-004			0.4596	1.0000e-005	0.0000	0.4599
Total	**2.0000e-004**	**6.9000e-004**	**1.7500e-003**	**1.0000e-005**	**5.7000e-004**	**0.0000**	**5.7000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**			**0.5633**	**2.0000e-005**	**0.0000**	**0.5638**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5600e-003	0.0151	0.0190	3.0000e-005		7.7000e-004	7.7000e-004		7.2000e-004	7.2000e-004			2.3773	7.3000e-004	0.0000	2.3956
Paving	1.2000e-004					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total	**1.6800e-003**	**0.0151**	**0.0190**	**3.0000e-005**		**7.7000e-004**	**7.7000e-004**		**7.2000e-004**	**7.2000e-004**			**2.3773**	**7.3000e-004**	**0.0000**	**2.3956**

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	5.5000e-004	1.5000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005			0.1037	1.0000e-005	0.0000	0.1039
Worker	1.9000e-004	1.4000e-004	1.6000e-003	1.0000e-005	5.5000e-004	0.0000	5.5000e-004	1.5000e-004	0.0000	1.5000e-004			0.4596	1.0000e-005	0.0000	0.4599
Total	**2.0000e-004**	**6.9000e-004**	**1.7500e-003**	**1.0000e-005**	**5.7000e-004**	**0.0000**	**5.7000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**			**0.5633**	**2.0000e-005**	**0.0000**	**0.5638**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.545842	0.044768	0.205288	0.119317	0.015350	0.006227	0.020460	0.031333	0.002546	0.002133	0.005184	0.000692	0.000862

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.2100e-003	0.0000	1.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			3.8000e-004	0.0000	0.0000	4.0000e-004
Unmitigated	1.2100e-003	0.0000	1.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			3.8000e-004	0.0000	0.0000	4.0000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.1000e-004					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Consumer Products	9.8000e-004					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	1.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			3.8000e-004	0.0000	0.0000	4.0000e-004
Total	**1.2100e-003**	**0.0000**	**1.9000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**			**3.8000e-004**	**0.0000**	**0.0000**	**4.0000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.1000e-004					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Consumer Products	9.8000e-004					0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	1.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000			3.8000e-004	0.0000	0.0000	4.0000e-004
Total	**1.2100e-003**	**0.0000**	**1.9000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**			**3.8000e-004**	**0.0000**	**0.0000**	**4.0000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Malibu Civic Watermains

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	15.12	1000sqft	0.35	15,123.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	460.6	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Malibu Civic Watermains - Los Angeles-South Coast County, Summer

Project Characteristics - SCE CO2 Intensity for 2023

Land Use - Area based on client 5,041 linear ft x 3 ft wide

Construction Phase - phases based on client input

Off-road Equipment - Equipment based on client input

Off-road Equipment - Equipment based on client input

Off-road Equipment - Equipment based on client input

Off-road Equipment - Equipment based on client input and engr judgment

Off-road Equipment - Equipment based on client input

Trips and VMT - Hauling trips based on client input
Trenching/backfill vendor trips are on-site material

Demolition -

Grading - Export and import based on client input

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	39.00
tblConstructionPhase	NumDays	10.00	38.00
tblConstructionPhase	NumDays	2.00	39.00
tblConstructionPhase	NumDays	2.00	38.00
tblConstructionPhase	NumDays	5.00	38.00
tblGrading	AcresOfGrading	0.00	0.50
tblGrading	MaterialExported	0.00	1,680.00
tblGrading	MaterialImported	0.00	413.00
tblLandUse	LandUseSquareFeet	15,120.00	15,123.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	4.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	1.00	0.00
tblOffRoadEquipment	UsageHours	1.00	0.00
tblOffRoadEquipment	UsageHours	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	460.6
tblTripsAndVMT	HaulingTripNumber	42.00	56.00
tblTripsAndVMT	HaulingTripNumber	210.00	336.00
tblTripsAndVMT	HaulingTripNumber	52.00	82.00
tblTripsAndVMT	VendorTripLength	6.90	2.00
tblTripsAndVMT	VendorTripLength	6.90	2.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	WorkerTripNumber	5.00	8.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	0.6238	7.4837	5.6219	0.0141	0.3517	0.3364	0.5690	0.0666	0.3098	0.3702			1,452.4430	0.2575	0.0000	1,458.8812
2023	0.3755	3.1636	4.1750	6.8400e-003	0.1155	0.1555	0.2710	0.0307	0.1439	0.1746			653.4217	0.1656	0.0000	657.5628
Maximum	**0.6238**	**7.4837**	**5.6219**	**0.0141**	**0.3517**	**0.3364**	**0.5690**	**0.0666**	**0.3098**	**0.3702**			**1,452.4430**	**0.2575**	**0.0000**	**1,458.8812**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	0.6238	7.4837	5.6219	0.0141	0.2224	0.3364	0.5588	0.0593	0.3098	0.3690			1,452.4430	0.2575	0.0000	1,458.8812
2023	0.3755	3.1636	4.1750	6.8400e-003	0.1155	0.1555	0.2710	0.0307	0.1439	0.1746			653.4217	0.1656	0.0000	657.5628
Maximum	**0.6238**	**7.4837**	**5.6219**	**0.0141**	**0.2224**	**0.3364**	**0.5588**	**0.0593**	**0.3098**	**0.3690**			**1,452.4430**	**0.2575**	**0.0000**	**1,458.8812**

Malibu Civic Watermains - Los Angeles-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	27.69	0.00	1.21	7.50	0.00	0.22	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.6500e-003	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005			3.3100e-003	1.0000e-005		3.5300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Total	**6.6500e-003**	**1.0000e-005**	**1.5400e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**			**3.3100e-003**	**1.0000e-005**	**0.0000**	**3.5300e-003**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.6500e-003	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005			3.3100e-003	1.0000e-005		3.5300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Total	**6.6500e-003**	**1.0000e-005**	**1.5400e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**			**3.3100e-003**	**1.0000e-005**	**0.0000**	**3.5300e-003**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	4/21/2022	6/13/2022	5	38	
2	Trenching	Grading	6/14/2022	8/5/2022	5	39	
3	Pipe installation	Building Construction	8/8/2022	9/29/2022	5	39	
4	Backfill	Grading	9/30/2022	11/22/2022	5	38	
5	Paving	Paving	11/23/2022	1/13/2023	5	38	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.35

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

OffRoad Equipment

Malibu Civic Watermains - Los Angeles-South Coast County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	0.00	81	0.73
Demolition	Rubber Tired Dozers	0	0.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Trenching	Concrete/Industrial Saws	0	0.00	81	0.73
Trenching	Graders	0	0.00	187	0.41
Trenching	Rubber Tired Dozers	0	0.00	247	0.40
Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Trenching	Trenchers	1	8.00	78	0.50
Pipe installation	Concrete/Industrial Saws	0	0.00	81	0.73
Pipe installation	Cranes	0	0.00	231	0.29
Pipe installation	Forklifts	2	6.00	89	0.20
Pipe installation	Rubber Tired Dozers	0	0.00	247	0.40
Pipe installation	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Backfill	Concrete/Industrial Saws	0	0.00	81	0.73
Backfill	Rubber Tired Dozers	0	0.00	247	0.40
Backfill	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	0	0.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	2	8.00	0.00	56.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	5.00	4.00	336.00	14.70	2.00	20.00	LD_Mix	HDT_Mix	HHDT
Pipe installation	4	6.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Backfill	2	5.00	4.00	82.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	3	10.00	2.00	0.00	14.70	2.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2365	0.0000	0.2365	0.0358	0.0000	0.0358			0.0000			0.0000
Off-Road	0.2471	2.5135	3.3569	4.6700e-003		0.1352	0.1352		0.1244	0.1244			451.8584	0.1461		455.5119
Total	**0.2471**	**2.5135**	**3.3569**	**4.6700e-003**	**0.2365**	**0.1352**	**0.3717**	**0.0358**	**0.1244**	**0.1602**			**451.8584**	**0.1461**		**455.5119**

3.2 Demolition - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0117	0.3672	0.0918	1.1300e-003	0.0258	1.0500e-003	0.0268	7.0600e-003	1.0100e-003	8.0700e-003			123.2641	8.3400e-003		123.4726
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0321	0.0213	0.2973	8.8000e-004	0.0894	7.0000e-004	0.0901	0.0237	6.4000e-004	0.0244			87.8970	2.4300e-003		87.9576
Total	**0.0438**	**0.3885**	**0.3890**	**2.0100e-003**	**0.1152**	**1.7500e-003**	**0.1169**	**0.0308**	**1.6500e-003**	**0.0324**			**211.1611**	**0.0108**		**211.4302**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1064	0.0000	0.1064	0.0161	0.0000	0.0161			0.0000			0.0000
Off-Road	0.2471	2.5135	3.3569	4.6700e-003		0.1352	0.1352		0.1244	0.1244			451.8584	0.1461		455.5119
Total	**0.2471**	**2.5135**	**3.3569**	**4.6700e-003**	**0.1064**	**0.1352**	**0.2416**	**0.0161**	**0.1244**	**0.1405**			**451.8584**	**0.1461**		**455.5119**

3.2 Demolition - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0117	0.3672	0.0918	1.1300e-003	0.0258	1.0500e-003	0.0268	7.0600e-003	1.0100e-003	8.0700e-003			123.2641	8.3400e-003		123.4726
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0321	0.0213	0.2973	8.8000e-004	0.0894	7.0000e-004	0.0901	0.0237	6.4000e-004	0.0244			87.8970	2.4300e-003		87.9576
Total	**0.0438**	**0.3885**	**0.3890**	**2.0100e-003**	**0.1152**	**1.7500e-003**	**0.1169**	**0.0308**	**1.6500e-003**	**0.0324**			**211.1611**	**0.0108**		**211.4302**

3.3 Trenching - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0185	0.0000	0.0185	2.2100e-003	0.0000	2.2100e-003			0.0000			0.0000
Off-Road	0.5286	5.0553	4.8369	6.4800e-003		0.3296	0.3296		0.3032	0.3032			628.1884	0.2032		633.2676
Total	**0.5286**	**5.0553**	**4.8369**	**6.4800e-003**	**0.0185**	**0.3296**	**0.3481**	**2.2100e-003**	**0.3032**	**0.3054**			**628.1884**	**0.2032**		**633.2676**

3.3 Trenching - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0684	2.1468	0.5364	6.6300e-003	0.1507	6.1600e-003	0.1568	0.0413	5.9000e-003	0.0472			720.6209	0.0488		721.8396
Vendor	6.8100e-003	0.2682	0.0629	4.5000e-004	7.5000e-003	2.5000e-004	7.7500e-003	2.1700e-003	2.4000e-004	2.4000e-003			48.6981	4.1000e-003		48.8005
Worker	0.0201	0.0133	0.1858	5.5000e-004	0.0559	4.4000e-004	0.0563	0.0148	4.0000e-004	0.0152			54.9356	1.5200e-003		54.9735
Total	**0.0953**	**2.4284**	**0.7850**	**7.6300e-003**	**0.2140**	**6.8500e-003**	**0.2209**	**0.0583**	**6.5400e-003**	**0.0648**			**824.2546**	**0.0544**		**825.6136**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.3100e-003	0.0000	8.3100e-003	9.9000e-004	0.0000	9.9000e-004			0.0000			0.0000
Off-Road	0.5286	5.0553	4.8369	6.4800e-003		0.3296	0.3296		0.3032	0.3032			628.1884	0.2032		633.2676
Total	**0.5286**	**5.0553**	**4.8369**	**6.4800e-003**	**8.3100e-003**	**0.3296**	**0.3379**	**9.9000e-004**	**0.3032**	**0.3042**			**628.1884**	**0.2032**		**633.2676**

3.3 Trenching - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0684	2.1468	0.5364	6.6300e-003	0.1507	6.1600e-003	0.1568	0.0413	5.9000e-003	0.0472			720.6209	0.0488		721.8396
Vendor	6.8100e-003	0.2682	0.0629	4.5000e-004	7.5000e-003	2.5000e-004	7.7500e-003	2.1700e-003	2.4000e-004	2.4000e-003			48.6981	4.1000e-003		48.8005
Worker	0.0201	0.0133	0.1858	5.5000e-004	0.0559	4.4000e-004	0.0563	0.0148	4.0000e-004	0.0152			54.9356	1.5200e-003		54.9735
Total	**0.0953**	**2.4284**	**0.7850**	**7.6300e-003**	**0.2140**	**6.8500e-003**	**0.2209**	**0.0583**	**6.5400e-003**	**0.0648**			**824.2546**	**0.0544**		**825.6136**

3.4 Pipe installation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4175	4.0958	5.0875	6.9600e-003		0.2400	0.2400		0.2208	0.2208			673.9047	0.2180		679.3535
Total	**0.4175**	**4.0958**	**5.0875**	**6.9600e-003**		**0.2400**	**0.2400**		**0.2208**	**0.2208**			**673.9047**	**0.2180**		**679.3535**

3.4 Pipe installation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	5.7100e-003	0.1847	0.0480	5.1000e-004	0.0128	3.5000e-004	0.0132	3.6900e-003	3.3000e-004	4.0200e-003			54.4972	3.1300e-003		54.5754
Worker	0.0241	0.0160	0.2230	6.6000e-004	0.0671	5.2000e-004	0.0676	0.0178	4.8000e-004	0.0183			65.9227	1.8200e-003		65.9682
Total	**0.0298**	**0.2006**	**0.2710**	**1.1700e-003**	**0.0799**	**8.7000e-004**	**0.0807**	**0.0215**	**8.1000e-004**	**0.0223**			**120.4199**	**4.9500e-003**		**120.5436**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4175	4.0958	5.0875	6.9600e-003		0.2400	0.2400		0.2208	0.2208			673.9047	0.2180		679.3535
Total	**0.4175**	**4.0958**	**5.0875**	**6.9600e-003**		**0.2400**	**0.2400**		**0.2208**	**0.2208**			**673.9047**	**0.2180**		**679.3535**

3.4 Pipe installation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	5.7100e-003	0.1847	0.0480	5.1000e-004	0.0128	3.5000e-004	0.0132	3.6900e-003	3.3000e-004	4.0200e-003			54.4972	3.1300e-003		54.5754
Worker	0.0241	0.0160	0.2230	6.6000e-004	0.0671	5.2000e-004	0.0676	0.0178	4.8000e-004	0.0183			65.9227	1.8200e-003		65.9682
Total	**0.0298**	**0.2006**	**0.2710**	**1.1700e-003**	**0.0799**	**8.7000e-004**	**0.0807**	**0.0215**	**8.1000e-004**	**0.0223**			**120.4199**	**4.9500e-003**		**120.5436**

3.5 Backfill - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.2300e-003	0.0000	1.2300e-003	1.9000e-004	0.0000	1.9000e-004			0.0000			0.0000
Off-Road	0.2471	2.5135	3.3569	4.6700e-003		0.1352	0.1352		0.1244	0.1244			451.8584	0.1461		455.5119
Total	**0.2471**	**2.5135**	**3.3569**	**4.6700e-003**	**1.2300e-003**	**0.1352**	**0.1364**	**1.9000e-004**	**0.1244**	**0.1246**			**451.8584**	**0.1461**		**455.5119**

3.5 Backfill - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0171	0.5377	0.1343	1.6600e-003	0.0377	1.5400e-003	0.0393	0.0103	1.4800e-003	0.0118			180.4939	0.0122		180.7991
Vendor	0.0114	0.3693	0.0961	1.0200e-003	0.0256	6.9000e-004	0.0263	7.3700e-003	6.6000e-004	8.0400e-003			108.9944	6.2500e-003		109.1507
Worker	0.0201	0.0133	0.1858	5.5000e-004	0.0559	4.4000e-004	0.0563	0.0148	4.0000e-004	0.0152			54.9356	1.5200e-003		54.9735
Total	**0.0486**	**0.9204**	**0.4162**	**3.2300e-003**	**0.1192**	**2.6700e-003**	**0.1219**	**0.0325**	**2.5400e-003**	**0.0351**			**344.4238**	**0.0200**		**344.9233**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.5000e-004	0.0000	5.5000e-004	8.0000e-005	0.0000	8.0000e-005			0.0000			0.0000
Off-Road	0.2471	2.5135	3.3569	4.6700e-003		0.1352	0.1352		0.1244	0.1244			451.8584	0.1461		455.5119
Total	**0.2471**	**2.5135**	**3.3569**	**4.6700e-003**	**5.5000e-004**	**0.1352**	**0.1357**	**8.0000e-005**	**0.1244**	**0.1244**			**451.8584**	**0.1461**		**455.5119**

3.5 Backfill - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0171	0.5377	0.1343	1.6600e-003	0.0377	1.5400e-003	0.0393	0.0103	1.4800e-003	0.0118			180.4939	0.0122		180.7991
Vendor	0.0114	0.3693	0.0961	1.0200e-003	0.0256	6.9000e-004	0.0263	7.3700e-003	6.6000e-004	8.0400e-003			108.9944	6.2500e-003		109.1507
Worker	0.0201	0.0133	0.1858	5.5000e-004	0.0559	4.4000e-004	0.0563	0.0148	4.0000e-004	0.0152			54.9356	1.5200e-003		54.9735
Total	**0.0486**	**0.9204**	**0.4162**	**3.2300e-003**	**0.1192**	**2.6700e-003**	**0.1219**	**0.0325**	**2.5400e-003**	**0.0351**			**344.4238**	**0.0200**		**344.9233**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3337	3.2525	3.8173	5.5500e-003		0.1766	0.1766		0.1634	0.1634			523.8122	0.1611		527.8394
Paving	0.0241					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.3578**	**3.2525**	**3.8173**	**5.5500e-003**		**0.1766**	**0.1766**		**0.1634**	**0.1634**			**523.8122**	**0.1611**		**527.8394**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	3.4000e-003	0.1341	0.0314	2.3000e-004	3.7500e-003	1.2000e-004	3.8700e-003	1.0800e-003	1.2000e-004	1.2000e-003			24.3491	2.0500e-003		24.4002
Worker	0.0402	0.0266	0.3716	1.1000e-003	0.1118	8.7000e-004	0.1127	0.0296	8.1000e-004	0.0305			109.8712	3.0300e-003		109.9470
Total	**0.0436**	**0.1607**	**0.4030**	**1.3300e-003**	**0.1155**	**9.9000e-004**	**0.1165**	**0.0307**	**9.3000e-004**	**0.0317**			**134.2203**	**5.0800e-003**		**134.3473**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3337	3.2525	3.8173	5.5500e-003		0.1766	0.1766		0.1634	0.1634			523.8122	0.1611		527.8394
Paving	0.0241					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.3578**	**3.2525**	**3.8173**	**5.5500e-003**		**0.1766**	**0.1766**		**0.1634**	**0.1634**			**523.8122**	**0.1611**		**527.8394**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	3.4000e-003	0.1341	0.0314	2.3000e-004	3.7500e-003	1.2000e-004	3.8700e-003	1.0800e-003	1.2000e-004	1.2000e-003			24.3491	2.0500e-003		24.4002
Worker	0.0402	0.0266	0.3716	1.1000e-003	0.1118	8.7000e-004	0.1127	0.0296	8.1000e-004	0.0305			109.8712	3.0300e-003		109.9470
Total	**0.0436**	**0.1607**	**0.4030**	**1.3300e-003**	**0.1155**	**9.9000e-004**	**0.1165**	**0.0307**	**9.3000e-004**	**0.0317**			**134.2203**	**5.0800e-003**		**134.3473**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3110	3.0287	3.8044	5.5600e-003		0.1546	0.1546		0.1431	0.1431			524.1109	0.1612		528.1406
Paving	0.0241					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.3351**	**3.0287**	**3.8044**	**5.5600e-003**		**0.1546**	**0.1546**		**0.1431**	**0.1431**			**524.1109**	**0.1612**		**528.1406**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	2.6100e-003	0.1108	0.0284	2.2000e-004	3.7500e-003	6.0000e-005	3.8100e-003	1.0800e-003	6.0000e-005	1.1400e-003			23.4626	1.7200e-003		23.5057
Worker	0.0377	0.0241	0.3422	1.0600e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304			105.8482	2.7300e-003		105.9166
Total	**0.0403**	**0.1349**	**0.3706**	**1.2800e-003**	**0.1155**	**9.1000e-004**	**0.1164**	**0.0307**	**8.4000e-004**	**0.0316**			**129.3108**	**4.4500e-003**		**129.4223**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3110	3.0287	3.8044	5.5600e-003		0.1546	0.1546		0.1431	0.1431			524.1109	0.1612		528.1406
Paving	0.0241					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.3351**	**3.0287**	**3.8044**	**5.5600e-003**		**0.1546**	**0.1546**		**0.1431**	**0.1431**			**524.1109**	**0.1612**		**528.1406**

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	2.6100e-003	0.1108	0.0284	2.2000e-004	3.7500e-003	6.0000e-005	3.8100e-003	1.0800e-003	6.0000e-005	1.1400e-003			23.4626	1.7200e-003		23.5057
Worker	0.0377	0.0241	0.3422	1.0600e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304			105.8482	2.7300e-003		105.9166
Total	**0.0403**	**0.1349**	**0.3706**	**1.2800e-003**	**0.1155**	**9.1000e-004**	**0.1164**	**0.0307**	**8.4000e-004**	**0.0316**			**129.3108**	**4.4500e-003**		**129.4223**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.545842	0.044768	0.205288	0.119317	0.015350	0.006227	0.020460	0.031333	0.002546	0.002133	0.005184	0.000692	0.000862

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	6.6500e-003	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005			3.3100e-003	1.0000e-005		3.5300e-003
Unmitigated	6.6500e-003	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005			3.3100e-003	1.0000e-005		3.5300e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.1500e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.3600e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.4000e-004	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005			3.3100e-003	1.0000e-005		3.5300e-003
Total	**6.6500e-003**	**1.0000e-005**	**1.5400e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**			**3.3100e-003**	**1.0000e-005**		**3.5300e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.1500e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.3600e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.4000e-004	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005			3.3100e-003	1.0000e-005		3.5300e-003
Total	**6.6500e-003**	**1.0000e-005**	**1.5400e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**			**3.3100e-003**	**1.0000e-005**		**3.5300e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Malibu Civic Watermains

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	15.12	1000sqft	0.35	15,123.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	460.6	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Malibu Civic Watermains - Los Angeles-South Coast County, Winter

Project Characteristics - SCE CO2 Intensity for 2023

Land Use - Area based on client 5,041 linear ft x 3 ft wide

Construction Phase - phases based on client input

Off-road Equipment - Equipment based on client input

Off-road Equipment - Equipment based on client input

Off-road Equipment - Equipment based on client input

Off-road Equipment - Equipment based on client input and engr judgment

Off-road Equipment - Equipment based on client input

Trips and VMT - Hauling trips based on client input
Trenching/backfill vendor trips are on-site material

Demolition -

Grading - Export and import based on client input

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	39.00
tblConstructionPhase	NumDays	10.00	38.00
tblConstructionPhase	NumDays	2.00	39.00
tblConstructionPhase	NumDays	2.00	38.00
tblConstructionPhase	NumDays	5.00	38.00
tblGrading	AcresOfGrading	0.00	0.50
tblGrading	MaterialExported	0.00	1,680.00
tblGrading	MaterialImported	0.00	413.00
tblLandUse	LandUseSquareFeet	15,120.00	15,123.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	4.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	1.00	0.00
tblOffRoadEquipment	UsageHours	1.00	0.00
tblOffRoadEquipment	UsageHours	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	460.6
tblTripsAndVMT	HaulingTripNumber	42.00	56.00
tblTripsAndVMT	HaulingTripNumber	210.00	336.00
tblTripsAndVMT	HaulingTripNumber	52.00	82.00
tblTripsAndVMT	VendorTripLength	6.90	2.00
tblTripsAndVMT	VendorTripLength	6.90	2.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	WorkerTripNumber	5.00	8.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	0.6283	7.5046	5.6475	0.0140	0.3517	0.3366	0.5691	0.0666	0.3099	0.3704			1,433.6354	0.2595	0.0000	1,440.1231
2023	0.3801	3.1643	4.1485	6.7700e-003	0.1155	0.1555	0.2710	0.0307	0.1439	0.1747			645.8123	0.1657	0.0000	649.9533
Maximum	**0.6283**	**7.5046**	**5.6475**	**0.0140**	**0.3517**	**0.3366**	**0.5691**	**0.0666**	**0.3099**	**0.3704**			**1,433.6354**	**0.2595**	**0.0000**	**1,440.1231**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	0.6283	7.5046	5.6475	0.0140	0.2224	0.3366	0.5589	0.0593	0.3099	0.3691			1,433.6354	0.2595	0.0000	1,440.1231
2023	0.3801	3.1643	4.1485	6.7700e-003	0.1155	0.1555	0.2710	0.0307	0.1439	0.1747			645.8123	0.1657	0.0000	649.9533
Maximum	**0.6283**	**7.5046**	**5.6475**	**0.0140**	**0.2224**	**0.3366**	**0.5589**	**0.0593**	**0.3099**	**0.3691**			**1,433.6354**	**0.2595**	**0.0000**	**1,440.1231**

Malibu Civic Watermains - Los Angeles-South Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	27.69	0.00	1.21	7.50	0.00	0.22	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.6500e-003	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005			3.3100e-003	1.0000e-005		3.5300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Total	**6.6500e-003**	**1.0000e-005**	**1.5400e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**			**3.3100e-003**	**1.0000e-005**	**0.0000**	**3.5300e-003**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.6500e-003	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005			3.3100e-003	1.0000e-005		3.5300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Total	**6.6500e-003**	**1.0000e-005**	**1.5400e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**			**3.3100e-003**	**1.0000e-005**	**0.0000**	**3.5300e-003**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	4/21/2022	6/13/2022	5	38	
2	Trenching	Grading	6/14/2022	8/5/2022	5	39	
3	Pipe installation	Building Construction	8/8/2022	9/29/2022	5	39	
4	Backfill	Grading	9/30/2022	11/22/2022	5	38	
5	Paving	Paving	11/23/2022	1/13/2023	5	38	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.35

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

OffRoad Equipment

Malibu Civic Watermains - Los Angeles-South Coast County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	0.00	81	0.73
Demolition	Rubber Tired Dozers	0	0.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Trenching	Concrete/Industrial Saws	0	0.00	81	0.73
Trenching	Graders	0	0.00	187	0.41
Trenching	Rubber Tired Dozers	0	0.00	247	0.40
Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Trenching	Trenchers	1	8.00	78	0.50
Pipe installation	Concrete/Industrial Saws	0	0.00	81	0.73
Pipe installation	Cranes	0	0.00	231	0.29
Pipe installation	Forklifts	2	6.00	89	0.20
Pipe installation	Rubber Tired Dozers	0	0.00	247	0.40
Pipe installation	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Backfill	Concrete/Industrial Saws	0	0.00	81	0.73
Backfill	Rubber Tired Dozers	0	0.00	247	0.40
Backfill	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	0	0.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	2	8.00	0.00	56.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	5.00	4.00	336.00	14.70	2.00	20.00	LD_Mix	HDT_Mix	HHDT
Pipe installation	4	6.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Backfill	2	5.00	4.00	82.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	3	10.00	2.00	0.00	14.70	2.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2365	0.0000	0.2365	0.0358	0.0000	0.0358			0.0000			0.0000
Off-Road	0.2471	2.5135	3.3569	4.6700e-003		0.1352	0.1352		0.1244	0.1244			451.8584	0.1461		455.5119
Total	**0.2471**	**2.5135**	**3.3569**	**4.6700e-003**	**0.2365**	**0.1352**	**0.3717**	**0.0358**	**0.1244**	**0.1602**			**451.8584**	**0.1461**		**455.5119**

3.2 Demolition - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0120	0.3714	0.0971	1.1100e-003	0.0258	1.0700e-003	0.0268	7.0600e-003	1.0200e-003	8.0900e-003			121.1098	8.6200e-003		121.3254
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0358	0.0236	0.2713	8.3000e-004	0.0894	7.0000e-004	0.0901	0.0237	6.4000e-004	0.0244			82.7656	2.2800e-003		82.8225
Total	**0.0478**	**0.3950**	**0.3684**	**1.9400e-003**	**0.1152**	**1.7700e-003**	**0.1170**	**0.0308**	**1.6600e-003**	**0.0325**			**203.8754**	**0.0109**		**204.1479**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1064	0.0000	0.1064	0.0161	0.0000	0.0161			0.0000			0.0000
Off-Road	0.2471	2.5135	3.3569	4.6700e-003		0.1352	0.1352		0.1244	0.1244			451.8584	0.1461		455.5119
Total	**0.2471**	**2.5135**	**3.3569**	**4.6700e-003**	**0.1064**	**0.1352**	**0.2416**	**0.0161**	**0.1244**	**0.1405**			**451.8584**	**0.1461**		**455.5119**

3.2 Demolition - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0120	0.3714	0.0971	1.1100e-003	0.0258	1.0700e-003	0.0268	7.0600e-003	1.0200e-003	8.0900e-003			121.1098	8.6200e-003		121.3254
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Worker	0.0358	0.0236	0.2713	8.3000e-004	0.0894	7.0000e-004	0.0901	0.0237	6.4000e-004	0.0244			82.7656	2.2800e-003		82.8225
Total	**0.0478**	**0.3950**	**0.3684**	**1.9400e-003**	**0.1152**	**1.7700e-003**	**0.1170**	**0.0308**	**1.6600e-003**	**0.0325**			**203.8754**	**0.0109**		**204.1479**

3.3 Trenching - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0185	0.0000	0.0185	2.2100e-003	0.0000	2.2100e-003			0.0000			0.0000
Off-Road	0.5286	5.0553	4.8369	6.4800e-003		0.3296	0.3296		0.3032	0.3032			628.1884	0.2032		633.2676
Total	**0.5286**	**5.0553**	**4.8369**	**6.4800e-003**	**0.0185**	**0.3296**	**0.3481**	**2.2100e-003**	**0.3032**	**0.3054**			**628.1884**	**0.2032**		**633.2676**

3.3 Trenching - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0700	2.1714	0.5676	6.5200e-003	0.1507	6.2600e-003	0.1569	0.0413	5.9900e-003	0.0473			708.0267	0.0504		709.2870
Vendor	7.3200e-003	0.2632	0.0734	4.3000e-004	7.5000e-003	2.7000e-004	7.7700e-003	2.1700e-003	2.6000e-004	2.4300e-003			45.6919	4.5000e-003		45.8045
Worker	0.0224	0.0147	0.1696	5.2000e-004	0.0559	4.4000e-004	0.0563	0.0148	4.0000e-004	0.0152			51.7285	1.4200e-003		51.7641
Total	**0.0997**	**2.4493**	**0.8106**	**7.4700e-003**	**0.2140**	**6.9700e-003**	**0.2210**	**0.0583**	**6.6500e-003**	**0.0649**			**805.4471**	**0.0563**		**806.8555**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.3100e-003	0.0000	8.3100e-003	9.9000e-004	0.0000	9.9000e-004			0.0000			0.0000
Off-Road	0.5286	5.0553	4.8369	6.4800e-003		0.3296	0.3296		0.3032	0.3032			628.1884	0.2032		633.2676
Total	**0.5286**	**5.0553**	**4.8369**	**6.4800e-003**	**8.3100e-003**	**0.3296**	**0.3379**	**9.9000e-004**	**0.3032**	**0.3042**			**628.1884**	**0.2032**		**633.2676**

3.3 Trenching - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0700	2.1714	0.5676	6.5200e-003	0.1507	6.2600e-003	0.1569	0.0413	5.9900e-003	0.0473			708.0267	0.0504		709.2870
Vendor	7.3200e-003	0.2632	0.0734	4.3000e-004	7.5000e-003	2.7000e-004	7.7700e-003	2.1700e-003	2.6000e-004	2.4300e-003			45.6919	4.5000e-003		45.8045
Worker	0.0224	0.0147	0.1696	5.2000e-004	0.0559	4.4000e-004	0.0563	0.0148	4.0000e-004	0.0152			51.7285	1.4200e-003		51.7641
Total	**0.0997**	**2.4493**	**0.8106**	**7.4700e-003**	**0.2140**	**6.9700e-003**	**0.2210**	**0.0583**	**6.6500e-003**	**0.0649**			**805.4471**	**0.0563**		**806.8555**

3.4 Pipe installation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4175	4.0958	5.0875	6.9600e-003		0.2400	0.2400		0.2208	0.2208			673.9047	0.2180		679.3535
Total	**0.4175**	**4.0958**	**5.0875**	**6.9600e-003**		**0.2400**	**0.2400**		**0.2208**	**0.2208**			**673.9047**	**0.2180**		**679.3535**

3.4 Pipe installation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	5.9900e-003	0.1842	0.0532	5.0000e-004	0.0128	3.6000e-004	0.0132	3.6900e-003	3.4000e-004	4.0300e-003			52.9941	3.3300e-003		53.0773
Worker	0.0269	0.0177	0.2035	6.2000e-004	0.0671	5.2000e-004	0.0676	0.0178	4.8000e-004	0.0183			62.0742	1.7100e-003		62.1169
Total	**0.0329**	**0.2018**	**0.2567**	**1.1200e-003**	**0.0799**	**8.8000e-004**	**0.0808**	**0.0215**	**8.2000e-004**	**0.0223**			**115.0682**	**5.0400e-003**		**115.1942**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4175	4.0958	5.0875	6.9600e-003		0.2400	0.2400		0.2208	0.2208			673.9047	0.2180		679.3535
Total	**0.4175**	**4.0958**	**5.0875**	**6.9600e-003**		**0.2400**	**0.2400**		**0.2208**	**0.2208**			**673.9047**	**0.2180**		**679.3535**

3.4 Pipe installation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	5.9900e-003	0.1842	0.0532	5.0000e-004	0.0128	3.6000e-004	0.0132	3.6900e-003	3.4000e-004	4.0300e-003			52.9941	3.3300e-003		53.0773
Worker	0.0269	0.0177	0.2035	6.2000e-004	0.0671	5.2000e-004	0.0676	0.0178	4.8000e-004	0.0183			62.0742	1.7100e-003		62.1169
Total	**0.0329**	**0.2018**	**0.2567**	**1.1200e-003**	**0.0799**	**8.8000e-004**	**0.0808**	**0.0215**	**8.2000e-004**	**0.0223**			**115.0682**	**5.0400e-003**		**115.1942**

3.5 Backfill - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.2300e-003	0.0000	1.2300e-003	1.9000e-004	0.0000	1.9000e-004			0.0000			0.0000
Off-Road	0.2471	2.5135	3.3569	4.6700e-003		0.1352	0.1352		0.1244	0.1244			451.8584	0.1461		455.5119
Total	**0.2471**	**2.5135**	**3.3569**	**4.6700e-003**	**1.2300e-003**	**0.1352**	**0.1364**	**1.9000e-004**	**0.1244**	**0.1246**			**451.8584**	**0.1461**		**455.5119**

3.5 Backfill - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0175	0.5439	0.1422	1.6300e-003	0.0377	1.5700e-003	0.0393	0.0103	1.5000e-003	0.0118			177.3394	0.0126		177.6551
Vendor	0.0120	0.3683	0.1063	9.9000e-004	0.0256	7.2000e-004	0.0263	7.3700e-003	6.9000e-004	8.0600e-003			105.9881	6.6600e-003		106.1546
Worker	0.0224	0.0147	0.1696	5.2000e-004	0.0559	4.4000e-004	0.0563	0.0148	4.0000e-004	0.0152			51.7285	1.4200e-003		51.7641
Total	**0.0519**	**0.9269**	**0.4181**	**3.1400e-003**	**0.1192**	**2.7300e-003**	**0.1220**	**0.0325**	**2.5900e-003**	**0.0351**			**335.0560**	**0.0207**		**335.5738**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.5000e-004	0.0000	5.5000e-004	8.0000e-005	0.0000	8.0000e-005			0.0000			0.0000
Off-Road	0.2471	2.5135	3.3569	4.6700e-003		0.1352	0.1352		0.1244	0.1244			451.8584	0.1461		455.5119
Total	**0.2471**	**2.5135**	**3.3569**	**4.6700e-003**	**5.5000e-004**	**0.1352**	**0.1357**	**8.0000e-005**	**0.1244**	**0.1244**			**451.8584**	**0.1461**		**455.5119**

3.5 Backfill - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0175	0.5439	0.1422	1.6300e-003	0.0377	1.5700e-003	0.0393	0.0103	1.5000e-003	0.0118			177.3394	0.0126		177.6551
Vendor	0.0120	0.3683	0.1063	9.9000e-004	0.0256	7.2000e-004	0.0263	7.3700e-003	6.9000e-004	8.0600e-003			105.9881	6.6600e-003		106.1546
Worker	0.0224	0.0147	0.1696	5.2000e-004	0.0559	4.4000e-004	0.0563	0.0148	4.0000e-004	0.0152			51.7285	1.4200e-003		51.7641
Total	**0.0519**	**0.9269**	**0.4181**	**3.1400e-003**	**0.1192**	**2.7300e-003**	**0.1220**	**0.0325**	**2.5900e-003**	**0.0351**			**335.0560**	**0.0207**		**335.5738**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3337	3.2525	3.8173	5.5500e-003		0.1766	0.1766		0.1634	0.1634			523.8122	0.1611		527.8394
Paving	0.0241					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.3578**	**3.2525**	**3.8173**	**5.5500e-003**		**0.1766**	**0.1766**		**0.1634**	**0.1634**			**523.8122**	**0.1611**		**527.8394**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	3.6600e-003	0.1316	0.0367	2.1000e-004	3.7500e-003	1.4000e-004	3.8800e-003	1.0800e-003	1.3000e-004	1.2100e-003			22.8459	2.2500e-003		22.9022
Worker	0.0448	0.0295	0.3392	1.0400e-003	0.1118	8.7000e-004	0.1127	0.0296	8.1000e-004	0.0305			103.4570	2.8500e-003		103.5282
Total	**0.0484**	**0.1610**	**0.3759**	**1.2500e-003**	**0.1155**	**1.0100e-003**	**0.1165**	**0.0307**	**9.4000e-004**	**0.0317**			**126.3029**	**5.1000e-003**		**126.4304**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3337	3.2525	3.8173	5.5500e-003		0.1766	0.1766		0.1634	0.1634			523.8122	0.1611		527.8394
Paving	0.0241					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.3578**	**3.2525**	**3.8173**	**5.5500e-003**		**0.1766**	**0.1766**		**0.1634**	**0.1634**			**523.8122**	**0.1611**		**527.8394**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	3.6600e-003	0.1316	0.0367	2.1000e-004	3.7500e-003	1.4000e-004	3.8800e-003	1.0800e-003	1.3000e-004	1.2100e-003			22.8459	2.2500e-003		22.9022
Worker	0.0448	0.0295	0.3392	1.0400e-003	0.1118	8.7000e-004	0.1127	0.0296	8.1000e-004	0.0305			103.4570	2.8500e-003		103.5282
Total	**0.0484**	**0.1610**	**0.3759**	**1.2500e-003**	**0.1155**	**1.0100e-003**	**0.1165**	**0.0307**	**9.4000e-004**	**0.0317**			**126.3029**	**5.1000e-003**		**126.4304**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3110	3.0287	3.8044	5.5600e-003		0.1546	0.1546		0.1431	0.1431			524.1109	0.1612		528.1406
Paving	0.0241					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.3351**	**3.0287**	**3.8044**	**5.5600e-003**		**0.1546**	**0.1546**		**0.1431**	**0.1431**			**524.1109**	**0.1612**		**528.1406**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	2.8000e-003	0.1089	0.0324	2.1000e-004	3.7500e-003	7.0000e-005	3.8200e-003	1.0800e-003	7.0000e-005	1.1500e-003			22.0294	1.8900e-003		22.0765
Worker	0.0422	0.0266	0.3118	1.0000e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304			99.6721	2.5700e-003		99.7362
Total	**0.0450**	**0.1356**	**0.3441**	**1.2100e-003**	**0.1155**	**9.2000e-004**	**0.1165**	**0.0307**	**8.5000e-004**	**0.0316**			**121.7014**	**4.4600e-003**		**121.8127**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3110	3.0287	3.8044	5.5600e-003		0.1546	0.1546		0.1431	0.1431			524.1109	0.1612		528.1406
Paving	0.0241					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.3351**	**3.0287**	**3.8044**	**5.5600e-003**		**0.1546**	**0.1546**		**0.1431**	**0.1431**			**524.1109**	**0.1612**		**528.1406**

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Vendor	2.8000e-003	0.1089	0.0324	2.1000e-004	3.7500e-003	7.0000e-005	3.8200e-003	1.0800e-003	7.0000e-005	1.1500e-003			22.0294	1.8900e-003		22.0765
Worker	0.0422	0.0266	0.3118	1.0000e-003	0.1118	8.5000e-004	0.1126	0.0296	7.8000e-004	0.0304			99.6721	2.5700e-003		99.7362
Total	**0.0450**	**0.1356**	**0.3441**	**1.2100e-003**	**0.1155**	**9.2000e-004**	**0.1165**	**0.0307**	**8.5000e-004**	**0.0316**			**121.7014**	**4.4600e-003**		**121.8127**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.545842	0.044768	0.205288	0.119317	0.015350	0.006227	0.020460	0.031333	0.002546	0.002133	0.005184	0.000692	0.000862

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	6.6500e-003	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005			3.3100e-003	1.0000e-005		3.5300e-003
Unmitigated	6.6500e-003	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005			3.3100e-003	1.0000e-005		3.5300e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.1500e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.3600e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.4000e-004	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005			3.3100e-003	1.0000e-005		3.5300e-003
Total	**6.6500e-003**	**1.0000e-005**	**1.5400e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**			**3.3100e-003**	**1.0000e-005**		**3.5300e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.1500e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.3600e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.4000e-004	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005			3.3100e-003	1.0000e-005		3.5300e-003
Total	**6.6500e-003**	**1.0000e-005**	**1.5400e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**			**3.3100e-003**	**1.0000e-005**		**3.5300e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix B-1

Biological Assessment Report

Biological Assessment Report

Civic Center Improvements Project, County of Los Angeles, California

Prepared for

Los Angeles Waterworks District
1000 South Fremont Avenue
Building A-9E, 4th Floor
Alhambra, California 91803-1331

Prepared by

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April 2024

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Section **Page**

TABLES

ATTACHMENT

1.0 INTRODUCTION

This Biological Assessment Report has been prepared as required by City of Malibu's Local Implementation Plan section 4.4.2, as a portion of the Civic Center Improvements Project (hereinafter referred to as the "Project") is within 200 feet of an identified Environmentally Sensitive Habitat Area (ESHA) and initial surveys on the Project site have identified special status resources within the Project boundary. This report is also intended to satisfy supporting documentation requirements for California Environmental Quality Act (CEQA) threshold determinations for biological resources.

1.1 PROJECT LOCATION AND PHYSICAL ENVIRONMENTAL SETTING

The Project Study Area is located within the City of Malibu (Exhibit 1, located in Attachment A). It is located within the Santa Monica Bay Watershed on the U.S. Geological Survey's (USGS') Malibu Beach 7.5-minute quadrangle map in Township 01S, Range 17W, Sections 32 and 33 (Exhibit 2). Elevations in the Study Area range from 15 to 390 feet above mean sea level (msl). The Study Area encompasses approximately 18 acres and includes the Project impact area along Serra Road beginning at Pacific Coast Highway (PCH) to Sweetwater Mesa Road and the temporary staging area at the top of Sweetwater Mesa Road. Land uses in the immediate Project vicinity are primarily residential with open space occurring west of Sierra Road and north of PCH in the Malibu Lagoon and west of the proposed tank location. The Pacific Ocean coastline occurs approximately 600 feet south of the Project location.

Soil types in the Study Area generally consist of the Chumash-Boades-Malibu association (30 to 75 percent slopes); Elder fine sandy loam, coastal (0 to 2 percent slopes); Urban land-Tongva complex (0 to 15 percent slopes); and Sapwi loam (30 to 75 percent slopes) (USDA NRCS 2017) (Exhibit 3).

1.2 PROJECT DESCRIPTION

1.2.1 New Sweetwater Mesa Tank

The proposed Project includes construction of a new 12-inch water main in Serra Road from PCH to Sweetwater Mesa Road. The water main will continue along Sweetwater Mesa Road from Serra Road to the new 1.0-million-gallon tank located at the Upper Sweetwater Mesa Tank site at the end of Sweetwater Mesa Road. A second 12-inch water main will be constructed in PCH from Serra Road to the beginning of the Malibu Lagoon Bridge. The new Sweetwater Mesa Tank would be located at an undeveloped Los Angeles County Waterworks District No. 29 (District) owned property just north of 3311 Sweetwater Mesa Road.

1.2.2 Water Main Replacements

There are currently three options for the final routing of WP1; they are designated as WP1.1, WP1.2 and WP1.3, and are subsequently separated into three distinct reaches as described below.

Water Main WP1.1

Under the WP1.1 option, the 12-inch water main would connect to the downstream side of a new pump/pressure regulating station at the Serra Tank site. WP1.1 would be routed upslope to Sweetwater Mesa Road (adjacent the area of the existing 4-inch pipe to be replaced) and extend up to the 418 Pressure Zone (PZ) tank and down to Serra Road where there currently is no water

main. The new 12-inch water main would also connect to the existing 380 PZ 6-inch water main at the Serra Tank site and located in a 10-feet wide water main easement.

Water Main WP1.2

Under the WP1.2 option, the 12-inch water main would connect to the downstream side of a new pump/pressure regulating station at the Serra Tank site. WP1.2 would be routed upslope to Sweetwater Mesa Road (adjacent the area of the existing 4-inch pipe to be replaced) and extend to the 418 PZ tank. Under the WP1.2 option, the 12-inch water main would not extend down Sweetwater Mesa Road to Serra Road. As with WP1.1, the new 12-inch water main would connect to the existing 6-inch water main in the 380 PZ located in a 10-foot easement to the Serra Tank off Serra Road

Water Main WP1.3

Under the WP1.3 option, the 12-inch water main would connect to the downstream side of a new pump/pressure regulating station at the Serra Tank site. WP1.3 would be routed upslope to Sweetwater Mesa Road (adjacent the area of the existing 4-inch pipe to be replaced) and extend to the 418-foot PZ tank. The new 12-inch Water Main would also connect to a proposed new 12-inch water main, which would replace the existing 6-inch water main in the 380 PZ located in the 10-feet water main easement to the Serra Tank site.

It should be noted that Sweetwater Mesa Road is a private, 14-foot wide, winding, concrete road with very little to no shoulder area. Although records show that a 40-foot easement exists for road and utility purposes, the homes along the road have a concentrated amount of landscaping directly adjacent to the roadway making it very difficult to install the 12-inch diameter water line within the area adjacent to the road, as recommended by the previously approved Serra Road Water Systems Improvements Project plans. All landscaping that would be removed or damaged during construction activities would be cataloged and replaced in kind to the satisfaction of the private property owners.

1.2.3 Pump Station

The Serra Tank site has an existing pump station, which would be replaced with a new skid mounted modern pump station. The pump station would only be used in an emergency condition – when gradient in the 500 PZ is below the height of the Sweetwater Mesa Tank. The new pump station would be quieter than the existing free-standing pumps and would include an enclosure for weather protection and sound attenuation.

1.2.4 Pressure Regulating Stations

The Project would construct three new Pressure Regulating Stations (PRS):

- **Palm Canyon Lane and Serra Road:** The first PRS is planned at the southwest corner of Palm Canyon Lane and Serra Road.
- **Mariposa De Oro Street and Serra Road:** The second PRS is planned on the west side of the intersection at the Mariposa De Oro Street and Serra Road.
- **Serra Tank-PRV:** The third PRS is planned on the Serra Tank site.

It should be noted that the exact termination and beginning of the Serra Road water main and the Sweetwater Mesa Road water main respectively are unknown at this time because the District does not have the easements for the District operated and maintained Serra Tank site. The District

is currently working with the property owner to obtain the easement. This Project details and analyzes what is understood to be the maximum extent and disturbance areas of the water mains.

1.3 REGULATORY SETTING

1.3.1 Federal

Federal Endangered Species Act

The Federal Endangered Species Act of 1973 (FESA, 16 *United States Code* [USC] 153 et seq.) protects plants and animals that are listed by the federal government as "Endangered" or "Threatened". The FESA is implemented by enforcing Sections 7 and 9 of the Act. A federally listed species is protected from unauthorized "take" pursuant to Section 9 of the FESA. "Take", as defined by the FESA, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or to attempt to engage in any such conduct". All persons are presently prohibited from taking a federally listed species unless and until (1) the appropriate Section 10(a) permit has been issued by the U.S. Fish and Wildlife Service (USFWS) or (2) an Incidental Take Statement is obtained as a result of formal consultation between a federal agency and the USFWS pursuant to Section 7 of the FESA and the implementing regulations that pertain to it (50 *Code of Federal Regulations* [CFR] 402). It should be noted that the proposed Project must have a federal nexus in order to request "take" pursuant to Section 7. If there is no federal nexus and there are impacts to federally listed species, preparation of a Habitat Conservation Plan will likely be required. "Person" is defined in the FESA as "an individual, corporation, partnership, trust, association, or any private entity; any officer, employee, agent, department, or instrument of the federal government; any State, Municipality, or political subdivision of the state; or any other entity subject to the jurisdiction of the United States". The Project Applicant is a "person" for purposes of the FESA.

Section 404 and 401 of the Clean Water Act of 1972

Section 404 of the Clean Water Act (CWA, 33 USC 1251 et seq.) regulates the discharge of dredged or filled material into "Waters of the U.S.", including wetlands. "Waters of the U.S." include navigable coastal and inland waters, lakes, rivers, streams, and their tributaries; interstate waters and their tributaries; wetlands adjacent to such waters; intermittent streams; and other waters that could affect interstate commerce. The U.S. Army Corps of Engineers (USACE) is the designated regulatory agency responsible for administering the 404 permit program and for making jurisdictional determinations. This permitting authority applies to all "Waters of the U.S." where the material has the effect of (1) replacing any portion of "Waters of the U.S." with dry land or (2) changing the bottom elevation of any portion of "Waters of the U.S.". These fill materials would include sand, rock, clay, construction debris, wood chips, and materials used to create any structure or infrastructure in the "Waters of the U.S.". Dredge and fill activities are typically associated with development projects; water-resource related projects; infrastructure development and wetland conversion to farming; forestry; and urban development.

Under Section 401 of the CWA, an activity requiring a USACE Section 404 permit must obtain a State Water Quality Certification (or waiver thereof) to ensure that the activity will not violate established State water quality standards. The U.S. Environmental Protection Agency (USEPA) is the federal regulatory agency responsible for implementing the CWA. However, the State Water Resources Control Board (SWRCB), in conjunction with the 9 California Regional Water Quality Control Boards (RWQCBs), has been delegated the responsibility for administering the Section 401 water quality certification program.

The RWQCB is the primary agency responsible for protecting water quality in California through the regulation of discharges to surface waters under the CWA and the California Porter-Cologne

Water Quality Control Act. The RWQCB's jurisdiction extends to all "Waters of the State" and to all "Waters of the U.S.", including wetlands (isolated and non-isolated). Section 401 requires the RWQCB to provide "certification that there is reasonable assurance that an activity which may result in the discharge to 'Waters of the U.S.' will not violate water quality standards". Water Quality Certification must be based on a finding that the proposed discharge will comply with water quality standards, which contain numeric and narrative objectives that can be found in each of the 9 Regional Boards' Basin Plans.

Migratory Bird Treaty Act of 1918

The Migratory Bird Treaty Act of 1918 (MBTA), as amended in 1972 (MBTA, 16 USC 703–711), makes it unlawful, unless permitted by regulations, to "pursue; hunt; take; capture; kill; attempt to take, capture or kill; possess; offer for sale; sell; offer to purchase; purchase; deliver for shipment; ship; cause to be shipped; deliver for transportation; transport; cause to be transported; carry or cause to be carried by any means whatever; receive for shipment, transportation, or carriage; or export, at any time, or in any manner, any migratory bird…for the protection of migratory birds…or any part, nest, or egg of any such bird" (16 USC 703).

In 1972, the MBTA was amended to include protection for migratory birds of prey (e.g., raptors). The following 6 families of raptors that occur in North America were included in the amendment: *Accipitridae* (kites, hawks, and eagles), *Cathartidae* (New World vultures), *Falconidae* (falcons and caracaras), *Pandionidae* (ospreys), *Strigidae* (typical owls), and *Tytonidae* (barn owls). The provisions of the 1972 amendment to the MBTA protect all species and subspecies of these families.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 USC 668) provides for the protection of the bald eagle (*Haliaeetus leucocephalus*) and the golden eagle (*Aquila chrysaetos*) by prohibiting—except under certain specified conditions—the taking, possession, and commerce of these 2 bird species. The 1972 amendments increased penalties for violating provisions of the Act and strengthened other enforcement measures. A 1978 amendment authorizes the Secretary of the Interior to permit the taking of golden eagle nests that interfere with resource development or recovery operations. A 1994 Memorandum (59 CFR 22953, April 29, 1994) from President William J. Clinton to the heads of Executive Agencies and Departments sets out the policy concerning collection and distribution of eagle feathers for Native American religious purposes.

1.3.2 State

California Endangered Species Act

Pursuant to the California Endangered Species Act (CESA, *California Fish and Game Code,* Section 2050 et seq.) and Section 2081 of the *California Fish and Game Code,* an Incidental Take Permit from the California Department of Fish and Wildlife (CDFW) is required for projects that could result in the take of a State-listed Threatened or Endangered species. Under CESA, "take" is defined as an activity that would directly or indirectly kill an individual of a species, but the definition does not include "harm" or "harass", as the federal act does. As a result, the threshold for take under the CESA is higher than that under the FESA. A CDFW-authorized Incidental Take Permit would be required where a project could result in the take of a State-listed Threatened or Endangered Species. The application for an Incidental Take Permit under Section 2081(b) has a number of requirements, including the preparation of a conservation plan, generally referred to as a Habitat Conservation Plan.

The State of California considers an Endangered Species to be one whose prospects of survival and reproduction are in immediate jeopardy; a Threatened Species as one present in such small numbers throughout its range that it is likely to become an Endangered Species in the near future in the absence of special protection or management; and a Rare Species as one present in such small numbers throughout its range that it may become Endangered if its present environment worsens. The Rare Species designation applies only to California native plants. The CESA authorizes the CDFW to issue permits authorizing incidental take of Threatened and Endangered Species. A California Species of Special Concern is an informal designation that the CDFW uses for some declining wildlife species that are not State Candidates for listing. This designation does not provide legal protection but signifies that these species are recognized as special status by the CDFW.

California Environmental Quality Act

State law (*California Fish and Game Code,* Section 1802) confers upon the CDFW the trustee responsibility and authority for the public trust resource of wildlife in California. The CDFW may play various roles under the CEQA process. By State law, the CDFW has jurisdiction over the conservation, protection, and management of the wildlife, native plants, and habitat necessary to maintain biologically sustainable populations. The CDFW is responsible for consulting with CEQA lead and responsible agencies and provides the requisite biological expertise to review and comment upon environmental documents and impacts arising from Project activities.

As a trustee agency, the CDFW has jurisdiction over certain resources held in trust for the people of California. Trustee agencies are generally required to be notified of CEQA documents relevant to their jurisdiction, whether or not these agencies have actual permitting authority or approval power over aspects of the underlying project (14 *California Code of Regulations*, Section 15386). The CDFW, as a trustee agency, must be notified of CEQA documents regarding projects involving fish and wildlife of the state, as well as Rare and Endangered native plants, wildlife areas, and ecological reserves. Although, the CDFW, as a trustee agency, cannot approve or disapprove a project, CEQA lead and responsible agencies are required to consult with the CDFW. The CDFW, as the trustee agency, has the authority to make recommendations regarding those resources held in trust for the people of California (*California Fish and Game Code,* Section 1802).

Lake and Streambed Alteration Program

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California that support wildlife resources and/or riparian vegetation are subject to CDFW regulations, pursuant to Sections 1600 through 1616 of the *California Fish and Game Code.* Under Section 1602, it is unlawful for any person to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream, or lake designated by CDFW as waters within their jurisdiction without first notifying CDFW of such activity. Additionally, a person cannot use any material from the streambeds without first notifying the CDFW of such activity. For a project that may affect stream channels and/or riparian vegetation regulated under Sections 1600 through 1616 of the *California Fish and Game Code,* CDFW authorization is required in the form of a Streambed Alteration Agreement.

Native Plant Protection Act

The Native Plant Protection Act (*California Fish and Game Code,* Section 1900 et seq.) provides for the preservation, protection, and enhancement of Endangered or Rare native plants in California. These sections also allow for the adoption of regulations governing the taking, possession, propagation, transportation, exportation, importation, or sale of any Endangered or Rare native plants.

California Fully Protected Species

Bird, mammal, reptile, amphibian, and fish species are defined as California Fully Protected Species in Sections 3511, 4700, 5050, and 5515 of the *California Fish and Game Code*. Fully protected animals may not be harmed, taken, or possessed.

Nesting Bird Protection

Nesting birds are protected in Sections 3503, 3503.5, and 3513 of the *California Fish and Game Code.* These sections state that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by or any regulation made pursuant to this code. Section 3503.5 explicitly provides protection for all birds of prey, including their eggs and nests. Section 3513 makes it unlawful to take or possess any migratory non-game bird as designated in the MBTA.

Threatened and Endangered Species

The *California Code of Regulations* (Sections 670.2 and 670.5) lists species, subspecies, and varieties of plants (Section 670.2) and animals (Section 670.5) that are designated as Threatened or Endangered (as defined by Section 2067 of the *California Fish and Game Code*) or Rare (as defined by Section 1901 of the *California Fish and Game Code*) in California.

California Porter-Cologne Water Quality Control Act

Pursuant to the California Porter-Cologne Water Quality Control Act, the SWRCB and the 9 RWQCBs may require permits (known as “Waste Discharge Requirements” [WDRs]) for the fill or alteration of the “Waters of the State”. The term “Waters of the State” is defined as “any surface water or groundwater, including saline waters, within the boundaries of the state” (*California Water Code,* Section 13050[e]). The State and Regional Boards have interpreted their authority to require WDRs to extend to any proposal to fill or alter “Waters of the State”, even if those same waters are not under USACE jurisdiction. Pursuant to this authority, the State and Regional Boards may require the submission of a “report of waste discharge” under Section 13260 of the *California Water Code*, which is treated as an application for WDRs.

Oak Woodland Conservation Act (2001) and California Public Resources Code (Section 21083.4)

The Oak Woodland Conservation Act (*California Fish and Game Code,* Sections 1360 et seq.), passed by the California Legislature in 2001, established an Oak Woodland Conservation Fund administered by the Wildlife Conservation Board (WCB) to help and encourage local governments, park and open space districts, resource conservation districts, nonprofit organizations and private property owners to protect and enhance oak woodlands. “It offers landowners, conservation organizations, and cities and counties an opportunity to obtain funding for projects designed to conserve and restore California’s oak woodlands. It authorizes the WCB to purchase oak woodland conservation easements and provide grants for land improvements and oak restoration efforts” (McCreary 2004). The Act defines oak woodlands as “an oak stand with a greater than 10 percent canopy cover or that may have historically supported greater than 10 percent canopy cover” (*California Fish and Game Code,* Section 1361[h]).

Section 21083.4 of the *California Public Resources Code* (PRC) (Senate Bill [SB] 1334), which references the Oak Woodland Conservation Act, provides an additional layer of protection for oak woodlands. Section 21083.4 requires that Counties determine if a project may result in a conversion of oak woodlands that will have a significant impact on the environment. If it is

determined that it would, the County must require one or more of the following to mitigate the significant effect of the conversion of oak woodlands:

1. Conserve oak woodlands, through the use of conservation easements;
2. (A) Plant an appropriate number of trees, including maintaining plantings and replacing dead or diseased trees.

   (B) The requirement to maintain trees pursuant to this paragraph terminates seven years after trees are planted.

   (C) Mitigation pursuant to this paragraph shall not fulfill more than one-half of the mitigation requirement for the Project.

   (D) The requirements imposed pursuant to this paragraph also may be used to restore former oak woodlands;
3. Contribute funds to the Oak Woodlands Conservation Fund. A project applicant that contributes funds under this paragraph shall not receive a grant from the Oak Woodlands Conservation Fund as part of the mitigation for the Project; and
4. Other mitigation measures developed by the County.

1.3.3 Local

City of Malibu Local Coastal Program Local Implementation Plan

The City of Malibu Local Coastal Program Local Implementation Plan was adopted by the California Coastal Commission on September 13, 2002 pursuant to the provisions of California PRC Section 30166.5. The stated purpose of the Plan is to implement the policies of the California Coastal Act of 1976, to carry out the policies of the City of Malibu Land Use Plan, and, in part, to:

- Assure orderly, balanced utilization and conservation of coastal zone resources, taking into account the social and economic needs of the people of this City and of the State;
- Protect, maintain, and where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and manmade resources;
- To protect and enhance the quality of the natural environment;
- To ensure that any development in the coastal zone preserves and enhances coastal resources; and protects coastal views and access; and guides growth, development, and environmental management in a manner consistent with the provisions of the Land Use Plan of the Local Coastal Program; and
- To provide adequate light and air, clean ground water, and non-polluting waste disposal.

This Biological Assessment Report was drafted in accordance with the requirements of the City of Malibu Local Coastal Program Local Implementation Plan for projects with potential for sensitive species or habitat, or if the proposed development (including required fuel modification) occurs within 200 feet of a known (mapped) ESHA.

2.0 SURVEY METHODOLOGY

This section describes the methodology used to conduct a literature review; perform general biological surveys; and assess the potential for each portion of the Study Area to support special status species. Representative site photos can be found in Attachment B.

2.1 LITERATURE REVIEW

An initial biological resource literature review was conducted based on existing records for the region. The California Native Plant Society's (CNPS's) Inventory of Rare and Endangered Vascular Plants of California (CNPS 2021, 2023) and the CDFW's California Natural Diversity Database (CDFW 2021, 2023) were reviewed to identify special status plants, wildlife, and habitats known to occur within the Project vicinity. A review of FESA critical habitat documents was used to identify any portions of the Study Area occurring within proposed or designated Critical Habitat. Database searches included the USGS' Malibu Beach, Topanga, Point Dume 7.5-minute quadrangles.

2.2 VEGETATION MAPPING AND GENERAL BIOLOGICAL SURVEYS

Psomas Biologist Sarah Thomas conducted field surveys on October 14, 2019, and November 24, 2020, to evaluate the potential of habitats on the site to support special status plant and wildlife species. Vegetation was mapped in the field on a 1 inch equals 200 feet (1″ = 200′) scale color aerial. In the event the tree canopy covered another vegetation type (e.g., oak canopy over a road) the vegetation was mapped as the corresponding vegetation type for the canopy. Nomenclature for vegetation types generally follows that of *The Vegetation Classification and Mapping Program: List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database* (CDFG 2010). A map of the vegetation types is provided in Exhibit 4, Vegetation Types and Other Areas.

Active searches for reptiles and amphibians included lifting, overturning, and carefully replacing rocks and debris. Birds were identified by visual and auditory recognition. Surveys for mammals were conducted during the day and included searching for and identifying diagnostic sign, including scat, footprints, burrows, and trails. Taxonomy and nomenclature for wildlife generally follows Crother (2017) for amphibians and reptiles, American Ornithologists' Union (AOU 2020) for birds, and Smithsonian National Museum of Natural History (2011) for mammals. All species observed were recorded in field notes. It should be noted that focused biological surveys have not been conducted for the proposed Project.

2.3 FOCUSED SPECIAL STATUS PLANT SURVEYS

Botanical surveys were floristic in nature and consistent with the protocols created by the CDFW (CDFW 2018). Prior to the field surveys, a literature search was conducted to identify special status plant species reported from the vicinity of the proposed Project site. Sources reviewed include the USGS 7.5-minute quadrangles for Point Dume, Malibu Beach, Triunfo Pass, Newbury Park, Thousand Oaks, and Calabasas in the CNPS' Locational Inventory of Rare and Endangered Vascular Plants of California (CNPS 2022) and the CDFW's CNDDB (CDFW 2022a).

According to the National Weather Service, the University of California, Los Angeles station (the nearest available data) received 13.32 inches of precipitation for Water Year 2022 to date (October 1, 2021, through August 31, 2022), which is approximately 82 percent of the normal average (National Weather Service 2023). Where available, reference populations were monitored for annual and difficult-to-detect target species to ensure that the scheduled surveys were comprehensive. This is especially relevant during periods of unusual rainfall patterns or

below-average rainfall. If conditions at a nearby reference population are suitable for germination and growth, then it can be inferred that conditions would also be suitable in the survey area. Reference populations were not monitored for species with a CRPR of 4; perennials (e.g., *Atriplex* species) which would be identifiable throughout the year; or for species with no extant, publicly accessible reference population in the Project region.

Psomas Biologist Sarah Thomas conducted special status plant surveys on April 20 and July 12, 2021. The surveys comprised 8 total person-hours. The potentially suitable habitats for special status plants within the survey area were systematically surveyed to the extent possible during the site visits. All plant species observed were recorded in field notes. Plant species were identified in the field or collected for subsequent identification using keys in Hickman (1993) and Munz (1974). Taxonomy follows Hickman (1993) and/or current scientific data (e.g., scientific journals) for scientific and common names.

3.0 EXISTING BIOLOGICAL RESOURCES

This section describes the biological resources that occur or potentially occur on the Project site or within nearby off-site areas associated with the proposed Project. The following topics are discussed below: vegetation types; wildlife populations and movement patterns; and jurisdictional waters.

3.1 FIRE HISTORY

A database search of the fire history overlapping the survey area was conducted using the 2020 California Department of Forestry and Fire Protection data set. Seven fires have been documented with burn areas overlapping the survey area. Fire names and dates are as follows:

- 1942, Las Flores Fire N. 47
- 1956, Hume Fire
- 1970, Wright Fire
- 1985, Piuma Fire
- 1993, Old Topanga Fire
- 1996, Calabasas Fire
- 2007, Canyon Fire

Evidence of past fires was not observed during the field visits.

3.2 UNAUTHORIZED DEVELOPMENT

Unauthorized development was not observed within the Study Area during the field visits.

3.3 VEGETATION TYPES AND OTHER AREAS

This section describes the vegetation types and other areas that occur on the Project site (Exhibit 4). A description of each vegetation type/other area is found below. Table 1 identifies the acreage for the vegetation types and other areas in the survey area.

TABLE 1
VEGETATION TYPES AND OTHER AREAS

Vegetation Types within the Project Boundaries	On-Site Total (acres)
blue elderberry stands – laurel sumac chaparral	0.99
mountain mahogany chaparral	0.47
disturbed coastal sage scrub	0.31
revegetated coastal sage scrub	0.22
olive grove (planted)	0.71
ruderal	0.98
mowed non-native grassland	0.26
developed/eucalyptus groves	3.06
developed/ornamental	2.68
developed/woodland and hedge landscaping	5.56
bare ground	0.37
developed	2.67
Grand Total	**18.30**

Blue elderberry stands – laurel sumac chaparral is a non-homogenous mixture of different shrubs and trees. It is dominated by laurel sumac (*Malosma laurina*) and blue elderberry (*Sambucus nigra* ssp. *caerulea*), with other shrubs such as lemonade berry (*Rhus integrifolia*) and date palm (*Phoenix* spp.). It occurs west of Serra Road and north of PCH.

Mountain mahogany chaparral is dominated by mountain mahogany (*Cercocarpus betuloides*). It occurs on a northwest facing slope at the top of Sweetwater Mesa Road. Other species also occurring include chamise (*Adenostoma fasciculatum*), California sagebrush (*Artemisia californica*), toyon (*Heteromeles arbutifolia*), laurel sumac (Malosma laurina), black sage (*Salvia mellifera*), California buckwheat (*Eriogonum fasciculatum*), and Menzies' goldenbush (*Isocoma menziesii*). Non-native grasses such as ripgut brome (*Bromus diandrus*) occur in the understory.

Disturbed coastal sage scrub is co-dominated by coastal buckwheat (*Eriogonum cinereum*), California buckwheat, California sagebrush, white sage (*Salvia apiana*), and Menzies' goldenbush. This vegetation type shows evidence of physical disturbance. It is located on a north facing slope at the top of Sweetwater Mesa Road. The area between shrubs is largely bare ground in this area, however, non-native grasses are scattered throughout. Revegetated coastal sage scrub occurs in a strip along Sweetwater Mesa Road and is similar to the description for disturbed coastal sage scrub. This area was revegetated with sage scrub species listed above.

Olive grove (planted) occurs in the middle of the survey area west of Sweetwater Mesa Road. This area is a monoculture of olive trees (*Olea europaea*), planted in rows.

Ruderal vegetation is dominated by weedy species such as white horehound (*Marrubium vulgare*), telegraph weed (*Heterotheca grandiflora*), and wirelettuce (*Stephanomeria* spp.). Non-native grasses (*Bromus* spp.) also occur here. Mowed non-native grassland is an area dominated by non-native grasses that has been mowed.

Developed/eucalyptus groves, developed/ornamental, and developed/woodland and hedge landscaping all occur throughout the majority of Sweetwater Mesa and Serra Roads. These areas are associated with residential plantings and street plantings. Dominate species in these areas

include Eucalyptus trees (*Eucalyptus* spp.), date palm, Brazilian pepper (*Schinus terebinthifolia*), ornamental cactus, and various non-native ornamental shrub species shaped into hedges.

Bare ground and developed areas are devoid of vegetative cover.

3.4 ENVIRONMENTALLY SENSITIVE HABITAT AREA

According to the City of Malibu Local Coastal Program (LCP) ESHA and Marine Resources Map 3: Dan Blocker to Malibu Pier, mapped ESHAs in the vicinity of the survey area occur directly adjacent and west of Serra Road and approximately 300 feet east of the northernmost portion of the Study Area on Sweetwater Mesa Road (Exhibits 5, 7, and 9). The portion of the ESHA that falls west of Serra Road overlaps the survey area. No riparian vegetation was mapped within this area.

3.5 COMMON WILDLIFE

The Study Area is comprised primarily of developed and non-native habitats, with some native habitats occurring in the southern and northern portions of the survey area. The survey area provides suitable habitat for several wildlife species. Common wildlife species observed or expected to occur in the Study Area are discussed below.

Fish are not expected to occur in the survey area due to a lack of habitat. No waterways occur within the survey area.

Amphibians require moisture for at least a portion of their life cycle and many require standing or flowing water for reproduction. Terrestrial species may or may not require standing water for reproduction. These species are able to survive in dry areas by aestivating (i.e., remaining beneath the soil in burrows or under logs and leaf litter and emerging only when temperatures are low and humidity is high). Many of these species' habitats are associated with water and they emerge to breed once the rainy season begins. Soil moisture conditions can remain high throughout the year in some habitat types depending on factors such as the amount of vegetation cover, elevation, and slope aspect. Amphibian species that may occur include western toad (*Anaxyrus boreas*) and Baja California treefrog (*Pseudacris hypochondriaca*).

Reptilian diversity and abundance typically vary with vegetation type and character. Many species prefer only one or two vegetation types; however, most species will forage in a variety of habitats. Most species occurring in open areas use rodent burrows for cover, protection from predators, and refuge during extreme weather conditions. Reptile species observed on the Project site include the western fence lizard (*Sceloporus occidentalis*) and side-blotched lizard (*Uta stansburiana*). Other reptile species that may occur in all vegetation types on the Project site include, red racer (*Coluber flagellum piceus*), San Diego gopher snake (*Pituophis catenifer annectens*), California kingsnake (*Lampropeltis californiae*), and southern Pacific rattlesnake (*Crotalus oreganus helleri*).

A variety of bird species are expected to be residents on the Project site, using the habitats throughout the year. Other species are present only during certain seasons. For example, the white-crowned sparrow (*Zonotrichia leucophrys*) is expected to occur on the Project site during the winter season and then migrate north in the spring to breed during the summer. On the Project site, chaparral and scrub vegetation supports bird populations composed of species adapted to the dense vegetation that typifies these areas. Although large numbers of individuals can often be found inhabiting these vegetation types, species diversity is usually low to moderate, depending on the season. A relatively high proportion of the birds breeding in these habitats are year-round residents. Such species observed during the surveys include California quail

(*Callipepla californica*), Bewick's wren (*Thryomanes bewickii*), wrentit (*Chamaea fasciata*), spotted towhee (*Pipilo maculatus*), and California towhee (*Pipilo crissalis*).

Developed/eucalyptus groves, developed/ornamental, and developed/woodland and hedge landscaping Eucalyptus woodland habitats provide relatively low nesting habitat value to native bird species, although they do provide food and shelter to both migratory and resident birds. Bird species observed that may breed in these habitats on the Project site include but are not limited to common raven (*Corvus corax*), mourning dove (*Zenaida macroura*), Anna's hummingbird (*Calypte anna*), California towhee (*Melozone crissalis*), spotted towhee (*Pipilo maculatus*), bushtit (*Psaltriparus minimus*), and Bullock's oriole (*Icterus bullockii*).

The ruderal and mowed non-native grassland vegetation types support fewer bird species than most other vegetation types on the Project site. However, these areas do provide foraging habitat for a number of species. Mourning dove, black phoebe (*Sayornis nigricans*), lesser goldfinch (*Carduelis psaltria*), and house finch (*Haemorhous mexicanus*) are expected to forage in these areas.

Raptors observed or expected to occur on the Project site include the turkey vulture (*Cathartes aura*), sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk (*Accipiter cooperii*), red-tailed hawk (*Buteo jamaicensis*), barn owl (*Tyto alba*), great horned owl (*Bubo virginianus*), red-shouldered hawk (*Buteo lineatus*), and American kestrel (*Falco sparverius*). The red-tailed hawk, barn owl, great horned owl, red-shouldered hawk, Cooper's hawk, and American kestrel may nest on the Project site.

As with other taxonomic groups, the presence of different vegetation types on the Project site offer mammals a variety of habitats. The Project site being mostly developed is expected to support a low diversity and abundance of mammals on the Project site. Small, ground-dwelling mammals observed or expected to occur on the Project site include deer mouse (*Peromyscus maniculatus*), California pocket mouse (*Perognathus californicus*), California mouse (*Peromyscus californicus*), woodrat (*Neotoma* sp.), pocket gopher (*Thomomys bottae*), California ground squirrel (*Spermophilus beecheyi*), and desert cottontail (*Sylvilagus audubonii*). Bats occur throughout most of Southern California and may use any portion of the Project site as foraging habitat. The trees in the survey area also provide potential roosting opportunities. The pallid bat (*Antrozous pallidus*), western mastiff bat (*Eumops perotis californicus*), Brazilian free-tailed bat (*Tadarida brasiliensis*), California myotis (*Myotis californicus*), western pipistrelle (*Pipistrellus hesperus*), and hoary bat (*Lasiurus cinereus*) may all occur on the Project site and off-site areas.

Medium to large mammals, including both herbivores and carnivores, that are expected on the Project site and off-site areas include striped skunk (*Mephitis mephitis*), bobcat (*Felis rufus*), mule deer (*Odocoileus hemionus*), Virginia opossum (*Didelphis virginiana*), gray fox (*Urocyon cinereoargenteus*), common raccoon (*Procyon lotor*), and coyote (*Canis latrans*).

3.5.1 Wildlife Movement

Wildlife corridors link together areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. The fragmentation of open space areas by urbanization creates isolated "islands" of wildlife habitat. In the absence of habitat linkages that allow movement to adjoining open space areas, various studies have concluded that some wildlife species, especially the larger and more mobile mammals, will not likely persist over time in fragmented or isolated habitat areas because they prohibit the infusion of new individuals and genetic information (MacArthur and Wilson 1967; Soule 1987; Harris and Gallagher 1989; Bennett 1990). Corridors mitigate the effects of this fragmentation by (1) allowing animals to move between remaining habitats, thereby permitting depleted populations to be replenished and promoting genetic exchange; (2) providing routes for wildlife to escape from fire, predators, and

human disturbances, thus reducing the risk that catastrophic events (e.g., fire or disease) will result in population or local species extinction; and (3) serving as travel routes for individual animals as they move in their home ranges in search of food, water, mates, and other necessary resources (Noss 1983; Fahrig and Merriam 1985; Simberloff and Cox 1987; Harris and Gallagher 1989).

Wildlife movement activities usually fall into one of three movement categories: (1) dispersal (e.g., juvenile animals from natal areas or individuals extending range distributions); (2) seasonal migration; and (3) movements related to home range activities (e.g., foraging for food or water, defending territories or searching for mates, breeding areas, or cover). A number of terms such as “wildlife corridor”, “travel route”, “habitat linkage”, and “wildlife crossing” have been used in various wildlife movement studies to refer to areas in which wildlife move from one area to another. To clarify the meaning of these terms and to facilitate the discussion on wildlife movement in this analysis, these terms are defined as follows:

- **Travel Route –** a landscape feature (such as a ridgeline, drainage, canyon, or riparian strip) within a larger natural habitat area that is used frequently by animals to facilitate movement and to provide access to necessary resources (e.g., water, food, cover, den sites). The travel route is generally preferred because it provides the least amount of topographic resistance in moving from one area to another. It contains adequate food, water, and/or cover while moving between habitat areas and it provides a relatively direct link between target habitat areas.
- **Wildlife Corridor –** a piece of habitat, usually linear in nature, that connects two or more habitat patches that would otherwise be fragmented or isolated from one another. Wildlife corridors are usually bound by urban land areas or other areas unsuitable for wildlife. The corridor generally contains suitable cover, food, and/or water to support species and to facilitate movement while in the corridor. Larger, landscape-level corridors (often referred to as “habitat linkages” or “landscape linkages”) can provide both transitory and resident habitat for a variety of species.
- **Wildlife Crossing –** a small, narrow area, relatively short in length and generally constricted in nature that allows wildlife to pass under or through an obstacle or barrier that otherwise hinders or prevents movement. Crossings typically are man-made and include culverts, underpasses, drainage pipes, and tunnels to provide access across or under roads, highways, pipelines, or other physical obstacles. These often represent “choke points” along a movement corridor, which may impede wildlife movement and increase the risk of predation.

It is important to note that, in a large open space area where there are few or no man-made or naturally occurring physical constraints to wildlife movement, wildlife corridors (as defined above) may not yet exist. Given an open space area that is both large enough to maintain viable populations of species and to provide a variety of travel routes (e.g., canyons, ridgelines, trails, riverbeds, and others), wildlife will use these “local” routes while searching for food, water, shelter, and mates and will not need to cross into other large open space areas. Based on their size, location, vegetative composition and availability of food, some of these movement areas (e.g., large drainages and canyons) are used for longer lengths of time and serve as source areas for food, water and cover, particularly for small- and medium-sized animals. This is especially true if the travel route is within a larger open space area. However, once open space areas become constrained and/or fragmented as a result of urban development or construction of physical obstacles (such as roads and highways), the remaining landscape features or travel routes that connect the larger open space areas become corridors as long as they provide adequate space, cover, food and water, and do not contain obstacles or distractions (e.g., man-made noise, lighting) that would generally hinder wildlife movement.

In general, animals discussed within the context of movement corridors typically include larger, more mobile species (such as mule deer, black bear, mountain lion, fox [*Urocyon* sp.], and coyote). Most of these species have relatively large home ranges through which they move to find adequate food, water, and breeding and wintering habitat. It is assumed that corridors that serve larger, more vagile species (i.e., those that can move freely, such as birds) also serve as corridors for many smaller, less mobile species, such as reptiles, amphibians, and rodents (generally discussed within the context of local movement). For smaller species, these local movements are compared to "stepping stones" as individuals move between populations; this facilitated gene flow on the regional scale.

The availability of open space corridors is generally considered less important for bird species. Most bird species are believed to fly in more or less direct paths to desired locations; however, some habitat-specific species may not move great distances from their preferred habitat types and are believed to be less inclined to travel across unsuitable areas.

Ideally, an open space corridor should encompass a heterogeneous mix of vegetation types to accommodate the ecological requirements of a wide variety of resident species in any particular region. Most species typically prefer adequate vegetation cover during movement, which can serve as both a food source and as protection from weather and predators. Drainages, riparian areas, and forested canyon bottoms typically serve as natural movement corridors because these features provide cover, food, and often water for a variety of species. Very few species will move across large expanses of open, uncovered habitat unless it is the only option available to them. For some species, landscape linkages must be able to support animals for sustained periods, not just for travel. Smaller or less mobile animals (such as rodents and reptiles) require long periods to traverse a corridor, so the corridor must contain adequate food and cover for survival.

The survey area is located mostly within a developed area. The areas that are vegetated with native vegetation occur on the edges of disturbance or development. Therefore, wildlife is expected to move relatively freely between the survey area and open space areas to the north and west but are generally not expected to move into the developed areas of the Study Area (with exception of urban-tolerant species such as coyotes and striped skunks).

3.6 SPECIAL STATUS BIOLOGICAL RESOURCES

The following section addresses special status biological resources reported from the region. These resources include plant and wildlife species that have been afforded special status and/or are recognized by federal and State resource agencies, as well as private conservation organizations. In general, the principal reason an individual taxon (i.e., species, subspecies, or variety) is given such recognition is the documented or perceived decline or limitations of its population size, geographic range, and/or distribution resulting in most cases from habitat loss. This list includes species reported by the California Natural Diversity Database (CNDDB), and CNPS and is supplemented with species from the author's experience that could occur based on the presence of suitable habitat. In addition, special status biological resources include vegetation types and habitats that are either unique, of relatively limited distribution in the region, or of particularly high wildlife value. These resources have been defined by federal, State, and local government conservation programs. Sources used to determine the special status of biological resources are listed below.

- **Habitats** – the CNDDB (CDFW 2023a) and the CDFG's *List of Vegetation Alliances and Associations, Vegetation Classification and Mapping Program* (CDFG 2010).
- **Plants** – the Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPS 2021, 2023); the CNDDB (CDFW 2021, 2023a); various USFWS *Federal Register*

notices regarding listing status of plant species; and the CDFG's *List of Special Vascular Plants, Bryophytes, and Lichens* (CDFW 2023b).

- **Wildlife** – the CNDDB (CDFW 2021, 2023a); various USFWS *Federal Register* notices regarding listing status of wildlife species; and the CDFW's *List of Special Animals* (CDFW 2023c).

3.6.1 Special Status Vegetation Types

In addition to providing an inventory of special status plant and wildlife species, the CNDDB also provides an inventory of vegetation types that are considered special status by the State and federal resource agencies, academic institutions, and various conservation groups (such as the CNPS). Determination of the level of imperilment is based on the NatureServe Heritage Program Status Ranks that rank both species and vegetation types on a global (**G**) and statewide (**S**) basis according to their rarity; trend in population size or area; and recognized threats (e.g., proposed developments, habitat degradation, and non-native species invasion). The ranks are scaled from 1 to 5. NatureServe considers **G1 or S1** communities to be critically imperiled and at a very high risk of extinction or elimination due to extreme rarity, very steep declines, or other factors; **G2 or S2** communities to be imperiled and at high risk of extinction or elimination due to very restricted range, very few populations or occurrences, steep declines, or other factors; **G3 or S3** communities to be vulnerable and at moderate risk of extinction or elimination due to a restricted range, relatively few populations or occurrences, recent and widespread declines, or other factors; **G4 or S4** communities to be apparently secure and uncommon but not rare with some cause for long-term concern due to declines or other factors; and **G5 or S5** communities to be secure (Faber-Langendoen et al. 2009).

All vegetation alliances[1] that have State ranks of S1 to S3 are considered to be highly imperiled. Currently, association ranks are not provided, but associations ranked as S3 or rarer are noted. None of the vegetation types in the survey area would be considered special status.

3.6.2 Definitions of Special Status Biological Resources

A federally **Endangered** species is one facing extinction throughout all or a significant portion of its geographic range. A federally **Threatened** species is one likely to become Endangered within the foreseeable future throughout all or a significant portion of its range. The presence of any federally Threatened or Endangered species within a project impact area generally imposes severe constraints on development, particularly if an action would result in "take" of the species or its habitat. The FESA defines the term "take" as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct. Harm, in this sense, can include any disturbance of habitats used by the species during any portion of its life history.

Proposed species or **Candidate** species are those officially proposed by the USFWS for addition to the federal Threatened and Endangered species list. Because proposed species may soon be listed as Threatened or Endangered, the presence of a Proposed or Candidate species may impose constraints on development if they are listed prior to an action, particularly if the action would result in "take" of the species or its habitat.

The State of California considers an Endangered species as one whose prospects of survival and reproduction are in immediate jeopardy; a Threatened species as one present in such small numbers throughout its range that it is likely to become an Endangered species in the near future in the absence of special protection or management; and a Rare species as one present in such

[1] A vegetation alliance is "a classification unit of vegetation, containing one or more associations and defined by one or more diagnostic species, often of high cover, in the uppermost layer or the layer with the highest canopy cover" (Sawyer et al. 2009).

small numbers throughout its range that it may become Endangered if its present environment worsens. Rare species applies only to California native plants; these species are treated as State-listed species. State-listed Threatened and Endangered species are fully protected against take unless an Incidental Take Permit is obtained from the resource agencies. The presence of any State-listed Rare, Threatened, or Endangered species generally imposes constraints on proposed actions, particularly if the action would result in "take" of the species or its habitat.

California Species of Special Concern is an informal designation used by the CDFW for some declining wildlife species that are not State Candidates. This designation does not provide legal protection, but signifies that these species are recognized as special status by the CDFW.

Species that are **California Fully Protected** and **Protected** include those protected by special legislation for various reasons, such as the mountain lion and white-tailed kite (*Elanus leucurus*). Fully Protected species may not be taken or possessed at any time. California Protected species include those species that may not be taken or possessed at any time except under special permit from the CDFW issued pursuant to the *California Code of Regulations* (Title 14, Sections 650, 670.7) or Section 2081 of the *California Fish and Game Code*.

The CRPR, formerly known as CNPS List, is a ranking system by the Rare Plant Status Review group[2] and managed by the CNPS and the CDFW. A CRPR summarizes information on the distribution, rarity, and endangerment of California's vascular plants. Plants with a CRPR of **1A** are presumed extinct in California because they have not been seen in the wild for many years. Plants with a CRPR of **1B** are Rare, Threatened, or Endangered throughout their range. Plants with a CRPR of **2A** are presumed extirpated from California but are more common elsewhere. Plants with a CRPR of **2B** are considered Rare, Threatened, or Endangered in California, but are more common elsewhere. Plants with a CRPR of **3** require more information before they can be assigned to another rank or rejected; this is a "review" list. Plants with a CRPR of **4** are of limited distribution or infrequent throughout a broader area in California; this is a "watch" list. The Threat Rank is an extension added onto the CRPR to designate the level of endangerment by a 1 to 3 ranking. An extension of **.1** is assigned to plants that are considered to be "seriously threatened" in California (i.e., over 80 percent of the occurrences are threatened or having a high degree and immediacy of threat). Extension **.2** indicates the plant is "fairly threatened" in California (i.e., between 20 and 80 percent of the occurrences are threatened or have a moderate degree and immediacy of threat). Extension **.3** is assigned to plants that are considered "not very threatened" in California (i.e., less than 20 percent of occurrences are threatened or have a low degree and immediacy of threat or no current threats known). The absence of a threat code extension indicates plants lacking any threat information.

3.6.3 Special Status Plants

Table 2 provides a summary of special status plant species reported to occur in the Project region and includes information on the status, species background, potential for occurrence, and results of focused survey efforts. This list includes species reported by the CNDDB and the CNPS, supplemented with species from the Project Biologist's experience that either occur nearby or could occur based on the presence of potentially suitable habitat. Note that these species are listed alphabetically according to their scientific name. Exhibits 6, 8, and 10 show the locations of special status species observed during surveys.

[2] A group of over 300 botanical experts from the government, academia, non-governmental organizations, and the private sector.

TABLE 2
SPECIAL STATUS PLANT SPECIES REPORTED FROM THE PROJECT REGION AND SURVEY RESULTS

Scientific Name	Common Name	USFWS	CDFW	CRPR	Species Background	Potential
Astragalus brauntonii	Braunton's milk-vetch	FE		1B.1	Perennial herb. Recently burned and disturbed areas, in sandstone and carbonite soils, in chaparral, coastal scrub, and grasslands; 13–2,099 ft. Southern California County Distribution: Los Angeles, Orange, Riverside, Ventura. Blooming period: January–August	Not expected to occur; no suitable habitat.
Astragalus pycnostachyus *var.* lanosissimus	Ventura marsh milk-vetch	FE	SE	1B.1	Perennial herb. Coastal dunes and scrub, marshes and swamps at ocean edges; 3–115 ft. Southern California County Distribution: Los Angeles (Presumed extirpated), Orange (Presumed extirpated), Ventura. Blooming period: June–October	Not expected to occur; no suitable habitat.
Astragalus tener *var.* titi	coastal dunes milk-vetch	FE	SE	1B.1	Annual herb. Often in vernally mesic areas in sandy coastal bluff scrub, coastal dunes, and mesic coastal prairie; 3–164 ft. Southern California County Distribution: Los Angeles (Presumed extirpated), San Diego (Presumed extirpated; Occurrence confirmed, but possibly extirpated). Blooming period: March–May	Not expected to occur; no suitable habitat.
Atriplex coulteri	Coulter's saltbush			1B.2	Perennial herb. Alkaline or clay soils in coastal bluff scrub, coastal dunes, coastal scrub, and grassland; 9–1,509 ft. Southern California County Distribution: Los Angeles, Orange, San Bernardino, San Diego, Ventura. Blooming period: March–October	Not expected to occur; no suitable habitat.
Atriplex pacifica	South Coast saltscale			1B.2	Annual herb. Coastal bluff scrub, coastal dunes, coastal scrub, playas; 0–459 ft. Southern California County Distribution: Los Angeles, Orange, Riverside, San Diego, Ventura (Presumed extirpated). Blooming period: March–October	Not expected to occur; no suitable habitat.
Atriplex parishii	Parish's brittlescale			1B.1	Annual herb. Alkaline soils in chenopod scrub, playas, and vernal pools; 82–6,232 ft. Southern California County Distribution: Los Angeles (Presumed extirpated), Orange (Presumed extirpated), Riverside, San Bernardino (Presumed extirpated), San Diego. Blooming period: June–October	Not expected to occur; no suitable habitat.
Atriplex serenana *var.* davidsonii	Davidson's saltscale			1B.2	Annual herb. Alkaline conditions in coastal bluff scrub and coastal scrub; 32–656 ft. Southern California County Distribution: Los Angeles (Presumed extirpated; Occurrence confirmed, but possibly extirpated), Orange, Riverside, San Diego, Ventura. Blooming period: April–October	Not expected to occur; no suitable habitat.
Baccharis malibuensis	Malibu baccharis			1B.1	Deciduous shrub. Chaparral, coastal scrub, cismontane and riparian woodland; 492–1,000 ft. Southern California County Distribution: Los Angeles, Orange. Blooming period: August	Limited potential to occur; marginally suitable habitat. Not observed during focused surveys.
Calochortus clavatus *var.* gracilis	slender mariposa lily			1B.2	Perennial bulbiferous herb. Chaparral, coastal scrub, grassland; 1,050–3,280 ft. Southern California County Distribution: Los Angeles, Ventura. Blooming period: March–June	Not expected to occur; outside current known elevational range.
Calochortus plummerae	Plummer's mariposa lily			4.2	Perennial bulbiferous herb. Granitic and rocky areas in chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and grassland; 328–5,576 ft. Southern California County Distribution: Los Angeles, Orange, Riverside, San Bernardino, Ventura. Blooming period: May–July	Limited potential to occur; marginally suitable habitat. Not observed during focused surveys.
Chloropyron maritimum *ssp.* maritimum	salt marsh bird's-beak	FE	SE	1B.2	Hemiparasitic annual herb. Coastal dunes and coastal salt marshes and swamps; 0–98 ft. Southern California County Distribution: Los Angeles, Orange, San Bernardino, San Diego, Ventura. Blooming period: May–October	Not expected to occur; no suitable habitat.
Chorizanthe parryi *var.* parryi	Parry's spineflower			1B.1	Annual herb. Sandy or rocky openings in chaparral, coastal scrub, cismontane woodland, and grassland; 902–4,001 ft. Southern California County Distribution: Los Angeles, Riverside, San Bernardino. Blooming period: April–June	Not expected to occur; no suitable habitat.
Deinandra minthornii	Santa Susana tarplant		SR	1B.2	Deciduous shrub. Rocky soils in chaparral and coastal scrub; 918–2,493 ft. Southern California County Distribution: Los Angeles, Ventura. Blooming period: July–November.	Limited potential to occur; marginally suitable habitat. Not observed during focused surveys.
Dithyrea maritima	beach spectaclepod		ST	1B.1	Perennial rhizomatous herb. Coastal dunes and sandy coastal scrub; 10–164 ft. Southern California County Distribution: Los Angeles (Presumed extirpated), Ventura. Blooming period: March–May	Not expected to occur; no suitable habitat.
Dudleya blochmaniae *ssp.* blochmaniae	Blochman's dudleya			1B.1	Perennial herb. Rocky, often clay or serpentine soils in coastal bluff scrub, chaparral, coastal scrub, and grassland; 16–1,476 ft. Southern California County Distribution: Los Angeles, Orange, San Diego, Ventura. Blooming period: April–June	Not expected to occur; no suitable habitat.
Dudleya cymosa *ssp.* agourensis	Agoura Hills dudleya	FT		1B.2	Perennial herb. Rocky and volcanic soils in chaparral and cismontane woodland; 656–1,640 ft. Southern California County Distribution: Los Angeles, Ventura. Blooming period: May–June	Not expected to occur; no suitable habitat.
Dudleya cymosa *ssp.* marcescens	marcescent dudleya	FT	SR	1B.2	Perennial herb. Rocky and volcanic soils in chaparral; 492–1,706 ft. Southern California County Distribution: Los Angeles, Ventura. Blooming period: April–July	Not expected to occur; no suitable habitat.

TABLE 2
SPECIAL STATUS PLANT SPECIES REPORTED FROM THE PROJECT REGION AND SURVEY RESULTS

Scientific Name	Common Name	USFWS	CDFW	CRPR	Species Background	Potential
Horkelia cuneata *var.* puberula	mesa horkelia			1B.1	Perennial herb. Sandy and gravelly soils in maritime chaparral, cismontane woodland, and coastal scrub; 229–2,657 ft. Southern California County Distribution: Los Angeles, Orange, Riverside (Presumed extirpated), San Bernardino, San Diego (Presumed extirpated), Ventura. Blooming period: February–July(September)	Not expected to occur; no suitable habitat.
Isocoma menziesii *var.* decumbens	decumbent goldenbush			1B.2	Perennial shrub. Chaparral and in sandy coastal scrub, often in sandy disturbed areas; 33–443 ft. Southern California County Distribution: Los Angeles, Orange, San Diego. Blooming period: April–November	Limited potential to occur; marginally suitable habitat. Not observed during focused surveys.
Juglans californica	**Southern California black walnut**			**4.2**	**Deciduous tree. Alluvial areas in chaparral, cismontane woodland, and coastal scrub; 164–2,952 ft. Southern California County Distribution: Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura. Blooming period: March–August**	**Observed; suitable habitat.**
Lasthenia glabrata *ssp.* coulteri	Coulter's goldfields			1B.1	Annual herb. Coastal salt marsh, coastal salt swamps, playas, vernal pools; 3–4,001 ft. Southern California County Distribution: Kern (Presumed extirpated), Los Angeles (Presumed extirpated), Orange, Riverside, San Bernardino (Presumed extirpated), San Diego, Ventura. Blooming period: February–June	Not expected to occur; no suitable habitat.
Monardella hypoleuca *ssp.* hypoleuca	white-veined monardella			1B.3	Perennial herb. Chaparral and cismontane woodland; 164–5,002 ft. Southern California County Distribution: Los Angeles, Ventura. Blooming period: April–December	Limited potential to occur; marginally suitable habitat. Not observed during focused surveys.
Navarretia ojaiensis	Ojai navarretia			1B.1	Annual herb. Openings in chaparral and coastal sage scrub and grassland, clay soil; 275–620 m (902–2,034 ft). Southern California County Distribution: Los Angeles (Uncertain about distribution or identity), Ventura. Blooming period: May–July	Not expected to occur; no suitable habitat.
Pentachaeta lyonii	Lyon's pentachaeta	FE	SE	1B.1	Annual herb. Rocky or clay soils in coastal scrub, grassland, and openings in chaparral; 98–2,066 ft. Southern California County Distribution: Los Angeles, Ventura. Blooming period: March–August	Limited potential to occur; marginally suitable habitat. Not observed during focused surveys.
Quercus dumosa	Nuttall's scrub oak			1B.1	Perennial evergreen shrub. Sandy or clay loam in closed-cone coniferous forest, chaparral, and coastal scrub; 49–1,312 ft. Southern California County Distribution: Los Angeles, Orange, San Diego, Ventura. Blooming period: February–August	Not expected to occur; no suitable habitat.
Romneya coulteri	**Coulter's matilija poppy**			**4.2**	**Perennial rhizomatous herb. Chaparral and coastal scrub; often in burned areas; 65–3,936 ft. Southern California County Distribution: Los Angeles, Orange, Riverside, San Diego. Blooming period: March–July**	**Observed; suitable habitat.**
Sidalcea neomexicana	salt spring checkerbloom			2B.2	Perennial herb. Alkaline and mesic soils in chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, and playas; 49–5,020 ft. Southern California County Distribution: Kern, Los Angeles (Presumed extirpated), Orange, Riverside, San Bernardino, San Diego, Ventura. Blooming period: March–June	Not expected to occur; no suitable habitat.
Spermolepis lateriflora	western bristly scaleseed			2A	Annual herb. Sandy or rocky Sonoran desert scrub; 1,198–2,198 ft. Southern California County Distribution: Los Angeles (Occurrence confirmed, but possibly extirpated), San Diego. Blooming period: March–April	Not expected to occur; no suitable habitat.

Species Background: California Native Plant Society (CNPS). 2021 (September 20). Inventory of Rare and Endangered Plants (online edition, v8-03 0.39). Sacramento, CA: CNPS. http://www.rareplants.cnps.org/.

Listing Status: California Department of Fish and Wildlife (CDFW). 2021b). Special Vascular Plants, Bryophytes, and Lichens List. Sacramento, CA: CDFW, Natural Heritage Division.

USFWS: U.S. Fish and Wildlife Service; CDFW: California Department of Fish and Wildlife; CRPR: California Rare Plant Rank; ft: feet

Special Status:

Federal (USFWS)

FE Endangered
FT Threatened

State (CDFW)

SE Endangered
ST Threatened
SR Rare

CRPR

1B Plants Rare, Threatened, or Endangered in California and elsewhere
4 Plants of limited distribution - watch list

CRPR Threat Code Extension

None Plants lacking any threat information
.1 Seriously threatened in California (over 80% of occurrences threatened; high degree and immediacy of threat)
.2 Moderately threatened in California (20–80% of occurrences threatened; moderate degree and immediacy of threat)
.3 Not very threatened in California (<20% of occurrences threatened; low degree and immediacy of threat or no current threats known)
Species that were observed [on site] shown in boldface type.

California Black Walnut

California black walnut (*Juglans californica*) has a CRPR of 4.2. This tree occurs in oak woodland and riparian areas between approximately 98–2,953 feet above msl (Jepson Flora Project 2022). This species is known from the outer south coast ranges, south coast, western transverse ranges, San Gabriel Mountains, peninsular ranges, and San Jacinto Mountains (Jepson Flora Project 2022).

Six California black walnut trees were documented in the survey area (Exhibits 6, 8, and 10). One walnut tree is located west of Serra Road near Pacific Coast Highway, three are located north of PCH, and two are located west of Sweetwater Mesa Road near the existing tank location.

Coulter's Matilija Poppy

Coulter's matilija poppy (*Romneya coulteri*) has a CRPR of 4.2. This perennial herb occurs in coastal sage scrub and chaparral below approximately 3,937 feet above msl (Jepson Flora Project 2023). This species is known from the south coast, western transverse ranges, peninsular ranges, and San Jacinto Mountains (Jepson Flora Project 2022). Two individual poppy locations were documented and one polygon containing approximately 20 individuals. All observations are located directly adjacent to Serra Road (Exhibits 6, 8, and 10).

3.6.4 Special Status Wildlife

Many special status wildlife species have been reported from the Project region. Table 3 provides a list of these species; their listing status; and their potential to occur in each portion of the survey area.

TABLE 3
SPECIAL STATUS WILDLIFE SPECIES OF THE PROJECT REGION

Species	General Habitat/Range Description	USFWS	CDFW	Potential for Occurrence
Invertebrates				
Trimerotropis occidentiloides Santa Monica grasshopper	Found on bare hillsides and along dirt trails in chaparral. Known only from the Santa Monica Mountains.	–	SA	May occur; limited suitable habitat.
Danaus plexippus pop. 1 monarch (California overwintering population)	Primarily occurs in coastal, lowland, and foothill areas with milkweed (*Ascelpias* spp.), though also in deserts and mountains; overwinters in large numbers on trees.	–	SA	May occur; limited suitable wintering habitat.
Euphydryas editha quino Quino checkerspot butterfly	Sunny openings within chaparral & coastal sage shrublands in parts of Riverside and San Diego counties. Hills and mesas near the coast. Need high densities of food plants *Plantago erecta*, *P. insularis*, and *Orthocarpus purpurescens*.	FE	–	Not expected to occur; outside of species range.
Bombus crotchii Crotch bumble bee	Occurs in open grassland and scrub habitats; nests underground. Feeds on milkweed (*Asclepias* sp.), pincushion (*Chaenactis* sp,), lupine (*Lupinus* sp.), alfalfa (*Medicago* sp.), phacelia (*Phacelia* sp.), and sage (*Salvia* sp.).	–	CE	May occur for foraging, not likely to occur for nesting due to limited marginal habitat; limited suitable habitat.
Fish				
Gila orcuttii arroyo chub	Occurs in coastal freshwater streams and rivers with sustained flows and emergent vegetation with substrates consisting primarily of sand or mud.	–	SSC	Not expected to occur; no suitable habitat.
Oncorhynchus mykiss irideus pop. 10 steelhead – southern California DPS	Occurs in perennial streams and rivers that connect to the ocean.	FE	–	Not expected to occur; no suitable habitat.
Eucyclogobius newberryi tidewater goby	Occurs in in waters of coastal lagoons, estuaries, and marshes.	FE	SSC	Not expected to occur; no suitable habitat.
Amphibians				
Anaxyrus californicus arroyo toad	Occurs in semi-arid regions near washes or intermittent streams; requires suitable breeding pools.	FE	SSC	Not expected to occur; no suitable habitat.
Spea hammondii western spadefoot	Occurs in a wide range of habitats; lowlands to foothills, grasslands, open chaparral, pine-oak woodlands. It prefers shortgrass plains, sandy or gravelly soil (e.g., alkali flats, washes, alluvial fans). It is fossorial and breeds in temporary rain pools and slow-moving streams (e.g., areas flooded by intermittent streams).	–	SSC	Not expected to occur; limited terrestrial habitat with no suitable breeding habitat (no breeding pools).

TABLE 3
SPECIAL STATUS WILDLIFE SPECIES OF THE PROJECT REGION

Species	General Habitat/Range Description	USFWS	CDFW	Potential for Occurrence
Reptiles				
Emys marmorata western pond turtle	Occurs in ponds, lakes, marshes, rivers, streams, and irrigation ditches with a rocky or muddy bottom and aquatic vegetation.	–	SSC	Not expected to occur; no suitable habitat.
Phrynosoma blainvillii coast horned lizard	Occurs in scrubland, grassland, coniferous forests, and broadleaf woodland vegetation types.	–	SSC	Not expected to occur; no suitable habitat, scrub habitat too degraded.
Aspidoscelis tigris stejnegeri coastal whiptail	Occurs in hot and dry areas with sparse foliage and open areas. Found in forests, woodland, chaparral, and riparian areas.	–	SSC	May occur; limited suitable habitat.
Anniella stebbinsi southern California legless lizard	Occurs in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks. Sometimes found in suburban gardens in Southern California. Spends most of its life beneath the soil, under rocks, boards, driftwood, logs, debris, or in leaf litter. Prefers areas with loose, sandy soil, moisture, warmth, and plant cover.	–	SSC	Not expected to occur; soils and habitat are not suitable for this species.
Diadophis punctatus modestus San Bernardino ringneck snake	Most common in open, relatively rocky areas. Often in somewhat moist microhabitats near intermittent streams.	–	SA	Not expected to occur; no suitable habitat.
Thamnophis hammondii two-striped garter snake	Occurs in wetlands, freshwater marsh, and riparian habitats with perennial water.	–	SSC	Not expected to occur; no suitable habitat.
Birds				
Accipiter cooperii Cooper's hawk (nesting)	Prefers to nest in oak woodlands and riparian woodlands. Forages primarily in forest habitats.	–	WL	May occur for foraging and nesting; suitable habitat.
Aquila chrysaetos golden eagle (nesting and wintering)	Nests in open and semi-open habitats, such as tundra, shrublands, grasslands, woodland-brushlands, coniferous forests, farmland, and riparian habitats. Forages in broad expanses of open country.	–	FP	Not expected to occur; no suitable habitat.
Falco peregrinus anatum American peregrine falcon (nesting)	Nests on cliffs and tall buildings near wetlands, lakes, rivers, or other large water features.	–	FP	Not expected to occur for nesting; no suitable habitat.
Athene cuniculari burrowing owl (burrow sites and some wintering sites)	Occurs in sparse vegetation in arid and semi-arid habitats such as grasslands, steppes, deserts, prairies, and agricultural areas. Nests in mammal burrows or man-made cavities.	–	SSC	Not expected to occur for nesting or wintering; no suitable habitat, lack of mammal burrows on site.

TABLE 3
SPECIAL STATUS WILDLIFE SPECIES OF THE PROJECT REGION

Species	General Habitat/Range Description	USFWS	CDFW	Potential for Occurrence
Polioptila californica californica coastal California gnatcatcher	In California, this species is an obligate resident of several distinct sub-associations of the coastal sage scrub vegetation type. The gnatcatcher has been recorded from sea level to approximately 3,000 feet above msl (USFWS 2003); however, greater than 90 percent of gnatcatcher records are from between sea level and 820 feet above msl along the coast and between sea level and 1,800 feet above msl inland (Atwood and Bolsinger 1992).	FT	SSC	Not expected to occur; disturbed and revegetated coastal sage scrub is too degraded and/or sparse to support breeding gnatcatcher, also there is a lack of occurrences in the Project vicinity.
Agelaius tricolor tricolored blackbird (nesting)	This colonial nesting species prefers to breed in freshwater marshes dominated by cattails and bulrushes, with willows and nettles (*Urtica* spp.) also common. The introduced mustards (*Brassica* spp.), blackberries (*Rubus* spp.), thistles (*Circium* spp.), and mallows (*Malva* spp.) have also been used for several decades.	–	ST, SSC	Not expected to occur; no suitable habitat.
Mammals				
Macrotus californicus California leaf-nosed bat	Occurs in desert riparian, desert wash, desert scrub, desert succulent scrub, alkali scrub and palm oasis habitats.	–	SSC	Not expected to occur; no suitable habitat.
Euderma maculatum spotted bat	Occurs in a variety of habitats such as arid desert, grassland, and mixed conifer forest (Zeiner et al. 1990). Roosts in rock crevices (Williams 1986).	–	SSC	Not expected to occur; no suitable habitat.
Lasiurus blossevillii western red bat	Prefers riparian areas dominated by walnuts, oaks, willows, cottonwoods, and sycamores where they roost in these broad-leafed trees.	–	SSC	Not expected to occur; no suitable habitat.
Lasiurus cinereus hoary bat	Found in open habitats, uses trees for cover, and forages in open areas or habitat edges. Roosts in dense foliage of medium to large trees near water.	–	SA	Not expected to occur due to lack of water on site; no suitable habitat.
Myotis ciliolabrum western small-footed myotis	Arid uplands, primarily in arid wooded and brushy uplands near water. Roosts in caves, buildings, mines, crevices, and occasionally under bridges and under bark.	–	SA	Not expected to occur; no suitable habitat.
Myotis yumanensis Yuma myotis	Open forests and woodlands near bodies of water for foraging. Maternity colonies in caves, mines, buildings, or crevices.	–	SA	Not expected to occur; no suitable habitat.
Eumops perotis californicus western mastiff bat	Occurs in many open semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, palm oases, chaparral, desert scrub, and urban areas. Typically forages in open areas with high cliffs and roosts in crevices on cliff faces and occasionally in man-made structures with at least 15 feet of unobstructed space below roost.	–	SSC	May occur for foraging; suitable foraging habitat; not expected to occur for roosting; no suitable roosting habitat.

TABLE 3
SPECIAL STATUS WILDLIFE SPECIES OF THE PROJECT REGION

Species	General Habitat/Range Description	USFWS	CDFW	Potential for Occurrence
Taxidea taxus American badger	Preferred habitat is open with low tree/shrub cover such as open pains, grassy fields, pastures, farmlands, open chaparral, and alpine meadows. The most important habitat element is soft loose soil for digging up fossorial prey.	–	SSC	Not expected to occur; no suitable habitat.
Neotoma lepida intermedia San Diego desert woodrat	The San Diego desert woodrat subspecies is found along the coastal slopes of southern California up through San Louis Obispo County. Desert woodrats make a stick nest at the base of a cactus, shrub, or tree. May also den among rocks. House materials can include cacti, sticks, bones, and trash. Prefers desert scrub, coastal sage scrub, and chaparral habitat with rocky outcrops and succulents.	–	SSC	May occur; limited suitable habitat.

USFWS: U.S. Fish and Wildlife Service; CDFW: California Department of Fish and Wildlife; USFS: U.S. Forest Service; msl: mean sea level

Status Definitions

Federal (USFWS) Status
FE Endangered
FT Threatened

State (CDFW) Status
ST Threatened
CE Candidate for Listing as Endangered
SSC Species of Special Concern
FP California Fully Protected
WL Watch List
SA Special Animal (tracked by CNDDB)

Notes: Scientific and common names for wildlife species follow the most current list of Special Animals (April 2021) available from the CDFW (https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals).

3.6.5 Jurisdictional Resources

Riparian habitats are often under the jurisdiction of the USACE, the RWQCB, and/or the CDFW due to their association with wetlands, "Waters of the U.S.", or streambeds. However, it should be noted that the riparian habitats described above are not equivalent to delineated areas subject to the jurisdiction of the USACE, the RWQCB, and/or the CDFW. Only the portion of these habitats associated within a discernible streambed and/or adjacent wetlands that meet certain criteria are within the jurisdiction of these regulatory agencies. Similarly, upland habitat types (e.g., mixed coastal sage scrub and mixed chaparral) or disturbed and developed areas may be within the jurisdiction of these agencies if they occur within a discernible streambed.

No wetlands or drainage features or associated riparian habitat under the jurisdiction of the CDFW, USACE, or RWQCB are present within the survey area.

4.0 PROJECT IMPACTS

4.1 INTRODUCTION

This section presents a general impact analysis of the Project. The determination of impacts in this analysis is based on a comparison of maps depicting Project Work Areas and maps of biological resources in the Study Area. All construction activities, including equipment areas, are assumed to be within the permanent impact areas identified on Exhibit 6. Permanent impact areas are typically defined as changes to or removal of an existing vegetation type or "other areas," including disturbed or developed (e.g., paved) that are permanent as a result of Project implementation. These impact areas are labeled with a red boundary on relevant graphics.

Temporary access/impact areas are typically defined as areas that may be subject to traversing vehicles or other mobile equipment, staging of equipment, stockpiles of soil, minor soil disturbance where there is no permanent alteration to the existing grade (e.g., no permanent holes, trenches, or berms), and no vegetation or tree removal. These impact areas are labeled with a yellow boundary on relevant graphics.

Both direct and indirect impacts on biological resources have been evaluated. Direct impacts are those that involve the initial loss of habitats due to grading, construction, and construction-related activities. Indirect impacts are those that would be related to impacts on the adjacent remaining habitat due to construction activities (e.g., noise, dust) or operation of the Project (e.g., human activity, operational noise, indirect lighting).

Biological impacts associated with the Project were evaluated with respect to the following special status biological issues:

- Federally or State-listed Endangered or Threatened plant or wildlife species;
- Non-listed species that meet the criteria in the definition of "Rare" or "Endangered" in the CEQA Guidelines (i.e., 14 *California Code of Regulations,* Section 15380)[3];
- Species designated as California Species of Special Concern;
- Streambeds, wetlands, and their associated vegetation;

[3] Section 15380 of the CEQA Guidelines indicates that a lead agency can consider a non-listed species (e.g., CNPS List 1B plants) to be Endangered, Rare, or Threatened if the species can be shown to meet the criteria in the definition of Rare or Endangered. For the purposes of this discussion, the current scientific knowledge on the population size and distribution for each special status species was considered in determining if a non-listed species meets the definitions for Rare and Endangered according to Section 15380 of the CEQA Guidelines.

- Habitats suitable to support a federally or State-listed Endangered or Threatened plant or wildlife species;
- Habitats, other than wetlands, considered special status by regulatory agencies (e.g., the USFWS, the CDFW) or resource conservation organizations; and
- Other species or issues of concern to regulatory agencies or conservation organizations.

The actual and potential occurrence of these resources in the Project Work Areas was correlated with the significance criteria listed in the next section in order to determine whether Project impacts on these resources would be considered significant.

4.2 SIGNIFICANCE CRITERIA

The environmental impacts relative to biological resources are assessed using impact significance criteria that mirror the policy 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 to:

> Prevent the elimination of fish or wildlife species due to man's activities, ensure 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 Section 15064.7, Thresholds of Significance, of the State CEQA Guidelines, 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 significant threshold is a quantitative, qualitative, or performance level of a particular environmental effect. The agency would normally determine an impact to be "significant" if it exceeds the threshold. In the development of significance thresholds for impacts to biological resources, CEQA provides guidance primarily in Section 15065, Mandatory Findings of Significance, and Appendix G, Environmental Checklist Form, of the State CEQA Guidelines. Appendix G of the CEQA Guidelines is more specific in addressing biological resources and encompasses a broader range of resources to be considered, including candidate, sensitive, or special status species; riparian habitat or other sensitive natural vegetation types; federally protected wetlands; fish and wildlife movement corridors; local policies or ordinances protecting biological resources; and adopted habitat conservation plans. These factors are considered through the checklist of questions answered during the Initial Study process used to determine appropriate environmental documentation for a project (i.e., Negative Declaration, Mitigated Negative Declaration, or EIR). Because these questions are derived from standards in other laws, regulations, and commonly used thresholds, it is reasonable to use these standards as a basis for defining significance thresholds in an EIR. For each of the thresholds identified below, the section of CEQA upon which the threshold was derived has been provided. For the purpose of this analysis, impacts to biological resources are considered significant (before considering offsetting mitigation measures) if one or more of the following conditions would result from implementation of the proposed Project if it would:

1. *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;*

2. *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;*
3. *Have a substantial adverse effect on federally or state protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marshes, vernal pools, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;*
4. *Interfere substantially with the movement of any native or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;*
5. *Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or*
6. *Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.*

An evaluation of whether an impact on biological resources would result in a "substantial adverse effect" must consider both the resource itself and how that resource fits into a regional context. For the proposed Project, the regional setting includes the Santa Monica Mountains. Analysis of impacts is based on the Project impact relative to the amount of the resource within the Project region.

For the purposes of the impact analysis, "substantial adverse effect" is defined as the loss or harm of a magnitude which, based on current scientific data and knowledge, would (1) substantially diminish population numbers of a species or distribution of a habitat type within the region or (2) eliminate the functions and values of a biological resource in the region.

4.3 DIRECT IMPACTS

The direct impacts for the proposed development include the impacts from the construction of the new 1.0 MG Upper Sweetwater Mesa Tank, water mains, pressure regulating stations, and pump station. Temporary construction easements would be established for the storage of construction materials, supplies, and equipment. The property alongside the Upper Sweetwater Tank property would be rented as a staging area for construction materials and equipment for both the water main and tank projects. Additionally, construction crews would temporarily use Sweetwater Mesa Road to access the tank site during the construction period.

Vegetation impacts will differ between each Option (WP1.1, WP1.2, WP1.3); however, all other direct and indirect impacts are identical for each Option and are referred to collectively as the "Project" in all sections following the Vegetation Type Impacts sections.

Vegetation Type Impacts Option WP1.1

Vegetation types and other areas that will be impacted in Option WP1.1 are listed in Table 4 and illustrated on Exhibit 6.

TABLE 4
Vegetation Impacts – Option WP1.1

Vegetation Types in the Survey Area	On-Site Total (acres)	Option WP1.1 Temporary Impact (acres)	Option WP1.1 Permanent Impact (acres)	Option WP1.1 Total Impact (acres)
blue elderberry stands – laurel sumac chaparral	0.99	-	-	-
mountain mahogany chaparral	0.47	0.02	0.06	0.09
disturbed coastal sage scrub	0.31	0.05	0.04	0.09
revegetated coastal sage scrub	0.22	-	-	-
olive grove (planted)	0.71	0.02	-	0.02
ruderal	0.98	0.46	-	0.46
mowed non-native grassland	0.26	-	0.02	0.03
developed/eucalyptus groves	3.06	0.55	-	0.55
developed/ornamental	2.68	0.83	-	0.83
developed/woodland and hedge landscaping	5.56	0.38	-	0.38
bare ground	0.37	0.31	0.06	0.37
developed	2.67	1.37	-	1.37
Grand Total	**18.30**	**3.99**	**0.18**	**4.17**

Note: Acreages may not total across rows and columns due to rounding errors.

Coastal sage scrub may be considered locally sensitive due to its ability to support the Federally Threatened coastal California gnatcatcher (*Polioptila californica californica*). However, the 0.31 acre of disturbed coastal sage scrub in the Option WP1.1 Project area is degraded, limited in extent, and sparse, rendering it unsuitable to support breeding or foraging gnatcatcher. Therefore, permanent impacts to 0.04 acre and temporary impacts to 0.05 acre of this vegetation type are considered adverse but less than significant and no mitigation would be required. Revegetated coastal sage scrub will not be impacted by Project implementation.

Mountain mahogany chaparral would be impacted by Project implementation. Approximately 0.06 acre of permanent impacts and 0.02 acre of temporary impacts are anticipated to occur during Option WP1.1 Project implementation. Impacts on this vegetation type would be considered adverse, but relatively minor because chaparral vegetation types are considered relatively common and abundant in large open space areas in the Project region. Therefore, impacts to these vegetation types are considered less than significant and no mitigation would be required.

Developed/eucalyptus groves, developed/ornamental, and developed/woodland and hedge landscaping would be impacted by Project implementation. Approximately 0.55 acres total of temporary impacts to these vegetation types is anticipated during Option WP1.1 Project implementation. Impacts on these vegetation types would be considered adverse but relatively minor because these vegetation types are considered relatively common in the Project region. Therefore, impacts to these vegetation types are considered less than significant and no mitigation would be required. Developed/eucalyptus groves provide potentially suitable habitat for the monarch (*Danaus plexippus* pop. 1, California overwintering), a Candidate State Endangered species. Potential impacts to this species are discussed in the Special Status Wildlife section below.

Approximately 0.02 acre olive grove (planted) and 0.46 acre of ruderal vegetation would be temporarily impacted by Option WP1.1 Project implementation. Additionally, 0.03 acre of mowed non-native grassland would be permanently impacted by Option WP1.1 Project implementation.

Impacts on these vegetation types would be considered adverse but negligible because these vegetation types are considered relatively common and of low biological value in the Project region. Therefore, impacts to these vegetation types are considered less than significant and no mitigation would be required.

Approximately 0.06 acre of permanent and 0.31 acre of temporary impacts to bare ground are anticipated to occur during Option WP1.1 Project implementation. Additionally, 1.37 acres of temporary impacts to developed are anticipated to occur during Option WP1.1 Project implementation. Impacts on these vegetation types would be considered minor because these vegetation types are considered to have low biological value. Therefore, impacts to these vegetation types are considered less than significant and no mitigation would be required.

Vegetation Type Impacts Option WP1.2

Vegetation types and other areas that will be impacted in Option WP1.2 are listed in Table 5 and illustrated on Exhibit 8.

TABLE 5
VEGETATION IMPACTS – OPTION WP1.2

Vegetation Types in the Survey Area	On-Site Total (acres)	Option WP1.2 Temporary Impact (acres)	Option WP1.2 Permanent Impact (acres)	Option WP1.2 Total Impact (acres)
blue elderberry stands – laurel sumac chaparral	0.99	-	-	-
mountain mahogany chaparral	0.47	0.02	0.06	0.09
disturbed coastal sage scrub	0.31	0.05	0.04	0.09
revegetated coastal sage scrub	0.22	-	-	-
olive grove (planted)	0.71	0.10	-	0.10
ruderal	0.98	0.46	-	0.46
mowed non-native grassland	0.26	-	0.02	0.03
developed/eucalyptus groves	3.06	0.62	-	0.62
developed/ornamental	2.68	0.79	-	0.79
developed/woodland and hedge landscaping	5.56	0.55	-	0.55
bare ground	0.37	0.31	0.06	0.37
developed	2.67	1.58	-	1.58
Grand Total	**18.30**	**3.21**	**0.18**	**3.39**
Note: Acreages may not total across rows and columns due to rounding errors.				

Coastal sage scrub may be considered locally sensitive due to its ability to support the Federally Threatened coastal California gnatcatcher (*Polioptila californica californica*). However, the 0.31 acre of disturbed coastal sage scrub in the Option WP1.2 Project area is degraded, limited in extent, and sparse, rendering it unsuitable to support breeding or foraging gnatcatcher. Therefore, permanent impacts to 0.04 acre and temporary impacts to 0.05 acre of this vegetation type are considered adverse but less than significant and no mitigation would be required. Revegetated coastal sage scrub will not be impacted by Project implementation.

Mountain mahogany chaparral would be impacted by Project implementation. Approximately 0.06 acre of permanent impacts and 0.02 acre of temporary impacts are anticipated to occur during Option WP1.2 Project implementation. Impacts on this vegetation type would be considered adverse, but relatively minor because chaparral vegetation types are considered relatively

common and abundant in large open space areas in the Project region. Therefore, impacts to these vegetation types are considered less than significant and no mitigation would be required.

Developed/eucalyptus groves, developed/ornamental, and developed/woodland and hedge landscaping would be impacted by Project implementation. Approximately 1.97 acres total of temporary impacts to these vegetation types is anticipated during Option WP1.2 Project implementation. Impacts on these vegetation types would be considered adverse but relatively minor because these vegetation types are considered relatively common in the Project region. Therefore, impacts to these vegetation types are considered less than significant and no mitigation would be required. Developed/eucalyptus groves provide potentially suitable habitat for the monarch (California overwintering population) (*Danaus plexippus* pop. 1), a Candidate State Endangered species. Potential impacts to this species are discussed in the Special Status Wildlife section below.

Approximately 0.10 acre olive grove (planted) and 0.46 acre of ruderal vegetation would be temporarily impacted by Option WP1.2 Project implementation. Additionally, 0.03 acre of mowed non-native grassland would be permanently impacted by Option WP1.2 Project implementation. Impacts on these vegetation types would be considered adverse but negligible because these vegetation types are considered relatively common and of low biological value in the Project region. Therefore, impacts to these vegetation types are considered less than significant and no mitigation would be required.

Approximately 0.06 acre of permanent and 0.31 acre of temporary impacts to bare ground are anticipated to occur during Option WP1.2 Project implementation. Additionally, 1.58 acre of temporary impacts to developed are anticipated to occur during Option WP1.2 Project implementation. Impacts on these vegetation types would be considered minor because these vegetation types are considered to have low biological value. Therefore, impacts to these vegetation types are considered less than significant and no mitigation would be required.

Vegetation Type Impacts Option WP1.3

Vegetation types and other areas that will be impacted in Option WP1.3 are listed in Table 6 and illustrated on Exhibit 10.

TABLE 6
VEGETATION IMPACTS – OPTION WP1.3

Vegetation Types in the Survey Area	On-Site Total (acres)	Option WP1.3 Temporary Impact (acres)	Option WP1.3 Permanent Impact (acres)	Option WP1.3 Total Impact (acres)
blue elderberry stands – laurel sumac chaparral	0.99	-	-	-
mountain mahogany chaparral	0.47	0.02	0.06	0.09
disturbed coastal sage scrub	0.31	0.05	0.04	0.09
revegetated coastal sage scrub	0.22	-	-	-
olive grove (planted)	0.71	0.01	-	0.01
ruderal	0.98	0.46	-	0.46
mowed non-native grassland	0.26	-	0.02	0.03
developed/eucalyptus groves	3.06	0.61	-	0.61
developed/ornamental	2.68	0.71	-	0.71
developed/woodland and hedge landscaping	5.56	0.52	-	0.52
bare ground	0.37	0.31	0.06	0.37
developed	2.67	1.58	-	1.58
Grand Total	**18.30**	**3.22**	**0.18**	**3.40**

Note: Acreages may not total across rows and columns due to rounding errors.

Coastal sage scrub may be considered locally sensitive due to its ability to support the Federally Threatened coastal California gnatcatcher (*Polioptila californica californica*). However, the 0.31 acre of disturbed coastal sage scrub in the Option WP1.3 Project area is degraded, limited in extent, and sparse, rendering it unsuitable to support breeding or foraging gnatcatcher. Therefore, permanent impacts to 0.04 acre and temporary impacts to 0.05 acre of this vegetation type are considered adverse but less than significant and no mitigation would be required. Revegetated coastal sage scrub will not be impacted by Project implementation.

Mountain mahogany chaparral would be impacted by Project implementation. Approximately 0.06 acre of permanent impacts and 0.02 acre of temporary impacts are anticipated to occur during Option WP1.3 Project implementation. Impacts on this vegetation type would be considered adverse, but relatively minor because chaparral vegetation types are considered relatively common and abundant in large open space areas in the Project region. Therefore, impacts to these vegetation types are considered less than significant and no mitigation would be required.

Developed/eucalyptus groves, developed/ornamental, and developed/woodland and hedge landscaping would be impacted by Project implementation. Approximately 1.83 acres total of temporary impacts to these vegetation types is anticipated during Option WP1.3 Project implementation. Impacts on these vegetation types would be considered adverse but relatively minor because these vegetation types are considered relatively common in the Project region. Therefore, impacts to these vegetation types are considered less than significant and no mitigation would be required. Developed/eucalyptus groves provide potentially suitable habitat for the monarch (*Danaus plexippus* pop. 1, California overwintering), a Candidate State Endangered species. Potential impacts to this species are discussed in the Special Status Wildlife section below.

Approximately 0.01 acre olive grove (planted) and 0.46 acre of ruderal vegetation would be temporarily impacted by Option WP1.2 Project implementation. Additionally, 0.03 acre of mowed non-native grassland would be permanently impacted by Option WP1.3 Project implementation.

Impacts on these vegetation types would be considered adverse but negligible because these vegetation types are considered relatively common and of low biological value in the Project region. Therefore, impacts to these vegetation types are considered less than significant and no mitigation would be required.

Approximately 0.06 acre of permanent and 0.31 acre of temporary impacts to bare ground are anticipated to occur during Option WP1.3 Project implementation. Additionally, 1.58 acre of temporary impacts to developed are anticipated to occur during Option WP1.3 Project implementation. Impacts on these vegetation types would be considered minor because these vegetation types are considered to have low biological value. Therefore, impacts to these vegetation types are considered less than significant and no mitigation would be required.

Trees

The Malibu Local Coastal Program Native Tree Protection Ordinance protects five native tree species (oak [*Quercus* sp.], California walnut [*Juglans californica*], western sycamore [*Platanus racemosa*], alder [*Alnus rhombifolia*], and toyon [*Heteromeles arbutifolia*]) that have at least one trunk measuring six inches or more in diameter, or a combination of any two trunks measuring a total of eight inches or more in diameter. Although no native trees of these species are proposed for removal or disturbance, they may occur within close proximity to Project activities. Potential indirect impacts to California black walnut and other regulated trees would be reduced through adherence with the Malibu LCP Native Tree Protection Ordinance and implementation of the required Tree Protection Plan (Psomas 2024), which can be found in (Appendix B-2) of the IS/MND. Therefore, impacts on trees are considered less than significant and no mitigation is required.

Common Wildlife

Native vegetation provides valuable nesting, foraging, roosting, and denning opportunities for a variety of wildlife species. The Project would result in the loss of approximately 0.17-acre (0.10-acre permanent, 0.07-acre temporary) of native habitat. The Project would also temporarily impact approximately 1.05-acre of developed/ornamental vegetation and a total of approximately 0.49-acre of temporary and permanent impacts to disturbed/developed areas. A total of 0.49-acre of non-native or weedy vegetation (mowed non-native grassland, and ruderal) would be impacted permanently and temporarily. Removing or altering habitats on the Project site would result in the loss of small mammals, reptiles, amphibians, and other animals of slow mobility that live in the proposed Project's direct impact area. More mobile wildlife species now using the Project site would be forced to move into remaining areas of open space, consequently increasing competition for available resources in those areas. This situation may result in the loss of individuals that cannot successfully compete. The loss of native and non-native vegetation that provides wildlife habitat is considered an adverse impact. However, the loss of native and non-native habitat would not be expected to reduce wildlife populations below self-sustaining levels. Therefore, impacts to these areas are considered adverse but less than significant and no mitigation would be required.

Several common bird and raptor species may nest in the Survey Area. The MBTA protects migratory birds, their nests, and eggs. If construction is initiated during the peak bird nesting season (i.e., March 15 to September 15), it could impact nesting birds protected by the MBTA. Additionally, Sections 3503, 3503.5, and 3513 of the *California Fish and Game Code* protect active raptor nests. If construction is initiated during the peak raptor nesting season (i.e., February 1 to June 30), it may impact nesting raptors protected by the *California Fish and Game Code.* The loss of any active bird or raptor nest would be considered a potentially significant impact. Implementation of MM 1 requiring nesting bird surveys and protection would reduce this impact to a less than significant level.

Wildlife Movement and Habitat Fragmentation

The Project site does not represent an area of important regional movement. The residential streets and structures present a barrier to movement for wildlife moving through the area. Wildlife looking to move locally through the foothills utilize canyons in the open space on either side of the Project site. Project activities would avoid these canyon areas. Wildlife that fly are expected to continue to move freely through the Study Area. While this effect would be adverse for some terrestrial wildlife, the adjacent canyons would continue to be available for movement; thus, regional wildlife movement would not be substantially disrupted and impacts would be considered less than significant.

Construction activities would create dust and noise within and adjacent to the impact area. During active construction, wildlife movement may be deterred by noise and human activity; however, most wildlife movement would occur at night while construction activities would occur during the day. Project implementation would not isolate and native habitats or create any bottle necks for wildlife movement because very little native vegetation on the edges of disturbance or development would be impacted. Therefore, construction impacts on local wildlife movement would be considered adverse, but less than significant and no mitigation would be required.

Special Status Biological Resource Impacts

Implementation of the Project may result in impacts on special status plant and wildlife species that occur in the Survey Area. Potential impacts on special status species were evaluated by determining the impacts on habitat that the species are expected to occupy or may occupy.

Special Status Plants

Two special status plant species were documented within the Project boundary during focused special status plant surveys: California black walnut, and Coulter's matilija poppy both of which are CRPR List 4 species. The walnut is also protected by the Malibu Local Coastal Program Native Tree Protection Ordinance. Coulter’s matilija poppy is located adjacent to Serra Road outside the impact area and are not expected to be impacted and no mitigation would be required. Potential indirect impacts to California black walnut would be reduced through adherence with the Malibu LCP Native Tree Protection Ordinance and implementation of the required Tree Protection Plan (Psomas 2024), which can be found in (Appendix B-2) of the IS/MND. Therefore, these impacts are considered less than significant an no mitigation is required.

Special Status Wildlife

Eucalyptus groves within the Project boundary have the potential to support overwintering monarch butterflies. Monarch butterfly overwintering sites are known from within the Project boundary in recent history and are presumed extant according to the California Natural Diversity Database (CDFW 2021, 2023). Impacts to overwintering monarch roost sites would be considered potentially significant. MM 2, monarch butterfly surveys and protection, would be required to reduce the impact to a level of less than significant.

Two additional invertebrates, the Crotch bumble bee and Santa Monica grasshopper, may occur in the survey area for foraging. The survey area provides limited marginal foraging habitat. No direct impacts on the bumble bee or Santa Monica grasshopper are expected through Project implementation due to the ability of these species to disperse ahead of disturbance, and the limited Project footprint in suitable habitat. Therefore, these impacts would be considered adverse but less than significance and no mitigation would be required.

One special status reptile has the potential to occur in the Project area, the San Diegan tiger whiptail (*Aspidoscelis tigris stejnegeri*). Project implementation would result in the loss of potentially suitable habitat for this species. These impacts would be considered adverse but not substantial enough to cause regional populations to drop below self-sustaining numbers. Therefore, these impacts are considered less than significant and no mitigation would be required.

Project implementation would not result in the loss of breeding or foraging habitat for any special status bird species; therefore, no impacts on special status bird species are anticipated and no mitigation would be required.

Common raptor species including owls have the potential to nest on the Project site. Should an active raptor nest be found on the Project site, the loss of an active nest would be considered a violation of the *California Fish and Game Code* (Sections 3503, 3503.5, and 3513). The loss of any active raptor nest occurring on the Project site would be considered significant. Impacts on these species would be reduced to a level of less than significant with the implementation MM 1 requiring nesting bird surveys and protection.

The western mastiff bat has the potential to occur in the Study Area for foraging. There is no suitable roosting habitat in the Survey Area. Construction activities would only occur during daylight hours; therefore, foraging would continue to be available over the construction areas throughout the duration of construction and would remain unchanged following completion of the Project. There are no anticipated impacts to special status bats and mitigation would not be required.

One other special status mammal species is potentially present, the San Diego desert woodrat (*Neotoma lepida intermedia*). Project implementation would result in the loss of potentially suitable habitat for these species. These impacts would be considered adverse but not substantial enough to cause regional populations to drop below self-sustaining numbers. Therefore, these impacts are considered less than significant and no mitigation would be required.

Environmentally Sensitive Habitat Area

The Project site is located adjacent to an ESHA as designated in the Malibu Local Coastal Plan (Exhibits 5, 7 and 9). No direct impacts to the ESHA are expected and temporary impacts would be limited to dust and noise increases. Construction activities would occur during daytime hours when ambient noise levels are higher. As a result, increase in noise is expected to have minimal effect on resources associated with the ESHA. Similarly, dust increases would be restricted to the unpaved portion of the survey area in the vicinity of the proposed tank location and staging area. At this location, the ESHA is approximately 300-feet from site at its closest point. The 300-foot buffer is expected to minimize effects of short-term dust increases on ESHA resources. Therefore, these impacts are expected to be less than significant, and no mitigation would be required.

4.4 INDIRECT IMPACTS

Indirect impacts are those related to disturbance by construction (such as noise, dust, and urban pollutants), long-term use of the Project site, and the Project's operational effect on adjacent habitat areas. The indirect impact discussion below includes a general assessment of the potential indirect effects (i.e., noise, increased dust and urban pollutants, night lighting, and human activity) of the construction and operation of the proposed Project.

4.4.1 Noise Impacts

Noise levels in the survey area would be expected to increase over present levels during construction and operation of the Project. During construction and operation, temporary noise impacts have the potential to disrupt foraging, nesting, roosting, and/or denning activities for wildlife species occurring within or adjacent to Project Work Areas. Wildlife species stressed by noise may disperse from the habitat located in the vicinity of the Project. Because the Project disturbance areas are limited in extent, this impact is considered adverse but less than significant and no mitigation would be required. However, if raptor species are nesting in the vicinity of the Project during construction, they may be temporarily displaced by construction noise. Indirect noise impacts on these species would be considered significant because nesting birds are protected by the *California Fish and Game Code.* Impacts on active nests would be reduced to a less than significant level with implementation of MM 1 requiring nesting bird surveys and protection.

4.4.2 Increased Dust and Urban Pollutants

Grading and other construction activities would disturb soils and result in the accumulation of dust on the surface of the leaves of trees, shrubs, and herbs within or immediately adjacent to Project work areas. The respiratory function of the plants in these areas could be impaired if dust accumulation is excessive. Because the Project area is limited in extent, this indirect impact is considered adverse but less than significant and no mitigation would be required.

During construction and operation, excess silt, petroleum, or chemicals on the soil surface within the construction area could be washed into drainages during storms and may affect areas downstream of the Project impact area. Adverse effects on water quality could indirectly impact species that use riparian areas within the watershed by affecting the food web interactions (e.g., abundance of insects or other prey) or through biomagnification (i.e., the buildup of pesticides to toxic levels in higher trophic levels). With implementation of standard Best Management Practices, this impact is expected to be less than significant and no mitigation would be required.

4.4.3 Night Lighting

The Project does not include night lighting other than infrequent temporary use if needed. Therefore, there would be no impact as a result of night lighting and mitigation is not required.

4.4.4 Invasive Exotic Plant Species

There would be no landscaping associated with the Project and minimal temporary ground disturbance outside of the reservoir sediment area. Therefore, there would be no impact as a result of invasive species and no mitigation would be required.

4.4.5 Human Activity

The Project is not expected to result in increased human activity other than minimal, temporary increase during construction. No new access points to open space are expected to result from the Project. Therefore, there would be no impact as a result of human activity.

5.0 MITIGATION MEASURES

Strategies to mitigate each identified potentially significant impact to a less than significant level are described below.

5.1 MM 1 – PRE-CONSTRUCTION NESTING BIRD SURVEYS

To the extent possible, vegetation removal will be conducted during the non breeding season (September 1 to February 28) in order to minimize direct impacts on nesting birds and raptors. If construction activities would be initiated during the breeding season for nesting birds/raptors (March 1–August 31), a pre construction survey will be conducted by a qualified Biologist as needed. If the Biologist does not find any active nests in or immediately adjacent to the impact area, construction activities can proceed.

If the Biologist detects an active nest within or immediately adjacent to the construction area and determines that the nest may be impacted or breeding activities substantially disrupted by increased activity around the nest, the Biologist will determine an appropriate protective buffer around the nest depending on the sensitivity of the species and the nature of the construction activity. Any protective buffers will be mapped on construction plans and designated as “Environmentally Sensitive Areas”. Construction can proceed within the protective buffer when the qualified Biologist has determined that the nest is no longer active (i.e., fledglings have left the nest, or the nest has failed).

5.2 MM 2 – ROOSTING MONARCH BUTTERFLY PRE-CONSTRUCTION SURVEYS

Should construction occur between November 1 and March 1, a pre-construction monarch overwintering roost survey shall be conducted by a qualified Biologist in the Eucalyptus groves on, and immediately adjacent to, the Project site. If a roosting population is detected, and the Biologist determines that roosting activities may be disrupted by increased Project activity in the area, the Biologist will determine an appropriate protective buffer depending on the nature of the construction activity. Any protective buffers will be mapped on construction plans and designated as “Environmentally Sensitive Areas”. Construction can proceed within the protective buffer when the qualified Biologist has determined that the roost is no longer active.

6.0 CUMULATIVE IMPACTS

Implementation of proposed Project, inclusive of the mitigation measures, would result in a negligible impact on biological resources of the region. The Project site largely occurs in developed/ornamental habitat of low biological value and other projects in the areas are expected to have similar results due to limited undeveloped lands. With mitigation implementation, the biological effects of the Project and other proposed projects of the region are expected to be relatively minor and would be considered cumulatively less than significant.

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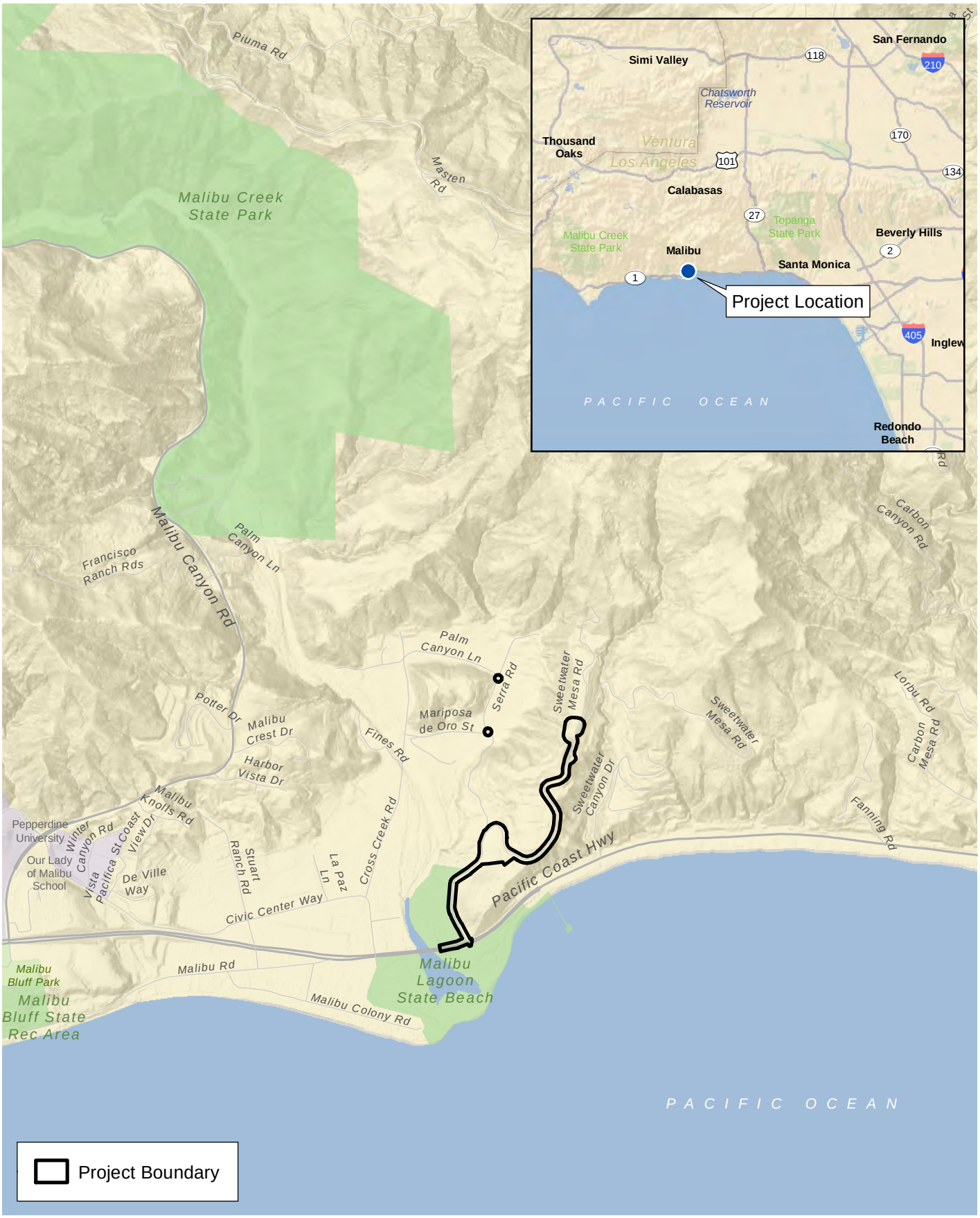
ATTACHMENT A

EXHIBITS



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Regional Location and Local Vicinity

Exhibit 1

Civic Center Improvements Project

N
W E
S

2,000 1,000 0 2,000

Feet

PSOMAS

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Source: USGS 7.5 Minute Quadrangle
Malibu Beach
Township: 01S
Range: 17W
Sections: 29, 32, 33

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USGS Topographic Quadrangle Map

Exhibit 2

Civic Center Improvements Project

N
W E
S

2,000 1,000 0 2,000
Feet

PSOMAS

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Data Source: U.S. Department of Agriculture; Natural Resources Conservation Service
Aerial Source: Esri, Maxar 2022

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Soil Types

Exhibit 3

Civic Center Improvements Project

N W E S

400 200 0 400

Feet

PSOMAS

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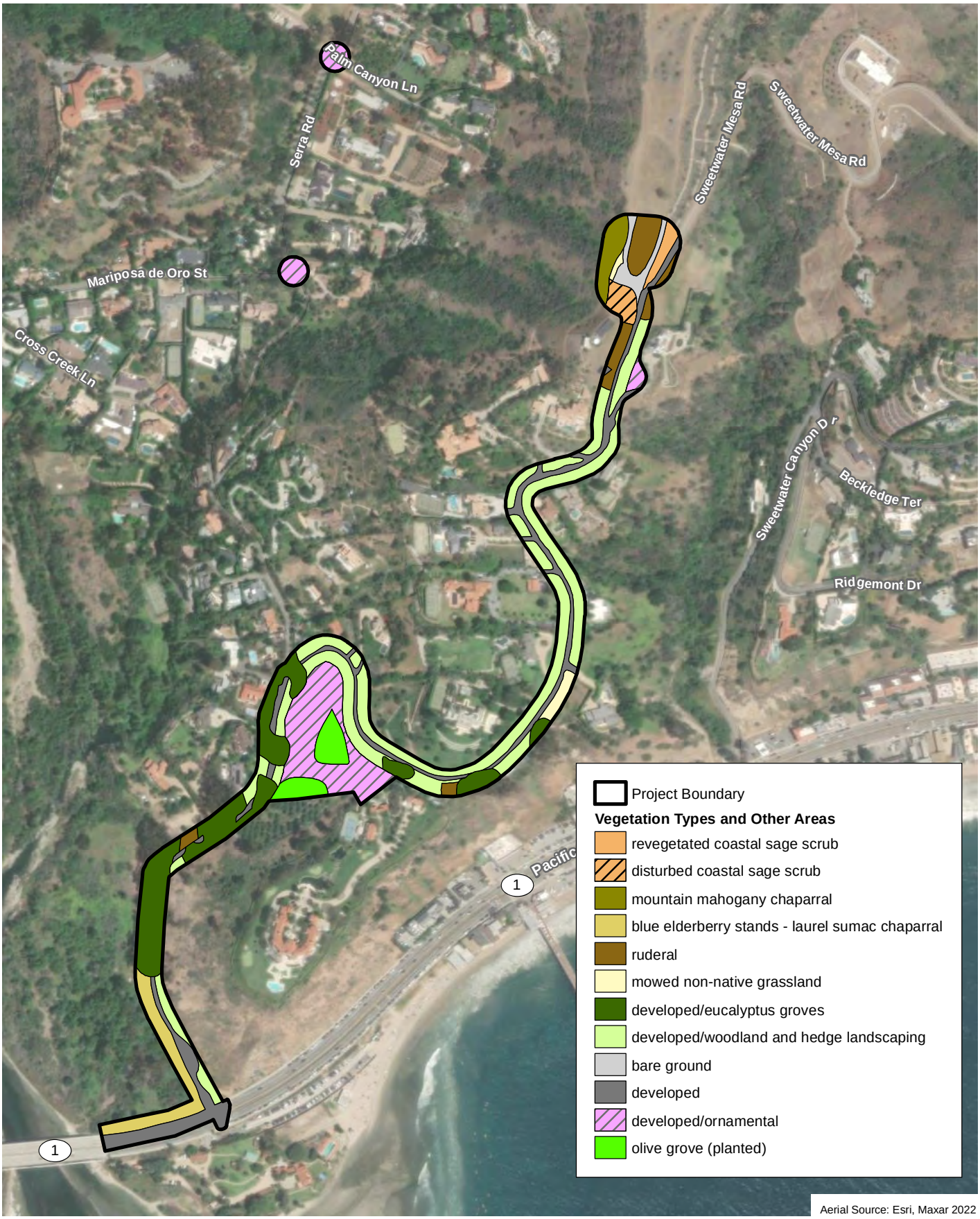

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Vegetation Types and Other Areas

Exhibit 4

Civic Center Improvements Project

N
W
E
S

400 200 0 400

Feet

PSOMAS

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Environmentally Sensitive Habitat Area – Option WP1.1

Exhibit 5a

Civic Center Improvements Project

N W E S

700 350 0 700 Feet

PSOMAS

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Environmentally Sensitive Habitat Area – Option WP1.1

Exhibit 5b

Civic Center Improvements Project

N
W E
S

150 75 0 150

Feet

PSOMAS

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Aerial Source: Esri, Maxar 2022

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Environmentally Sensitive Habitat Area – Option WP1.1

Exhibit 5c

Civic Center Improvements Project

N W E S

150 75 0 150

Feet

PSOMAS

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Environmentally Sensitive Habitat Area – Option WP1.1

Exhibit 5d

Civic Center Improvements Project

N
W E
S

150 75 0 150

Feet

PSOMAS

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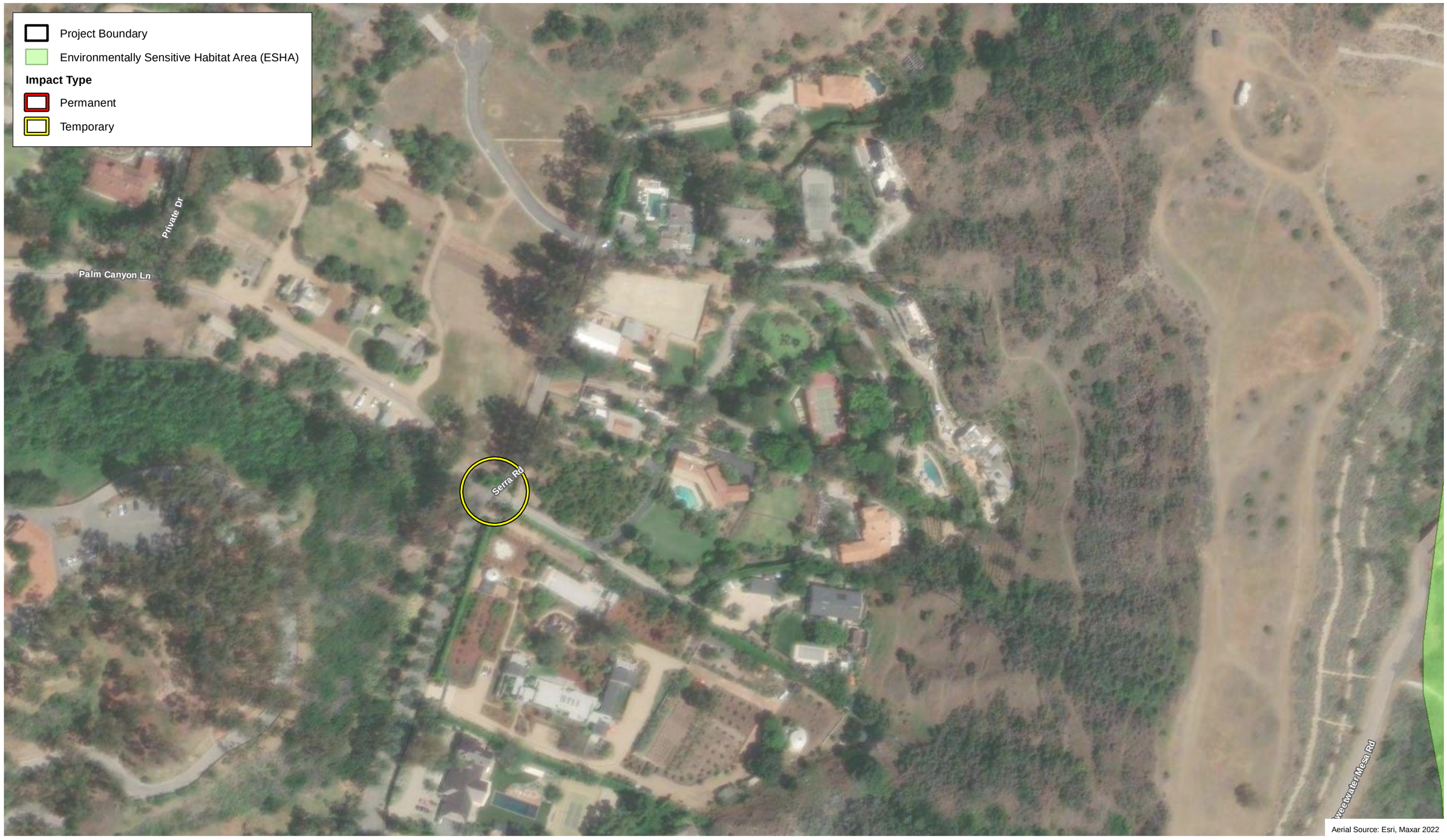

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Environmentally Sensitive Habitat Area – Option WP1.1

Exhibit 5e

Civic Center Improvements Project

N W E S

150 75 0 150

Feet

PSOMAS

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Impacts to Biological Resources – Option WP1.1

Exhibit 6a

Civic Center Improvements Project

N
W
E
S

800 400 0 800

Feet

PSOMAS

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Project Boundary

Impact Type

Permanent

Temporary

Special Status Plants

California black walnut

Coulter's poppy

Coulter's poppy

Vegetation Types and Other Areas

revegetated coastal sage scrub

disturbed coastal sage scrub

mountain mahogany chaparral

blue elderberry stands - laurel sumac chaparral

ruderal

mowed non-native grassland

developed/eucalyptus groves

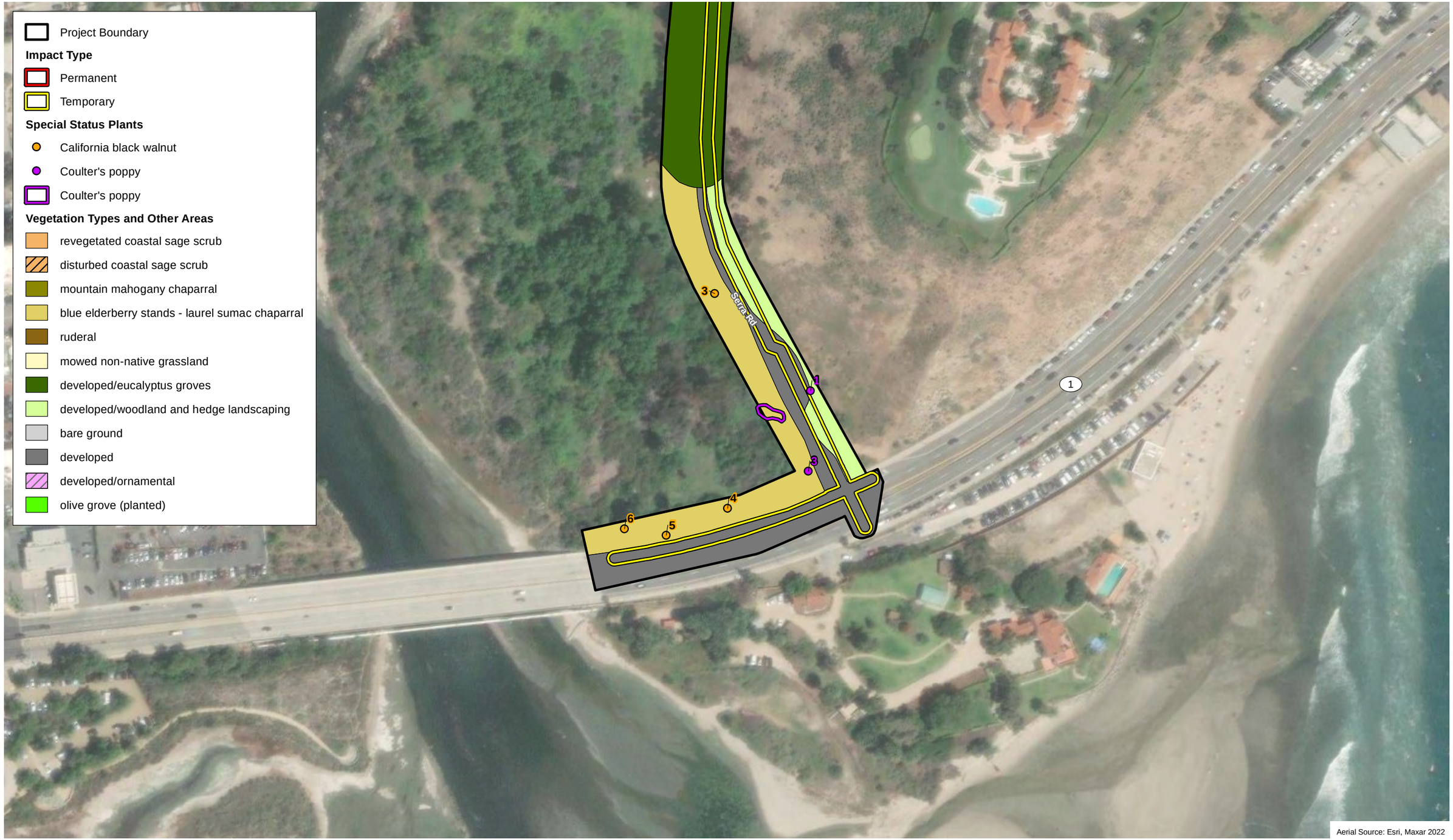
developed/woodland and hedge landscaping

bare ground

developed

developed/ornamental

olive grove (planted)



Aerial Source: Esri, Maxar 2022

Impacts to Biological Resources – Option WP1.1

Civic Center Improvements Project

Exhibit 6b

N W E S

150 75 0 150

Feet

PSOMAS

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Project Boundary

Impact Type

Permanent

Temporary

Special Status Plants

California black walnut

Coulter's poppy

Coulter's poppy

Vegetation Types and Other Areas

revegetated coastal sage scrub

disturbed coastal sage scrub

mountain mahogany chaparral

blue elderberry stands - laurel sumac chaparral

ruderal

mowed non-native grassland

developed/eucalyptus groves

developed/woodland and hedge landscaping

bare ground

developed

developed/ornamental

olive grove (planted)

1

2

Sweetwater Mesa Rd

Serra Rd

1

Aerial Source: Esri, Maxar 2022

Impacts to Biological Resources – Option WP1.1

Exhibit 6c

Civic Center Improvements Project

N W E S

150 75 0 150

Feet

PSOMAS

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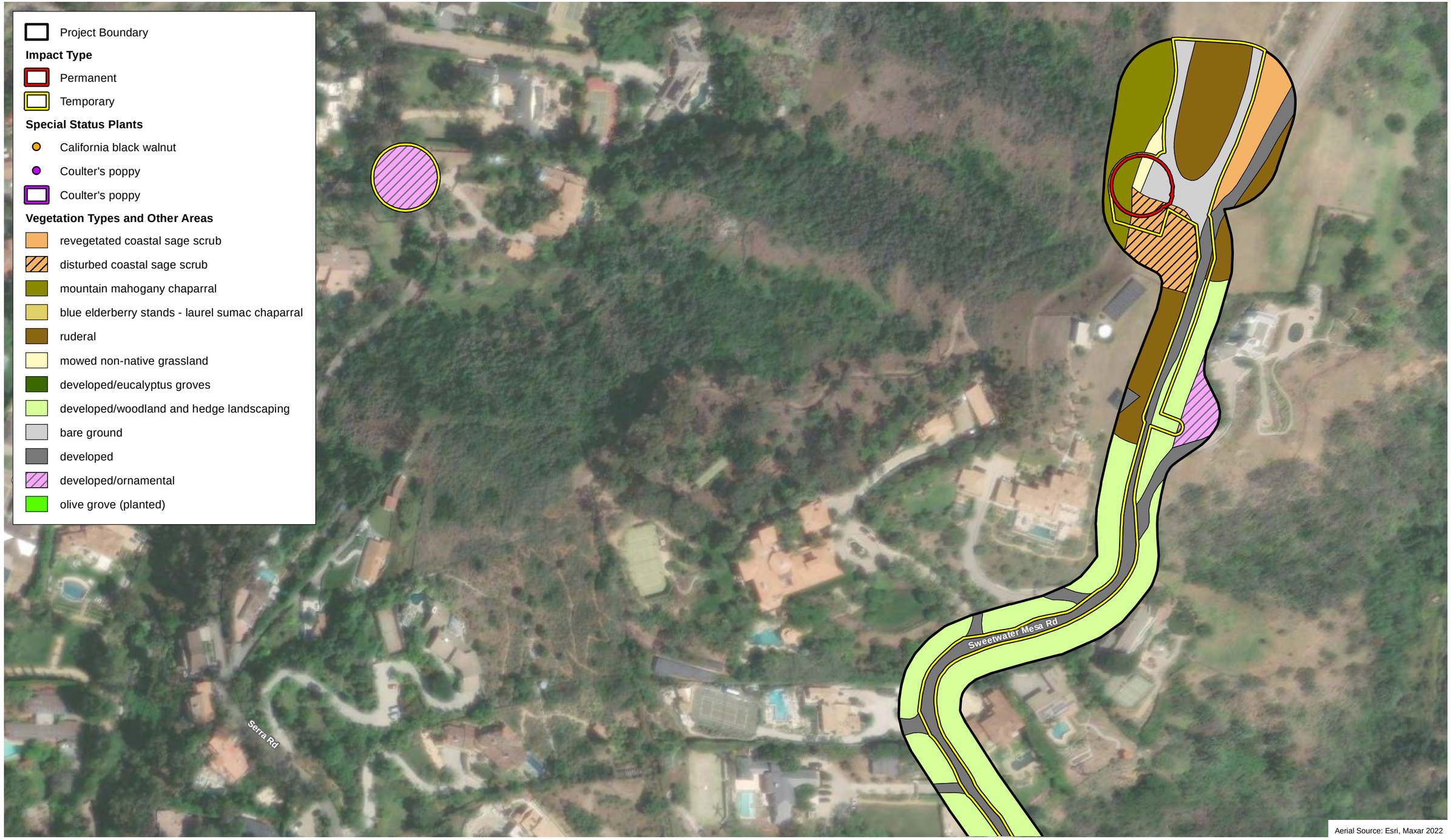

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Impacts to Biological Resources – Option WP1.1

Exhibit 6d

Civic Center Improvements Project

N W E S

150 75 0 150

Feet

PSOMAS

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Project Boundary

Impact Type

Permanent

Temporary

Special Status Plants

California black walnut

Coulter's poppy

Coulter's poppy

Vegetation Types and Other Areas

revegetated coastal sage scrub

disturbed coastal sage scrub

mountain mahogany chaparral

blue elderberry stands - laurel sumac chaparral

ruderal

mowed non-native grassland

developed/eucalyptus groves

developed/woodland and hedge landscaping

bare ground

developed

developed/ornamental

olive grove (planted)

Serra Rd

Sweetwater Mesa Rd

Aerial Source: Esri, Maxar 2022

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Impacts to Biological Resources – Option WP1.1

Exhibit 6e

Civic Center Improvements Project

N W E S

150 75 0 150

Feet

PSOMAS

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Aerial Source: Esri, Maxar 2022

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Environmentally Sensitive Habitat Area – Option WP1.2

Exhibit 7a

Civic Center Improvements Project

N W E S

700 350 0 700

Feet

PSOMAS

(Rev: 1-23-2023 MMD) R:\Projects\CAN\3CAN020100\Graphics\Biotech\ex_ESHA.pdf

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Environmentally Sensitive Habitat Area – Option WP1.2

Exhibit 7b

Civic Center Improvements Project

N W E S

150 75 0 150

Feet

PSOMAS

(Rev: 1-23-2023 MMD) R:\Projects\CAN\3CAN020100\Graphics\Biotech\ex_ESHA.pdf

Project Boundary

Environmentally Sensitive Habitat Area (ESHA)

Impact Type

Permanent

Temporary

See Detail

Sweetwater Mesa Rd

Serra Rd

1

Aerial Source: Esri, Maxar 2022

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Environmentally Sensitive Habitat Area – Option WP1.2

Exhibit 7c

Civic Center Improvements Project

N W E S

150 75 0 150

Feet

PSOMAS

(Rev: 1-23-2023 MMD) R:\Projects\CAN\3CAN020100\Graphics\Biotech\ex_ESHA.pdf

Project Boundary

Environmentally Sensitive Habitat Area (ESHA)

Impact Type

Permanent

Temporary

Mariposa de Oro St

Cross Creek Ln

Serra Rd

Sweetwater Mesa Rd

Aerial Source: Esri, Maxar 2022

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Environmentally Sensitive Habitat Area – Option WP1.2

Exhibit 7d

Civic Center Improvements Project

N W E S

150 75 0 150

Feet

PSOMAS

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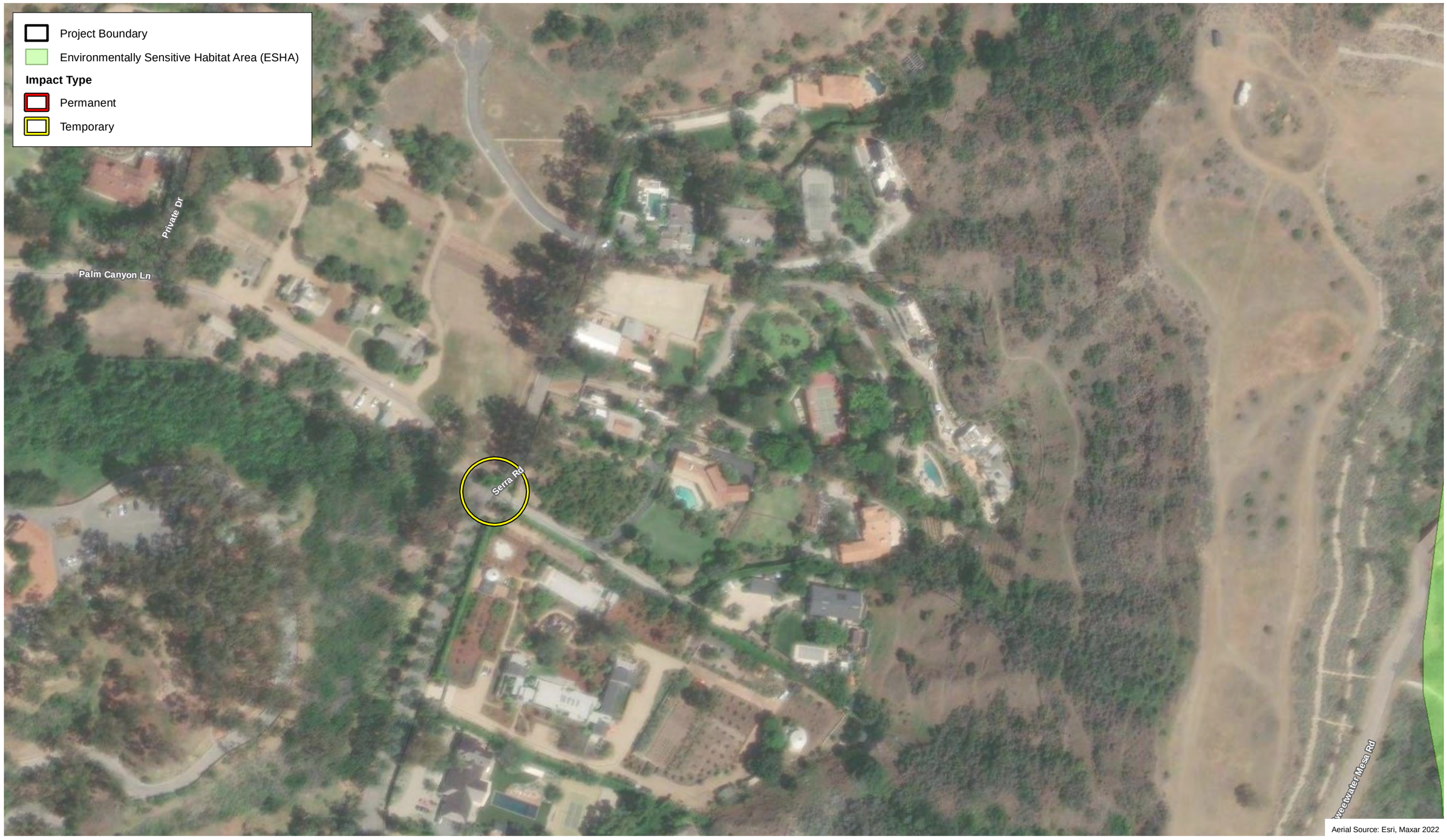

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Environmentally Sensitive Habitat Area – Option WP1.2

Exhibit 7e

Civic Center Improvements Project

N W E S

150 75 0 150

Feet

PSOMAS

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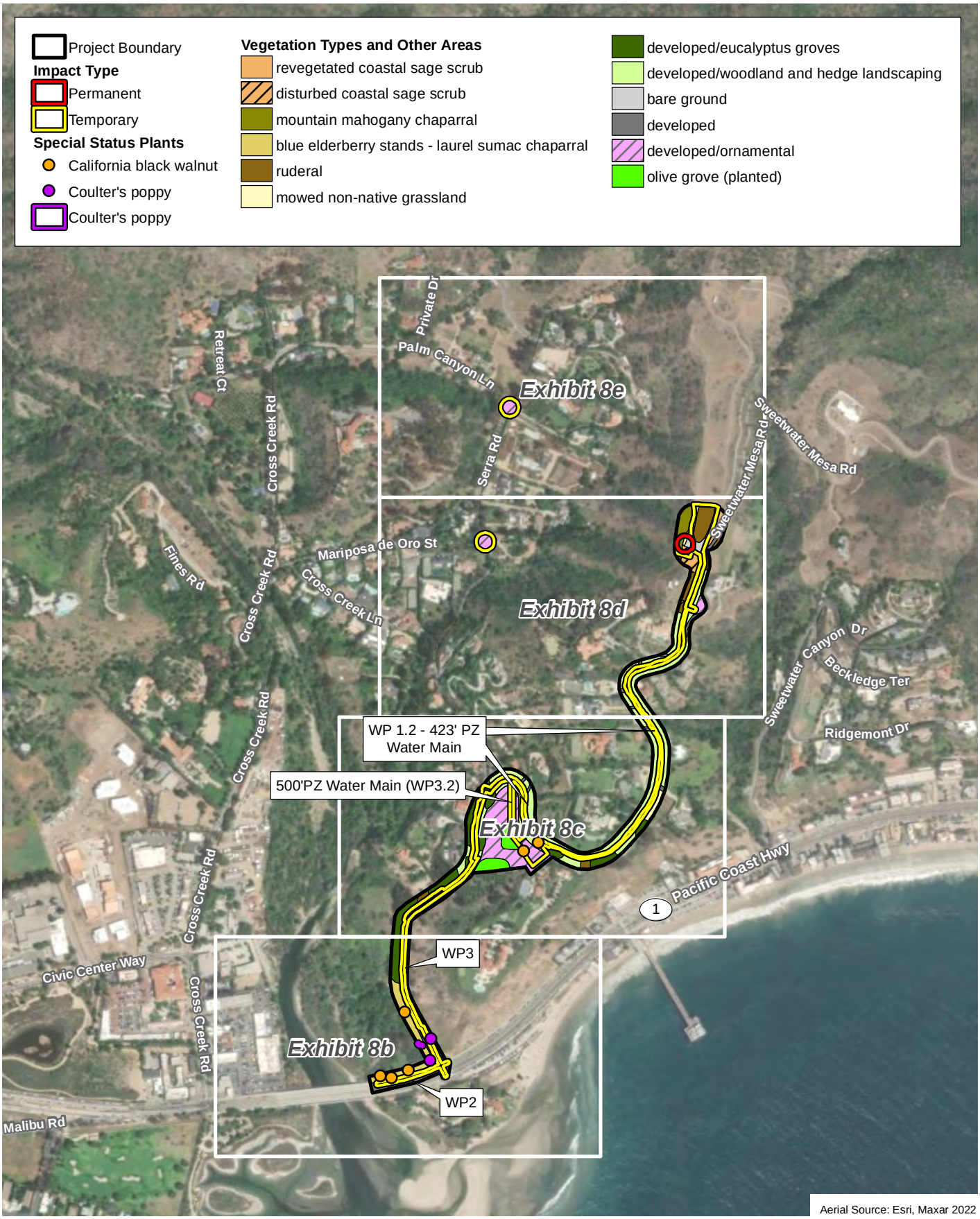

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Impacts to Biological Resources – Option WP1.2

Exhibit 8a

Civic Center Improvements Project

N W E S

800 400 0 800

Feet

PSOMAS

(Rev: 3-08-2023 MMD) R:\Projects\CAN\3CAN020100\Graphics\Biotech\ex_Impacts_BioResources.pdf

Project Boundary

Impact Type

Permanent

Temporary

Special Status Plants

California black walnut

Coulter's poppy

Coulter's poppy

Vegetation Types and Other Areas

revegetated coastal sage scrub

disturbed coastal sage scrub

mountain mahogany chaparral

blue elderberry stands - laurel sumac chaparral

ruderal

mowed non-native grassland

developed/eucalyptus groves

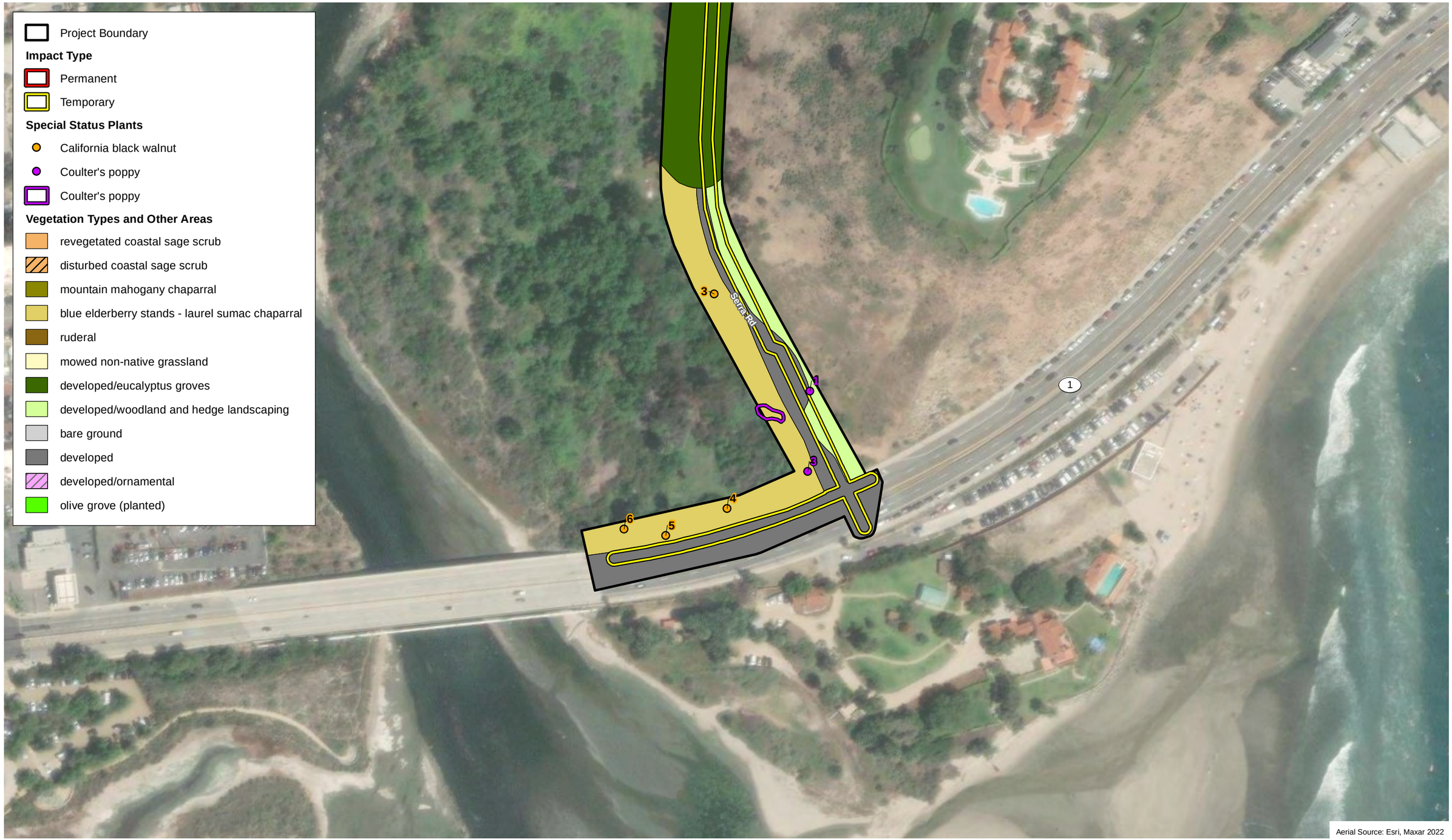
developed/woodland and hedge landscaping

bare ground

developed

developed/ornamental

olive grove (planted)



Aerial Source: Esri, Maxar 2022

Impacts to Biological Resources – Option WP1.2

Civic Center Improvements Project

Exhibit 8b

N W E S

150 75 0 150

Feet

PSOMAS

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Project Boundary

Impact Type

Permanent

Temporary

Special Status Plants

California black walnut

Coulter's poppy

Coulter's poppy

Vegetation Types and Other Areas

revegetated coastal sage scrub

disturbed coastal sage scrub

mountain mahogany chaparral

blue elderberry stands - laurel sumac chaparral

ruderal

mowed non-native grassland

developed/eucalyptus groves

developed/woodland and hedge landscaping

bare ground

developed

developed/ornamental

olive grove (planted)

1

2

Sweetwater Mesa Rd

Serra Rd

1

Aerial Source: Esri, Maxar 2022

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Impacts to Biological Resources – Option WP1.2

Exhibit 8c

Civic Center Improvements Project

N W E S

150 75 0 150

Feet

PSOMAS

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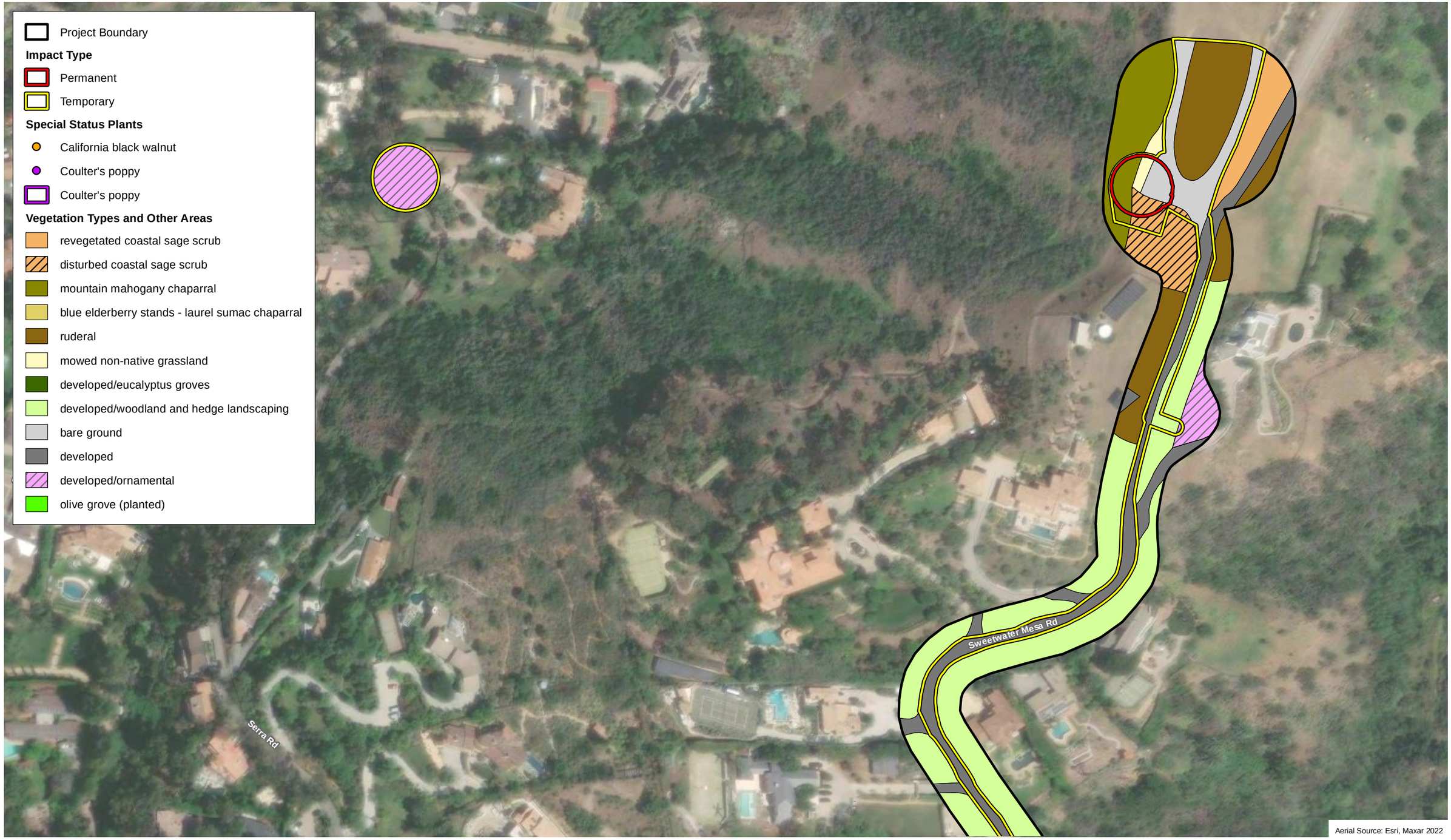

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Impacts to Biological Resources – Option WP1.2

Exhibit 8d

Civic Center Improvements Project

N W E S

150 75 0 150

Feet

PSOMAS

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Project Boundary

Impact Type

Permanent

Temporary

Special Status Plants

California black walnut

Coulter's poppy

Coulter's poppy

Vegetation Types and Other Areas

revegetated coastal sage scrub

disturbed coastal sage scrub

mountain mahogany chaparral

blue elderberry stands - laurel sumac chaparral

ruderal

mowed non-native grassland

developed/eucalyptus groves

developed/woodland and hedge landscaping

bare ground

developed

developed/ornamental

olive grove (planted)

Serra Rd

Sweetwater Mesa Rd

Aerial Source: Esri, Maxar 2022

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Impacts to Biological Resources – Option WP1.2

Exhibit 8e

Civic Center Improvements Project

N W E S

150 75 0 150

Feet

PSOMAS

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Environmentally Sensitive Habitat Area – Option WP1.3

Exhibit 9a

Civic Center Improvements Project

N W E S

700 350 0 700 Feet

PSOMAS

(Rev: 1-23-2023 MMD) R:\Projects\CAN\3CAN020100\Graphics\Biotech\ex_ESHA.pdf

Environmentally Sensitive Habitat Area – Option WP1.3

Exhibit 9b

Civic Center Improvements Project

N
W E
S

150 75 0 150

Feet

PSOMAS

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Project Boundary

Environmentally Sensitive Habitat Area (ESHA)

Impact Type

Permanent

Temporary

See Detail

Sweetwater Mesa Rd

Serra Rd

1

Aerial Source: Esri, Maxar 2022

D:\Projects\3CAN020100\MXD\Biotech\ex_ESHA_Detail_3_20230122.mxd

Environmentally Sensitive Habitat Area – Option WP1.3

Exhibit 9c

Civic Center Improvements Project

N W E S

150 75 0 150

Feet

PSOMAS

(Rev: 1-23-2023 MMD) R:\Projects\CAN\3CAN020100\Graphics\Biotech\ex_ESHA.pdf

Environmentally Sensitive Habitat Area – Option WP1.3

Exhibit 9d

Civic Center Improvements Project

N W E S

150 75 0 150

Feet

PSOMAS

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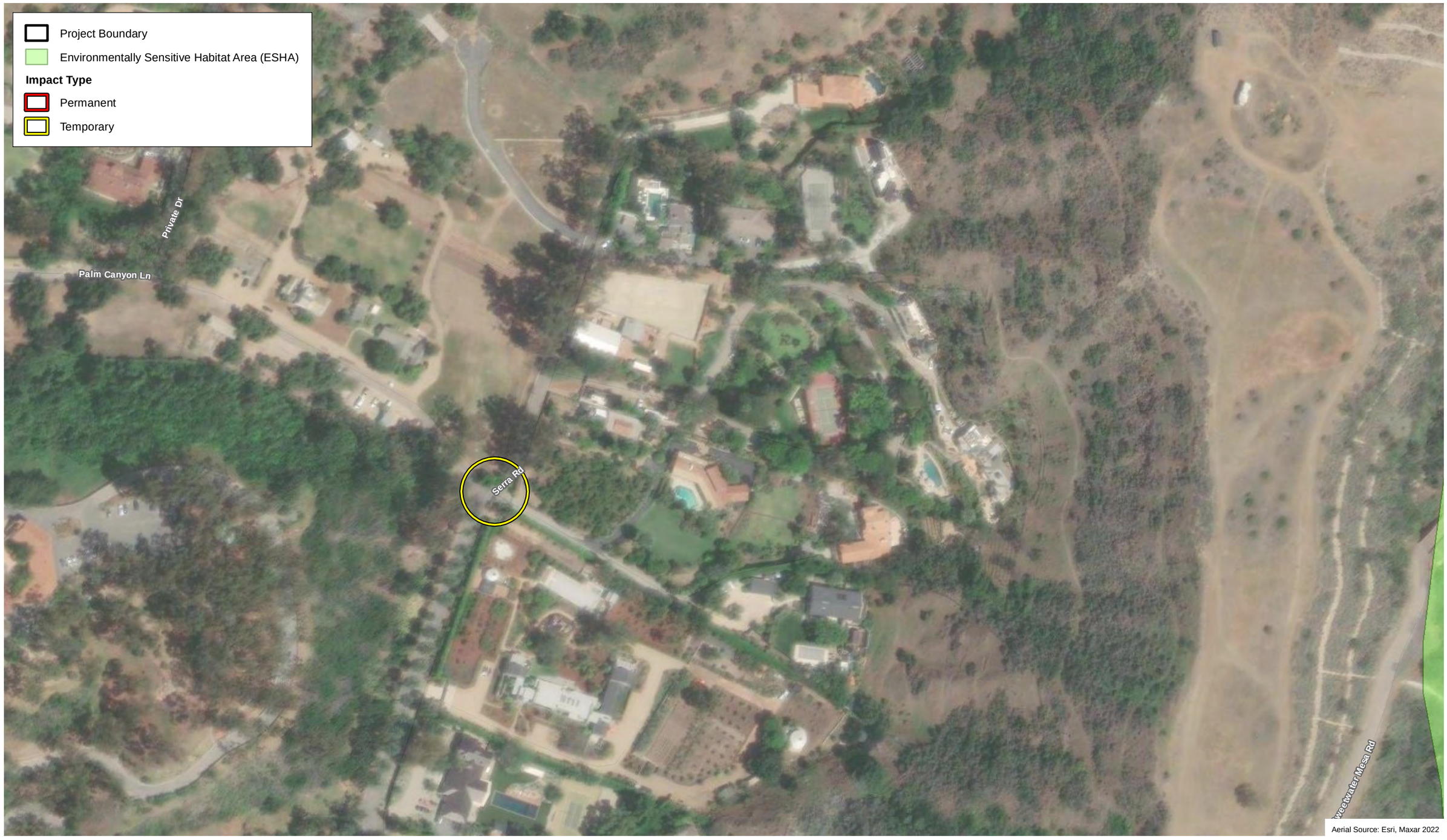

Aerial Source: Esri, Maxar 2022

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Environmentally Sensitive Habitat Area – Option WP1.3

Exhibit 9e

Civic Center Improvements Project

N W E S

150 75 0 150

Feet

PSOMAS

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Aerial Source: Esri, Maxar 2022

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Impacts to Biological Resources – Option WP1.3

Exhibit 10a

Civic Center Improvements Project

N
W
E
S

800 400 0 800

Feet

PSOMAS

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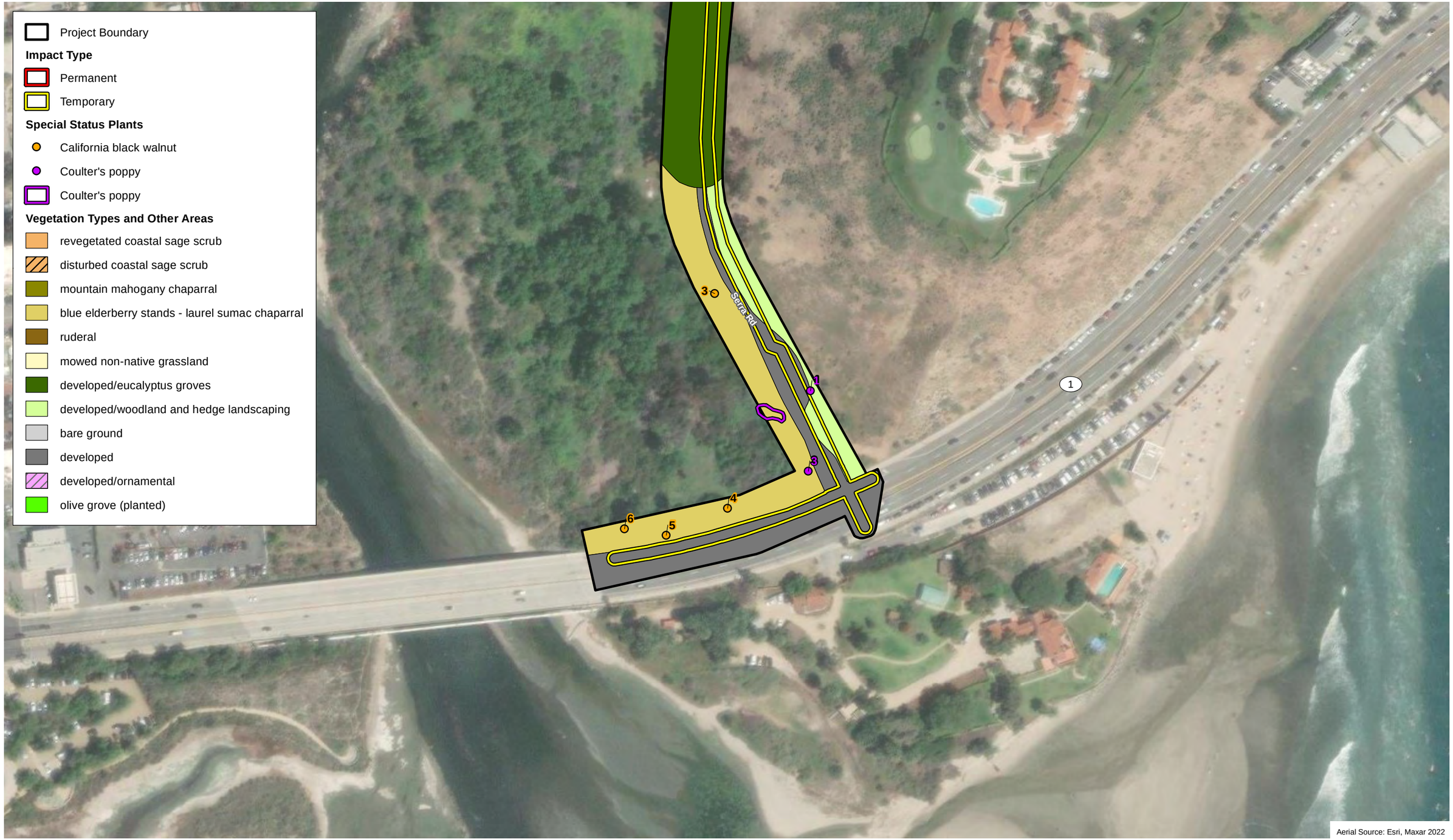

Aerial Source: Esri, Maxar 2022

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Impacts to Biological Resources – Option WP1.3

Exhibit 10b

Civic Center Improvements Project

N W E S

150 75 0 150

Feet

PSOMAS

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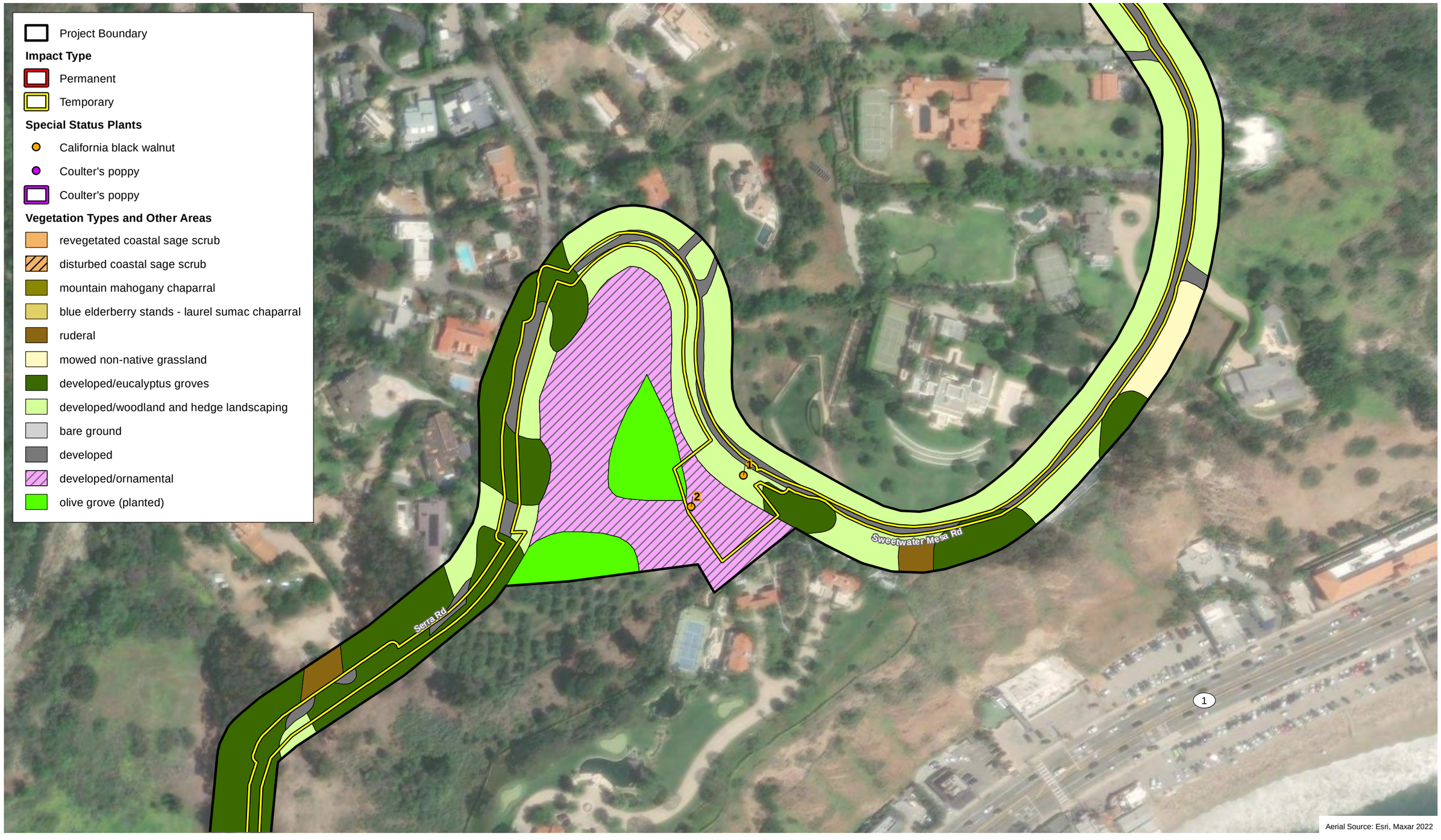

Aerial Source: Esri, Maxar 2022

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Impacts to Biological Resources – Option WP1.3

Exhibit 10c

Civic Center Improvements Project

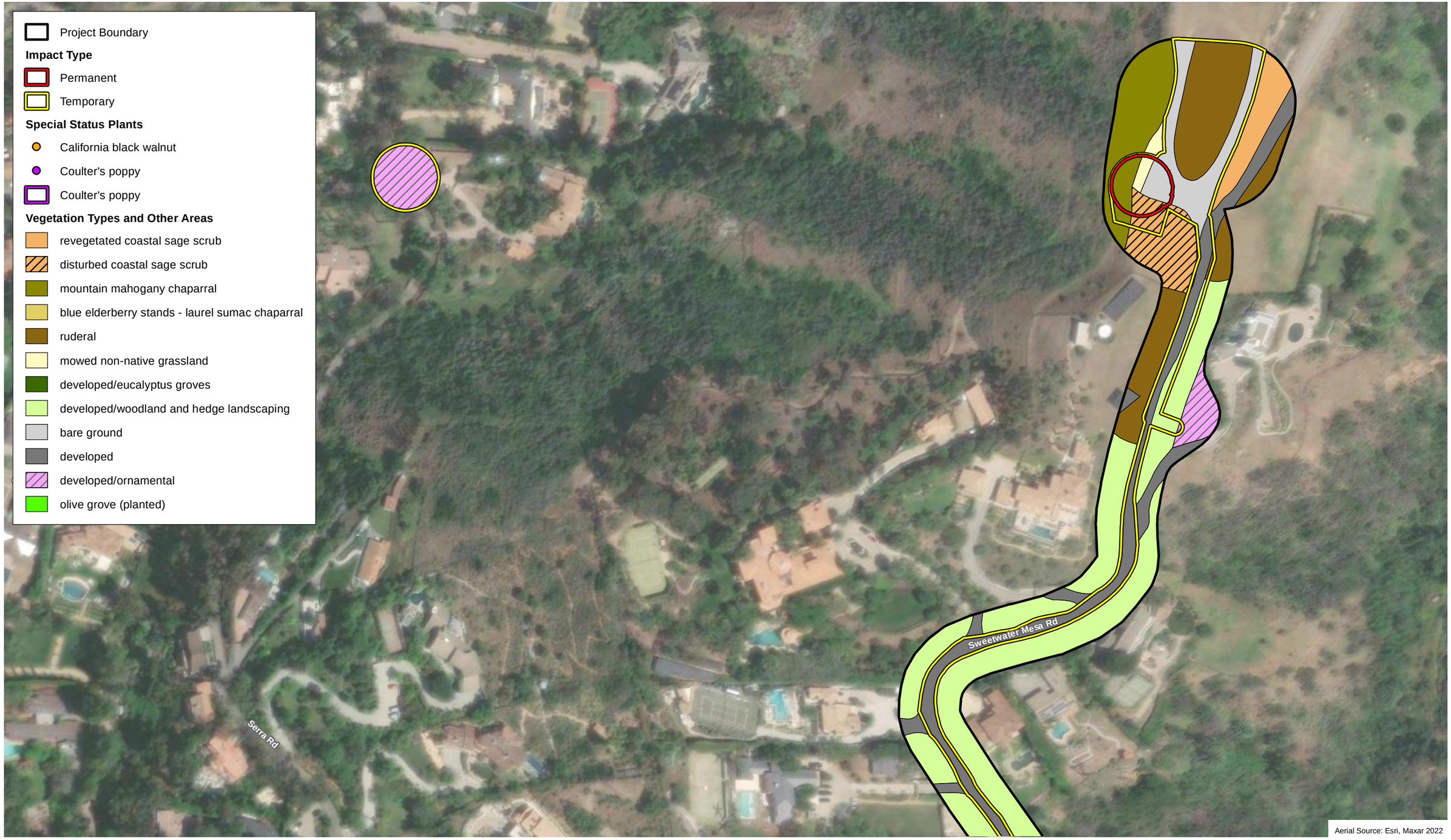
N W E S

150 75 0 150

Feet

PSOMAS

(Rev: 3-07-2023 MMD) R:\Projects\CAN\3CAN020100\Graphics\Biotech\ex_Impacts_BioResources.pdf



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Impacts to Biological Resources – Option WP1.3

Exhibit 10d

Civic Center Improvements Project

N W E S

150 75 0 150

Feet

PSOMAS

(Rev: 3-07-2023 MMD) R:\Projects\CAN\3CAN020100\Graphics\Biotech\ex_Impacts_BioResources.pdf

Project Boundary

Impact Type

Permanent

Temporary

Special Status Plants

California black walnut

Coulter's poppy

Coulter's poppy

Vegetation Types and Other Areas

revegetated coastal sage scrub

disturbed coastal sage scrub

mountain mahogany chaparral

blue elderberry stands - laurel sumac chaparral

ruderal

mowed non-native grassland

developed/eucalyptus groves

developed/woodland and hedge landscaping

bare ground

developed

developed/ornamental

olive grove (planted)

Serra Rd

Sweetwater Mesa Rd

Aerial Source: Esri, Maxar 2022

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Impacts to Biological Resources – Option WP1.3

Exhibit 10e

Civic Center Improvements Project

N W E S

150 75 0 150

Feet

PSOMAS

(Rev: 3-07-2023 MMD) R:\Projects\CAN\3CAN020100\Graphics\Biotech\ex_Impacts_BioResources.pdf

ATTACHMENT B

REPRESENTATIVE SITE PHOTOGRAPHS

Photo 1. View of existing Serra water tank. Taken facing south

Photo 2. Intersection of Mariposa de Oro and Serra Road. Location of one of the Pressure Regulating Stations. Taken facing south.

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Representative Site Photos

Attachment B-1

Civic Center Improvements Project

PSOMAS

Photo 3. Intersection of Palm Canyon Lane and Serra Road. Location of one of the Pressure Regulating Stations. Taken facing north.

Photo 4. View of the proposed new water tank location, showing bare ground in the foreground, and disturbed coastal sage scrub vegetation in the background. Taken facing southwest.

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Representative Site Photos

Attachment B-2

Civic Center Improvements Project

PSOMAS

(04/08/2021 MMD) R:\Projects\CAN\3CAN020100\Graphics\Biotech\Att_SP.pdf

Photo 5. View of chaparral vegetation in the Survey Area. Taken facing southwest.

Photo 6. Close-up view of the disturbed coastal sage scrub habitat in the Survey Area.

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Representative Site Photos

Attachment B-3

Civic Center Improvements Project

PSOMAS

(04/08/2021 MMD) R:\Projects\CAN\3CAN020100\Graphics\Biotech\Att_SP.pdf

Photo 7. View of olive groves in the background. Taken facing southwest.

Photo 8. View of one of the California black walnut trees observed in the Study Area.

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Representative Site Photos

Attachment B-4

Civic Center Improvements Project

PSOMAS

(04/08/2021 MMD) R:\Projects\CAN\3CAN020100\Graphics\Biotech\Att_SP.pdf

Appendix B-2

Tree Assessment Report

February 12, 2024

Darian Wong
Environmental Engineering Specialist
Los Angeles County Public Works
1000 South Freemont Avenue
Alhambra, California 91803

VIA EMAIL
DarWong@dpw.lacounty.gov

Subject: Tree Assessment Report for the Sweetwater Mesa Tank and Waterline Improvement Projects, City of Malibu, Los Angeles County, California

Dear Darian Wong:

Psomas is pleased to provide this Tree Assessment Report for the Sweetwater Mesa Project (Project) located in the City of Malibu, California. The survey area for this assessment consists of the Project impact area along Serra Road beginning at Pacific Coast Highway (PCH) to Sweetwater Mesa Road and the temporary staging area at the top of Sweetwater Mesa Road (Exhibit 1). Two additional impact areas for Pressure Regulating Stations were also surveyed. The first area is located at the intersection of Palm Canyon Lane and Serra Road and the second at the intersection of Mariposa De Oro Street and Serra Road.

Psomas Certified Arborist Trevor Bristle performed the tree assessment on January 11, 2024 to document the type, quantity, and condition of trees that are present in the survey areas. Each tree was individually numbered, and the trunk, branches, and foliage were carefully examined for injuries, pests, diseases, or other health factors to evaluate their physical condition. The following data were recorded: tree species, number of trunks, trunk diameter at breast height (dbh), tree height, and canopy diameter. The health and aesthetics of each tree was assessed and rated on a scale of A (Excellent) to F (Dead).

PROJECT DESCRIPTION AND BACKGROUND

The proposed Project includes construction of a new 12-inch water main in Serra Road from PCH to Sweetwater Mesa Road. The water main will continue along Sweetwater Mesa Road from Serra Road to the new 1.12-million-gallon tank located at the end of Sweetwater Mesa Road. A second 12-inch water main will be constructed in the Pacific Coast Highway from Serra Road to the beginning of the Malibu Lagoon Bridge. The new Sweetwater Mesa Tank would be located at an undeveloped Los Angeles County Waterworks District No. 29 (District) owned property just north of 3311 Sweetwater Mesa Road.

Water Main Project No.1 (WP1) would replace the existing undersized 4-inch main through construction of approximately 3,140 feet of 12-inch Steel concrete mortar coated (CMC) and concrete mortar lined (CML) water main in Sweetwater Water Mesa Road, beginning at the Serra Tank site at Sweet Water Mesa Road and extending to the new Sweetwater Mesa Road Tank at the end of Sweetwater Mesa Road.

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Pasadena, CA 91101

Tel 626.351.2000
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www.Psomas.com

Water Main Project No.2 (WP2) involves construction of approximately 445 feet of 12-inch diameter steel CMC and CML and epoxy coated water main in PCH from Serra Road to the Malibu Lagoon Bridge. This 12-inch main would replace the existing 6-inch water main.

Water Main Project No.3 (WP3) includes construction of approximately 1,837 feet of parallel 12-inch diameter steel CMC and CML water main along Serra Road between PCH and the Serra Tank.

The Serra Tank site has an existing pump station, which would be replaced with a new skid mounted modern pump station. The pump station would only be used in an emergency condition – when gradient in the 500 Pressure Zone (PZ) is below the height of the Sweetwater Mesa Tank. The new pump station would be quieter than the existing free-standing pumps.

The Project would construct three new Pressure Regulating Stations (PRS):

- **Palm Canyon Lane and Serra Road:** The first PRS is planned at the southwest corner of Palm Canyon Lane and Serra Road.
- **Mariposa De Oro Street and Serra Road:** The second PRS is planned on the west side of the intersection at the Mariposa De Oro Street and Serra Road.
- **Serra Tank-PRV:** The third PRS is planned on the Serra Tank site.

It should be noted that the exact termination and beginning of the Serra Road water main and the Sweetwater Mesa Road water main respectively are unknown at this time because the District does not have the easements for the District operated and maintained Serra Tank site. The District is currently working with the property owner to obtain the easement. This Tree Assessment Report analyzes what is understood to be the maximum extent and disturbance areas of the water mains.

REGULATORY AUTHORITY

The Malibu Local Coastal Program Native Tree Protection Ordinance (NTPO) regulates impacts on five native tree species, including all native oaks (*Quercus* spp.), Southern California black walnut (*Juglans californica*), western sycamore (*Platanus racemosa*), white alder (*Alnus rhombifolia*), and toyon (*Heteromeles arbutifolia*) that have at least one trunk measuring six inches or more in diameter, or a combination of any two trunks measuring a total of eight inches or more in diameter.

EXISTING CONDITIONS

The Project site survey area measures approximately 18 acres and is surrounded by primarily residential areas. Natural open space occurs west of Serra Road, south of PCH in the Malibu Lagoon area, and west of the proposed tank location. The Pacific Ocean coastline is approximately 600 feet south of the Project. Vegetation along the alignment consists mainly of various non-native ornamental tree species including eucalyptus (*Eucalyptus* sp.), olive (*Olea europaea*), and Indian laurel fig (*Ficus microcarpa*).

DISCUSSION

A total of 12 western sycamores were documented in the survey area that meet the requirements to be regulated by the NTPO. No tree trunks are located within the Project impact areas, but the canopies of these sycamores overhang the road and may be affected by construction activities. Photographs of each tree are provided in Attachment A. The locations of these trees are provided on Exhibit 2 and all data collected during the survey is available in Attachment B.

The trees along the survey area are generally mature individuals in good to fair health. They have normal seasonal foliage with signs of routine maintenance in the form of irrigation and pruning. No conspicuous signs of decay (e.g., trunk cavities, bleeding sap, broken limbs, or fungi) were observed. Evaluation of these trees was based on a visual assessment from the ground.

Trees No. 1 to 11 are located at the southern end of Serra Road, approximately 50 to 500 feet north of PCH. These trees are rooted within 20 feet of the eastern side of Serra Road near a guard shack. Trees No. 6 and 8 have lower health ratings due to heavy pruning and deadwood. Tree No. 2 has a powerline running through its canopy and appears to have been pruned back several times for clearance.

Tree No. 12 is located approximately 950 feet from the north end of the alignment. This tree is rooted within 4 feet of the eastern side of Sweetwater Mesa Road. This tree is planted behind a 3-foot-tall concrete wall with canopy overhanging into the road.

PROJECT IMPACTS

Construction and Post-Construction Impacts

Project construction is expected to consist mainly of temporary impacts that consist of areas that may be subject to traversing vehicles or other mobile equipment, staging of equipment; stockpiling of soil; minor soil disturbance where there is no permanent alteration to the existing grade; and no vegetation or tree removal. These areas are labeled with a yellow boundary on Exhibit 2.

There is one permanent impact area located where the new water tank is to be installed. This is considered a permanent impact area as it may include the removal of vegetation and potential earthwork. This permanent impact area is labeled with a red boundary on Exhibit 2.

None of the trees documented in the survey area are located near the permanent impact area so that no tree removal is expected. Trees documented herein are located adjacent to the temporary impact areas with relatively small portions of their canopies overhanging. The roots of these trees are not expected to extend into the area due to the compacted soil conditions where roads have been constructed. Therefore, no tree impacts are expected to result from the construction process.

Project Alternative Feasibility for Impact Avoidance/Minimization

No project alternatives to the above referenced waterline alignments are proposed at this time as the trees documented during this survey are to be avoided and no impacts are expected.

TREE PROTECTION MEASURES

A Tree Protection Plan is provided in Attachment C that lists actions to be implemented to avoid or minimize Project impacts on trees documented in this report.

LONG-TERM MAINTENANCE AND MONITORING

No long-term maintenance and/or monitoring is recommended at this time as the trees documented during this survey are to be avoided and no impacts are expected.

Please call Trevor Bristle at (626) 204-6538 with any questions related to this report.

Sincerely,

PSOMAS

Marc T. Blain
Biological Resources Project Manager

Trevor Bristle
International Society of Arboriculture
Certificate No. WE-10233A
American Society of Consulting Arborists
Registered Consulting Arborist #746

Exhibit 1 – Project Location
Exhibit 2 – Tree Locations
Attachment A – Tree Photographs
Attachment B – Tree Data Summary
Attachment C – Tree Protection Plan

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Project Location

Exhibit 1

Sweetwater Mesa Tree Survey

N W E S

0 1,000 2,000 Feet

PSOMAS

(Rev: 1-19-2024 PLO) R:\Projects\CAN\3CAN020100\Graphics\Trees\ex_Project_Location.pdf

Impact Type

Temporary

Permanent

Tree Species

western sycamore *(Platanus racemosa)*

N
W E
S

0 125 250
Feet

Aerial Source: Nearmap 2023

Tree Locations

Exhibit 2a

Sweetwater Mesa Tree Survey

PSOMAS

(Rev: 1-22-2024 PLO) R:\Projects\CAN\3CAN020100\Graphics\Trees\ex_Tree_Locations.pdf

D:\Projects\3CAN\Civic_Center\PRO\Civic_Center.aprx\ex_Tree_Locations

Impact Type

Temporary

Permanent

Tree Species

western sycamore *(Platanus racemosa)*

N
W E
S

0 125 250 Feet

Aerial Source: Nearmap 2023

Tree Locations

Exhibit 2b

Sweetwater Mesa Tree Survey

PSOMAS

(Rev: 1-22-2024 PLO) R:\Projects\CAN\3CAN020100\Graphics\Trees\ex_Tree_Locations.pdf

D:\Projects\3CAN\Civic_Center\PRO\Civic_Center.aprx\ex_Tree_Locations

ATTACHMENT A

TREE PHOTOGRAPHS

View of Tree 1. January 11, 2024

View of Tree 2. January 11, 2024

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Tree Photographs

Attachment A-1

Sweetwater Mesa Tree Survey

PSOMAS

View of Tree 3. January 11, 2024

View of Tree 4. January 11, 2024

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Tree Photographs

Attachment A-2

Sweetwater Mesa Tree Survey

PSOMAS

View of Tree 5. January 11, 2024

View of Tree 6. January 11, 2024

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Tree Photographs

Attachment A-3

Sweetwater Mesa Tree Survey

PSOMAS

View of Tree 7. January 11, 2024

View of Tree 8. January 11, 2024

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Tree Photographs

Attachment A-4

Sweetwater Mesa Tree Survey

PSOMAS

View of Tree 9. January 11, 2024

View of Tree 10. January 11, 2024

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Tree Photographs

Attachment A-5

Sweetwater Mesa Tree Survey

PSOMAS

View of Tree 11. January 11, 2024

View of Tree 12. January 11, 2024

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Tree Photographs

Attachment A-6

Sweetwater Mesa Tree Survey

PSOMAS

ATTACHMENT B

TREE DATA SUMMARY

TREE DATA SUMMARY

Tree Number	Common Name	Species	# of Trunks	1st Trunk DBH (in)	2nd Trunk DBH (in)	Total DBH (in)	Height (ft)	Canopy Diameter (ft)	Health	Aesthetics
1	western sycamore	*Platanus racemosa*	1	8.9	-	8.9	35	12	B	B
2	western sycamore	*Platanus racemosa*	1	10.5	-	10.5	40	30	B	C
3	western sycamore	*Platanus racemosa*	2	5.6	4.8	10.4	25	20	B	B
4	western sycamore	*Platanus racemosa*	2	6.9	6.4	13.3	35	25	B	B
5	western sycamore	*Platanus racemosa*	1	10.4	-	10.4	35	35	B	B
6	western sycamore	*Platanus racemosa*	1	9.6	-	9.6	35	25	C	C
7	western sycamore	*Platanus racemosa*	2	5.4	4.0	9.4	25	20	B	C
8	western sycamore	*Platanus racemosa*	1	10.4	-	10.4	30	25	C	C
9	western sycamore	*Platanus racemosa*	2	10.1	9.8	19.9	35	30	B	B
10	western sycamore	*Platanus racemosa*	2	5.6	4.4	10.0	25	18	B	B
11	western sycamore	*Platanus racemosa*	1	8.5	-	8.5	25	25	B	B
12	western sycamore	*Platanus racemosa*	1	7.6	-	7.6	20	20	B	B

DBH = Diameter at Breast Height (4.5 ft from mean grade); Health/Aesthetic = A (Excellent), B (Good), C (Fair), D (Poor), E (Nearly Dead), F (Dead)

ATTACHMENT C

TREE PROTECTION PLAN

SWEETWATER MESA TANK AND WATERLINE IMPROVEMENT PROJECTS TREE PROTECTION PLAN

The measures described herein are intended to ensure that potential Project impacts on tree resources in the vicinity of the Sweetwater Mesa Tank and Waterline Improvement are minimized or avoided. Tree protection measures are consistent with tree protection standards described in the Native Tree Protection Ordinance (NTPO) that is part of the Malibu Local Coastal Program's Local Implementation Plan (Malibu 2002).

EXISTING TREE RESOURCES

As documented in the tree inventory report, a total of 12 western sycamores (*Platanus racemosa*) are located in the immediate vicinity of proposed Project activities that are subject to the protections of the NTPO. These trees occur along the edges of Sweetwater Mesa Road and Serra Road, though none occur within the proposed Project disturbance footprint.

TREE BIOLOGY

Maintaining tree health requires protection of both the tree's root zone as well as the above-ground portions of the tree. Roots are responsible for nutrient and water absorption (absorbing roots) as well as for providing structural stability (buttress roots). Buttress roots generally provide stability for the tree to a distance of several feet from the trunk, after which they taper off to less than one inch in diameter. Absorbing roots are much smaller in size and densely occupy the soil. Overall, a tree's roots radiate horizontally from the trunk (generally within the top one to two feet of soil) and can extend beyond the dripline (outer canopy). Because roots can be quite small and occupy the top two feet of soil, they are very sensitive to soil disturbance. Soil compaction or placement of fill in the root zone can reduce the ability of water and air to reach the roots, which may result in their death (ISA 2011). Significant impacts to the root zone usually result in an overall decrease in the tree's physiological processes that can greatly affect a tree's health.

Impacts to above-ground portions of the tree are also often damaging to a tree's overall health. Trunk wounds and broken branches provide an opportunity for pathogens to enter a tree's vascular system, causing wood to decay. Once the process of decay begins, it can spread throughout a tree, weakening the structure and reducing the flow of water and nutrients. Reducing the canopy through excessive pruning can also reduce the overall physiological processes of a tree. Fewer leaves in the canopy results in less photosynthetic activity, which slows the growth rate of trees and reduces their ability to withstand other stressors.

PROJECT ARBORIST

Los Angeles County Public Works shall be responsible for retaining an Arborist who is certified by the International Society of Arboriculture or the American Society of Consulting Arborists. The Project Arborist shall be approved by the Malibu Planning Manager prior to the implementation of the tree protection measures described herein and prior to any construction activities. The Project Arborist shall be responsible for monitoring successful compliance of tree protection measures described herein and shall be on site to monitor all work activities that have the potential to harm trees documented in the tree inventory report. A post-construction monitoring report will be provided to the City of Malibu summarizing Project activities and if any trees were harmed during construction activities.

ROOT PROTECTION ZONE

The root protection zone (RPZ) is defined as the area in which most of a tree's root system is found. Although roots may extend beyond the RPZ, this is the area in which disturbance to roots will have the

greatest chance of causing serious damage to a tree's overall health. For this Project site, the RPZ is defined as the ground that occurs below each tree's canopy (i.e., extending to the tree's dripline), though the RPZ should be reduced where soil conditions are deemed by the Project Arborist to prevent root growth (i.e., compacted soil conditions under existing roads).

ENCROACHMENT

Encroachment consists of any soil-disturbing activity (i.e., cutting or filling) or vehicle operation within the RPZ. Any such impacts may cause significant harm to the overall health of a tree. If any such activities are necessary within the RPZ, construction personnel shall discuss proposed activities with the Project Arborist to minimize impacts on roots and soil. A protective root buffer may be needed to dissipate the weight of any construction equipment to limit soil compaction. Protective root buffers may include placement of six inches (or more) of wood chips with ¾-inch plywood on top.

Please note that minor excavations in the RPZ may not be considered encroachment if disturbance is limited to the use of hand tools and if (1) no roots greater than one inch in diameter are encountered during the excavation; and (2) less than ten percent of the total RPZ is affected. The Project Arborist will document any such work in the RPZ as part of the post-construction monitoring report and will indicate if the work meets the standard for requiring long-term monitoring as described below.

TREE PROTECTION MEASURES

To ensure successful avoidance of Project impacts on trees, the following measures shall be implemented:

- The RPZ shall be delineated through the installation of conspicuous protective fencing that extends each tree's dripline. The size of the RPZ can be reduced where soil conditions are determined by the Project Arborist to prevent root growth. This would include the developed footprint of Serra Road and Sweetwater Mesa Road where the compacted road base is expected to prevent roots from extending into these areas. The fencing shall be installed prior to any soil disturbing activities and shall not be removed until all construction in the vicinity of these trees is complete.
- Native trees and their protected zones should be represented on Project construction plans.
- No storage or operation of equipment or materials will be allowed within the RPZ of any native tree. Spill kits should always be present so that accidental spills of harmful products near a tree's RPZ zone can be immediately cleaned up.
- No ground disturbance shall occur within the RPZ. If any excavations within a tree's RPZ become unavoidably necessary, work shall be constructed using only hand-held tools. The Project Arborist shall be present for any such disturbance within the RPZ or during any tree trimming that requires removal of branches greater than 3 inches in diameter or pruning that totals more than 10 percent of an individual tree's canopy.
- All trees in the vicinity of construction activity should be monitored for dust accumulation. If observed, the foliage may be sprayed with water to reduce any dust accumulation on the leaves. This should take place periodically (i.e., no more than twice a week).
- Surface water runoff should be directed away from the RPZ of the western sycamore trees that are adjacent to the construction areas. If it is determined by the Project Arborist that construction activities have the potential to result in siltation and/or erosion within the RPZ, appropriate erosion-control measures shall be installed outside the RPZ. Erosion-control measures may consist of silt screen fencing, sand bags, straw wattles, or another appropriate device.

TREE MONITORING

If tree encroachment occurs during Project construction activities, long-term monitoring of the tree by the Project Arborist will occur to determine if this disturbance has resulted in an irreversible decline in the health of the tree.
Long-term monitoring shall consist of annual site visits during the tree's growth period (April through July) to evaluate the tree's overall condition. Photos shall be taken each year to compare the overall vigor of the tree from year to year. This monitoring program will occur for a ten-year period after the end of Project construction and annual monitoring report will be provided by the Project Arborist to the City of Malibu.

TREE REPLACEMENT

Tree replacement will be required if any native trees that are protected by the NTPO: (1) are removed during Project construction activities; (2) are significantly harmed during construction so that it is the Project Arborist's opinion that the tree is not expected to recover; or (3) die or experience a significant health decline during the long-term monitoring period (for trees that experience encroachment during construction).

Tree replacement shall be performed at a 10:1 ratio (i.e., ten replacement trees for every tree to be removed). Replacement trees shall be the same species as those that are removed. All replacement trees will be monitoring by the Project Arborist for a period of ten years to document their successful establishment. This ten-year monitoring program shall follow the monitoring guidelines described above, namely that trees will be evaluated annually for a ten-year period; that field evaluations will be performed during the tree's growth period; and that annual monitoring reports will be provided to the City of Malibu.

REFERENCES

International Society of Arboriculture (ISA). 2011. Avoiding Tree Damage During Construction. Champaign, IL: ISA. http://www.treesaregood.com/treecare/resources/AvoidingTreeDamage.pdf.

Malibu, City of, 2002. Native Tree Protection Ordinance (Chapter 5 of the Malibu Local Implementation Plan for the Malibu Local Coastal Program: Malibu: CA. https://malibucity.org/DocumentCenter/View/4421/Malibu-Local-Implementation-Plan-LIP-?bidId=

Appendix C

Cultural Resources Literature Reviews and Record Search Results

Report List

Sweetwater 3CAN020100

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
LA-00010		1973	Leonard, Nelson N. III	3469 Crosscreek Road Survey	University of California, Los Angeles Archaeological Survey	
LA-00081		1975	Rosen, Martin D.	Evaluation of the Archaeological Resources for the Areawide Facilities Plan for the Las Virgenes Municipal District, (Malibu Coast, Western Santa Monica Mountains, Southern Simi Hills), Los Angeles and Ventura Counties.	University of California, Los Angeles Archaeological Survey	19-000018, 19-000019, 19-000028, 19-000029, 19-000031, 19-000032, 19-000093, 19-000129, 19-000133, 19-000187, 19-000189, 19-000190, 19-000195, 19-000215, 19-000246, 19-000265, 19-000266, 19-000268, 19-000269, 19-000314, 19-000331, 19-000352, 19-000450, 19-000505, 19-000506, 19-000517, 19-000707, 56-000008, 56-000012, 56-000123, 56-000176, 56-000177, 56-000180, 56-000181, 56-000267, 56-000270
LA-00183		1988	Singer, Clay A. and John Atwood	Cultural Resources Survey and Impact Assessment for the Proposed John Paul Jones Residence, an 8 Acre Property Located on the North End of Sweetwater Mesa Road in Malibu, Los Angeles County, California	C.A. Singer & Associates, Inc.	19-000267
LA-00203		1981	Singer, Clay A.	Cultural Resource Survey and Impact Assessment for the Connoleenolley Parcel, Sweetwater Mesa, Malibu, Los Angeles County, California	C.A. Singer & Associates, Inc.	19-000264, 19-000267
LA-00723		1973	Suchey, Judy M., Walter Wood, and Stewart Shermis	Analysis of Human Skeletal Material From Malibu, California (LAN-264)	CSU Fullerton & Long Beach	19-000264
LA-00738		1965	Glassow, Mike	An Analysis of Faunal Remains From the Site of Malibu (LAN-264), Los Angeles County, California	University of California, Los Angeles Archaeological Survey	19-000264
LA-00743		1967	King, Chester	The Sweetwater Mesa Site (LAN-267) and its Place in Southern California Prehistory	University of California, Los Angeles Archaeological Survey	19-000267
LA-00975		1981	McIntyre, Michael J. and John M. Foster	Cultural Resource Reconnaissance: Parcel No.24, Tentative Parcel Map No. 12597, 23838 Harbor Vista Drive, Malibu, Los Angeles County	Greenwood and Associates	
LA-00995		1981	Singer, Clay A.	Cultural Resource Survey and Impact Assessment for Tentative Tract No. 40724, in Malibu, Los Angeles County, California		19-000471, 19-001105, 19-001106

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Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
LA-01022		1981	Boxt, Matthew A.	An Archaeological Assessment of a Proposed Project Site Located at 23903 Malibu Knolls Road, Malibu, California, Case Number Pm 13422	Matthew Boxt	
LA-01049		1981	Boxt, Matthew A.	An Archaeological Assessment of a Proposed Project Site Located at 3415 Cross Creek Road, Malibu, California, Property Designated As Tentative Minor Land Division on Number 6381	Matthew Boxt	
LA-01286		1983	Whitley, David S.	An Archaeological Assessment of Prehistoric Cultural Resources at 22917 Pacific Coast Highway, Malibu, Los Angeles County, CA	University of California, Los Angeles Archaeological Survey	19-000690
LA-01482		1985	Greenwood, Roberta S. and John Parker	Archaeological Investigation, Proposed Postal Facility in Malibu, California	Greenwood and Associates	
LA-01538		1986	Dillon, Brian D.	Malibu Wastewater Facilities Plan: Archaeological Analysis Survey Report		19-000019, 19-000030, 19-000114, 19-000133, 19-000189, 19-000195, 19-000197, 19-000201, 19-000210, 19-000226, 19-000264, 19-000310, 19-000311, 19-000335, 19-000451, 19-000690, 19-001012
LA-01653		1987	Dillon, Brian D.	Preliminary Summary of Archaeological Boundary Test Investigations on the Malibu Coast: CA-LAN-19, 210, 226, 264, 311, and 1298 Los Angeles County, Ca	University of California, Los Angeles Archaeological Survey	19-000019, 19-000210, 19-000226, 19-000264, 19-000311, 19-001298
LA-01772		1981	Clewlow, William C. Jr.	Report on Preliminary Archaeological Testing and Recommendations for Mitigation at Site LAN-267, Locus C, Los Angeles County, California	Ancient Enterprises, Inc.	19-000267
LA-01780		1989	Raab, Mark L.	Summary of Data From Site CA-LAN-264, Malibu Lagoon, California	Northridge Center for Public Archaeology, CSUN	19-000264
LA-01790		1989	Singer, Clay A. and John E. Atwood	Archaeological Investigations at CA-LAN-267b, a Portion of the Sweetwater Mesa Site in Malibu, Los Angeles County, California.	C.A. Singer & Associates, Inc.	19-000267
LA-01876		1989	Greenwood, Roberta S. and John M. Foster	Evaluation of Condition: CA-LAN-471, CA-LAN-1105 and CA-LAN-1106, Malibu, Los Angeles County	Greenwood and Associates	19-000471, 19-001105, 19-001106
LA-01946		1990	Foster, John M.	Cultural Resource Investigation: Malibu Homes, T.t. 46999	Greenwood and Associates	
LA-01983		1975	Dawson, Donald E. and Rosalie Woodward	Draft Environmental Impact Report Tentative 29164 Malibu, Los Angeles County	South Bay Engineering Company	

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Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
LA-02093		1990	Salls, Roy A.	Report of Archaeological Reconnaissance Survey of Proposed Main US Post Office Malibu, California	Northridge Center for Public Archaeology, CSUN	19-000264
LA-02213		1989	White, Robert S.	Archaeological Survey Report: Tentative Tract No. 47289 City of Palmdale	Archaeological Associates, Ltd.	19-001874
LA-02276		1990	Atwood, John E.	Archaeological Survey for a Proposed Guest House at 3415 Sweetwater Mesa Road, Malibu, California.	C.A. Singer & Associates, Inc.	19-000267
LA-02401		1982	Bickford, Virginia Fay Gilmore	European Artifacts From a Chumash Cemetery CA-LAN-264.	California State University Long Beach Dept. of Anthropology	19-000264
LA-02411		1991	Becker, Kenneth M.	Cultural Resources Reconnaissance of Tract 46999, Malibu, Los Angeles County, California.	RMW Paleo Associates, Inc.	19-001991
LA-02448		1991	Romani, John F., Dan A. Larson, and Gwendolyn R. Romani	Archaeological Data Recovery at CA-LAN-690, Pacific Coast Highway (Route LAN-1), Malibu, Los Angeles County, California	Greenwood and Associates	19-000264, 19-000690, 19-001449, 19-003766
LA-02537		1991	Larson, Dan A.	Archaeological Monitoring on Pacific Coast Highway, Near Carbon Beach, Malibu	Greenwood and Associates	
LA-02558		1990	Altschul, Jeffery	Gateway Project	Statistical Research, Inc.	19-000047
LA-02559		1992	King, Chester	Native American Placenames in the Santa Monica Mountains: First Draft	Topange Archaeological Consultants	19-000008, 19-000043, 19-000052, 19-000110, 19-000114, 19-000186, 19-000207, 19-000229, 19-000242, 19-000243, 19-000264, 19-000384, 19-000413, 19-000511, 19-000690, 56-000011, 56-000024, 56-000071, 56-000086, 56-000089, 56-000100, 56-000110, 56-000174, 56-000179, 56-000261, 56-000737
LA-02615		1992	Larson, Dan A.	Archaeological Monitoring: Underground Utility Line on Pacific Coast Highway, Malibu	Greenwood and Associates	19-000264, 19-000690, 19-001449
LA-02624		1992	Larson, Dan A.	Archaeological Monitoring on Pacific Coast Highway for a Water Main Installation From Sierra Road to 22400 Pacific Coast Highway, Malibu	Greenwood and Associates	19-000264, 19-000690, 19-001449

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Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
LA-02729		1987	Van Horn, David M.	Trade and Subsistence in Humaliwu: a Focused Review of the Decades of Archaeology in the Conejo Corridor		19-000227, 19-000229, 19-000246, 19-000264, 19-000669, 56-000039, 56-000045, 56-000068, 56-000069, 56-000070, 56-000124, 56-000125, 56-000243, 56-000261, 56-000271, 56-000294, 56-000373
LA-02812		1993	Singer, Clay A., John E. Atwood, and Shelley M. Gomes	Archaeological Impact Assessment for the Serra Tank Site, Adjacent to Sweetwater Mesa Road in the City of Malibu, Los Angeles County, California.	C.A. Singer & Associates, Inc.	19-000267
LA-02823		1993	Singer, Clay A., John E. Atwood, and Shelley M. Gomes	Cultural Resources Survey and Impact Assessment for a 0.37 Acre Property at 22244 Pacific Coast Highway, in the City of Malibu, Los Angeles County, California	C.A. Singer & Associates, Inc.	19-000690, 19-001105, 19-001106
LA-02826		1993	Frierman, Jay D.	Phase I Archaeological Survey of a Residential Lot at 22540 Carbon Mesa Road Malibu, California 90265	Consulting Archaeologist	19-000264, 19-000267, 19-001005, 19-001105, 19-001106, 19-001449
LA-02833		1993	Singer, Clay A., John E. Atwood, and Shelley M. Gomes	Cultural Resources Survey and Impact Assessment for the Serra Road Water Main Replacement Project, in the City of Malibu, Los Angeles County, California.	C.A. Singer & Associates, Inc.	19-000264, 19-000267, 19-000386, 19-000387, 19-000404, 19-000471, 19-000690, 19-001105, 19-001106, 19-001417, 19-001449
LA-02840		1993	Singer, Clay A., John E. Atwood, and Shelley M. Gomes	Cultural Resources Survey and Impact Assessment for a Proposed Single Family Residence at 23806 Malibu Crest Drive in the City of Malibu, Los Angeles County, California	C.A. Singer & Associates, Inc.	19-000264, 19-000266, 19-000267, 19-000319, 19-000386, 19-000387, 19-000404, 19-000471, 19-000690, 19-001106, 19-001417, 19-001449, 19-001715, 19-001991
LA-02854		1993	Wlodarski, Robert J.	A Phase 1 Archaeological Study for a Parcel of Land (22224 Pacific Coast Highway), Malibu, Los Angeles County, California	Historical, Environmental, Archaeological, Research, Team	
LA-02883		1993	King, Chester	Archaeological Reconnaissance at a Parcel on Palm Canyon Road Malibu, California. City of Malibu File Number 93-162	Topanga Anthropological Consultants	
LA-02898		1993	Wlodarski, Robert J.	A Phase 1 Archaeological Study for a Parcel of Land (23267 Palm Canyon Lane), Malibu, Los Angeles County, California	Historical, Environmental, Archaeological, Research, Team	
LA-02959		1993	Singer, Clay A., John E. Atwood, and Shelley M. Gomes	Cultural Resources Survey and Impact Assessment for a Single Family Residence at 23500 Malibu Colony Drive (no. 85), in the City of Malibu, Los Angeles County, California.	C.A. Singer & Associates, Inc.	

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Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
LA-03006		1993	Frierman, Jay D.	Phase Ii Archaeological Survey of a Developed Residential Lot at 3415 Sweetwater Mesa Road Malibu, California 90265	Consulting Archaeologist	
LA-03009		1994	Knight, Albert	Damages to and Losses of Cultural Resources in Los Angeles County, California During the Riots, Fire Storms and Earthquakes of 1992-1994	Western Mojave Survey Association	19-000052, 19-000264, 19-000448, 19-000449, 19-001126, 19-001945, 19-002006, 19-002175, 19-002176
LA-03014		1994	King, Chester	Archaeological Reconnaissance at 23140 Mariposa De Oro Malibu, California.	Topanga Anthropological Consultants	
LA-03031		1994	King, Chester	Archaeological Conditions for 3415 Sweetwater Mesa Road (ppr 93-182)	Topanga Anthropological Consultants	19-000267
LA-03083		1994	McKenna, Jeanette A.	Malibu Property Records Check - 22600 Pacific Coast Highway, Malibu	McKenna et al.	19-000267
LA-03092		1994	Dillon, Brian D.	Archaeological Resources Survey and Impact Assessment of Tentative Minor Land Division 23897, a 35.8 Acre Parcel in Malibu, Los Angeles County, California		19-000387, 19-002247
LA-03112		1994	King, Chester	Archaeological Reconnaissance at 3211 Colony View Circle Malibu, California.	Topanga Anthropological Consultants	
LA-03113		1972	Suchey, Judy M., Walter Wood, and Stewart Shermis	(Voided, added to LA-723) Anaysis of Human Skeletal Material From Malibu, California (LAN-264)	University of California Los Angeles Department of Anthropology	19-000264
LA-03191		1995	King, Chester	Archaeological Reconnaissance at 3700 La Paz Lane Malibu, California.	Topanga Anthropological Consultants	
LA-03294		1996	Demcak, Carol R.	Cultural Resources Assessment for Malibu Civic Center Specific Plan, City of Malibu County of Los Angeles, California	ARMC	19-000264, 19-000266, 19-000319, 19-001715, 19-001991
LA-03296		1996	King, Chester	Archaeological Reconnaissance at 23722 Harbor Vista Drive Malibu, California	Topanga Anthropological Consultants	
LA-03298		1996	King, Chester	Archaeological Reconnaissance at 3250 Serra Road Malibu, California.	Topanga Anthropological Consultants	
LA-03352		1994	King, Chester	Archaeological Reconnaissance at Nw Corner Civic Center Way and Stuart Ranch Road Malibu, California	Topanga Anthropological Consultants	
LA-03361		1987	Gibson, Robert O.	A Preliminary Study of Beads From Humaliwo, 4-LAN-264 at Malibu State Park, Los Angeles County, California	Robert Gibson	19-000264

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Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
LA-03388		1996	King, Chester	Archaeological Reconnaissance at 3728 Cross Creek Road, Malibu California	Topanga Anthropological Consultants	
LA-03391		1994	Taylor, Thomas T.	Archaeological Monitoring Plan Pacific Coast Hwy Malibu Lagoon Bridge Electrical Utility Undergrounding Project, City of Malibu, California	Southern California Edison Company	19-000264, 19-000267
LA-03480		1992	King, Chester	Report of Volunteer Archaeological Surveys in Malibu for Project Applications	Topanga Anthropological Consultants	19-000019, 19-000114, 19-000454, 19-000471, 19-001049, 19-001105, 19-001106, 19-001107, 19-001425, 19-002048
LA-03488		1972	Anonymous	Malibu Lagoon State Beach Resource Inventory Report	Unknown	19-000264
LA-03512		1964	Johnson, Keith L.	Ucas-035 Malibu Beach, LAN-264/h	UCAS	19-000264
LA-03532		1966	Leonard, N. and Chester King	(duplicate of LA-02186) Ucas-224 Route 268 Mulholland Drive, Los Angeles	UCAS	19-000218, 19-000310
LA-03548		1967	Riddell, Francis A., James T. Toney, Joseph L. Chartkoff, and N. Nelson Leonard III	Ucas-267 Salvage Project of 19-000264 in Malibu	UCAS	19-000264
LA-03551		1967	King, Chester, James Toney, and Joseph L. Chartkoff	Ucas-283 Big Sycamore VEN-89 Salvage Project (also VN-1447)	UCAS	19-000229, 19-000247, 19-000264, 56-000002, 56-000007, 56-000010, 56-000016, 56-000017, 56-000019, 56-000020, 56-000021, 56-000039, 56-000069, 56-000070, 56-000088, 56-000089, 56-000103, 56-000169
LA-03562		1969	King, Thomas F.	Ucas-355 Salvage Excavation of LAN-386, Malibu Canyon, Los Angeles County	UCAS	19-000386

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Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
LA-03583		1974	Bucknam, Bonnie M.	The Los Angeles Basin and Vicinity: a Gazetteer and Compilation of Archaeological Site Information	Archaeological Research, Inc.	19-000001, 19-000002, 19-000003, 19-000004, 19-000005, 19-000007, 19-000009, 19-000010, 19-000011, 19-000012, 19-000013, 19-000015, 19-000016, 19-000017, 19-000018, 19-000019, 19-000023, 19-000024, 19-000027, 19-000028, 19-000029, 19-000030, 19-000031, 19-000033, 19-000037, 19-000038, 19-000039, 19-000040, 19-000044, 19-000045, 19-000046, 19-000047, 19-000048, 19-000049, 19-000050, 19-000051, 19-000052, 19-000053, 19-000054, 19-000055, 19-000056, 19-000057, 19-000058, 19-000059, 19-000060, 19-000061, 19-000062, 19-000063, 19-000064, 19-000065, 19-000066, 19-000067, 19-000068, 19-000069, 19-000070, 19-000071, 19-000072, 19-000073, 19-000074, 19-000078, 19-000080, 19-000088, 19-000090, 19-000091, 19-000092, 19-000094, 19-000096, 19-000097, 19-000098, 19-000099, 19-000100, 19-000101, 19-000102, 19-000103, 19-000104, 19-000105, 19-000106, 19-000107, 19-000108, 19-000109, 19-000110, 19-000112, 19-000113, 19-000114, 19-000115, 19-000116, 19-000117, 19-000118, 19-000119, 19-000120, 19-000121, 19-000122, 19-000123, 19-000124, 19-000125, 19-000126, 19-000127, 19-000131, 19-000133, 19-000134, 19-000135, 19-000136, 19-000137, 19-000138, 19-000139, 19-000140, 19-000141, 19-000142, 19-000143, 19-000144, 19-000145, 19-000146, 19-000147, 19-000148, 19-000149, 19-000150, 19-000151, 19-000152, 19-000153, 19-000154, 19-000155, 19-000156, 19-000159, 19-000161, 19-000162, 19-000170, 19-000171, 19-000172, 19-000174, 19-000175, 19-000178, 19-000179, 19-000180, 19-000181, 19-000182, 19-000183, 19-000184, 19-000185,

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Sweetwater 3CAN020100

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
						19-000187, 19-000189, 19-000190, 19-000191, 19-000193, 19-000194, 19-000195, 19-000196, 19-000197, 19-000198, 19-000199, 19-000200, 19-000201, 19-000202, 19-000203, 19-000204, 19-000205, 19-000206, 19-000207, 19-000210, 19-000211, 19-000212, 19-000213, 19-000214, 19-000215, 19-000216, 19-000217, 19-000219, 19-000220, 19-000222, 19-000224, 19-000225, 19-000226, 19-000227, 19-000229, 19-000231, 19-000232, 19-000233, 19-000234, 19-000235, 19-000236, 19-000245, 19-000255, 19-000263, 19-000264, 19-000265, 19-000266, 19-000267, 19-000268, 19-000269, 19-000270, 19-000271, 19-000272, 19-000273, 19-000274, 19-000275, 19-000276, 19-000277, 19-000278, 19-000279, 19-000280, 19-000281, 19-000282, 19-000283, 19-000284, 19-000285, 19-000286, 19-000287, 19-000288, 19-000289, 19-000291, 19-000292, 19-000303, 19-000306, 19-000307, 19-000308, 19-000309, 19-000310, 19-000311, 19-000316, 19-000317, 19-000319, 19-000322, 19-000330, 19-000331, 19-000332, 19-000333, 19-000335, 19-000340, 19-000341, 19-000344, 19-000350, 19-000352, 19-000353, 19-000354, 19-000356, 19-000382, 19-000383, 19-000385, 19-000386, 19-000387, 19-000388, 19-000389, 19-000390, 19-000398, 19-000400, 19-000401, 19-000403, 19-000404, 19-000406, 19-000415, 19-000423, 19-000424, 19-000425, 19-000448, 19-000454, 19-000468, 19-000469, 19-000470, 19-000472, 19-000478, 19-000483, 19-000484, 19-000494, 19-000495, 19-000496, 19-000497, 19-000499, 19-000500, 19-000501, 19-000505, 19-000506, 19-000512, 19-000513, 19-000514, 19-000515, 19-000516, 19-000517,

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Sweetwater 3CAN020100

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
						19-000519, 19-000520, 19-000523, 19-000525, 19-000526, 19-000527, 19-000528, 19-167019, 19-179270

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Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
LA-03587		1994	King, Chester	Prehistoric Native American Cultural Sites in the Santa Monica Mountains	Topanga Anthropological Consultants	19-000001, 19-000002, 19-000007, 19-000019, 19-000040, 19-000043, 19-000052, 19-000059, 19-000060, 19-000069, 19-000070, 19-000071, 19-000072, 19-000073, 19-000074, 19-000080, 19-000111, 19-000114, 19-000174, 19-000186, 19-000189, 19-000193, 19-000194, 19-000207, 19-000213, 19-000222, 19-000225, 19-000227, 19-000229, 19-000242, 19-000243, 19-000264, 19-000267, 19-000324, 19-000352, 19-000373, 19-000384, 19-000413, 19-000453, 19-000466, 19-000629, 19-000666, 19-000669, 19-000690, 19-000776, 19-000807, 19-000958, 19-001107, 19-001117, 19-001248, 19-001326, 19-001327, 19-001341, 19-001352, 19-001424, 19-002153, 19-002154, 19-002155, 19-002156, 19-002157, 19-002158, 19-002159, 19-002160, 19-002161, 19-002162, 19-002163, 19-002164, 19-002165, 19-002167, 19-002168, 19-002177, 19-002200, 19-002201, 19-002202, 19-004322, 19-100036, 19-100037, 19-100038, 19-100039, 19-100040, 19-100041, 19-100042, 19-100043, 19-100044, 56-000001, 56-000003, 56-000010, 56-000024, 56-000039, 56-000044, 56-000045, 56-000065, 56-000070, 56-000071, 56-000089, 56-000095, 56-000096, 56-000100, 56-000110, 56-000115, 56-000123, 56-000124, 56-000145, 56-000146, 56-000174, 56-000179, 56-000195, 56-000204, 56-000221, 56-000222, 56-000261, 56-000271, 56-000294, 56-000341, 56-000342, 56-000535, 56-000536, 56-000538, 56-000606, 56-000639, 56-000640, 56-000705, 56-000706, 56-000707, 56-000721, 56-000737, 56-000853, 56-000865, 56-000869, 56-000870, 56-000871, 56-000872, 56-000873, 56-000874, 56-000875, 56-000876, 56-000877, 56-000878,

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Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
						56-000879, 56-000880, 56-000881, 56-000882, 56-000883, 56-000884, 56-000885, 56-000886, 56-001020, 56-001154, 56-001156, 56-001157
LA-03606			King, Chester	Proposal for Salvage Excavation at the Site of Malibu (LAN-264)	University of California, Los Angeles Archaeological Survey	19-000264
LA-03764		1981	Kelly, John H.	The Following Is an Evaluation of Cultural Resources Near the Proposed Fill Zone at Malibu Creek State Park	California Department of Parks and Recreation	19-000225, 19-000227, 19-000229, 19-000728, 19-000739, 19-000740, 19-000741, 19-000840
LA-04035		1998	King, Chester	Report of Initial Archaeological Study at 3615 Serra Road, Malibu, California.	Topanga Anthropological Consultants	
LA-04041		1989	Kane, Diane and Romani, John	Malibu Bridge Replacement Project Route La-1, in Malibu, California	Unknown	19-000264
LA-04092		1998	King, Chester	Archaeological Reconnaissance at 3551 Cross Creek Lane Malibu, California	Topanga Anthropological Consultants	
LA-04334		1998	King, Chester	Report of Initial Archaeological Study at 2509 Sweetwater Mesa Road, Malibu, California.	Chester King	
LA-04705		1999	King, Chester	Report of Initial Archaeological Study at Malibu Road West of Webb Way, Malibu, California	Chester King	19-001417
LA-04706		1999	King, Chester	Report of Initial Archaeological Study at 23430 Malibu Colony Drive, Malibu, California	Chester King	
LA-04809		1999	Stickel, Gary E.	An Archaeological Survey for the Civic Center Project, City of Malibu, Califronia	Environmental Research Archaeologists	
LA-04811		1999	King, Chester	Report of Intial Archaeological Study at 23225 Mariposa De Oro, Malibu, California		
LA-04812		1999	King, Chester	Report of Intial Archaeological Study at 23445 (92A) Malibu Colony Drive, Malibu Colony Drive, Malibu, California		
LA-04813		2000	King, Chester	Report of Intial Archaeological Study for a Road at APN #4452-025-011-012-014-016, Malibu, California		19-001105
LA-04815		2000	King, Chester	Report of Intial Archaeological Study At 3268 Serra Road, Malibu, California		
LA-05213		1999	King, Chester	Report of Initial Archaeological Study at 3516 Sweetwater Mesa Road, Malibu, Ca. City of Malibu File Number 99-139	Chester King	19-000267

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Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
LA-05361		2001	Wlodarski, Robert J.	A Phase I Archaeological Study for 23610 Malibu Colony Drive #58 City of Malibu, County of Los Angeles, California	Historical, Environmental, Archaeological, Research, Team	
LA-05371		2000	King, Chester	Archaeological Reconnaissance and Recommendations for Archaeological Studies at a Corral Canyon Road Project Malibu, Ca	TAC	
LA-05373		2000	King, Chester	Report of Initial Archaeological Study at 3011 Malibu Canyon Road, Malibu, Ca	TAC	
LA-05385		2001	Singer, Clay A.	Initial Evaluation of Soil Deposits at 3669A Sweetwater Mesa Road in the City of Malibu, Los Angeles County, Ca	C.A. Singer & Associates, Inc.	19-000267
LA-05387		1996	Demcak, Carol R.	Cultural Resource Assessment for Malibu Civic Center Specific Plan (Revised), City of Malibu, County of Los Angeles, Ca	Archaeological Resource Management Corportation	19-000266
LA-05391		1999	Potter, M Steven	Archaeological Investigations at CA-LAN-267a East: Phase II Testing at 3516 Sweetwater Mesa Road in the City of Malibu, Los Angeles County, Ca	C.A. Singer & Associates, Inc.	19-000267
LA-05655		2001	McKenna, Jeanette A. and David Brunzell	A Phase I Cultural Resource Investigation of the Malibu Bay Company Development Project Area, Malibu, Los Angeles County, California	McKenna et al.	19-000197, 19-001065, 19-002028
LA-05672		2001	Sylvia, Barbara	Negative Archaeological Survey Report: Construct Curb Ramps at Various Locations on Pch From Cross Creek Road to Heathercliff Road in the Malibu Are.	Caltrans District 7	
LA-05808		2001	Wlodarski, Robert J.	A Phase 1 Archaeological Study for Proposed Improvements to 22313 Carbon Mesa Drive (Salvator Trust) City of Malibu, Los Angeles County, California	Historical, Environmental, Archaeological, Research, Team	
LA-05809	Cellular -	1999	Duke, Curt	Cultural Resource Assessment for the At&t Wireless Services Facility Number F001, County of Los Angeles, California	LSA Associates, Inc.	
LA-05810		2001	Wlodarski, Robert J.	A Phase 1 Archaeological Study for Improvements to 23700 Malibu Colony Drive #34 City of Malibu, County of Los Angeles, California	Historical, Environmental, Archaeological, Research, Team	

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Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
LA-05811		2002	Wlodarski, Robert J.	A Phase 1 Archaeological Study APN # 4458-003-007 Encompassing Portions of Lots 11 and 12 #50 'a' Malibu Colony Drive [the Avondale Trust] City of Malibu, County of Los Angeles, California	Historical, Environmental, Archaeological, Research, Team	
LA-06080		2002	Wlodarski, Robert J.	A Phase I Archaeological Study for Proposed Improvements to 3510 Cross Creek Road City of Malibu, Los Angeles County, California	Historical, Environmental, Archaeological, Research, Team	
LA-06531		2003	Wlodarski, Robert J.	An Archaeological Evaluation of Property Located at 22965 Pacific Coast Highway City of Malibu, County of Los Angeles, California	Historical, Environmental, Archaeological, Research, Team	
LA-06533		2002	Wlodarski, Robert J.	An Archaeological Evaluation of CA-LAN-2247, Located Within Lot 2 of Tenative Parcel Map 23879 County of Los Angeles,	Historical, Environmental, Archaeological, Research, Team	19-002247
LA-06534		2002	Romani, John F. and Larson, Dan A.	Phase I Archaeological Survey at 3520 Cross Creek Lane, Serra Retreat, Malibu, California	Compass Rose Archaeological, Inc.	
LA-06865		2003	Wlodarski, Robert J.	A Phase I Archaeological Study for the "as Built" Existing Rock and Vegetation Malibu Creek Bank Stabilization Project City of Malibu, County of Los Angeles, California	Historical, Environmental, Archaeological, Research, Team	
LA-06890		2003	Wlodarski, Robert J.	Results of an Extended Phase 1 Archaeological Investigation for CA-LAN-3125 Located at 3311 Sweetwater Mesa Road (APN4452-016-003) City of Malibu, County of Los Angeles, California	Historical, Environmental, Archaeological, Research, Team	19-003125
LA-06891		2003	Stickel, Gary E.	A Phase 3 (mitigation) of Archaeological Site CA-LAN-267a Located at 3516 Sweetwater Mesa Road, City of Malibu, California	Environmental Research Archaeologists: A Scientific Consortium	19-000267
LA-06892		2003	Stickel, Gary E.	A Phase 2 (test Phase) of Archaeological Site CA-LAN-267a Located at 3516 Sweetwater Mesa Road, City of Malibu,	Environmental Research Archaeologists: A Scientific Consortium	19-000267
LA-06893		2003	Wlodarski, Robert J.	A Phase 1 Archaeological Study for Two Lots Within APN #4452-025-001 and 4452-025-002 West of Carbon Canyon, City of Malibu, Los Angeles County, California	Historical, Environmental, Archaeological, Research, Team	
LA-06918		2003	Wlodarski, Robert J.	Archaeological Monitoring Results for CA-LAN-2247 Located Within Lot 2 of Tentative Parcel Map 23879 County of Los Angeles, California	Historical, Environmental, Archaeological, Research, Team	19-002247

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Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
LA-07571		2005	Wlodarski, Robert J.	A Phase I Archaeological Study for a Portion of Parcel 2 Within APN#4452-025-002 West of Carbon Canyon City of Malibu, Los Angeles County, California	Historical, Environmental, Archaeological, Research, Team	
LA-07573		2005	Whitley, David S.	Phase I Archaeological Survey for 23405 Malibu Colony Drive, City of Malibu, Los Angeles County, California	W & S Consultants	
LA-07585		2005	Wlodarski, Robert J.	A Phase I Archaeological Study for Proposed Improvements to 3270 Serra Road City of Malibu, County of Los Angeles, California	Historical, Environmental, Archaeological, Research, Team	
LA-07586		2005	Wlodarski, Robert J.	A Phase I Archaeological Study for Proposed Improvements to 22407 Carbon Mesa Drive (APN# 4451-012-034 and 4451-012-035) City of Malibu, Loa Angeles County, California	Historical, Environmental, Archaeological, Research, Team	
LA-07589		2005	Wlodarski, Robert J.	A Phase I Archaeological Study for the Construction of a Swimming Pool at 3464 Sweetwater Mesa Road (APN#4452-016-015) City of Malibu, County of Los Angeles, California	Historical, Environmental, Archaeological, Research, Team	
LA-07592	Cellular -	2003	Bonner, Wayne H.	Records Search and Site Visit for Sprint Telecommunications Facility La36xc587f (Cross Creek Road), 3200 Cross Creek Road, Malibu, Los Angeles County, California	Michael Brandman Associates	
LA-07595		2004	Wlodarski, Robert J.	A Phase 1 Archaeological Study for 2930 Sweetwater Mesa Road (APN#4452-025-023) Site 4-vg Properties Llc, City of Malibu, County of Los Angeles, California	Historical, Environmental, Archaeological, Research, Team	
LA-07596		2004	Wlodarski, Robert J.	A Phase 1 Archaeological Study For 2860 Sweetwater Mesa Road (APN#4452-025-021) Site 3-vg Estates Llc City of Malibu, County of Los Angeles, California	Historical, Environmental, Archaeological, Research, Team	19-001105
LA-07601		2004	Bandy, Matthew	Archaeological Investigation for Sweetwater Mesa Water Line Construction Malibu, Los Angeles County, California	Greenwood and Associates	
LA-07602		2002	Simon, Joseph M.	Phase I Archaeological Survey 3416 Sweetwater Mesa Road, Malibu, Los Angeles County, California	W & S Consultants	

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Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
LA-07603		2005	Wlodarski, Robert J.	A Phase 1 Archaeological Study for Portions of Parcels 3 and 4 Within APN#4452-025-001 and 4452-025-002 West of Carbon Canyon City of Malibu, Los Angeles County, California	Historical, Environmental, Archaeological, Research, Team	
LA-07604		2003	Wlodarski, Robert J.	A Phase 1 Archaeological Study for 3311 Sweetwater Mesa Road (APN4452-016-003) City of Malibu, County of Los Angeles, California	Historical, Environmental, Archaeological, Research, Team	19-003125
LA-07608		2004	Wlodarski, Robert J.	A Phase I Archaeological Study for Proposed Improvements to 23344 Palm Canyon Lane (APN#4452-014-004) City of Malibu, County of Los Angeles, California	Historical, Environmental, Archaeological, Research, Team	
LA-07609		1992	Singer, Clay A., John E. Atwood, and Gomes, Shelley Marie	Proposal for a Phase Ii Archaeological Investigation at Parcel 16779, in the City of Malibu, Los Angeles County, California	C.A. Singer & Associates, Inc.	19-000264, 19-000267, 19-000386, 19-000387, 19-000471, 19-000690, 19-001105, 19-001106
LA-07610		1992	Singer, Clay A., John E. Atwood, and Gomes, Shelly M.	Proposal for a Phase Ii Archaeological Investigation at Parcel 16779 in the City of Malibu, Los Angeles County, California	C.A. Singer & Associates, Inc.	19-000264, 19-000267, 19-000386, 19-000387, 19-000471, 19-000690, 19-001105, 19-001106
LA-07611		2004	Wlodarski, Robert J.	A Phase I Archaeological Study for APN #4458-024-028, Harbor Vista Drive City of Malibu, Los Angeles County, California	Historical, Environmental, Archaeological, Research, Team	
LA-07916		1996	Gamble, Lynn, Russell, Glenn, King, Chester, and Hudson Jean	Distribution of Wealth and Other Items at the Malibu Site, CA-LAN-264	American Indian Studies Center and Institute of Archaeology UCLA	19-000264, 56-000011
LA-08281		2007	Wlodarski, Robert J.	A Phase I Archaeological Study for Proposed Improvements to 3415 Sweetwater Mesa Road, City of Malibu, Los Angeles County, California	Historical, Environmental, Archaeological, Research, Team	19-000267, 19-000471, 19-000690, 19-001105, 19-001106
LA-08282		2007	Wlodarski, Robert J.	A Phase I Archaeological Study for Proposed Improvements to 23681 Malibu Road, City of Malibu, Los Angeles County, California	Historical, Environmental, Archaeological, Research, Team	19-000264, 19-000266, 19-001417, 19-001715, 19-001991
LA-09147		2008	Wlodarski, Robert J.	A Phase I Archaeological Study for Proposed Improvements to 22165 Carbon Mesa Road (APN#4451-021-024) City of Malibu, Los Angeles County, California	Historical, Environmental, Archaeological, Research, Team	19-001105, 19-001106, 19-002811
LA-09178		2008	Wlodarski, Robert J.	A phase I Archaeological Study for Proposed Improvements to 22201 Carbon Mesa Road (APN#4451-012-023) City of Malibu, Los Angeles County, California	Historical, Environmental, Archaeological, Research, Team	19-001105, 19-001106, 19-002811

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Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
LA-09294		2008	Tumamait, Patrick	Archaeological Monitoring Report: Cross Creek Road Improvements Project City of Malibu, Los Angeles County California	Compass Rose Archaeological, Inc.	19-000264
LA-09308		2008	Slawson, Dana N.	Archaeological Survey Report 3314 Serra Road City of Malibu, Los Angeles County, California	Greenwood and Associates	19-000267, 19-000387, 19-000471, 19-002247, 19-003125
LA-09384		2008	Wlodarski, Robert J.	A Phase 1 Archaeological Study for 3469 Cross Creek Road (APNs 4458-023-003, 4458-023-004, and 4458-024-028) City of Malibu, County of Los Angeles California	Historical Archaeological Research Team	19-000264, 19-000266, 19-000267, 19-000386, 19-000387, 19-000404, 19-001417, 19-001715, 19-001991, 19-002247
LA-09613		2008	Getchell, Barbie and John E. Atwood	Initial Cultural Resources Evaluation of APN 4458-019-008, A Commercial Property, Located at 23614 Pacific Coast Highway in the City of Malibu, Los Angeles County, California	PAST, Inc.	19-000264
LA-09617		2009	Wlodarski, Robert	A Phase 1 Archaeological Study for Proposed Improvements to 22224 Pacific Coast Highway (PCH), APN#451-006-030, 22230 PCH, 22234 PCH, and 22240 Pacific Coast Highway, City of Malibu, County of Los Angeles, California	Historical Environmental Archaeological Research Team	19-000264, 19-000267, 19-000471, 19-000690, 19-001105, 19-001106
LA-10371		2009	Wlodarski, Robert	A Phase 1 Archaeological Study for Proposed Improvements to 23038 Pacific Coast Highway (APN# 4452-005-001), City of Malibu, County of Los Angeles, California	HEART	19-000264, 19-000267, 19-000471, 19-000690, 19-001105, 19-001106
LA-10377		2008	Wlodarski, Robert	A Phase 1 Archaeological Study for Proposed Improvements to 22931-33 Pacific Coast Highway (ANP#4452-019-008), 22935 Pacific Coast Highway (4452-019-010), 22941 Pacific Coast Highway (APN#4452-019-009), City of Malibu, County of Los Angeles, California	HEART	19-000264, 19-000267, 19-000471, 19-000690, 19-001105, 19-001106
LA-10409		2006	Robinson, Mark	Malibu Lagoon Restoration and Enhancement Plan Final Environmental Impact Report (EIR)	Jones and Stokes	19-000264
LA-10410		2009	Wlodarski, Robert	A Phase 1 Archaeological Study for Proposed Improvements to 23676-23712 Malibu Road, City of Malibu, Los Angeles County, California	H.E.A.R.T	

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Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
LA-10411		2010	Wlodarski, Robert	A Phase 1 Archaeological Study for the Proposed Whole Foods Development Project located on the Northwest corner of Civic Center Way and Cross Creek Road City of Malibu, County of Los Angeles, California	H.E.A.R.T	19-000264, 19-000266, 19-000267, 19-000386, 19-000387, 19-000404, 19-001417, 19-001715, 19-001991, 19-002247
LA-10425		1995	Gamble, Lynn, Russell, Glenn, and Hudson, Jean	Archaeological Site Mapping and Collections Assessment of Humaliwu (CA-LAN-264) and Muwu (CA-VEN-11)	UCLA	19-000264, 56-000011
LA-10514		2010	Wlodarski, Robert J.	A Phase I Archaeological Study for 3240 Cross Creek Road (APN#4457-002-038) City of Malibu, County of Los Angeles, California	H.E.A.R.T.	19-000264, 19-000266, 19-000267, 19-000386, 19-000404, 19-001417, 19-001715, 19-001991, 19-002247
LA-11151		2003	Romani, John and Larson, Dan	Results of a Cultural Resource Phase I Assessment and Extended Phase I Shovel Test Program for the Proposed Heart-of-the-Park Shuttle Demonstration Project, Santa Monica Mountains National Recreation Area.	Compass Rose	19-000199
LA-11152		2002	Mason, Roger	Santa Monica Mountains National Recreation Area, Heart-of-the-Park Shuttle Demonstration Project Draft Environmental Assessment/Initial Study	Parsons	
LA-11530		2012	Wlodarski, Robert	A Phase I Archaeological Study for 23847 Stuart Ranch Road -Malibu Racquet Club- City of Malibu, County of Los Angeles, California	HEART	19-000264, 19-000266, 19-000267, 19-000386, 19-000387, 19-000404, 19-001417, 19-001715, 19-001991, 19-002247
LA-11652		2012	Romani, Gwen	Initial Archaeological Evaluation: 3511 Cross Creek Lane, City of Malibu, Los Angeles County, California	Compass Rose	
LA-12480		2013	Wlodarski, Robert	A Phase I Archaeological Study for 3763 Sweetwater Canyon Drive (APN#4452-020-067) City of Malibu, County of Los Angeles, California	HEART	19-000267, 19-000471, 19-000690, 19-001105, 19-001106
LA-12481		2013	Toren, George and Romani, Gwen	Phase I Archaeological Study 3535 Cross Creek Lane, City of Malibu, Los Angeles County, California	Compass Rose	19-000387
LA-12780		2014	Schmidt, June and Romani, Gwen	Phase I Archaeological Study: 1.7 Acre Parcel Located at 3350 Serra Road, City of Malibu, Los Angeles County, California	Compass Rose	19-000267, 19-000387, 19-002247
LA-12781		2014	Toren, George and Romani, Gwen	Phase I Archaeological Study: Surfrider Hotel 23033 Pacific Coast Highway, City of Malibu, Los Angeles County, California	Compass Rose	19-000264, 19-000267, 19-000690, 19-001449, 19-003766, 19-186261

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Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
LA-12782		2014	Toren, George and Romani, Gwen	Phase I Archaeological Study: 23314 Malibu Colony Drive, City of Malibu, Los Angeles County, California	Compass Rose	19-000264
LA-13039		1970	King, Thomas F.	NEWCOMER CAVE (Lan-386), Report on a salvage excavation by the University of California Archaeological Survey, Los Angeles; a part of the Santa Monica Mountains Research Project	Univeristy of California, Los Angeles	
LA-13041		1988	LARSON, DAN	ARCHAEOLOGICAL ANALYSIS OF LITHIC MATERIALS FROM A PORTION OF CA-LAN-1449		19-001449
LA-13042		1989	Larson, Dan A.	RESULTS OF ARCHAEOLOGICAL MONITORING AT CA-LAN-264, CA-LAN-690 AND CA-LAN-1449, AS A RESULT OF UTILITY TRENCHING ON PACIFIC COAST HIGHWAY, IN MALIBU, CALIFORNIA		19-000264, 19-000690, 19-001449

Resource List

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Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-19-000264	CA-LAN-000264/H	Resource Name - MALIBU SITE, HUMALIWO (CHUMASH NAME)	Site	Prehistoric, Historic	AH12 (Graves/cemetery); AP02 (Lithic scatter); AP09 (Burials); AP15 (Habitation debris)	1959 (R. S. Watson); 1963 (Blackburn); 1975 (C. Meighan); 1976 (John J. Judge); 2001 (C. Zepeda)	LA-00084, LA-00203, LA-00701, LA-00723, LA-00738, LA-01100, LA-01538, LA-01653, LA-01780, LA-02093, LA-02401, LA-02448, LA-02559, LA-02615, LA-02624, LA-02729, LA-02826, LA-02833, LA-02840, LA-03009, LA-03113, LA-03294, LA-03361, LA-03391, LA-03459, LA-03488, LA-03512, LA-03548, LA-03551, LA-03558, LA-03583, LA-03587, LA-03606, LA-03776, LA-04041, LA-05362, LA-05383, LA-05386, LA-05394, LA-06033, LA-07609, LA-07610, LA-07916, LA-08088, LA-08282, LA-08795, LA-09294, LA-09384, LA-09407, LA-09613, LA-09617, LA-10371, LA-10377, LA-10409, LA-10411, LA-10425, LA-10514, LA-10589, LA-10891, LA-10899, LA-10900, LA-11027, LA-11530, LA-11800, LA-12777, LA-12781, LA-12782, LA-12899, LA-13042,

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Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
							VN-01084, VN-01447, VN-01449, VN-01458, VN-01462, VN-02815
P-19-000267	CA-LAN-000267	Resource Name - Sweetwater Mesa site, Winnikoff Property; Voided - 19-003125; Other - Boeing #1	Site	Prehistoric	AP02 (Lithic scatter); AP14 (Rock shelter/cave); AP15 (Habitation debris)	1961 (Chester King, M. Glassow); 1972 (Coleman); 1981 (Clay A. Singer); 1999 (Clay A. Singer, C.A. Singer & Associates); 2003 (Robert J. Wlodarski and Dan Larson, HEART)	LA-00084, LA-00183, LA-00203, LA-00743, LA-01772, LA-01790, LA-02276, LA-02812, LA-02826, LA-02833, LA-02840, LA-03031, LA-03083, LA-03391, LA-03583, LA-03587, LA-03713, LA-03768, LA-05213, LA-05362, LA-05385, LA-05391, LA-06891, LA-06892, LA-07609, LA-07610, LA-08281, LA-09308, LA-09384, LA-09617, LA-10371, LA-10377, LA-10411, LA-10514, LA-10891, LA-10899, LA-10900, LA-11530, LA-11800, LA-12480, LA-12780, LA-12781, VN-01462, VN-01540
P-19-000386	CA-LAN-000386		Site	Prehistoric	AP14 (Rock shelter/cave); AP15 (Habitation debris)	1969 (Newcomer, T. King)	LA-02833, LA-02840, LA-03559, LA-03562, LA-03583, LA-07609, LA-07610, LA-09384, LA-10411, LA-10514, LA-11530, LA-11800

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Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-19-000387	CA-LAN-000387H	Resource Name - TADIA RANCH; Other - Rancho Topanga Malibu Sequit	Site	Historic	AH02 (Foundations/structure pads); AH03 (Landscaping/orchard); AH04 (Privies/dumps/trash scatters); AH15 (Standing structures)	1969 (T. King)	LA-02833, LA-02840, LA-03092, LA-03559, LA-03583, LA-05362, LA-07609, LA-07610, LA-09308, LA-09384, LA-10411, LA-11530, LA-11800, LA-12481, LA-12780
P-19-000404	CA-LAN-000404		Site	Prehistoric	AP15 (Habitation debris)	1969 (Chartkoff, Gutman)	LA-02833, LA-02840, LA-03583, LA-09384, LA-10411, LA-10514, LA-11530, LA-11800
P-19-000471	CA-LAN-000471		Site	Prehistoric	AP02 (Lithic scatter)	1972 (Coleman, Taggart); 1981 (C.A. Singer)	LA-00995, LA-01876, LA-02833, LA-02840, LA-03480, LA-03481, LA-03768, LA-07609, LA-07610, LA-08281, LA-09308, LA-09617, LA-10371, LA-10377, LA-11800, LA-12480, VN-01540
P-19-000690	CA-LAN-000690	Resource Name - Embarcadero Site	Site	Prehistoric	AP02 (Lithic scatter); AP15 (Habitation debris)	1983 (R. Aycock); 1983 (C.A.Singer); 1987 (C.A. Singer)	LA-01286, LA-01538, LA-02448, LA-02559, LA-02615, LA-02624, LA-02823, LA-02833, LA-02840, LA-03587, LA-07609, LA-07610, LA-08281, LA-09617, LA-10371, LA-10377, LA-11800, LA-12480, LA-12781, LA-13042, VN-01084, VN-01462

Resource List

Sweetwater 3CAN020100

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-19-001105	CA-LAN-001105	Resource Name - #A	Site	Prehistoric	AP02 (Lithic scatter); AP11 (Hearths/pits); AP15 (Habitation debris)	1981 (C.A. Singer, J & G. Romani)	LA-00995, LA-01876, LA-02823, LA-02826, LA-02833, LA-03480, LA-04813, LA-07596, LA-07609, LA-07610, LA-08281, LA-08979, LA-09147, LA-09178, LA-09185, LA-09617, LA-10371, LA-10377, LA-11800, LA-12480
P-19-001106	CA-LAN-001106	Resource Name - #B	Site	Prehistoric	AP02 (Lithic scatter); AP04 (Bedrock milling feature)	1981 (C.A. Singer & J&G Romani)	LA-00995, LA-01876, LA-02823, LA-02826, LA-02833, LA-02840, LA-03480, LA-07609, LA-07610, LA-08281, LA-09147, LA-09178, LA-09185, LA-09617, LA-10371, LA-10377, LA-11800, LA-12480
P-19-001417	CA-LAN-001417	Resource Name - Malibu Road #1	Site	Prehistoric	AP02 (Lithic scatter); AP05 (Petroglyphs); AP15 (Habitation debris)	1988 (Robert J. Wlodarski & Dan A. Larson, HEART)	LA-02833, LA-02840, LA-04705, LA-08127, LA-08282, LA-08795, LA-09384, LA-09407, LA-09614, LA-10411, LA-10514, LA-10589, LA-11027, LA-11530, LA-11800
P-19-001449	CA-LAN-001449	Resource Name - Malibu Shores Motel (MSM) Site	Site	Prehistoric	AP02 (Lithic scatter); AP15 (Habitation debris)	1988 (Dan Larson, John Romani, Kote Lotah, A-lul'koy Lotah)	LA-02448, LA-02615, LA-02624, LA-02826, LA-02833, LA-02840, LA-11800, LA-12781, LA-13041, LA-13042

Resource List

Sweetwater 3CAN020100

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-19-001991	CA-LAN-001991	Resource Name - MH-1	Site	Prehistoric	AP15 (Habitation debris)	1991 (Kenneth M. Becker, RMW Paleo Associates); 1991 (Kenneth M. Becker)	LA-02411, LA-02840, LA-03294, LA-05386, LA-08127, LA-08282, LA-08795, LA-09384, LA-09407, LA-09614, LA-10411, LA-10514, LA-10589, LA-11027, LA-11530, LA-11800
P-19-002247	CA-LAN-002247	Resource Name - TMLD 23897 Temporary Site 1	Site	Prehistoric	AP15 (Habitation debris)	1994 (Brian D. Dillon); 2003 (R. Wlodarski, HEART)	LA-03092, LA-06533, LA-06918, LA-09308, LA-09384, LA-10411, LA-10514, LA-11530, LA-11800, LA-12780
P-19-002811	CA-LAN-002811	Resource Name - Redstar notes; Other - 00-23	Site	Prehistoric	AP15 (Habitation debris)	1999 (Chester King, Topanga Anthropological Consultants)	LA-08979, LA-09147, LA-09178, LA-09185
P-19-002936	CA-LAN-002936/H	Resource Name - ML-1	Site	Prehistoric, Historic	AH04 (Privies/dumps/trash scatters); AP02 (Lithic scatter); AP15 (Habitation debris)	2001 (K. Shabel, C. Zepeda, Dept of Parks & Rec)	LA-11800
P-19-003766	CA-LAN-003766	Resource Name - Malibu Pier Parking Lot Deposit; Other - Malibu Pier Sewer Trench	Site	Prehistoric	AP02 (Lithic scatter); AP15 (Habitation debris) - Shellfish Remains	2003 (Jennifer Parker, Cal Dept of Parks & Rec)	LA-02448, LA-11800, LA-12781
P-19-004429	CA-LAN-004429H	Resource Name - DPR-Rindge-02; Resource Name - Rindge Reservoir Water Distribution Pipeline	Site	Historic	AH06 (Water conveyance system)	2013 (Barbara Tejada, Evan Ruiz, and Bethanny Weisberg, CA State Parks)	
P-19-004468	CA-LAN-004468	Resource Name - Sweetwater Ridge 1	Site	Prehistoric	AP02 (Lithic scatter); AP15 (Habitation debris)	2014 (Chester King, Topanga Anthropological Consultants)	

Resource List

Sweetwater 3CAN020100

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-19-177472		OHP Property Number - 028150; Resource Name - Adamson House; CHL - CHL 966; Other - Adamson House on "Vaquero Hill"; Other - Adamson House ay Malibu Lagoon State Park	Building	Historic	HP02 (Single family property)	1976 (J. Merrick, Malibu Historical Society & Malibu Township Council);	LA-11800
P-19-186261		OHP Property Number - 090799; Resource Name - Malibu Pier	Structure	Historic	HP39 (Other) - Pier	1985	LA-11800, LA-12781
P-19-189451		OHP Property Number - 174302; Resource Name - Stevens House	Building	Historic		2011	
P-19-192413		Resource Name - Malibu Point Historic District	District	Historic	HP39 (Other) - Ocean Recreation	2017 (Alexander Bevil, Southern Service Center)	

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

October 17, 2019

Charles Cisneros
Psomas

VIA Email to: Charles.cisneros@psomas.com

RE: Native American Tribal Consultation, Pursuant to the Assembly Bill 52 (AB 52), Amendments to the California Environmental Quality Act (CEQA) (Chapter 532, Statutes of 2014), Public Resources Code Sections 5097.94 (m), 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2 and 21084.3, Civic Center Improvements Project, Los Angeles County

Dear Mr. Cisneros:

Pursuant to Public Resources Code section 21080.3.1 (c), attached is a consultation list of tribes that are traditionally and culturally affiliated with the geographic area of the above-listed project. Please note that the intent of the AB 52 amendments to CEQA is to avoid and/or mitigate impacts to tribal cultural resources, (Pub. Resources Code §21084.3 (a)) ("Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource.")

Public Resources Code sections 21080.3.1 and 21084.3(c) require CEQA lead agencies to consult with California Native American tribes that have requested notice from such agencies of proposed projects in the geographic area that are traditionally and culturally affiliated with the tribes on projects for which a Notice of Preparation or Notice of Negative Declaration or Mitigated Negative Declaration has been filed on or after July 1, 2015. Specifically, Public Resources Code section 21080.3.1 (d) provides:

> Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section.

The AB 52 amendments to CEQA law does not preclude initiating consultation with the tribes that are culturally and traditionally affiliated within your jurisdiction prior to receiving requests for notification of projects in the tribe's areas of traditional and cultural affiliation. The Native American Heritage Commission (NAHC) recommends, but does not require, early consultation as a best practice to ensure that lead agencies receive sufficient information about cultural resources in a project area to avoid damaging effects to tribal cultural resources.

The NAHC also recommends, but does not require that agencies should also include with their notification letters, information regarding any cultural resources assessment that has been completed on the area of potential effect (APE), such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

- A listing of any and all known cultural resources that have already been recorded on or adjacent to the APE, such as known archaeological sites;

- Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;

- Whether the records search indicates a low, moderate, or high probability that unrecorded cultural resources are located in the APE; and

- If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

   - Any report that may contain site forms, site significance, and suggested mitigation measures.

     All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code section 6254.10.

3. The result of any Sacred Lands File (SLF) check conducted through the NAHC was negative.
4. Any ethnographic studies conducted for any area including all or part of the APE; and
5. Any geotechnical reports regarding all or part of the APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS are not exhaustive and a negative response to these searches does not preclude the existence of a tribal cultural resource. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the event that they do, having the information beforehand will help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our consultation list remains current.

If you have any questions, please contact me at my email address: steven.quinn@nahc.ca.gov.

Sincerely,

Steven Quinn

Steven Quinn
Associate Governmental Program Analyst

Attachment

Appendix D-1

Geotechnical Evaluation

Geotechnical Evaluation

Sweetwater Mesa Tank
Civic Center Improvement Project
Los Angeles County Waterworks
Malibu, California

Cannon Corporation
11900 West Olympic Blvd., Ste. 530 | Los Angeles, California 90064

October 9, 2020 | Project No. 211056001





Geotechnical | Environmental | Construction Inspection & Testing | Forensic Engineering & Expert Witness

Geophysics | Engineering Geology | Laboratory Testing | Industrial Hygiene | Occupational Safety | Air Quality | GIS

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

Geotechnical Evaluation

Sweetwater Mesa Tank
Civic Center Improvement Project
Los Angeles County Waterworks
Malibu, California

Mr. Eric Porkert
Cannon Corporation
11900 West Olympic Boulevard, Suite 530 | Los Angeles, California 90064

October 9, 2020 | Project No. 211056001

Jennifer Schmidt, PG, CEG
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Chief Geotechnical Engineer

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Distribution: (1) Addressee (via e-mail)

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1 INTRODUCTION

In accordance with your request and authorization, we have performed a geotechnical evaluation for Los Angeles County Waterworks' (District 29) Civic Center Improvement Project (aka Sweetwater Mesa Project) located in the city of Malibu, California (Figure 1) The purpose of the project is to replace and upgrade the existing water system to meet requirements for fire flow and increasing domestic demands within the water district. The Sweetwater Mesa Project includes the design and construction of a new water storage tank within an empty parcel on Sweetwater Mesa Road and a new water main pipeline to connect the tank to the existing water system on Pacific Coast Highway (PCH). The purpose of our geotechnical services was to evaluate the soil and geologic conditions at the water tank site and along the proposed pipeline alignment. This report includes our findings, conclusions, and geotechnical design and construction recommendations for the tank. Our recommendations for the pipeline portion of the project were provided under separate cover (Ninyo & Moore, 2020).

2 SCOPE OF SERVICES

Our scope of services associated with the tank design included the following:

- Project coordination and planning with Cannon, County of Los Angeles representatives, and our drilling subcontractors.
- Review of readily available background materials, including published geologic maps, fault and seismic hazards maps, groundwater data, topographic maps, stereoscopic aerial photographs, project plans provided by the client, and our subsurface exploration performed for the pipeline portion of the project (Ninyo & Moore, 2020).
- Acquisition of permits, including a well permit from Los Angeles County Department of Environmental Health.
- Geotechnical field reconnaissance to map the site geology and mark proposed exploratory boring locations in the field for Underground Service Alert notification.
- Subsurface exploration consisting of drilling, logging, and sampling of two large-diameter borings to depths of approximately 60 feet below the ground surface.
- Geotechnical laboratory testing of selected soil samples to evaluate moisture content, in-situ dry density, in-place bulk density, direct shear strength, and corrosivity.
- Data compilation and engineering analysis of the information obtained from our background review, subsurface evaluation, and laboratory testing.
- Preparation of this geotechnical report presenting our findings, conclusions, and geotechnical design and construction recommendations for the proposed tank.

3 SITE AND PROJECT DESCRIPTION

The Sweetwater Mesa Project is a Los Angeles County Department of Public Works (LACDPW) project located in the city of Malibu (Figure 1). The project generally includes the design and construction of a new water storage tank and new water main pipeline within hilly terrain of the Santa Monica Mountains along the north side of PCH and east of Malibu's Civic Center. The new tank will be constructed near the top of a southwest descending ridgeline (Figures 1 and 2). The west side of the ridgeline and proposed water tank are bounded by an approximately 330-foot-high, approximately 1½:1 (horizontal to vertical) undeveloped descending slope. The descending slope is densely vegetated with residential properties located at its base. The east side of the ridge, approximately 75 feet east of the tank, is bounded by an approximately 200-foot-high, descending slope. The upper approximately 110 vertical feet of the east slope is at an inclination of approximately 3:1 (horizontal to vertical) and the lower approximately 90 feet is approximately 1.25:1 (horizontal to vertical). Portions of the east descending slope have been developed with residential properties. The southern approximate one-third of the tank will be located within the base of an approximately 40-foot-high, approximately 4:1 (horizontal to vertical) sparsely vegetated slope that ascends to the top of a small hill (topographic high area) along the ridgeline. The top of the hill is developed with a residential property. Outcrops of volcanic bedrock are present on the face of the hill. The northern approximate two-thirds of tank site is relatively flat with elevations ranging from approximately 394 to 396 feet above mean sea level (MSL). The southern approximate one-third of the site slopes up toward the south to an elevation of up to approximately 405 feet (MSL).

Based on our review of the project plans (Cannon, 2020), we understand that the proposed water tank will constructed at-grade and will be approximately 82-foot in diameter and 29-feet in height (Figure 3). The tank will have a reservoir capacity of up to approximately 950,000 gallons. The tank will be constructed reinforced cast-in-place concrete with approximately 10-inch-thick walls and a 6-inch-thick floor. The bottom of floor will be underlain by approximately 6-inches of aggregate base and 30-millimeter polyvinyl chloride liner. The top of floor elevation is approximately 395 feet (MSL). The tank will be supported by an approximately 5-foot-wide by 1½-foot-deep shallow ring foundation. The tank roof will be supported by 10 columns supported on the interior floor slab. Other improvements will include the construction of an approximately 9½-foot-wide asphalt concrete (4 inches) over aggregate base (8 inches) walkway around the perimeter of the tank, new inlet and outlet pipelines, and staircases to access the top of the tank.

In general, grading for the tank will generally include relatively minor cuts and fills in the northern portions of the tank to build the structure at-grade and cuts up to approximately 10-vertical feet at the south end to extend the tank into the base of the south ascending slope. According to the

plans, temporary retaining wall/shoring will be installed approximately 10-feet beyond the outer edge of the tank to support the slope cut and facilitate tank construction. Following construction of the tank, the area between the tank and retaining wall/shoring will be backfilled with compacted fill and a concrete "V"-ditch installed at the toe of the ascending slope. The lower approximately 20 feet of the slope will be contoured with cuts/fills generally less than 1 foot. A second approximately 80-foot-long, approximately 2 to 3-foot-high retaining wall will be constructed approximately 10-feet beyond the western side of the tank to support the walkway due to the proximity of the adjacent descending slope. The new inlet and outlet pipelines are anticipated to be on the order of 4 to 6 feet in depth.

The pipeline portion of this project involves the design and construction of approximately 5,642 lineal feet of new 12-inch-diameter ductile steel water pipeline that will extend from the new reservoir tank to a tie-in point with an existing pipeline system on PCH at the east end of the Malibu Creek Bridge. From the tank, the pipeline will be located within existing private streets (Sweetwater Mesa and Serra Roads) that descend the winding roads down to PCH. As discussed, the proposed new pipeline was addressed in a separate report.

4 SUBSURFACE EVALUATION AND LABORATORY TESTING

Our subsurface exploration for the proposed new tank was conducted on August 19 through 22, 2019, and consisted of the drilling, logging, and sampling of two large-diameter borings (LD-1 and LD-2). The approximate locations of the borings are shown on Figures 2 and 5. The large-diameter borings were drilled using a truck-mounted drill rig with 24-inch-diameter augers to depths of approximately 60 feet below the ground surface. The borings were downhole logged by our Certified Engineering Geologist. Relatively undisturbed and bulk samples were obtained from the borings at selected intervals and the borings were backfilled with imported 1-sack slurry. The logs of the large-diameter borings are presented in Appendix A.

Our subsurface exploration of the pipeline alignment was performed concurrently with our subsurface exploration performed for the tank and included 32 hollow-stem-auger (HSA) borings (B-1 through B-32). Logs of the pipeline borings and laboratory testing of samples collected from these borings were provided with the pipeline report under separate cover (Ninyo & Moore, 2020). Since pipeline borings B-1 through B-4 were drilled in the vicinity of the tank (Figure 2) and encountered similar materials as the tank borings (described below), the logs of borings B-1 through B-4 and associated laboratory testing were used to supplement our current evaluation of the tank site. The logs of borings B-1 through B-4 are included in Appendix B. Laboratory test results from these borings are included in Appendix C.

Laboratory testing was performed on representative samples collected from the large-diameter borings and from the hollow-stem-auger pipeline borings (B-1 through B-4) to evaluate the in-situ moisture content and dry density, bulk density, direct shear strength, and corrosivity. The laboratory test results are presented in Appendix C, and on the boring logs in Appendices A and B.

5 GEOLOGIC AND SUBSURFACE CONDITIONS

The project site is in the Santa Monica Mountains of the Transverse Ranges Geomorphic Province. The province encompasses an approximately 40- to 60-mile-wide area (north to south) that extends approximately 320 miles (west to east) from Point Arguello and San Miguel Island to the Eagle and Pinto Mountains of the Mojave Desert (Norris and Webb, 1990). The province generally consists of a region of east to west-trending mountain ranges considered atypical to the predominant northwest to southeast structural fabric of California. The atypical trend of the Province is the result of a restraining bend ("the Big Bend") on the San Andreas Fault that has rotated and compressed the region to its current configuration. The compression has resulted in folding and reverse/thrust faulting with similar east to west trends, and regional uplift. The Santa Monica Mountains are the southernmost of the east to west trending ranges of the province and consist of a wide range of Mesozoic to Cenozoic-age marine and non-marine sedimentary rocks, volcanic intrusive and extrusive rocks, and metamorphic slate underlain at depth by granitic/metamorphic basement rock (Norris and Webb, 1990).

According to Dibblee (1993) and Yerkes and Campbell (1980) (Figure 4), the water tank site is underlain volcanic rocks of the Conejo Volcanics. These authors indicate that the regional geologic structure generally consists of complexly faulted blocks of uplifted terrain. Specific information regarding the bedding trend in the site vicinity was not available on their maps. Landslides are relatively common in the mountainous terrain of the region but have not been mapped within the project limits or on the slopes adjacent to the site by Dibblee (1993) or Yerkes and Campbell (1980). Landslides were not observed on the adjacent slopes in aerial photographs reviewed by our firm.

Generalized descriptions of the materials encountered during our subsurface exploration, mapped during our site geologic reconnaissance, and/or mapped by Yerkes and Campbell (1980) are provided in the following sections. More detailed descriptions of the subsurface materials are presented on the boring logs in Appendices A and C. The geologic formation mapped during our site reconnaissance and/or presented on the geologic map by Yerkes and Campbell (1980) are provided on the site geology map on Figure 5. Our interpretations of the subsurface conditions are provided our Cross Sections A-A' and B-B' (Figures 6 and 7, respectively).

5.1 Undocumented Fill (Af)

Undocumented fill was encountered in our borings at the ground surface of the tank site to depths of up to approximately 2 feet, and other area of the site ranging from approximately 1 to 4 feet The undocumented fill generally consisted of brown to light brown, moist, medium dense, silty sand and clayey sand with scattered gravel and cobble-sized pieces of concrete.

5.2 Conejo Volcanics (Tco)

Bedrock of the Conejo Volcanics was encountered in our borings beneath the fill to the total depth explored of 60 feet below the ground surface. The bedrock generally consists of moist, soft to very hard, moderately to highly fractured, weathered basalt with occasional very thin to thin interbeds of volcanic breccia, basaltic sandstone, and tuff. Bedding attitudes within the borings ranged from approximately 17 to 63 degrees to the south-southwest and east. In general, the fractures ranged from approximately $^{1}/_{32}$ to 1 inch in width and approximately ½ to 3 feet in spacing. The fractures were randomly oriented and typically infilled with clay, sand, and/or calcite. The fracture surfaces were typically stained with iron oxidation. The degree of weathering and amount of fracturing was observed to decrease below a depth of approximately 38 feet in both borings. Continuous and discontinuous clay seams were encountered in boring LD-1 at a depth of approximately 37½ feet and in boring LD-2 between depths of approximately 27½ to 32½ feet. The clay seams ranged from approximately 1/8- to 3-inches in thickness and were randomly oriented with dips of approximately 19 and 30 degrees to the northeast, 30 degrees to the northwest, 36 degrees to the south, and 25 degrees to the east. Shearing within the clay was not observed. Bedding observed within bedrock outcrops on the ascending slope south of the tank site ranged from approximately 48 to 88 degrees to the south-southwest. The attitudes of the bedding and clay seams measured within borings LD-1 and LD-2 and the outcrop are plotted on Figure 5.

The Conejo Volcanics are described by Yerkes, et al. (1980, 2005) and Campbell, et al. (2014) as consisting of basalt, andesitic basalt, basaltic andesite, andesite and dacitic flows, flow breccias, agglomerates, volcanic breccias, and volcanic sandstones and siltstones.

6 GROUNDWATER

Groundwater was not encountered in our borings at the time of drilling; however, seepage was encounter at depths of approximately 32½ and 42 feet in boring LD-2. Fluctuations in the level of groundwater may occur due to variations in ground surface topography, subsurface stratification, rainfall, irrigation practices, groundwater pumping, and other factors, which may not have been evident at the time of our field evaluation.

7 FAULTING AND SEISMICITY

The subject site is not located within a State of California Earthquake Fault Zone (EFZ) (formerly known as Alquist-Priolo Special Studies Zone) (CGS, 2018); however, the site is in a seismically active area, as is the majority of southern California, and the potential for strong ground motion in the project areas is considered significant during the design life of the proposed improvements. The approximate locations of major faults in the region and their geographic relationship to the site are shown on Figure 8. The nearest mapped active fault is the Malibu Coast fault located approximately 0.3 mile south of the site (Unites State Geological Survey [USGS], 2008).

According to Treiman (1994), the Malibu Coast Fault Zone is an east-west zone of faulting along the southern boundary of the Santa Monica Mountains and is part of a larger zone of faults that defines the southern margin of the Transverse Ranges (Figure 9). This large zone includes the Santa Monica, Hollywood, and Raymond faults to the east, and the Anacapa-Dume, Santa Cruz Island, and Santa Rosa Island faults offshore and to the west. The Malibu Coast Fault Zone includes an offshore portion west of Leo Carillo Beach, west of the site, and an onshore portion east of Leo Carillo Beach. The onshore portion, which includes the project site, is generally made up of a complex zone of multiple fault traces. In general, the Malibu Coast fault is a reverse thrust fault that dips steeply north with a component of left-oblique slip. During the Quaternary period, the compressional movement of the fault has been considered the dominant type of fault movement, whereas the strike-slip movement of the fault is considered to have tapered off (Treiman, 1994). More recent Holocene movement on the Malibu Coast fault, classifying it as an active fault, has been a debated subject. Some segments of the fault have been zoned as EFZ by the State of California (Treiman, 1994), while the majority of the fault has not been zoned due to lack of evidence to meet the zoning requirement of being “sufficiently active.” However, the County of Los Angeles and the City of Malibu generally consider it an active fault (City of Malibu, 2014). According to Fault Evaluation Report (FER-229) prepared by Treiman (1994) (Figure 9), the water tank site is located approximately 0.3 mile north of multiple fault splays of the Malibu Coast Fault, within an area that does not meet the State zoning requirements.

The principal seismic hazards at the subject site are surface fault rupture, strong ground motion, and seismically induced landslides. A brief description of these hazards and the potential for their occurrences on site are discussed below.

7.1 Surface Ground Rupture

Based on our review of the referenced literature and our site reconnaissance, no active faults are known to cross the project site. Therefore, the probability of damage from surface fault rupture is

considered to be low. However, lurching or cracking of the ground surface as a result of nearby seismic events is possible.

7.2 Ground Motion

The 2019 California Building Code (CBC) specifies that the Risk-Targeted, Maximum Considered Earthquake (MCE_R) ground motion response accelerations be used to evaluate seismic loads for design of buildings and other structures. The MCE_R ground motion response accelerations are based on the spectral response accelerations for 5 percent damping in the direction of maximum horizontal response and incorporate a target risk for structural collapse equivalent to 1 percent in 50 years with deterministic limits for near-source effects. Based on our review of USGS's on-line Site Data Application (USGS, 2020), the inferred site shear wave velocity (V_{s-30}) is approximately 520 meters per second. Accordingly, the site is considered to be Site Class is C. The horizontal peak ground acceleration (PGA) that corresponds to the MCE_R for the site was calculated as 0.74g using the Applied Technology Council (ATC) seismic design tool (ATC, 2020 [web-based]).

The 2019 CBC specifies that the potential for liquefaction and soil strength loss be evaluated, where applicable, for the mapped Maximum Considered Earthquake Geometric Mean (MCE_G) PGA (PGA_M) with adjustment for site class effects in accordance with the American Society of Civil Engineers 7-16 Standard. The MCE_G PGA is based on the geometric mean PGA with a 2 percent probability of exceedance in 50 years. The mapped MCE_G PGA with adjustment for site class effects (PGA_M) was calculated as 0.885g using the ATC seismic design tool (ATC, 2020 [web-based]).

7.3 Seismically Induced Landslides

Landslides may be induced by strong vibratory motion produced by earthquakes. Research and historical data indicate that seismically induced landslides tend to occur in weak soil and rock on steep terrain. The process for zoning earthquake-induced landslides incorporates expected future earthquake shaking, existing landslide features, slope gradient, and strength of earth materials on the slope. The site is not located in a State of California seismic hazard zone for landsliding; however, the descending slopes west and east of the site are mapped as being susceptible to earthquake-induced landslides (California Department of Mines and Geology [CDMG], 2001b) (Figure 10). Slope stability analyses were performed for the site, including pseudo-static analysis to evaluate seismic stability as presented in the following section.

8 SLOPE STABILITY ANALYSIS

Slope stability analyses were performed to evaluate the stability of the west and east descending slopes adjacent to the tank site, which are mapped by CDMG (2001b) as being susceptible to seismically induced landslides. The stability models were based on our interpretation of the geologic conditions along Cross Section A-A' (Figure 6), which was prepared using data collected from our borings and site reconnaissance, and the regional geologic maps prepared by Dibblee (1993) or Yerkes and Campbell (1980). As shown on Cross Section A-A' (Figure 6), bedding generally dips into slope (favorable condition) for the west descending slope and is approximately parallel to the topography of the east descending slope (i.e., dip slope condition, slightly unfavorable). The bedrock materials were assigned with anisotropic strength properties due to account for the observed bedding conditions in our borings and our judgement. The bedrock strength parameters were selected based on the results of laboratory shear tests performed for our evaluation, literature review, and our experience with similar materials. A summary of the shear strength parameters used in our stability analyses are presented in Table 1.

Table 1 – Shear Strength Parameters Used in Slope Stability Analyses

Geologic Unit	Moist Unit Weight (pcf)	Friction Angle (degrees)	Cohesion (ksf)
Conejo Volcanics- Basalt (across bedding)	140	0	1,050
Conejo Volcanics- Basalt (along bedding)	140	0	10.5
Conejo Volcanics- Weathered Basalt (across bedding)	130	0	225
Conejo Volcanics- Weathered Basalt (along bedding)	130	0	2.25
Compacted Fill	120	32	0.05
Terrace Deposits	110	28	0.05
Ancient Landslide Deposits	110	28	0.05

Notes:
ksf – kips per square foot
pcf – pounds per cubic foot

Our slope stability analyses were performed on the basis of the Morgenstern and Price limit equilibrium method using a two-dimensional stability analysis program, Slope/W (Geo-Slope International Ltd., 2012), for static and pseudo-static conditions. Failure surfaces were generated using the "CIRCLE" and "BLOCK" search algorithms. Iterations using these subroutines yield what we consider to be critical failure surfaces. Pseudo-static analyses were performed using a coefficient of horizontal ground acceleration of 0.15 as recommended in Special Publication (SP) 117A (CGS, 2008). As suggested in SP 117A, slopes with factors of safety of 1.5 and 1.1 for the static and pseudo-static condition, respectively, are considered adequately stable.

The results of our stability analyses indicate that the existing west and east descending slopes have adequate factors of safety against global instability under static and pseudo-static conditions. The results of our stability analyses are summarized in Table 2. The slope stability analyses are presented in Appendix D.

Table 2 – Summary of Slope Stability Analyses		
Slope Evaluated	**Calculated Static Factor of Safety**	**Calculated Pseudo-Static Factor of Safety**
Tank Site (West Descending Slope)	33.3	10.4
Tank Site (East Descending Slope)	82.9	77.4

9 CONCLUSIONS

Based on the results of our geotechnical evaluation, it is our opinion that the proposed tank project is feasible from a geotechnical standpoint, provided the recommendations presented in this report are incorporated into the design and construction of the project. In general, the following conclusions were made:

- The tank site is underlain by undocumented fill and bedrock of the Conejo Volcanics. The fill is considered to be potentially compressible.

- Excavations of the on-site material is considered feasible with earthmoving equipment in good working condition. Due to the variability of weathering and fracturing in the volcanic rock, hard materials should be anticipated that may result in oversize material and/or difficult excavation. Special excavating equipment, such as rippers, pneumatic chippers or jackhammers should be anticipated. The contractor should anticipate handling oversize materials.

- We anticipate that the undocumented fill and process bedrock materials should generally be suitable for use as compacted fill at the site; however, this material is generally not considered suitable for use as backfill behind retaining walls.

- For preliminary planning purposes, the undocumented fill at the site should be considered as Type C soils and the bedrock materials should be considered as Type B soils in accordance with Occupational Safety and Health Administration (OSHA) soil classifications. The contractor's competent person should make their own evaluation of the soil types encountered during construction.

- Groundwater was not encountered in our borings, but seepage was encountered at approximately 32½ and 42 feet in boring LD-2. The depth to groundwater varies due to seasonal precipitation, subsurface conditions, irrigation, groundwater pumping, and other factors. Seepage should be anticipated during construction

- The subject site is not located within a State of California Earthquake Fault Zone (CGS, 2018). The probability of surface fault rupture at the site is considered low.

- Based on our site reconnaissance, subsurface exploration, and review of published geologic maps and aerial photographs, there are no known landslides on the adjacent slopes or at the project site; however, CDMG (2001b) has mapped the adjacent west and east descending slopes as being susceptible to seismically induced landslides

- Our slope stability analyses indicate that the existing west and east descending slopes have an adequate factor of safety (1.5 or more) under static condition, and an adequate factor of safety (1.1 or more) under pseudo-static condition.
- The PGA_M was estimated to be 0.885g for the site.
- Our limited laboratory corrosion testing indicates that the on-site materials can be classified as corrosive based on California Department of Transportation (Caltrans, 2018) corrosion guidelines.

9.1 Los Angeles County Statement 111

In accordance with Section 111 of the Los Angeles County Building Code, we are providing our professional opinion regarding the geologic hazards of landsliding, settlement, and slippage and their impact on the proposed development. It is our professional opinion that the site for the proposed improvements will not be subject to hazards from future landsliding, settlement, or slippage, provided the recommendations of this report are incorporated into the design plans and are implemented during construction. Further, it is our opinion that the proposed construction and associated grading will not impact the geologic stability of properties outside the site, provided the recommendations of this report are incorporated into the design plans and are implemented during construction.

10 RECOMMENDATIONS

The following sections include our geotechnical recommendations for design and construction of the proposed Sweetwater Mesa Tank. These recommendations are based on our evaluation of the site geotechnical conditions and our understanding of the planned construction. The proposed site improvements should be constructed in accordance with the requirements of applicable governing agencies. Recommendations for design and construction of the proposed water pipeline were provided under separate cover (Ninyo & Moore, 2020).

10.1 Earthwork

Based on our understanding of the project, earthwork is anticipated to consist of remedial grading associated with preparation of the tank pad, tank and retaining wall foundations, and AC walkway, as well as trenching and backfilling associated with underground utility installation. Proposed cuts are anticipated to be on the order of 10 vertical feet into the south ascending slope to achieve tank pad grade elevation. Earthwork should be performed in accordance with the requirements of the appropriate governing agencies, and the recommendations presented below.

10.1.1 Pre-Construction Conference

We recommend that a pre-construction conference be held. The owner and/or their representative, the governing agencies' representatives, the civil engineer, Ninyo & Moore, and the contractor should be in attendance to discuss the work plan and project schedule and earthwork requirements.

10.1.2 Clearing and Site Preparation

Prior to performing excavations, the site should be cleared of vegetation, debris, surface obstructions, and other deleterious materials. Obstructions that extend below finish grade, if any, should be removed and the resulting holes filled with compacted soils. Materials generated from the clearing operations should be removed from the project site and disposed of at a legal dumpsite.

10.1.3 Tank Pad and Retaining Wall Foundation Preparation

In order to provide suitable support for the proposed tank, we recommend that the tank's perimeter ring foundation be founded on relatively competent volcanic bedrock. The interior floor of the tank, including underlying AB and liners, may be founded on compacted structural fill and/or relatively competent bedrock. Existing undocumented fill and loose bedrock (if present) should be over-excavated and replaced with compacted structural fill. The overexcavation bottom should expose relatively dense and competent volcanic bedrock material. The excavation bottom should be evaluated by the project geotechnical consultant during the excavation work. The exposed subgrade should be scarified to a depth of approximately 8 inches, moisture-conditioned, and compacted prior to the placement of fill. On-site and imported soils placed to backfill the excavation should be comprised of low expansion potential, granular soil compacted to 95 percent relative compaction as evaluated by ASTM International (ASTM) D 1557. Clayey soils should not be used within the tank pad area.

We recommend placing the retaining wall footings on competent bedrock. In the event that loose/disturbed bedrock, undocumented fill, and/or other material (i.e. slopewash, colluvium, etc.) are encountered at the retaining wall foundation depths, these materials should be removed to expose competent bedrock. The foundation and/or removal excavations should be evaluated by the geotechnical consultant. The removals may be backfilled with on-site and imported soil comprised of low expansion potential, granular soil compacted to a relative compaction of 95 percent as evaluated by ASTM D 1557.

10.1.4 Excavation Characteristics

We anticipate that excavations in the fill and volcanic bedrock can be accomplished with conventional earthmoving equipment in good working condition. We anticipate that the undocumented fill will generally consist of clayey to silty sand with varying amounts of gravel and construction debris and the volcanic bedrock materials will generally consist of variably weathered and fractured basalt. Relatively hard zones within the bedrock should be anticipated. During excavations, the contractor should anticipate encountering oversize materials. The contractor should be prepared to take appropriate measures to address the presence of oversize materials and hard materials. Difficult excavating should be anticipated within the less weathered bedrock, which may involve special excavating equipment, such as rippers, pneumatic chippers, and jackhammers. Excavating difficulty will also depend on the degree of fracturing/jointing in the rock. The contractor should make their own independent evaluation of the excavatability of the on-site materials prior to submitting their bids.

10.1.5 Temporary Excavations

We recommend that trenches and temporary excavations be designed and constructed in accordance with OSHA regulations. These regulations provide trench sloping and shoring design parameters for trenches up to 20 feet deep based on the soil types encountered. Trenches over 20 feet deep should be designed by the contractor's engineer based on site-specific geotechnical analyses. For planning purposes, we recommend that the undocumented fill materials and other surficial materials (i.e., residual soil, slope wash, and/or colluvium), if encountered, be considered as OSHA soil Type C. Volcanic bedrock materials should be considered as OSHA soil Type B for planning purposes. Per OSHA regulations, temporary slopes above the water table for Type C soils should be laid-back at inclinations of 1.5:1 (horizontal to vertical). and excavations for Type B soils should be laid-back at inclinations of approximately 1:1 (horizontal to vertical) or flatter. The contractor's competent person should make their own evaluation of the soil types encountered during construction.

Care should be taken by the contractor to avoid undermining adjacent existing foundations and improvements. New excavations should not extend within the "zone of influence" of existing foundations, which is defined as a 1:1 (horizontal to vertical) plane projecting out from the bottom outside edge of the foundations. In the event that excavations will extend within the "zone of influence" of existing foundations, our office should be notified and appropriate recommendations provided, such as temporary underpinning of impacted foundations and/or temporary shoring.

10.1.6 Shoring

Where slopes/lay-backs are not possible for temporary excavations 4 or more feet in depth, shoring will be appropriate. The design of the shoring system should consider the excavation characteristics of the onsite soil, temporary excavation stability, and the impact of construction on existing structures.

We understand that a temporary excavation is planned along the south ascending slope that will be up to approximately 10 feet in height to allow construction of the tank pad and foundations. According to the project plans (Cannon, 2020), this temporary cut will be shored during construction. The type of shoring system is unknown at this time; however, we anticipate that use of soldier piles with lagging. Driven piles are generally not considered feasible for the project due to the relatively dense nature of the volcanic bedrock materials. We understand that the area between the tank and shoring will be backfilled with compacted fill following completion of the tank construction. We anticipate that the shoring will be left in-place.

Other shoring may also be required for other areas where temporary slopes are not feasible, such as trench excavations. Speed shoring (hydraulic shoring) with plates or trench boxes are anticipated for use during trenching operations. Vibratory sheet piles are generally not considered applicable for the project given the relatively dense nature of the underlying volcanic bedrock.

Shoring systems for the project should be designed using the lateral earth pressure values provided on Figures 11 and 12 for cantilevered and braced systems, respectively. Shoring systems should be reviewed by Ninyo & Moore to evaluate the design considerations and geotechnical parameters used. The recommended design pressures for shoring are based on the assumptions that the shoring system is constructed without raising the ground surface elevation behind the shoring system, that there are no surcharge loads, such as soil stockpiles, construction materials, construction equipment, or vehicular traffic, and that no loads act above a 1:1 (horizontal to vertical) plane extending up and back from the base of the shoring system. For shoring systems subjected to the above-mentioned surcharge loads, the contractor should include the effect of these loads on the lateral pressures against the shoring system.

Ground settlement may occur behind the shoring system wall during excavation. The amount of settlement depends on the type of shoring system, the contractor's workmanship, and soil conditions. We recommend that structures/improvements in the vicinity of the planned

shoring installation be reviewed with regard to foundation support and tolerance to settlement. To reduce the potential for distress to adjacent structures, we recommend that the shoring system be designed to limit the ground settlement behind the shoring system to ½ inch or less, which would equal approximately ½ inch of deflection. Possible causes of settlement that should be addressed include settlement during installation of the piles, excavation for structure construction, construction vibrations, and removal of the support system. We recommend that shoring installation be evaluated carefully by the contractor prior to construction.

The contractor should retain a licensed, qualified and experienced engineer to design the shoring system. The shoring parameters presented in this report are minimum requirements, and the contractor should evaluate the adequacy of these parameters and make the required modifications for their design. We recommend that the contractor take appropriate measures to protect workers. OSHA requirements pertaining to worker safety should be observed.

10.1.7 Fill Material

In general, the on-site materials are considered suitable for use as general fill, provided they are free of trash, debris, roots, vegetation, or other deleterious materials. Fill should generally be free of rocks or lumps of material in excess of 4 inches in diameter. Rocks or hard lumps larger than approximately 4 inches in diameter should be broken into smaller pieces or should be removed from the site. Fill used beneath the tank, as retaining wall backfill, or other structural backfill, should be comprised of granular, non-expansive soil that conforms to the latest edition of “Greenbook” Standard Specifications for Public Works Construction (Greenbook) for structural backfill. “Non-expansive” is defined as soil having an EI of 20 or less in accordance with ASTM D 4829 (CBC, 2019). On-site soils used as fill will involve moisture conditioning to achieve appropriate moisture content for compaction.

Import material, if used, should consist of clean, non-expansive, granular material, which conforms to the “Greenbook” for structure backfill. Soil should also be tested for corrosive properties prior to importing. We recommend that the imported materials satisfy the Caltrans (2018) criteria for non-corrosive soils (i.e., soils having a chloride concentration of 500 parts per million [ppm] or less, a soluble sulfate content of approximately 0.20 percent [2,000 ppm] or less, a pH value of 5.5 or more and an electrical resistivity of 1,100 ohm-centimeters [ohm-cm] or more). Import material should be submitted to Ninyo & Moore for review prior to importing to the site. The contractor should be responsible for the uniformity of import material brought to the site.

10.1.8 Fill Placement and Compaction

Fill placed for support of the new tank should be compacted in horizontal lifts to a relative compaction of 95 percent or more as evaluated by the latest edition of ASTM D 1557. Wall backfill and other fill outside the tank area should be compacted in horizontal lifts to a relative compaction of 90 percent or more as evaluated by ASTM D 1557. Fill soils should be placed at slightly above the optimum moisture content as evaluated by ASTM D 1557. The optimum lift thickness of fill will depend on the type of compaction equipment used but generally should not exceed 8 inches in loose thickness. Placement and compaction of the fill soils should be in general accordance with appropriate governing agency grading ordinances and good construction practice.

When placing fill on slopes steeper than 5:1 (horizontal to vertical), near-horizontal keys and near-vertical benches should be excavated, extending through the near-surface soil into competent bedrock material. Keying and benching should be performed in accordance with our benching detail presented on Figure 13. Example areas where keying and benching should be anticipated are where new fill slopes tie into existing slopes. A backdrain system should be installed along the heel of the toe key for fill slopes 10 or more feet in height as shown on Figure 13. Keying, benching, and the installation of a backdrain should be evaluated by the geotechnical consultant prior to placement of fill. As fill is placed behind the retaining wall, the backcut should be benched to expose relatively competent material.

10.2 Seismic Design Considerations

Design of the proposed improvements should be performed in accordance with the requirements of governing jurisdictions and applicable building codes. Table 3 presents the seismic design parameters for the site in accordance with the CBC (2019) guidelines and adjusted MCE_R spectral response acceleration parameters (ATC, 2020).

Table 3 – 2019 California Building Code Seismic Design Criteria

Site Coefficients and Spectral Response Acceleration Parameters	Values
Site Class	C
Mapped Spectral Response Acceleration at 0.2-second Period, S_s	1.725g
Mapped Spectral Response Acceleration at 1.0-second Period, S_1	0.611g
Site-Specific Spectral Response Acceleration at 0.2-second Period, S_{MS}	2.07g
Site-Specific Spectral Response Acceleration at 1.0-second Period, S_{M1}	0.856g
Site-Specific Design Spectral Response Acceleration at 0.2-second Period, S_{DS}	1.38g
Site-Specific Design Spectral Response Acceleration at 1.0-second Period, S_{D1}	0.57g
Site-Specific Maximum Considered Earthquake Geometric Mean (MCE_G) Peak Ground Acceleration, PGA_M	0.885g

10.3 Foundations

We anticipate that shallow spread footings bearing on relatively competent bedrock materials will be appropriate for support of the tank and proposed retaining wall along the west side of the tank. Project foundations should be designed in accordance with structural considerations and our geotechnical recommendations. In addition, requirements of the governing jurisdictions, practices of the Structural Engineers Association of California, and applicable building codes should be considered in the design of the structures.

Shallow spread footings, including the perimeter ring foundation for the tank, should extend 18 inches or more below the lowest adjacent finished grade with a width of 36 inches or more and should bear on relatively competent volcanic bedrock. Spread footings should be reinforced with four No. 4 steel reinforcing bars, two placed near the top and two placed near the bottom of the footings, and further detailed in accordance with the recommendations of the structural engineer.

Footings, as described above and bearing on competent volcanic bedrock may be designed using an allowable bearing capacity of 5,000 pounds per square foot (psf). The allowable bearing capacity may be increased by 500 psf for every foot of increase in width or depth up to a value of 6,000 psf. The allowable bearing capacity may be increased by one third when considering loads of short duration, such as wind or seismic. Total and differential settlements for footings designed in accordance with the above recommendations are estimated to be less than ½ inch and ¼ inch over a horizontal span of 40 feet, respectively.

Footings bearing on competent volcanic bedrock may be designed using a coefficient of friction of 0.4, where the total frictional resistance equals the coefficient of friction times the dead load. Footings may be designed using a passive resistance of 450 psf per foot of depth for level ground condition up to a value of 4,500 psf. The allowable lateral resistance can be taken as the sum of the frictional resistance and passive resistance provided the passive resistance does not exceed one-half of the total allowable resistance. The passive resistance may be increased by one-third when considering loads of short duration such as wind or seismic forces.

Footings located adjacent to utility trenches should have their bearing surfaces situated below an imaginary 1:1 plane projected upward from the bottom edge of the adjacent utility trench. Foundations should also maintain an appropriate setback from the face of the steep slope. We recommend a setback of 15 feet or more.

10.4 Tank Slab-On-Grade

Floor slabs subjected to dead and live loads should be designed by the project structural engineer based on the anticipated loading conditions. Floor slabs should be underlain by compacted

structural fill prepared following the recommendations presented in this report. We recommend that slabs be 6 inches thick and reinforced with No. 4 steel reinforcing bars placed 24 inches on-center (each way) placed near the mid-height of the slab. The placement of the reinforcement in the slab is vital for satisfactory performance. The floor slab and foundations should be tied together by extending the slab reinforcement into the footings. At a minimum, the slab should be underlain by a 4-inch-thick layer of sand or gravel with a particle size of approximately $^{3}/_{8}$ inch or smaller (the plans indicated that the slab will be underlain by 6 inches of AB). Soils underlying the slab should be moisture-conditioned and compacted in accordance with the recommendations presented in this report prior to concrete placement. Joints should be constructed at intervals designed by the structural engineer to help reduce random cracking of the slab.

10.5 Retaining Walls

Retaining walls may be supported on foundations supported on competent volcanic bedrock designed in accordance with the recommendations presented above. Lateral earth pressures recommended for the design of yielding retaining walls are provided on Figure14.

Retaining walls should be backfilled with free-draining, granular, imported soil with non-expansive material (CBC Expansion Index 20 or less). Measures should be taken to reduce the potential for build-up of moisture behind the retaining walls. Drainage design should include free-draining backfill materials and subsurface drainage provisions as shown on Figure 15.

10.6 Underground Utilities

We anticipate that underground inlet and outlet pipelines will be supported on fill or volcanic bedrock materials. Based on the plans (Canon, 2020), we anticipate that the pipe invert depths for new pipelines will be on the order of 4 to 6 feet in depth. Trenches should not be excavated parallel to building footings. If needed, trenches can be excavated adjacent to a continuous footing, provided that the bottom of the trench is located above a 1:1 (horizontal to vertical) plane projected downward from a point 6 inches above the bottom of the adjacent footing. Utility lines that cross beneath footings should be encased in concrete below the footing.

10.6.1 Excavation Bottom Stability

In general, we anticipate that the bottom of the pipeline trenches will remain stable and provide suitable support to the proposed pipeline and construction operations. However, excavations in alluvial soils that extend close to or below the groundwater table may be unstable. Unstable bottom conditions may be stabilized by overexcavation of the trench bottom approximately 1 to 2 feet and replacement with crushed rock or aggregate base materials. Crushed rock used to stabilize bottoms should be wrapped in filter fabric (Mirafi

140N or equivalent). Recommendations for stabilizing excavation bottoms should be based on evaluation in the field by Ninyo & Moore at the time of construction

10.6.2 Pipe Bedding

We recommend that pipelines and other utility lines be supported on 6 inches or more of granular bedding material such as sand with a sand equivalent value of 30 or more in accordance with ASTM D 2419. Bedding material should be placed and compacted around the pipe, and 12 inches or more above the top of the pipe in accordance with the latest edition of Greenbook. Special care should be taken not to allow voids beneath and around the pipe. Bedding material and compaction requirements should be in accordance with the recommendations of this report, the project specifications, and applicable requirements of the governing agencies

10.6.3 Trench Backfill

Based on our subsurface evaluation, the on-site soils should generally be suitable for re-use as trench backfill provided they are free of organic material, clay lumps, debris, and rocks more than approximately 4 inches in diameter. We recommend that trench backfilling be in general conformance with the Standard Specifications for Public Works Construction ("Greenbook") for structure backfill. Fill should be moisture-conditioned to at or slightly above the laboratory optimum. Wet soils should be allowed to dry to a moisture content near the optimum prior to their placement as trench backfill. Trench backfill should be compacted to a relative compaction of 90 percent or more. Lift thickness for backfill will depend on the type of compaction equipment utilized, but fill should generally be placed in horizontal lifts not exceeding 8 inches in loose thickness. Special care should be exercised to avoid damaging the pipe during compaction of the backfill.

10.6.4 Lateral Earth Pressures for Thrust Blocks

Thrust restraint for buried pipelines may be achieved by transferring the thrust force to the soil outside the pipe through a thrust block. Thrust blocks may be designed using the lateral passive earth pressures for granular soil/bedrock presented on Figure 16.

10.6.5 Modulus of Soil Reaction

The modulus of soil reaction is used to characterize the stiffness of soil backfill placed on the sides of buried flexible pipelines for the purpose of evaluating lateral deflection caused by the weight of the backfill above the pipe. We recommend that a modulus of soil reaction of 1,200 pounds per square inch be used for design, provided that granular bedding material is placed adjacent to the pipe, as recommended in this report.

10.6.6 Pavement Reconstruction

In general, pavement repair for trenches that extend through paved areas should match the existing pavement section and should conform to the requirements of the appropriate governing agency. Aggregate base material and asphalt concrete should be compacted to a relative compaction of 95 percent as evaluated by ASTM D 1557

10.7 Corrosivity

Laboratory testing was performed on a representative near surface sample to evaluate soil pH, electrical resistivity, and chloride and water-soluble sulfate content. The pH and electrical resistivity tests were performed in accordance with California Test (CT) Method 643, and sulfate and chloride tests were performed in accordance with CT 417 and 422, respectively.

The results of the corrosivity testing indicated that the sample had an electrical resistivity of approximately 640 ohm-cm, a soil pH of 8.4, a chloride content of approximately 135 ppm, and a sulfate content of approximately 0.013 percent (i.e., 130 ppm). Based on the laboratory test results and Caltrans criteria, the project site can be classified as a corrosive site, which is defined as having earth materials with more than 500 ppm chlorides, more than 1,500 ppm of sulfates, a pH of 5.5 or less, and/or an electrical resistivity of less than 1,100 ohm-cm. The results of the corrosivity test are presented in Appendix C.

10.8 Concrete

Concrete in contact with soil or water that contains high concentrations of water-soluble sulfates can be subject to premature chemical and/or physical deterioration. Based on the American Concrete Institute (ACI) criteria (2016b), the potential for sulfate attack is negligible for water-soluble sulfate contents in soil ranging from 0.00 to 0.10 percent by weight and moderate for water-soluble sulfate contents ranging from 0.10 to 0.20 percent by weight. The potential for sulfate attack is severe for water-soluble sulfate contents ranging from 0.20 to 2.00 percent by weight and very severe for water-soluble sulfate contents over 2.00 percent by weight. The soil samples tested for this evaluation, using CT 417, indicate a water-soluble sulfate content of approximately 0.013 percent (i.e., 130 ppm). Accordingly, the on-site materials are considered to have a negligible to moderate potential for sulfate attack. Per ACI (2016b), Type II cement is appropriate for the site improvements. However, due to the potential variability of the materials on site, consideration should be given to using Type II/V cement for the project.

To reduce the potential for shrinkage cracks in the concrete during curing, we recommend that the concrete for the proposed structures be placed with a slump of 4 inches based on ASTM C 143. The slump should be checked periodically at the site prior to concrete placement.

We further recommend that concrete cover over reinforcing steel for foundations be provided in accordance with the 2019 CBC. The structural engineer should be consulted for additional concrete specifications.

10.9 Drainage

Appropriate surface drainage is imperative for satisfactory site performance. Positive drainage should be provided and maintained to direct surface water away from the proposed tank. Positive drainage is defined as a slope of 2 percent or more for a distance of 5 feet or more away from foundations and tops of slopes. Runoff should then be directed by the use of swales or pipes into a collective drainage system. We recommend that structures have roof drains and downspouts installed to collect runoff. Surface water should not be allowed to flow over slope faces or to pond adjacent to footings.

11 CONSTRUCTION OBSERVATION

The recommendations provided in this report are based on our understanding of the proposed project and on our evaluation of the data collected based on subsurface conditions disclosed by widely spaced exploratory borings. It is imperative that the interpolated subsurface conditions be checked by our representative during construction. Observation and testing of compacted fill and backfill should also be performed by the project geotechnical consultant during construction. We further recommend that the project plans and specifications be reviewed by the geotechnical consultant prior to construction. It should be noted that, upon review of these documents, some recommendations presented in this report might be revised or modified.

During construction we recommend that the duties of the geotechnical consultant include, but not be limited to:

- Observing clearing, grubbing, and removals.
- Observing excavation bottoms, the placement of bedding and shading materials, and the placement and compaction of fill.
- Observing installation of shoring for temporary excavations.
- Evaluation of imported materials prior to their use as fill.
- Performance of field tests to evaluate fill compaction.
- Observing foundation excavations for bearing materials and cleaning prior to placement of reinforcing steel or concrete.
- Performing material testing services including concrete compressive strength and steel tensile strength tests and inspections.

The recommendations provided in this report assume that Ninyo & Moore will be retained as the geotechnical consultant during the construction phase of this project. If another geotechnical consultant is selected, we request that the selected consultant indicate to the owner and to our firm in writing that our recommendations are understood and that they are in full agreement with our recommendations.

12 LIMITATIONS

The field evaluation, laboratory testing, and geotechnical analyses presented in this report have been conducted in accordance with current engineering practice and the standard of care exercised by reputable geotechnical consultants performing similar tasks in this area. No warranty, expressed or implied, is made regarding the conclusions, recommendations, and professional opinions expressed in this report. Variations may exist and conditions not observed or described in this report may be encountered during construction.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ninyo & Moore should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document.

The conclusions and recommendations presented in this report are based on an analysis of the observed site conditions. If geotechnical or environmental conditions different from those described in this report are encountered, our office should be notified, and additional recommendations, if warranted, will be provided upon request. It should be understood that the conditions of a site could change with time as a result of natural processes or the activities of man at the subject site or nearby sites. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ninyo & Moore has no control.

This report is intended exclusively for use by the client. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

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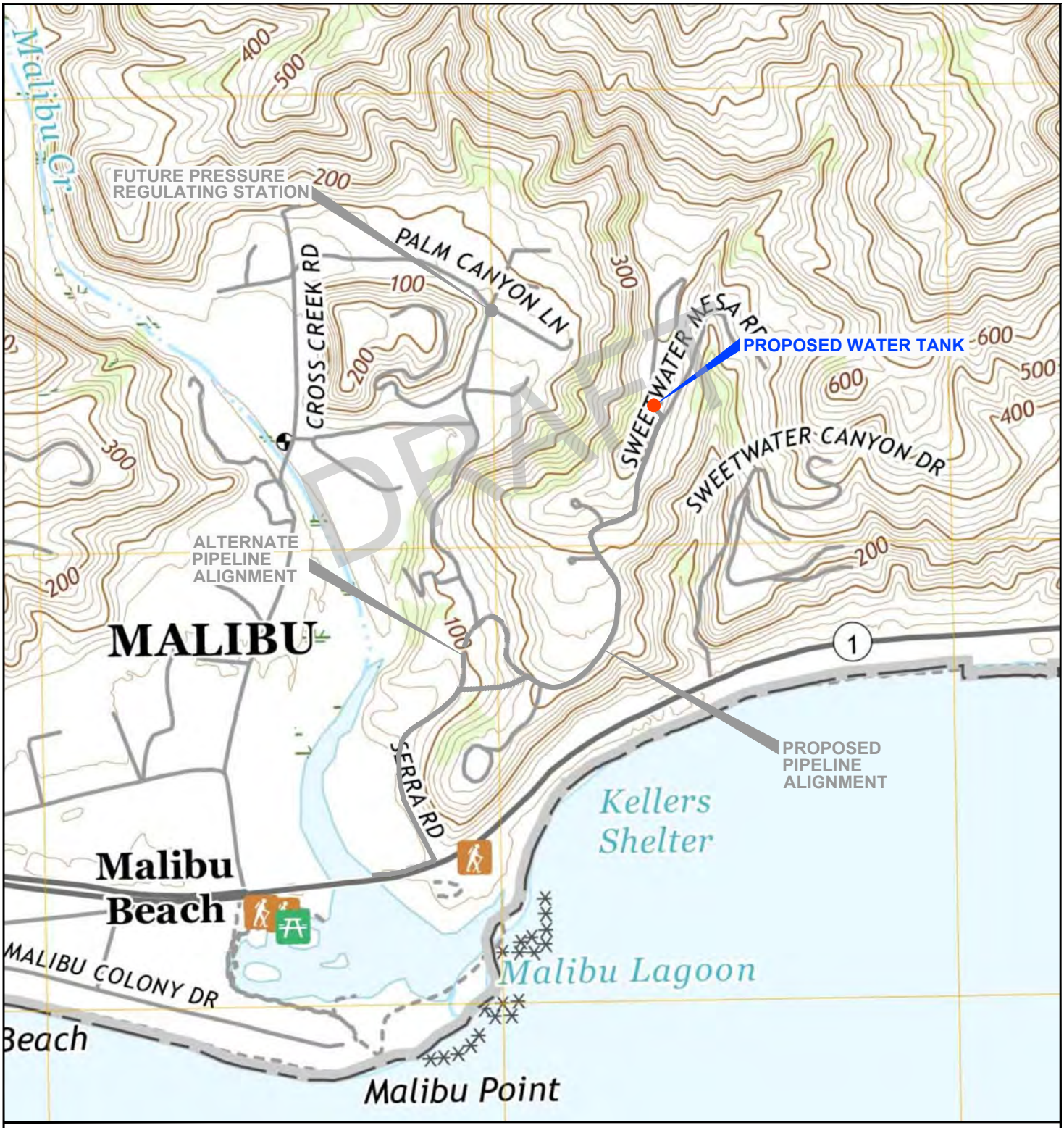
FIGURES



NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: USGS, 2018.

N

FEET

0 1,000 2,000

211056001_SL.dwg 10/07/2020 (TANK / Oct. 2020) JDP

FIGURE 1

SITE LOCATION

CIVIC CENTER IMPROVEMENTS PROJECT - SWEETWATER MESA TANK
MALIBU, CALIFORNIA

211056001 I 10/20

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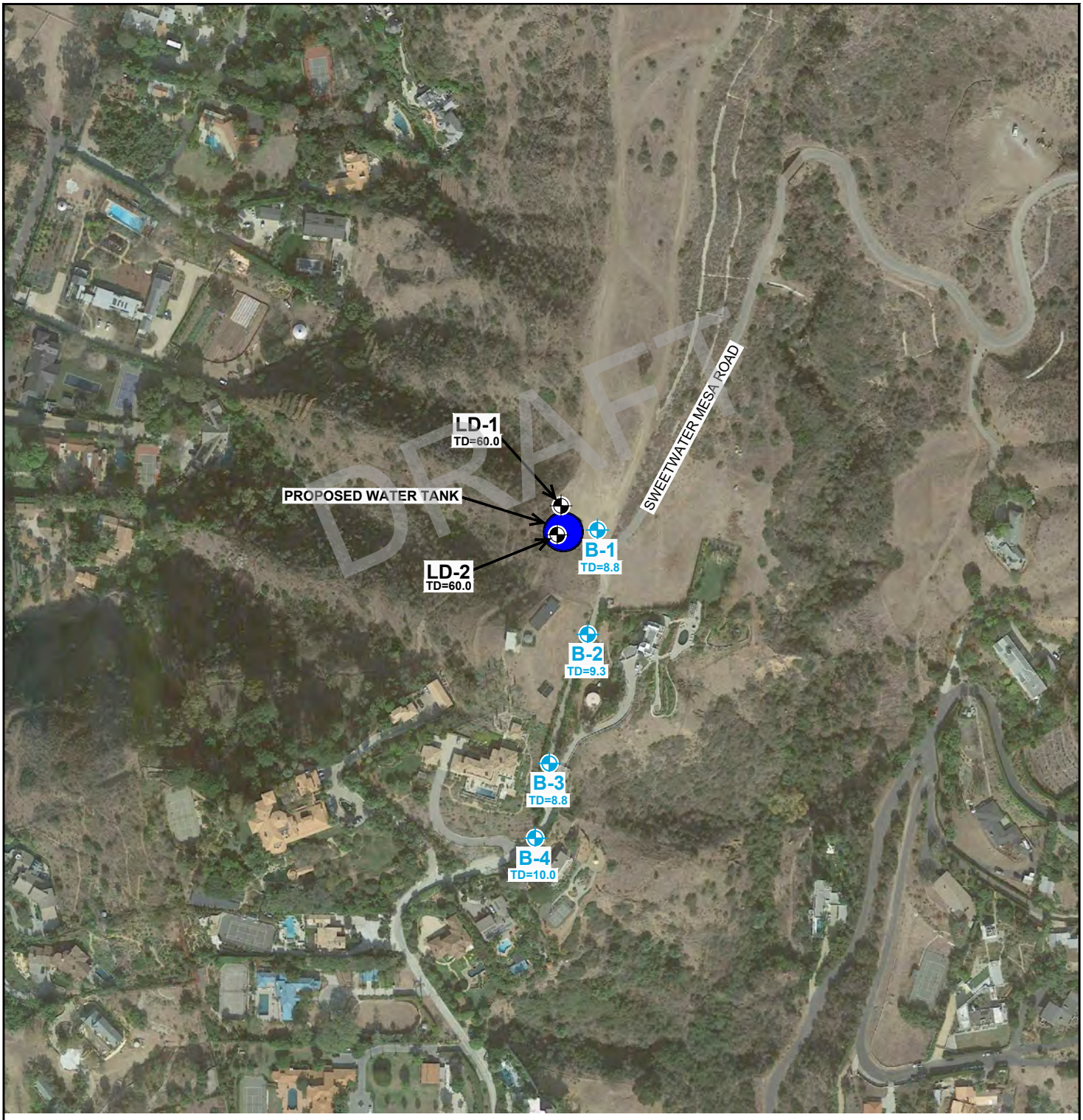
Geotechnical & Environmental Sciences Consultants



LEGEND

LD-2 TD=60.0 — LARGE-DIAMETER BORING; TD=TOTAL DEPTH IN FEET

B-4 TD=10.0 — HOLLOW-STEM-AUGER BORING FOR PIPELINE (NINYO & MOORE, 2020); TD=TOTAL DEPTH IN FEET

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: GOOGLE EARTH, 2019.

N

FEET

0 300 600

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FIGURE 2

SITE PLAN AND BORING LOCATIONS

CIVIC CENTER IMPROVEMENTS PROJECT - SWEETWATER MESA TANK
MALIBU, CALIFORNIA

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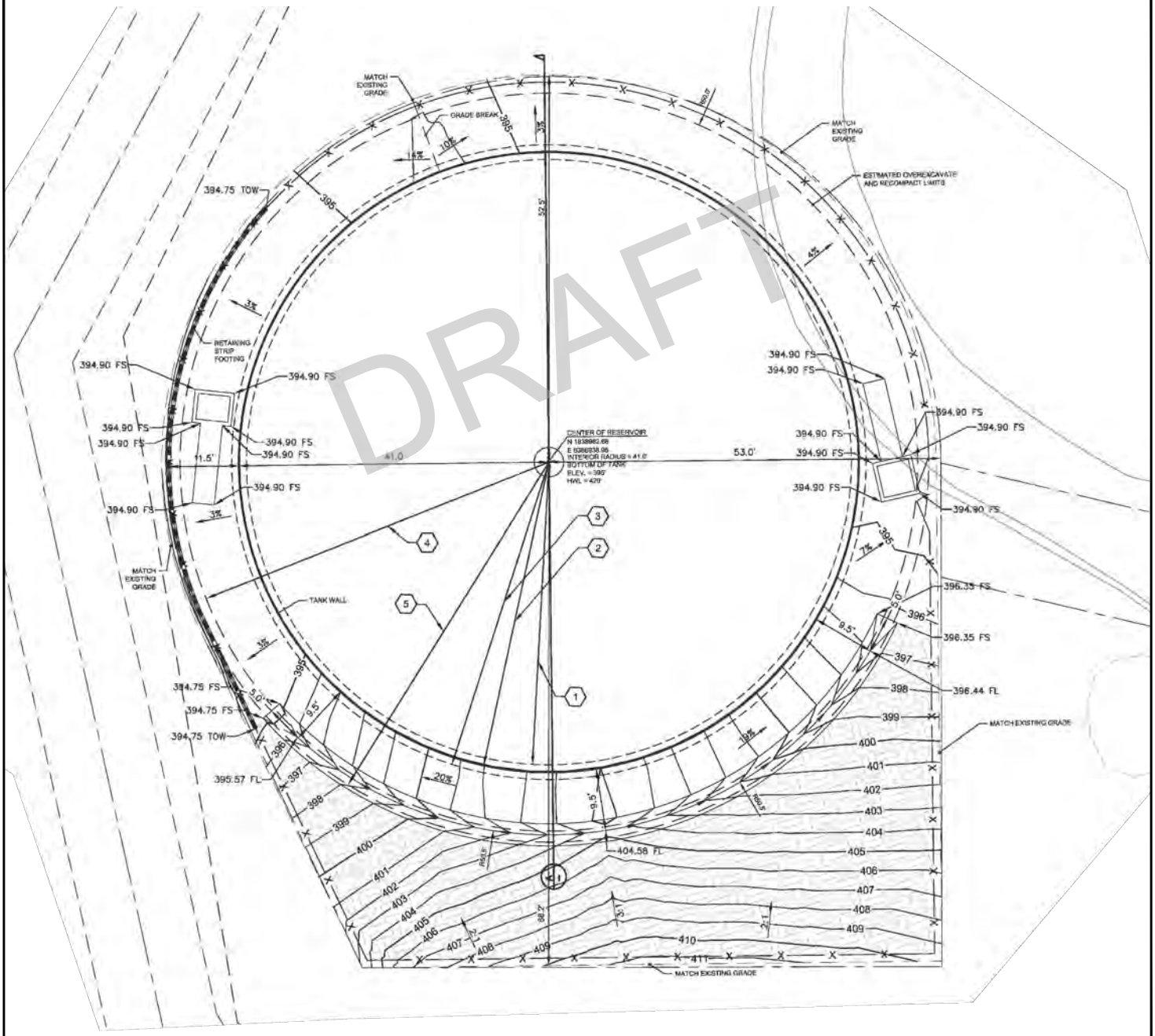

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: CANNON, 2020.

FIGURE 3

PROPOSED TANK CONSTRUCTION

CIVIC CENTER IMPROVEMENTS PROJECT - SWEETWATER MESA TANK
MALIBU, CALIFORNIA

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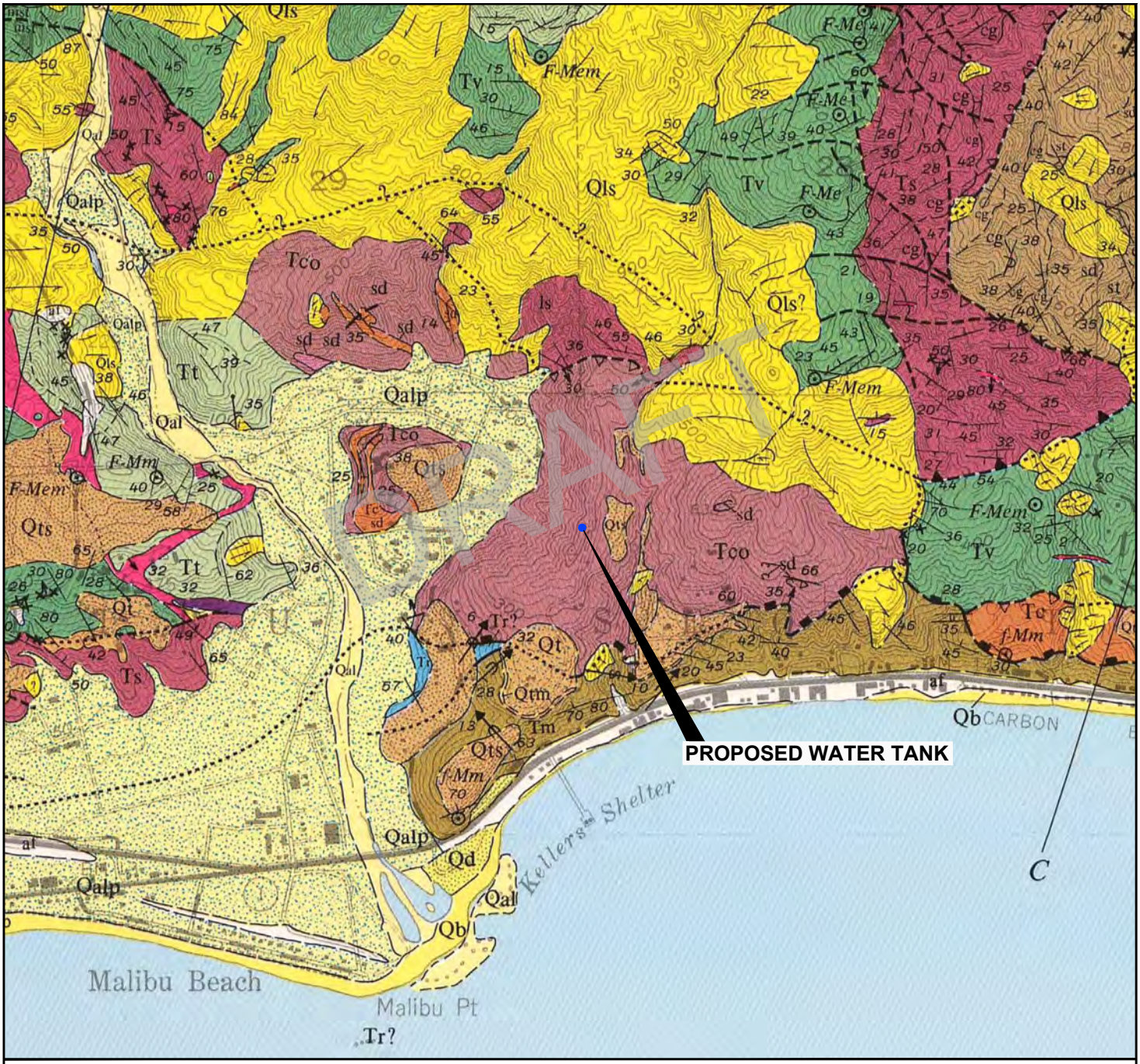

LEGEND

Qalp	ALLUVIUM
Qd	DUNE DEPOSITS
Qls	LANDSLIDE DEPOSITS
Qt	TERRACE DEPOSITS
Tco	CONEJO VOLCANICS
Tm	MONTEREY SHALE
	GEOLOGIC CONTACT
	FAULT; DASHED WHERE INFERRED, DOTTED WHERE CONCEALED
70	STRIKE AND DIP OF BEDS

N

FEET

0 1,500 3,000

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: YERKES ET AL, 1980.

211056001_RG.dwg 10/07/2020 (TANK / Oct. 2020) JDP

FIGURE 4

REGIONAL GEOLOGY

CIVIC CENTER IMPROVEMENTS PROJECT - SWEETWATER MESA TANK
MALIBU, CALIFORNIA

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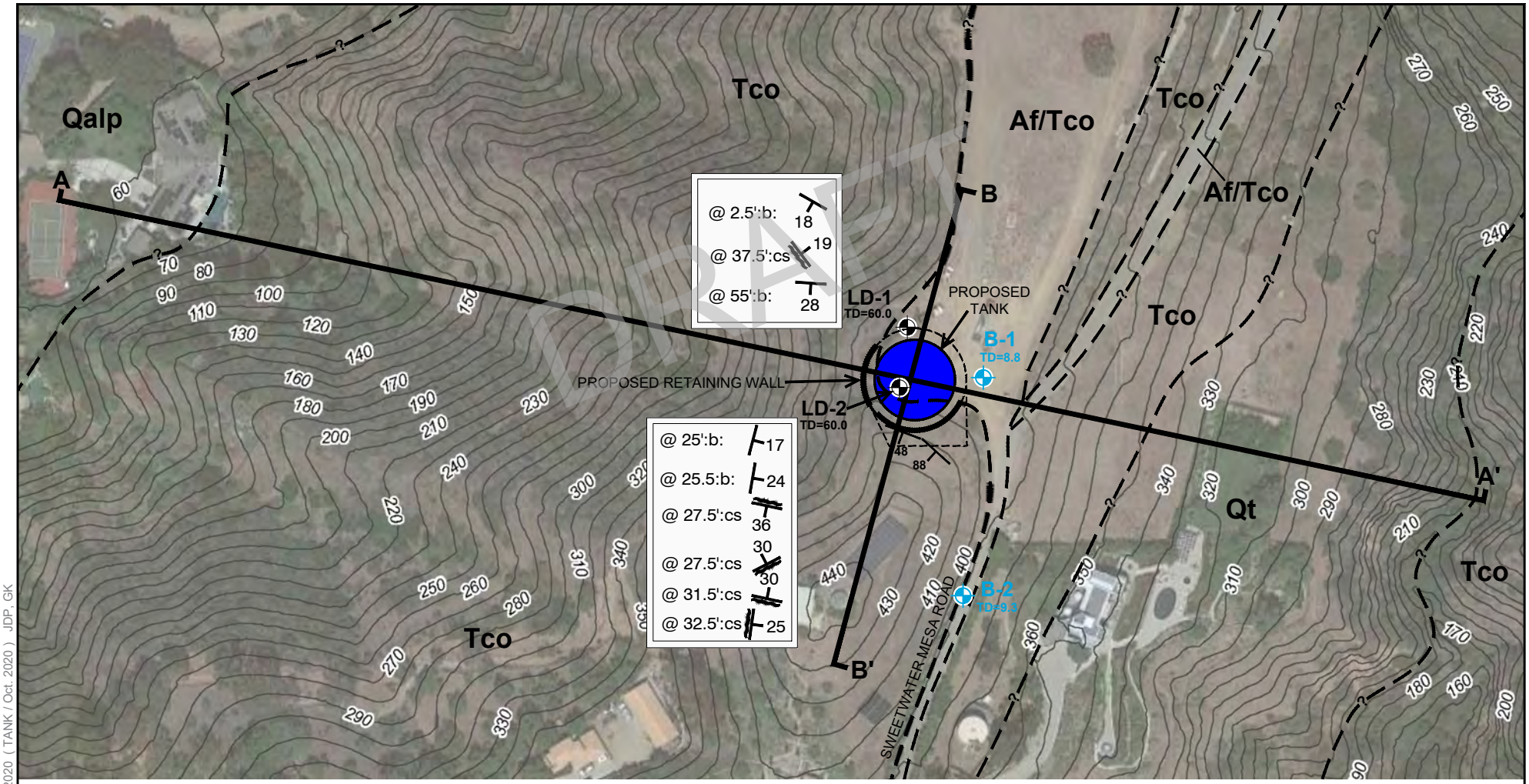

REFERENCE: TOPOGRAPHIC CONTOURS - NOAA, 2019; GOOGLE EARTH, 2018.

LEGEND

Af	ARTIFICIAL FILL	GEOLOGIC CONTACT; QUERIED WHERE INFERRED	LARGE-DIAMETER BORING; TD=TOTAL DEPTH IN FEET
Qalp	ALLUVIUM	STRIKE AND DIP OF BEDDING	HOLLOW-STEM AUGER BORING FOR PIPELINE (NINYO & MOORE, 2020); TD=TOTAL DEPTH IN FEET
Qt	TERRACE DEPOSITS	STRIKE AND DIP OF CLAY SEAM	CROSS SECTION
Tco	CONEJO VOLCANICS		

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

N

FEET

0 150 300

211056001_SG.dwg 10/07/2020 (TANK / Oct. 2020) JDP, GK

FIGURE 5

SITE GEOLOGY

CIVIC CENTER IMPROVEMENTS PROJECT - SWEETWATER MESA TANK
MALIBU, CALIFORNIA

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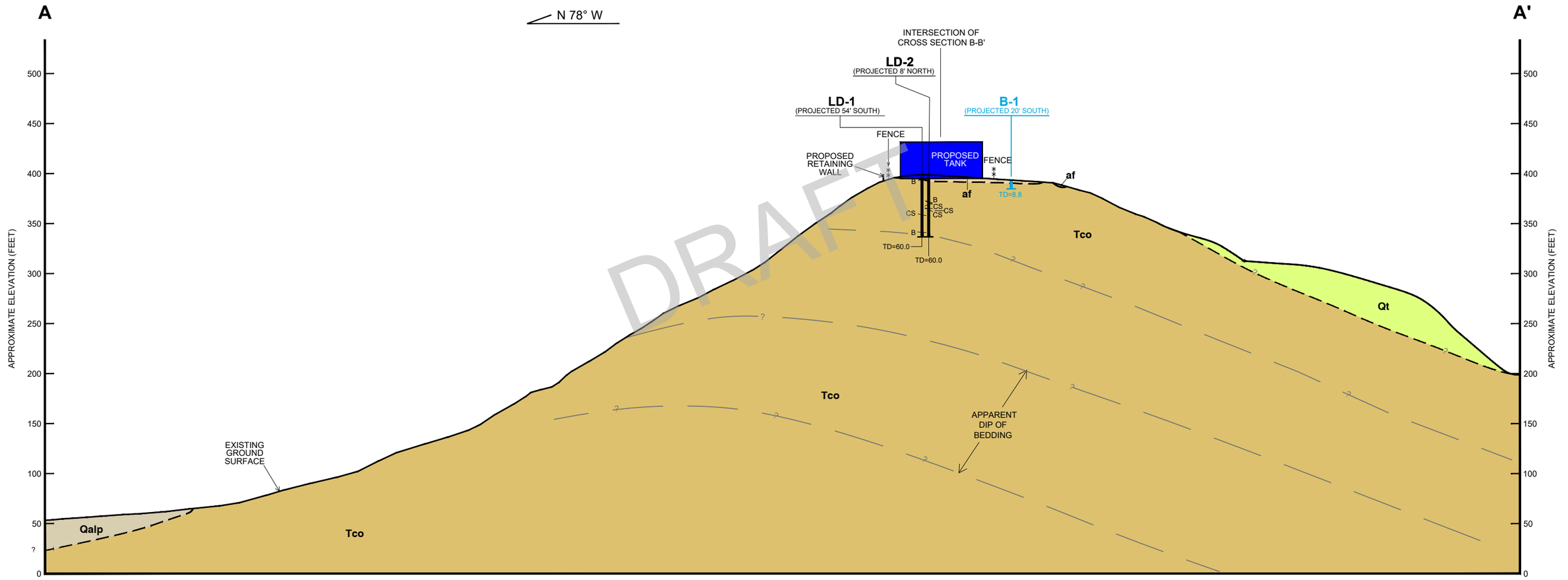

LEGEND

LD-2 (TD=60.0)	LARGE-DIAMETER BORING; TD=TOTAL DEPTH IN FEET
B-1 (TD= 8.8)	HOLLOW-STEM AUGER BORING FOR PIPELINE (NINYO & MOORE, 2020); TD=TOTAL DEPTH IN FEET
A — A'	CROSS SECTION
Af	ARTIFICIAL FILL
Qalp	ALLUVIUM
Qt	TERRACE DEPOSITS
Tco	CONEJO VOLCANICS
—?—	GEOLOGIC CONTACT

SCALE IN FEET
0 100 200

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: NOAA, 2019; CANNON, 2020.

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FIGURE 6

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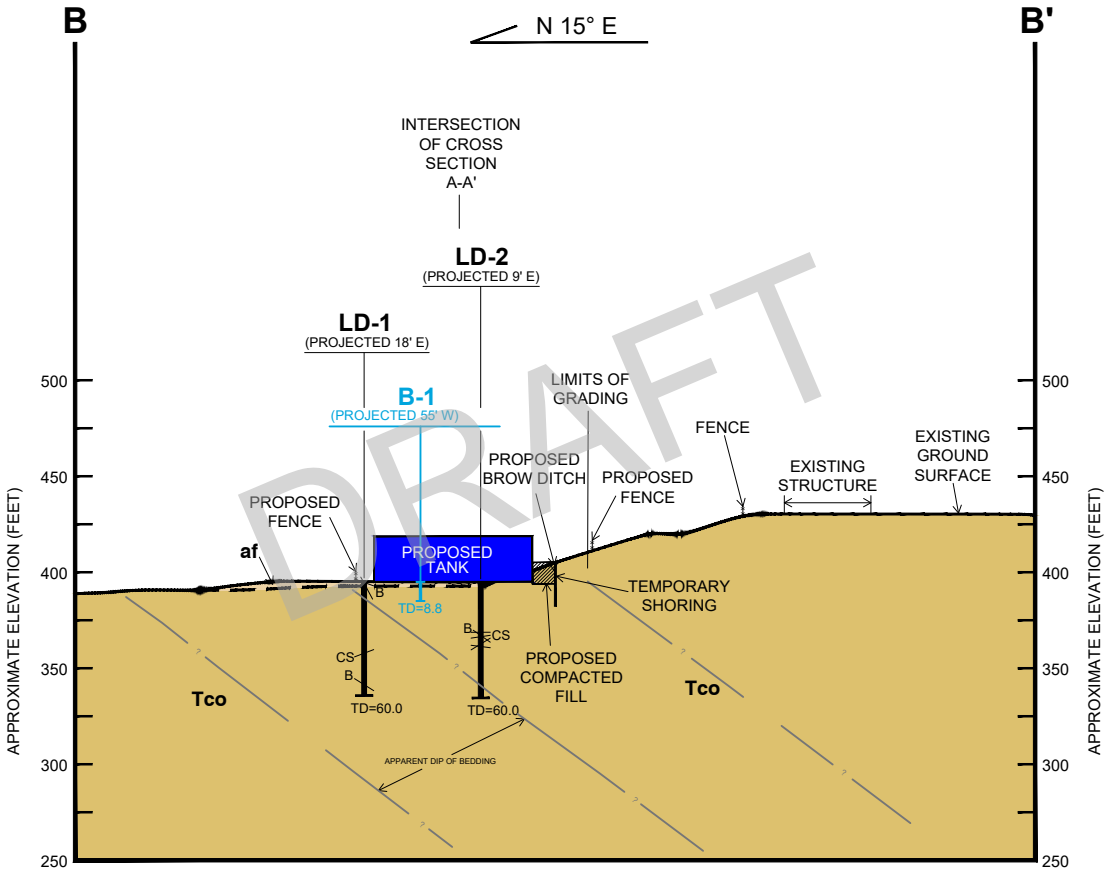
CROSS SECTION A-A'

CIVIC CENTER IMPROVEMENTS PROJECT - SWEETWATER MESA TANK
MALIBU, CALIFORNIA

211056001 I 10/20



LEGEND

LD-2 / TD=60.0 — LARGE-DIAMETER BORING; TD=TOTAL DEPTH IN FEET

B-1 / TD= 8.8 — HOLLOW-STEM AUGER BORING FOR PIPELINE (NINYO & MOORE, 2020); TD=TOTAL DEPTH IN FEET

B — B' — CROSS SECTION

af — ARTIFICIAL FILL

Tco — CONEJO VOLCANICS

GEOLOGIC CONTACT

SCALE IN FEET

0 100 200

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: NOAA, 2019; CANNON, 2020.

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FIGURE 7

CROSS SECTION B-B'

CIVIC CENTER IMPROVEMENTS PROJECT - SWEETWATER MESA TANK
MALIBU, CALIFORNIA

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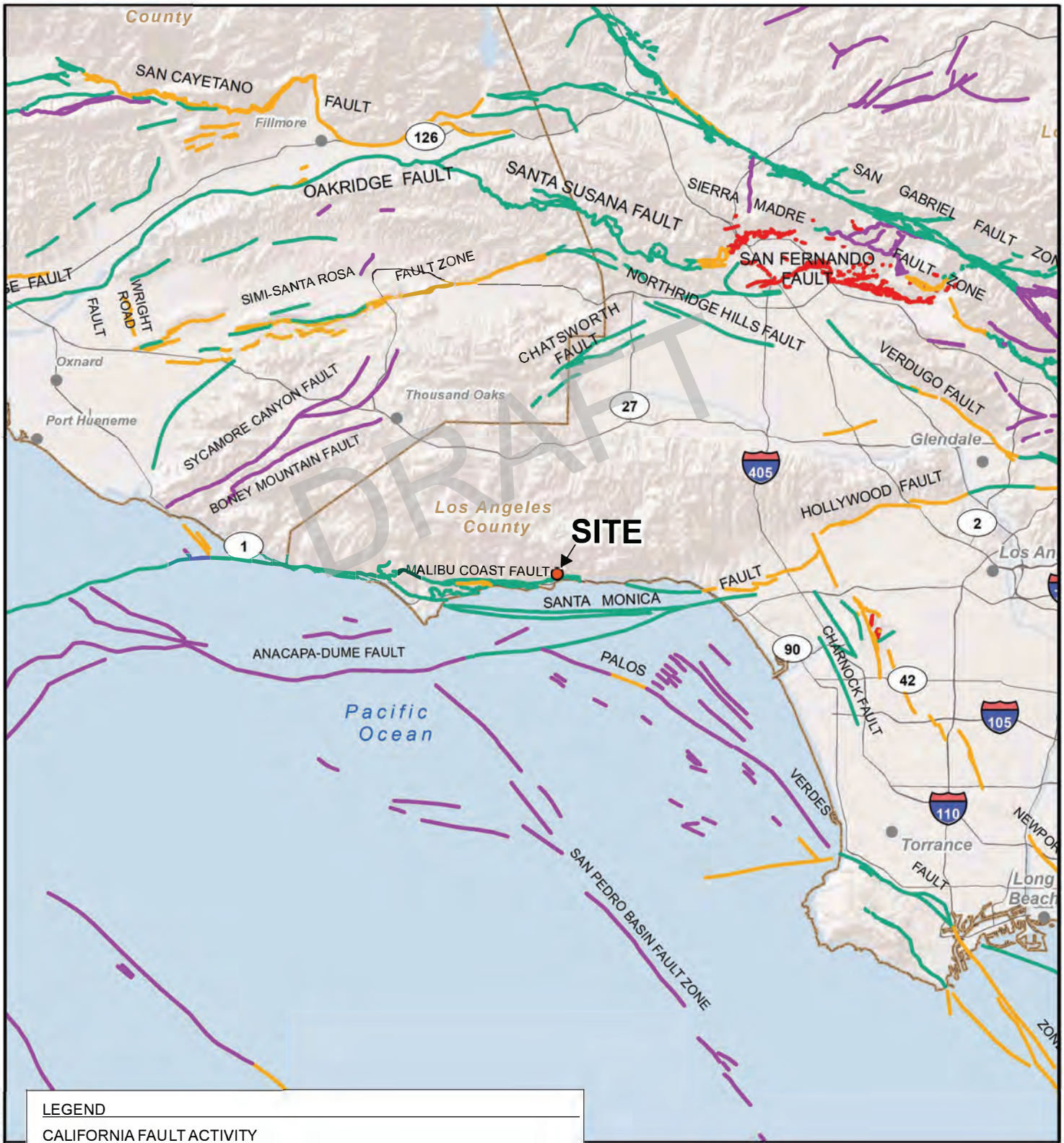

LEGEND

CALIFORNIA FAULT ACTIVITY

- HISTORICALLY ACTIVE
- HOLOCENE ACTIVE
- LATE QUATERNARY (POTENTIALLY ACTIVE)
- QUATERNARY (POTENTIALLY ACTIVE)
- QUATERNARY (INACTIVE)
- STATE/COUNTY BOUNDARY

SOURCES: CALIFORNIA DIVISION OF MINES AND GEOLOGY, 1976, ENVIRONMENTAL GEOLOGY OF ORANGE COUNTY, CALIFORNIA, OPEN FILE REPORT 79-8.; JENNINGS, C.W., AND BRYANT, 2010, FAULT ACTIVITY MAP OF CALIFORNIA; ESRI SHADED RELIEF, 2017

N

MILES

0 8 16

NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE.

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FIGURE 8

FAULT LOCATIONS

CIVIC CENTER IMPROVEMENTS PROJECT - SWEETWATER MESA TANK
MALIBU, CALIFORNIA

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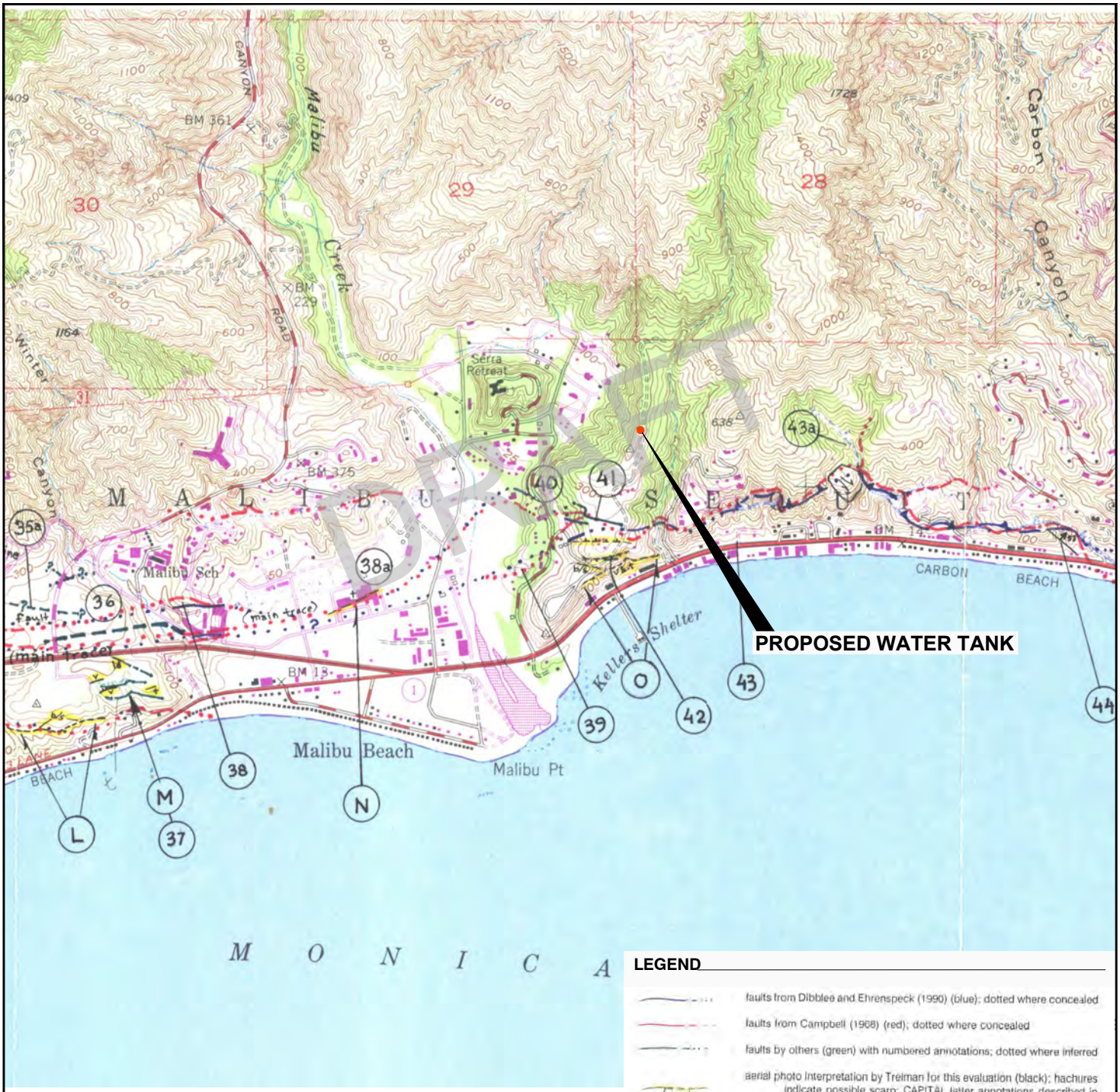

LEGEND

faults from Dibblee and Ehrenspeck (1990) (blue); dotted where concealed

faults from Campbell (1968) (red); dotted where concealed

faults by others (green) with numbered annotations; dotted where inferred

aerial photo interpretation by Treiman for this evaluation (black); hachures indicate possible scarp; CAPITAL letter annotations described in Table II; lower case letters as follows: b - topographic bench v - vegetational contrast or lineament (including kelp offshore)

numbered annotations indicate data or studies by others described in Table I; leader indicates specific locality

N

FEET

0 2,000 4,000

REFERENCES: TREIMAN, J.A., 1994, MALIBU COAST FAULT, LOS ANGELES COUNTY, CALIFORNIA, CALIFORNIA DEPARTMENT OF CONSERVATION, DIVISION OF MINES AND GEOLOGY, FAULT EVALUATION REPORT FER-229, DATED OCTOBER 3.

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NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

211056001_PAF.dwg 10/07/2020 (TANK / Oct. 2020) JDP

FIGURE 9

PROJECT AREA FAULTING

CIVIC CENTER IMPROVEMENTS PROJECT - SWEETWATER MESA TANK
MALIBU, CALIFORNIA

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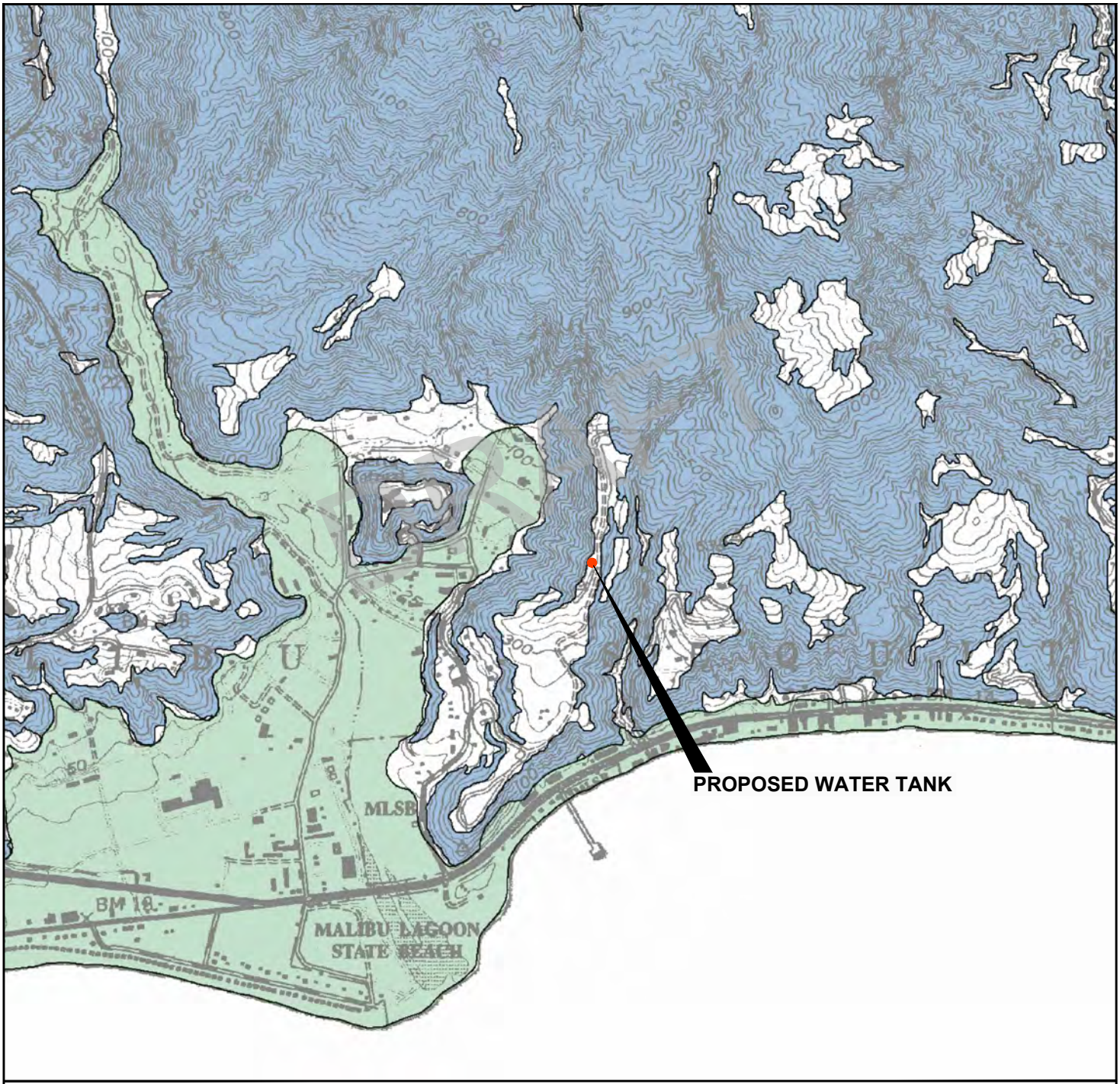

LEGEND

EARTHQUAKE-INDUCED LANDSLIDES
Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

LIQUEFACTION
Areas where historic occurrence of liquefaction, or local geological, geotechnical and groundwater conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: CDMG, 2001a.

N

FEET
0 1,500 3,000

211056001_SHZ.dwg 10/07/2020 (TANK / Oct. 2020) JDP

FIGURE 10

SEISMIC HAZARD ZONES

CIVIC CENTER IMPROVEMENTS PROJECT - SWEETWATER MESA TANK
MALIBU, CALIFORNIA

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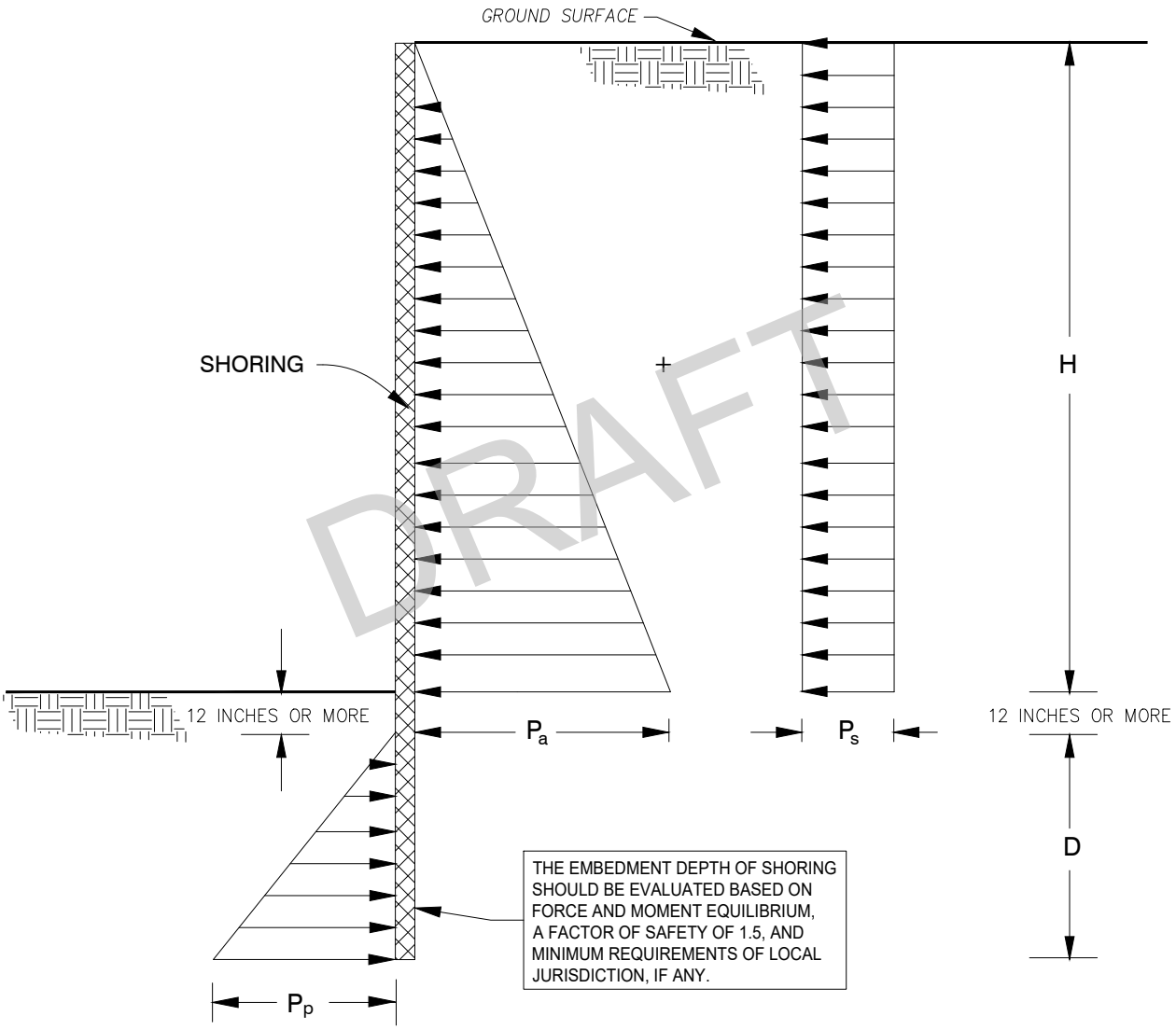

NOTES:

1. ACTIVE LATERAL EARTH PRESSURE, P_a
   P_a = 30H psf
2. CONSTRUCTION TRAFFIC INDUCED SURCHARGE PRESSURE, P_s
   P_s = 72 psf
3. PASSIVE LATERAL EARTH PRESSURE, P_p
   P_p = 450D psf
4. ASSUMES GROUNDWATER IS NOT PRESENT
5. H AND D ARE IN FEET

NOT TO SCALE

FIGURE 11

LATERAL EARTH PRESSURES FOR TEMPORARY CANTILEVERED SHORING

CIVIC CENTER IMPROVEMENTS PROJECT - SWEETWATER MESA TANK
MALIBU, CALIFORNIA

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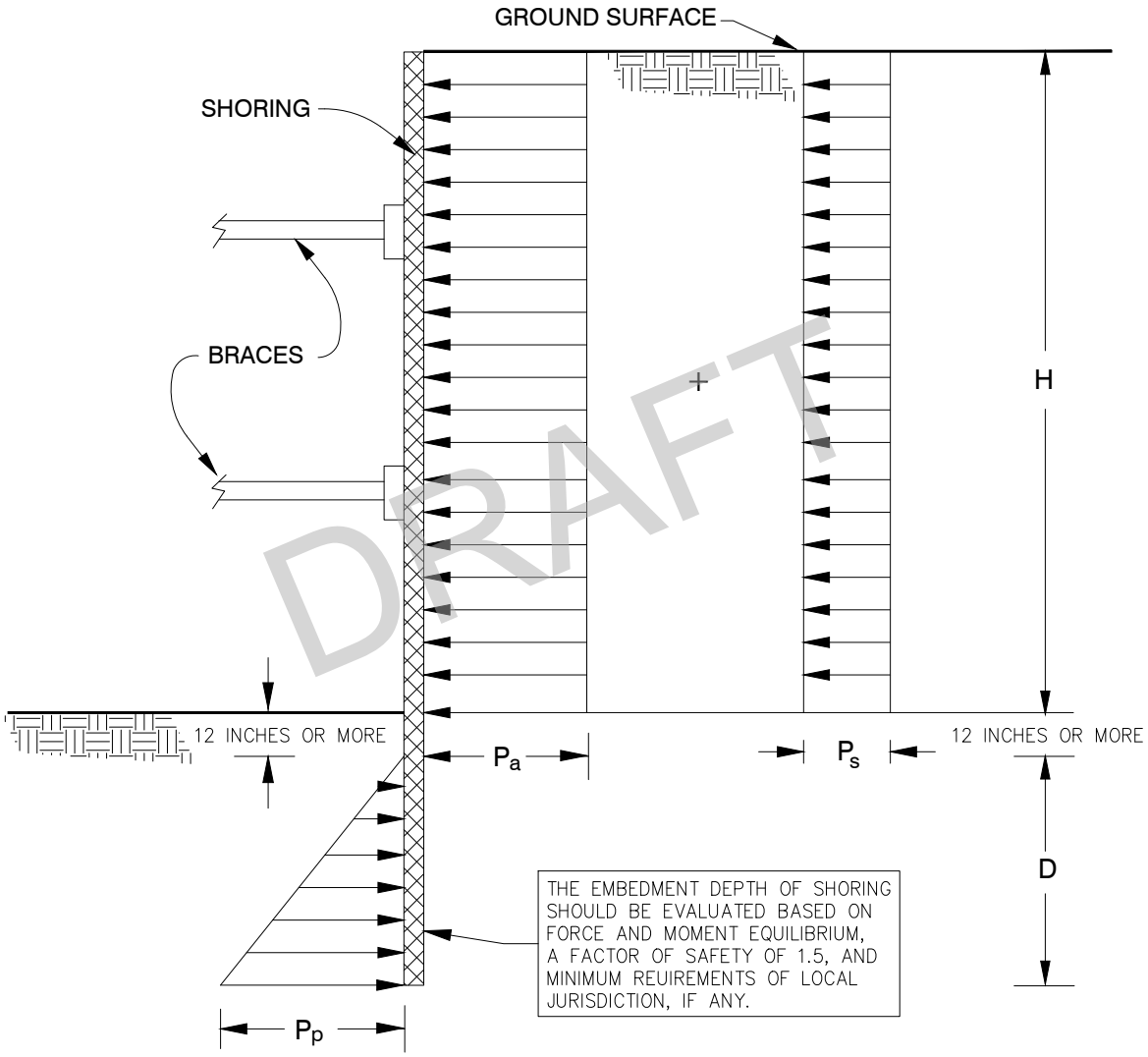

NOTES:

1. APPARENT LATERAL EARTH PRESSURE, P_a
   P_a = 20H psf
2. CONSTRUCTION TRAFFIC INDUCED SURCHARGE PRESSURE, P_s
   P_s = 120 psf
3. PASSIVE LATERAL EARTH PRESSURE, P_p
   P_p = 450D psf
4. ASSUMES GROUNDWATER IS NOT PRESENT
5. SURCHARGES FROM EXCAVATED SOIL OR CONSTRUCTION MATERIALS ARE NOT INCLUDED
6. H AND D ARE IN FEET

NOT TO SCALE

FIGURE 12

LATERAL EARTH PRESSURES FOR BRACED EXCAVATION

CIVIC CENTER IMPROVEMENTS PROJECT - SWEETWATER MESA TANK
MALIBU, CALIFORNIA

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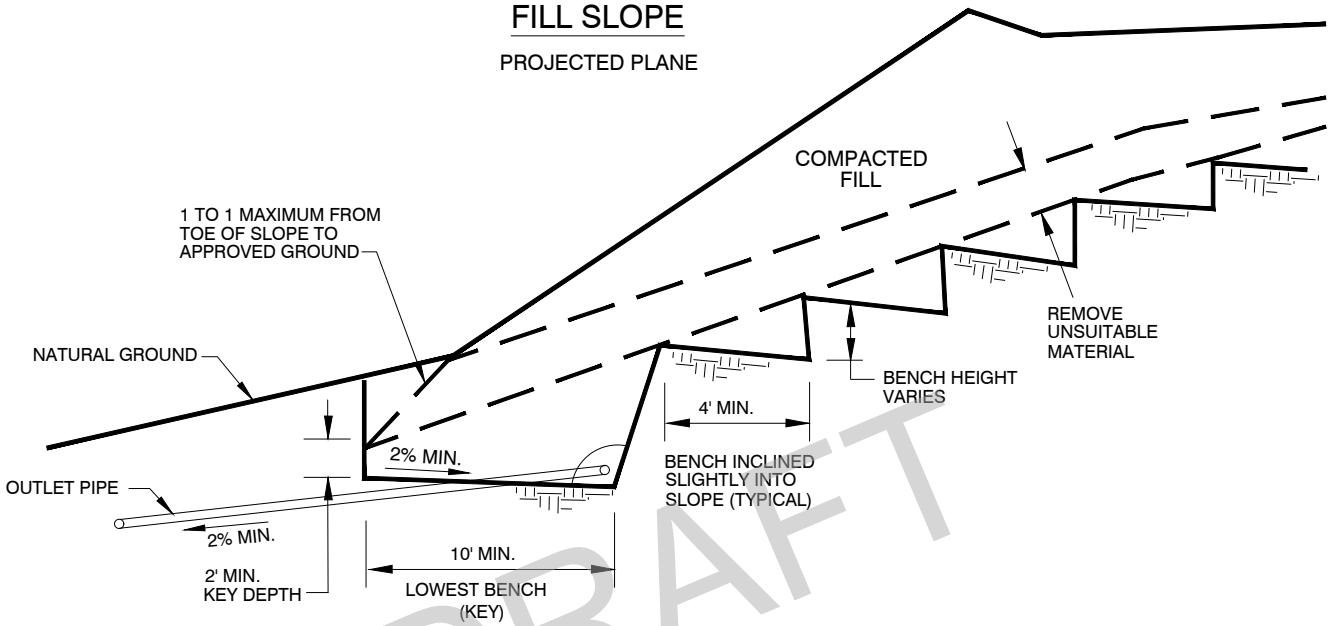
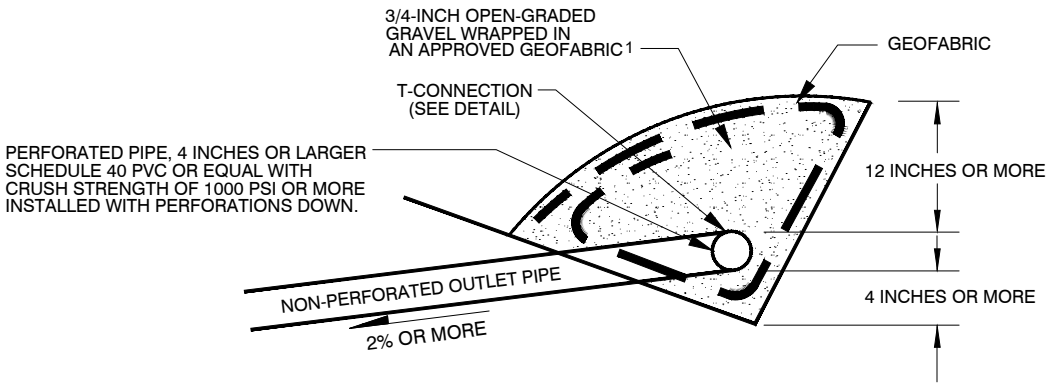
FILL SLOPE



SUBDRAIN DETAIL



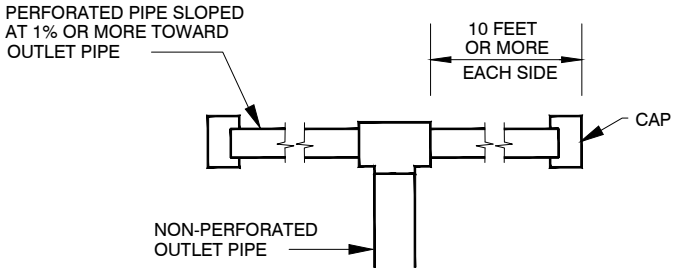
FILTER MATERIAL

FILTER MATERIAL SHALL BE CLASS II PERMEABLE MATERIAL PER STATE OF CALIFORNIA STANDARD SPECIFICATION OR APPROVED GRAVEL AND FILTER FABRIC WRAP ALTERNATIVE

CLASS II GRADATION

SIEVE SIZE	PERCENT PASSING
1"	100
3/4"	90-100
3/8"	40-100
No. 4	25-40
No. 8	18-33
No. 30	5-15

T-CONNECTION DETAIL



NOTE: [1]AS AN ALTERNATIVE, AN APPROVED GEOCOMPOSITE DRAIN SYSTEM MAY BE USED.

NOT TO SCALE

FIGURE 13

KEYING AND BENCHING DETAIL

CIVIC CENTER IMPROVEMENTS PROJECT - SWEETWATER MESA TANK
MALIBU, CALIFORNIA

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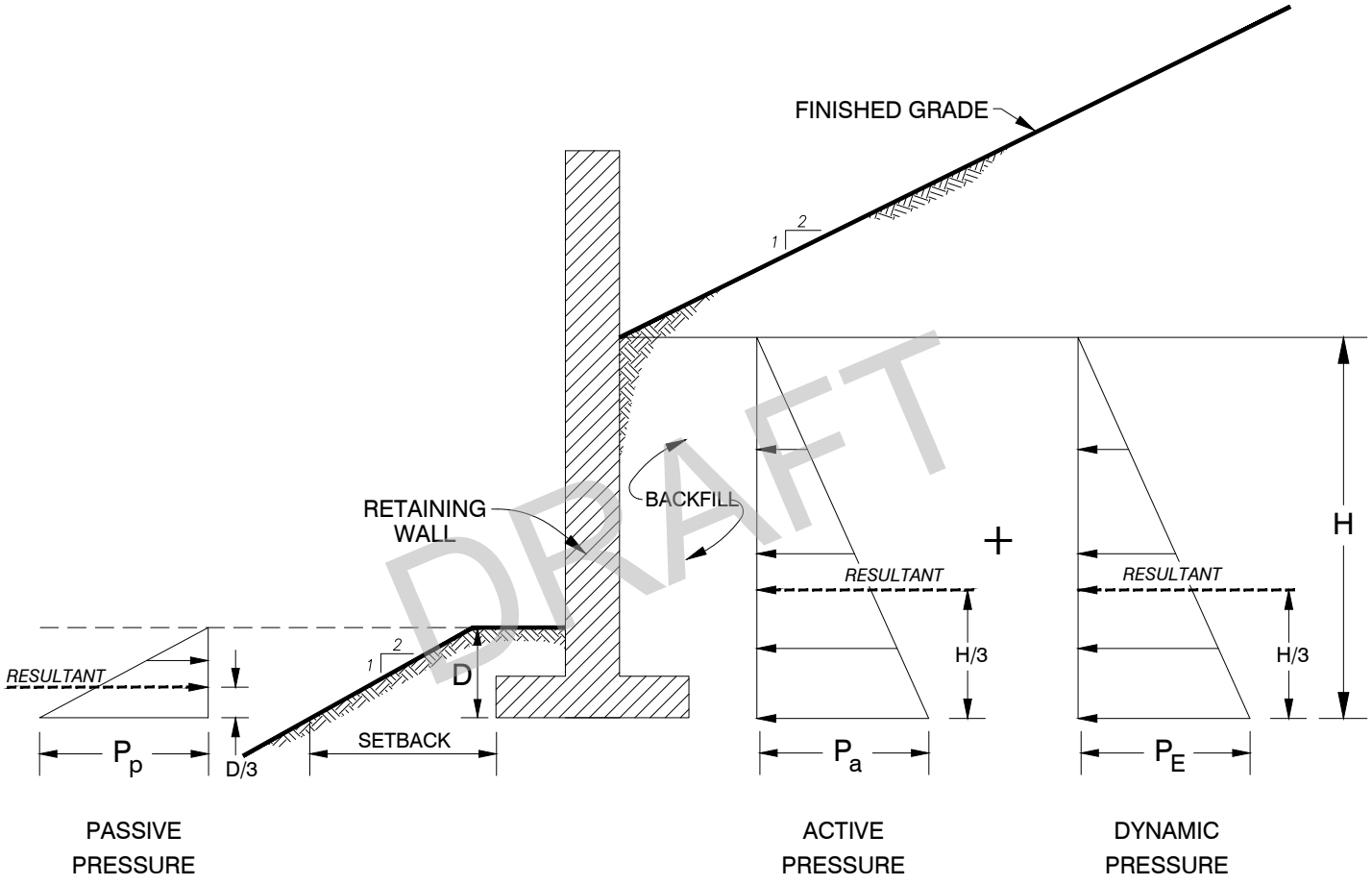

NOTES:

1. ASSUMES NO HYDROSTATIC PRESSURE BUILD-UP BEHIND THE RETAINING WALL
2. STRUCTURAL, GRANULAR BACKFILL MATERIALS AS SPECIFIED IN GREENBOOK SHOULD BE USED FOR RETAINING WALL BACKFILL
3. DRAINS AS RECOMMENDED IN THE RETAINING WALL DRAINAGE DETAIL SHOULD BE INSTALLED BEHIND THE RETAINING WALL
4. DYNAMIC LATERAL EARTH PRESSURE IS BASED ON A MAPPED DESIGN PEAK GROUND ACCELERATION OF 0.89 g
5. P_E IS CALCULATED IN ACCORDANCE WITH THE RECOMMENDATIONS OF MONONOBE AND MATSUO (1929), AND ATIK AND SITAR (2010).
6. SURCHARGE PRESSURES CAUSED BY VEHICLES OR NEARBY STRUCTURES ARE NOT INCLUDED
7. H AND D ARE IN FEET
8. SETBACK SHOULD BE IN ACCORDANCE WITH FIGURE 1808.7.1 OF THE CBC (2019)

RECOMMENDED GEOTECHNICAL DESIGN PARAMETERS

Lateral Earth Pressure	Equivalent Fluid Pressure ($lb/ft^2/ft$)[1]	
P_a	Level Backfill with Granular Soils[2]	2H:1V Sloping Backfill with Granular Soils[2]
	30H	42H
P_E	18H	18H
P_p	Level Ground	2H:1V Descending Ground
	450D	180D

NOT TO SCALE

FIGURE 14

LATERAL EARTH PRESSURES FOR YIELDING RETAINING WALLS

CIVIC CENTER IMPROVEMENTS PROJECT - SWEETWATER MESA TANK
MALIBU, CALIFORNIA

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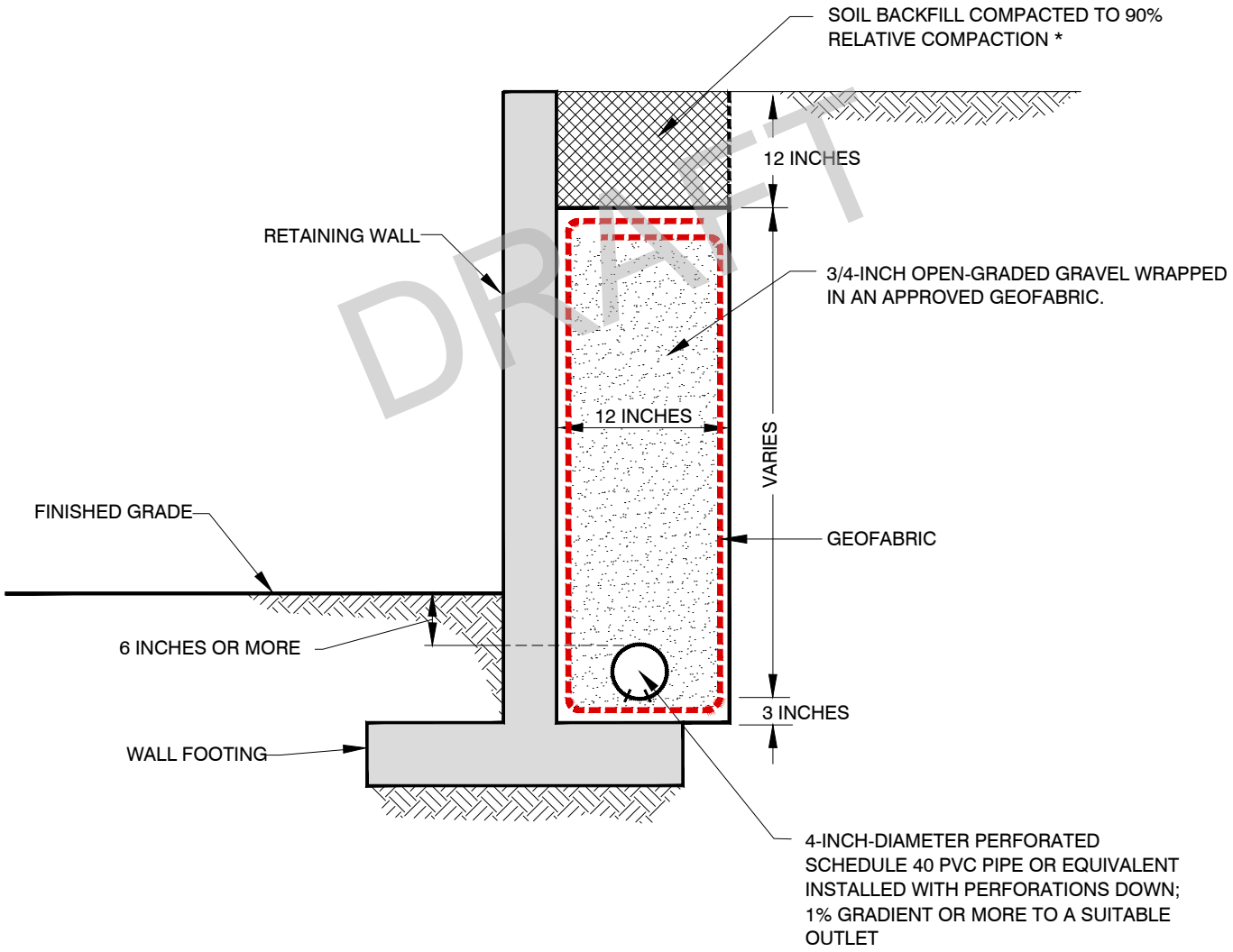

*BASED ON ASTM D1557

NOT TO SCALE

FIGURE 15

RETAINING WALL DRAINAGE DETAIL

CIVIC CENTER IMPROVEMENTS PROJECT - SWEETWATER MESA TANK
MALIBU, CALIFORNIA

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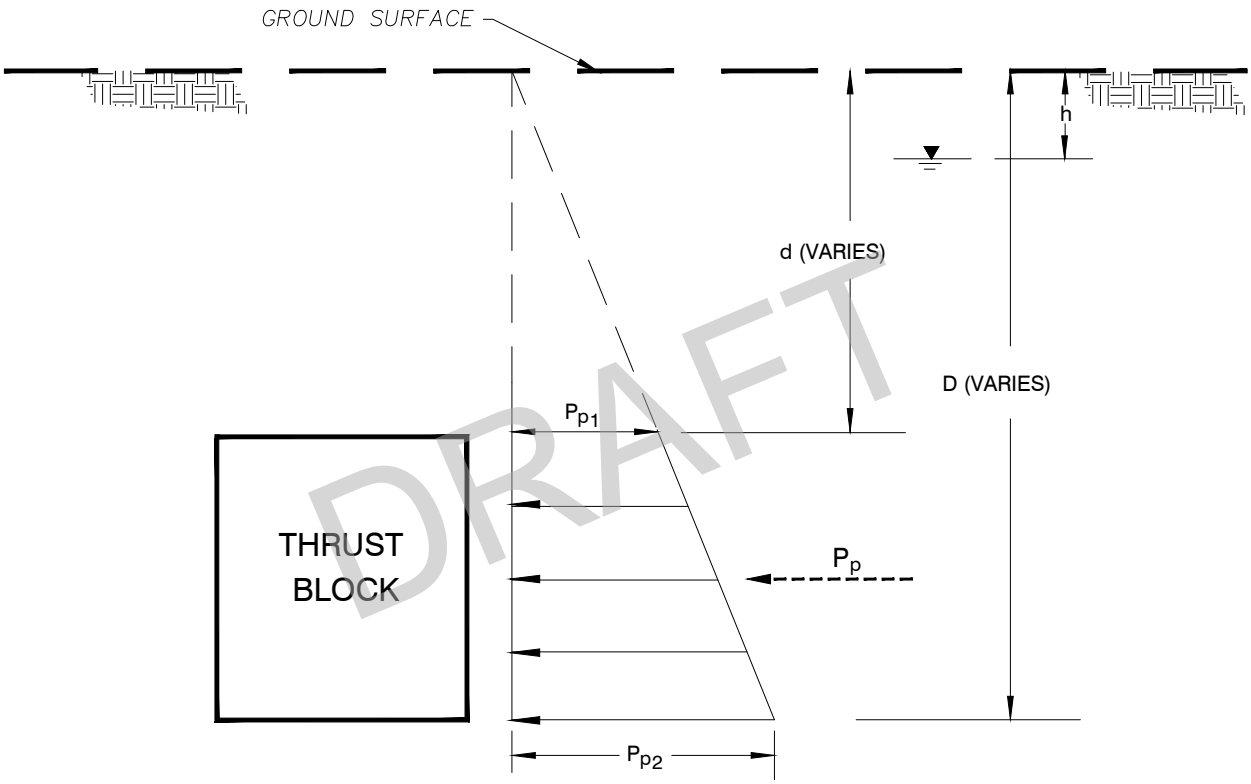

NOTES:

1. GROUNDWATER BELOW BLOCK
   $P_p = 230(D^2-d^2)$ lb/ft
2. ASSUMES BACKFILL IS GRANULAR MATERIAL
3. ASSUMES THRUST BLOCK IS ADJACENT TO COMPETENT MATERIAL
4. D, d AND h ARE IN FEET
5. GROUNDWATER TABLE

NOT TO SCALE

FIGURE 16

THRUST BLOCK LATERAL EARTH PRESSURE DIAGRAM

CIVIC CENTER IMPROVEMENTS PROJECT - SWEETWATER MESA TANK
MALIBU, CALIFORNIA

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APPENDIX A

Large-Diameter Boring Logs

APPENDIX A

LARGE-DIAMETER BORING LOGS

Field Procedure for the Collection of Disturbed Samples
Disturbed soil samples were obtained in the field using the following method.

Bulk Samples
Bulk samples of representative earth materials were obtained from the exploratory borings. The samples were bagged and transported to the laboratory for testing.

Field Procedure for the Collection of Relatively Undisturbed Samples
Relatively undisturbed soil samples were obtained in the field using the following methods.

The Modified Split-Barrel Drive Sampler
The sampler, with an external diameter of 3 inches, was lined with 1-inch-long, thin brass rings with inside diameters of approximately 2.4 inches. The sample barrel was driven into the ground with the weight of a hammer in general accordance with ASTM D 3550. The driving weight was permitted to fall freely. The approximate length of the fall, the weight of the hammer, and the number of blows per foot of driving are presented on the boring logs as an index to the relative resistance of the materials sampled. The samples were removed from the sample barrel in the brass rings, sealed, and transported to the laboratory for testing.

Chunk Samples
Chunk samples consisting of coherent blocks of relatively undisturbed material were collected from the borings. These samples were sealed tightly in plastic bags and transported to the laboratory for testing.

DATE DRILLED 8/21/19 BORING NO. LD-1

GROUND ELEVATION 395' ± (MSL) SHEET 1 OF 4

METHOD OF DRILLING EZ Bore 24" Bucket (Roy Brothers Drilling)

DRIVE WEIGHT See End of Log DROP 12"

SAMPLED BY AES LOGGED BY AES/JRS REVIEWED BY GMC

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	BULK DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SC	FILL: Brown to light brown, moist, medium dense, clayey SAND; trace rootlets and gravel. Irregular contact; intermixed with basalt below.
5			6	18.2	–			CONEJO VOLCANICS: Dark gray, moist, moderately hard, BASALT; weathered; blocky texture; moderately fractured, oxidation staining on fractures; few randomly oriented fractures infilled with calcite and up to approximately 1/2-inch wide. @ 2.5': Approximately 1- to 2-inch-thick bed of light yellowish white, very soft to soft, tuff; weathered; punky texture. @ 4': Approximately 8-inch-thick bed of white to light gray, moderately soft, volcanic breccia; gravel-sized clasts within very light brown sandy matrix. @ 5': Becomes less weathered. @ 5.5': f: N89°E, 22°N; approximately 1/8- to 1/2-inch wide; infilled with light brown clayey sand and calcite.
10			5	7.4	–			@ 7': f: N20°E, 15°N; approximately 1/8-inch wide; infilled with calcite; discontinuous. @ 11': j: N86°E, 54°N; approximately 1/32-inch wide; infilled with light reddish brown sand; oxidation staining on surfaces. @ 11' - 12': Becomes more weathered; zone of increased randomly oriented fractures; breaks easily.
15			6	16.0	–			@ 13.5': Becomes moderately soft to moderately hard. @ 14' - 16': Zone of increased randomly oriented fractures; less than 1/8-inch wide; infilled with calcite; oxidation staining on surfaces. @ 16': Becomes less weathered and hard to very hard.
20								@ 19': fs: N61°E, 44-52°N; infilled with white calcite and clayey sand.

DATE DRILLED 8/21/19 BORING NO. LD-1

GROUND ELEVATION 395' ± (MSL) SHEET 2 OF 4

METHOD OF DRILLING EZ Bore 24" Bucket (Roy Brothers Drilling)

DRIVE WEIGHT See End of Log DROP 12"

SAMPLED BY AES LOGGED BY AES/JRS REVIEWED BY GMC

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	BULK DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20		■	6	15.7	–			CONEJO VOLCANICS: (Continued) Dark gray, moist, moderately soft to moderately hard, BASALT; weathered; moderately fractured; oxidation staining on fracture surfaces; occasionally infilled with white to yellowish brown calcite and light yellow sand. @ 22.5': f: N72°E, 46°N; approximately 1/2-inch wide; infilled with calcite and light yellow sand; f: N31°E, 20°S; approximately 1/16-inch wide; infilled with calcite; f: N68°E, 38°N, approximately 1/16-inch wide; infilled with calcite. @ 24': f: N50°E, 31°N; approximately 1/16-inch wide; infilled with calcite.
	■				136.5			
25		■	15/10"	16.1	–			@ 25': f: N59°W, 37°N. @ 27' - 30': fs: N45°E, 25-45°N; zone of increased fractures ranging from approximately 1/4-inch to 1-inch wide; infilled with calcite and light brown sand.
30		■	16	10.3	–			@ 30': Becomes more weathered; randomly oriented fractures infilled with sand. @ 32.5': f: N50°E, 35°N; approximately 1/4-inch wide; infilled with calcite.
35	■							
		■	12	13.6	–			Slow drilling. @ 37.5': cs: N38°W, 19°N; light yellowish brown, moist, soft, sandy clay; approximately 3-inches thick; planar; rough. @ 38': Becomes very dark gray to black; hard.
40	■							

FIGURE A- 2

DATE DRILLED 8/21/19 BORING NO. LD-1

GROUND ELEVATION 395' ± (MSL) SHEET 3 OF 4

METHOD OF DRILLING EZ Bore 24" Bucket (Roy Brothers Drilling)

DRIVE WEIGHT See End of Log DROP 12"

SAMPLED BY AES LOGGED BY AES/JRS REVIEWED BY GMC

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	BULK DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
40								CONEJO VOLCANICS: (Continued) Very dark gray, moist, moderately hard to hard, BASALT; weathered; slightly fractured.
45								
50				–	143.3			Hard; decrease in fracturing.
55								@ 55': b: N85°W, 28°S; approximately 1-inch-thick bed of light yellowish white, moderately soft to moderately hard, tuff; punky texture. Downhole logged to 58 feet.
60								

FIGURE A- 3

DATE DRILLED 8/21/19 BORING NO. LD-1

GROUND ELEVATION 395' ± (MSL) SHEET 4 OF 4

METHOD OF DRILLING EZ Bore 24" Bucket (Roy Brothers Drilling)

DRIVE WEIGHT See End of Log DROP 12"

SAMPLED BY AES LOGGED BY AES/JRS REVIEWED BY GMC

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	BULK DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
60								Total Depth = 60.0 feet. Downhole logged to approximately 58 feet. Groundwater was not encountered during drilling or logging. Backfilled with 1-sack sand slurry and capped with approximately 1-foot thick layer of on-site soil on 8/22/19. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents. Drive Weights: 0' - 25' = 4,900 lbs. 25' - 50' = 3,900 lbs.
65								
70								
75								
80								

DATE DRILLED 8/19/19 BORING NO. LD-2

GROUND ELEVATION 395' ± (MSL) SHEET 1 OF 4

METHOD OF DRILLING EZ Bore 24" Bucket (Roy Brothers Drilling)

DRIVE WEIGHT See End of Log DROP 12"

SAMPLED BY AES LOGGED BY AES/JRS REVIEWED BY GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	BULK DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	FILL: Light brown, moist, medium dense, silty SAND; few gravel of basalt; trace rootlets; trace cobble-sized pieces of concrete debris; approximately 4 feet thick on the north side; approximately 1 foot thick on the south side. Irregular contact; intermixed with basalt below.
5		6	16.6	-			CONEJO VOLCANICS: Dark brown to very dark brown, moist, soft to moderately soft, BASALT; weathered; blocky texture; intensely fractured; oxidation staining on fractures; fractures infilled with calcite and up to approximately 1/2-inch wide. @ 3.5': f: N80°E, 70°S. @ 3.5': j: N85°W, 60°N; j: N80°W, 57°N; j: N80°E, 55°N. @ 4.0': f: N70°W, 65°S. @ 5': Few randomly oriented fractures infilled with dark brown clay and black calcium carbonate; red oxidation staining on fracture surfaces. @ 5': js: N70°W, 50-60°N. @ 5': Moderately soft to hard; weathered; becomes moderately fractured; oxidation staining on fracture surfaces.
10		5	11.8	-			@ 8': js: N70-85°W, 55-60°N; abundant jointing; approximately 1- to 2-inch spacing. @ 8': f: N30°W, 65°S. @ 9': Blocky weathering; basalt weathered to sandy clay; randomly oriented fractures infilled with calcite and up to approximately 1/4-inch wide.
15		4	12.6				@ 14': f: N28°E, 72°N; approximately 1/8-inch to 1-inch wide; infilled with calcite and dark brown, platy basalt. @ 15' - 16.5': Intensely weathered zone; becomes highly fractured; minor caving; randomly oriented fractures up to approximately 1/8- to 1/4-inch wide and infilled with light yellowish brown clayey sand and light yellowish white bentonite clay. @ 15': f: N45°E, 50°N; approximately 1/4-inch wide; infilled with white calcite crystals. @ 16': Becomes moderately hard to hard; randomly oriented fractures infilled with calcite and approximately 1/8- to 1/2-inch wide; red oxidation on fracture surfaces.
20							@ 19.5': j: N15°W, 62°N.

DATE DRILLED 8/19/19 BORING NO. LD-2

GROUND ELEVATION 395' ± (MSL) SHEET 2 OF 4

METHOD OF DRILLING EZ Bore 24" Bucket (Roy Brothers Drilling)

DRIVE WEIGHT See End of Log DROP 12"

SAMPLED BY AES LOGGED BY AES/JRS REVIEWED BY GMC

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	BULK DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20		■	6	15.3	-	▨		CONEJO VOLCANICS: (Continued) Dark gray to dark brown, moist, moderately soft to moderately hard, BASALT; weathered; slightly fractured; fractures infilled with calcite and up to approximately 1-inch wide.
								@ 24.5': f: N87°E, 8°N; approximately 1/4- to 1-inch wide; infilled with white calcite.
25		■	10	16.1	-			@ 25-25.5': b: N15°E, 17°S; Light brown, moist, basaltic sandstone. @ 25.5': b: N10°E, 24°S; approximately 1/8- to 1/2-inch-thick bed of yellowish white, moist, soft, tuff.
								@ 27': fs: N62E/NW; approximately 1/8-inch wide; infilled with calcite. @ 27.5': cs: N80°W, 36°S; light brown, moist, soft, sandy clay with calcite; approximately 1/4-inch thick. @ 27.5': cs: N62°E, 30°N; light brown, moist, soft, sandy clay with calcite; approximately 1/8-inch thick; discontinuous; cut by clay seam above.
30		■	11	9.2	-			Oxidation staining on fracture surfaces.
				⚲				@ 31.5': cs: N80°W, 30°N; light brown, moist, soft, sandy clay; approximately 1/4-inch thick. @ 32': Becomes moderately hard to hard. @ 32.5': cs: N05°E, 25°S; hard, sandy clay and calcite; approximately 1/8- to 3-inch thick; minor seepage. @ 32.5': Becomes very dark gray to black basalt.
35		■						
								@ 38': Becomes hard to very hard.
40								

DATE DRILLED 8/19/19 BORING NO. LD-2

GROUND ELEVATION 395' ± (MSL) SHEET 3 OF 4

METHOD OF DRILLING EZ Bore 24" Bucket (Roy Brothers Drilling)

DRIVE WEIGHT See End of Log DROP 12"

SAMPLED BY AES LOGGED BY AES/JRS REVIEWED BY GMC

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	BULK DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
40								CONEJO VOLCANICS: (Continued) Very dark gray to black, moist, hard to very hard, BASALT; weathered; slightly fractured; fractures infilled with calcite and up to approximately 2-inches wide.
				♀				@ 42': Seepage. @ 42.5': f: N05°E, 25°S; approximately 1/2- to 2-inch wide.
								@ 44': Becomes dark gray to black.
45								
								@ 47': Becomes hard to very hard.
50								@ 52': Becomes very hard.
								@ 54': f: N60°E, 80°S; approximately 1/8-inch wide; infilled with calcite.
55								Downhole logged to 59 feet.
60								

DATE DRILLED 8/19/19 BORING NO. LD-2

GROUND ELEVATION 395' ± (MSL) SHEET 4 OF 4

METHOD OF DRILLING EZ Bore 24" Bucket (Roy Brothers Drilling)

DRIVE WEIGHT See End of Log DROP 12"

SAMPLED BY AES LOGGED BY AES/JRS REVIEWED BY GMC

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	BULK DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
60								Total Depth = 60.0 feet. Downhole logged to approximately 59 feet. Groundwater was not encountered during drilling or logging. Seepage encountered at approximately 42 feet during logging. Backfilled with 1-sack sand slurry and capped with approximately 1-foot of on-site soil on 8/22/19. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents. Drive Weights: 0' - 25' = 4,900 lbs. 25' - 50' = 3,900 lbs.
65								
70								
75								
80								

APPENDIX B

Hollow-Stem-Auger Boring Logs
(Ninyo & Moore, 2020)

APPENDIX B

HOLLOW-STEM-AUGER BORING LOGS

Field Procedure for the Collection of Disturbed Samples
Disturbed soil samples were obtained in the field using the following method.

Bulk Samples
Bulk samples of representative earth materials were obtained from the exploratory borings. The samples were bagged and transported to the laboratory for testing.

Field Procedure for the Collection of Relatively Undisturbed Samples
Relatively undisturbed soil samples were obtained in the field using the following method.

The Modified Split-Barrel Drive Sampler
The sampler, with an external diameter of 3 inches, was lined with 1-inch-long, thin brass rings with inside diameters of approximately 2.4 inches. The sample barrel was driven into the ground with the weight of a hammer in general accordance with ASTM D 3550. The driving weight was permitted to fall freely. The approximate length of the fall, the weight of the hammer, and the number of blows per foot of driving are presented on the boring logs as an index to the relative resistance of the materials sampled. The samples were removed from the sample barrel in the brass rings, sealed, and transported to the laboratory for testing.

DATE DRILLED 8/19/19 BORING NO. B-1

GROUND ELEVATION 395' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY AES LOGGED BY AES REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							CL	FILL: Dark brown, moist, firm to stiff, lean CLAY; few to little fine sand.
							SM	Brown, moist, medium dense to dense, silty SAND; trace gravel and cobbles.
5			50/4"					CONEJO VOLCANICS: Dark brown to light brown, moist, moderately soft to moderately hard, VOLCANIC ROCK; fractured; weathered; oxidation staining.
			50/4"					
10								Total Depth = 8.8 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils on 8/19/19. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
15								
20								

DATE DRILLED 3/4/20 BORING NO. B-2

GROUND ELEVATION 390' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	ASPHALT CONCRETE: Approximately 3 inches thick.
							CL	AGGREGATE BASE: Brown, moist, medium dense to dense, gravelly SAND; approximately 3 inches thick.
								ASPHALT CONCRETE: Approximately 3 inches thick.
								FILL: Brown, moist, firm to stiff, lean CLAY; trace roots and metal debris.
5			76	11.2	110.7			CONEJO VOLCANICS: Dark brown, moist, moderately soft to hard, VOLCANIC ROCK; weathered; oxidation staining; moderately to highly fractured; fractures unfilled with red clay.
			50/4"					Increase in weathering.
10								Total Depth = 9.3 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with rapid-set concrete on 3/4/20.
								Notes: Boring cleared to 5 feet below the ground surface using hydro-vacuum equipment (C-Below) on 1/17/20.
								Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
15								The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
20								

DATE DRILLED 3/4/20 BORING NO. B-3

GROUND ELEVATION 378' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	ASPHALT CONCRETE: Approximately 3 inches thick.
						CL	AGGREGATE BASE: Brown, moist, medium dense, gravelly SAND; trace roots; approximately 4 inches thick.
							ASPHALT CONCRETE: Approximately 3 inches thick.
							FILL: Brown, moist, stiff, lean CLAY.
							CONEJO VOLCANICS: Brown to dark gray, moist, moderately soft to moderately hard, VOLCANIC ROCK; weathered; moderately to highly fractured; fractures infilled with red clay.
5		50/4"					
		50/4"					
							Total Depth = 8.8 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with rapid-set concrete on 3/4/20.
10							Notes: Boring cleared to 5 feet below the ground surface using hydro-vacuum equipment (C-Below) on 1/17/20.
							Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
15							
20							

FIGURE A- 3

DATE DRILLED 3/3/20 BORING NO. B-4

GROUND ELEVATION 340' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							PORTLAND CEMENT CONCRETE: Approximately 5 inches thick.
						CL	FILL: Dark brown, moist, stiff, lean CLAY.
							CONEJO VOLCANICS: Brown, moist, soft to moderately soft, VOLCANIC ROCK; weathered; moderately to highly fractured; trace calcium carbonate stringers.
5		34					
		32	17.4	89.6			
10							Total Depth = 10.0 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with rapid-set concrete on 3/3/20.
							Notes: Boring cleared to 5 feet below the ground surface using hydro-vacuum equipment (C-Below) on 1/16/20.
							Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
15							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
20							

APPENDIX C

Laboratory Testing

APPENDIX C

LABORATORY TESTING

Classification
Soils were visually and texturally classified in accordance with the Unified Soil Classification System (USCS) in general accordance with ASTM D 2488. Soil classifications are indicated on the logs of the exploratory borings in Appendices A and B.

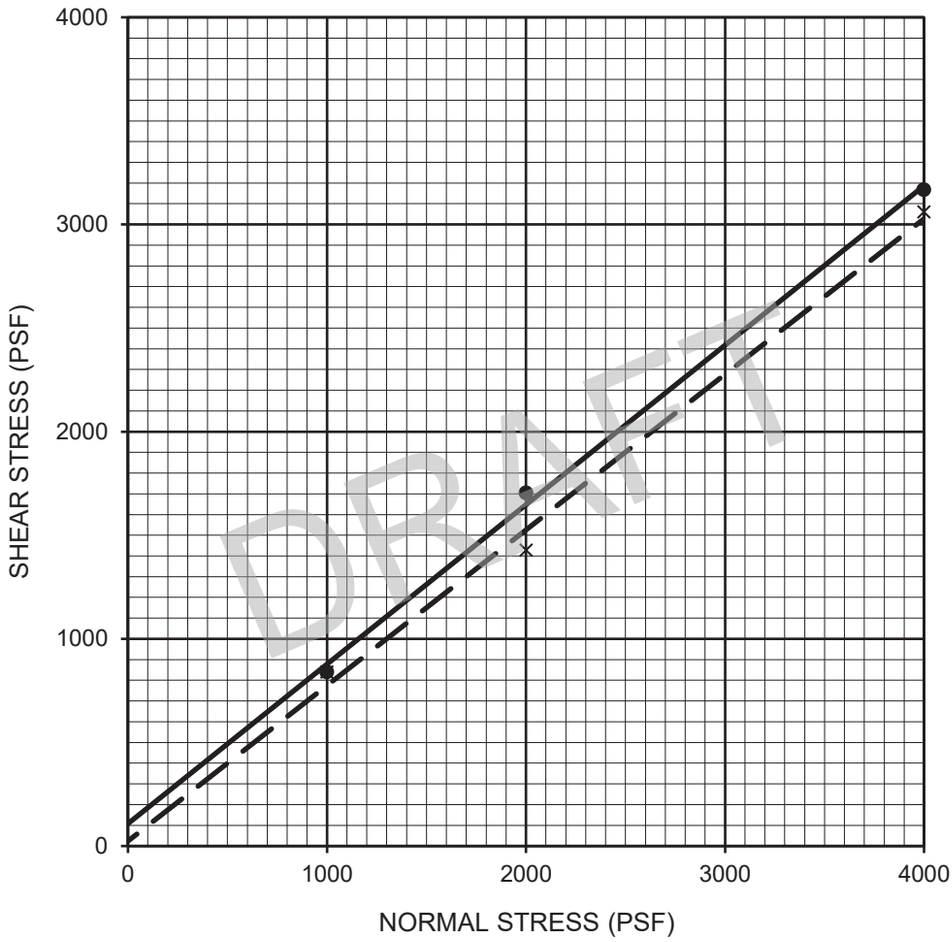
Moisture Content
The moisture content of samples obtained from the exploratory borings was evaluated in accordance with ASTM D 2216. The test results are presented on the logs of the large-diameter borings in Appendix A.

In-Place Bulk Density Tests
The bulk density of relatively undisturbed chunk samples obtained from the exploratory borings were evaluated by wax immersion in general accordance with ASTM C 914. The test results are presented on the logs of the large-diameter borings in Appendix A.

In-Place Moisture and Density Tests
The moisture content and dry density of relatively undisturbed samples obtained from the exploratory borings were evaluated in general accordance with ASTM D 2937. The test results are presented on the logs of the hollow-stem-auger borings in Appendix B.

Direct Shear Test
A direct shear test was performed on a relatively undisturbed sample in general accordance with ASTM D 3080 to evaluate the shear strength characteristics of the selected material. The sample was inundated during shearing to represent adverse field conditions. The results are shown on Figures C-1 and C-2.

Soil Corrosivity Tests
Soil pH and resistivity tests were performed on a representative sample in general accordance with California Test (CT) 643. The soluble sulfate and chloride content of the selected sample was evaluated in general accordance with CT 417 and CT 422, respectively. The test results are presented on Figure C-3.



Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Equivalent Soil Type
VOLCANIC ROCK	—●—	B-4	5.0-6.5	Peak	110	38	SC
VOLCANIC ROCK	– –X– –	B-4	5.0-6.5	Ultimate	25	37	SC

Sample Number	Normal Stress (psf)	Moisture Content (%)		Dry Density (pcf)	Degree of Saturation (%)	
		Before Test	After Test		Before Test	After Test
A	1,000	26.0	34.9	79.6	64.0	85.8
B	2,000	26.4	33.4	87.6	78.8	99.7
C	4,000	25.9	34.3	82.7	68.7	90.9

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

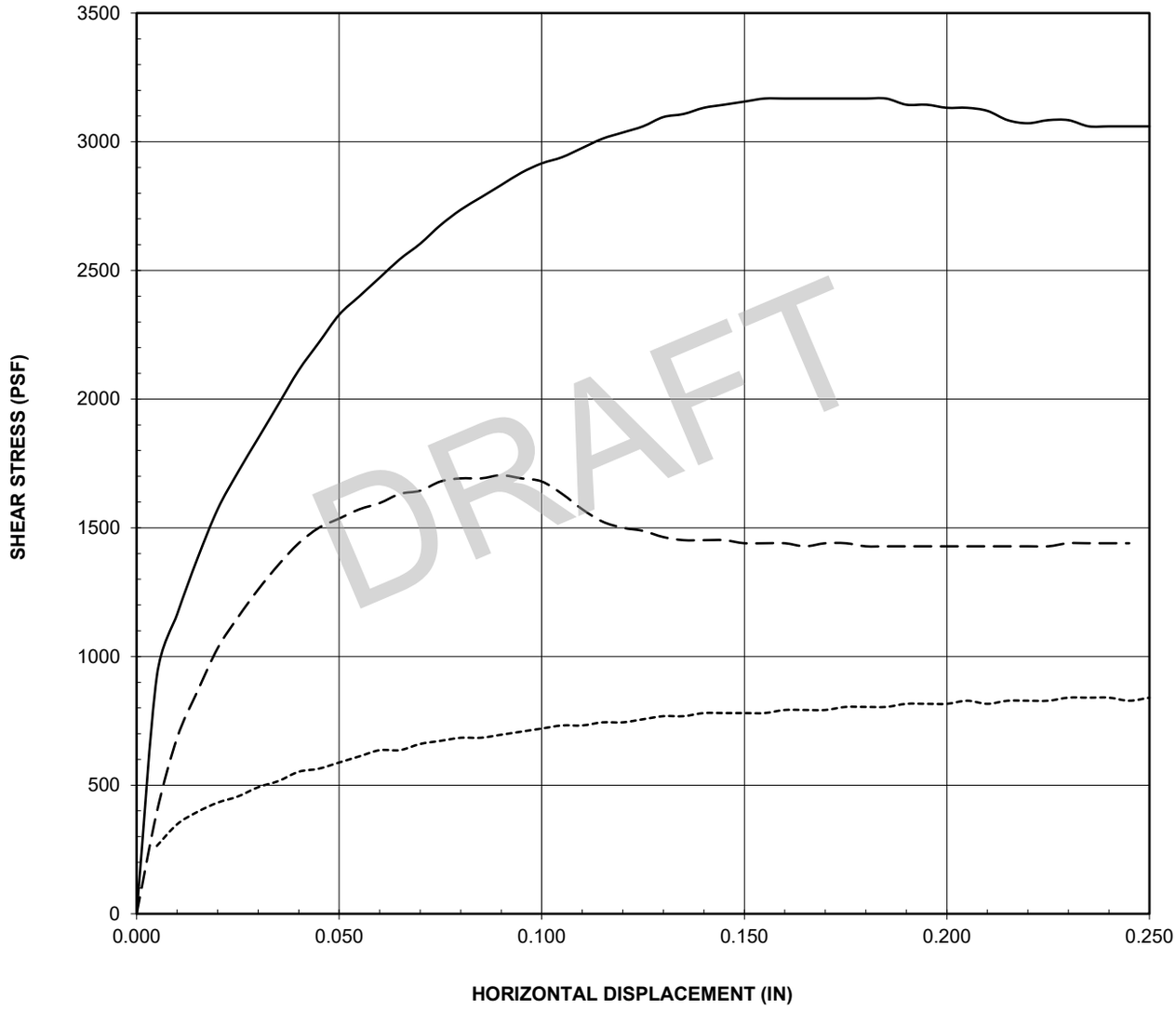
FIGURE C-1

DIRECT SHEAR TEST RESULTS

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA TANK
MALIBU, CALIFORNIA

211056001 | 10/20

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants



Sample A	Normal Stress	1000	psf	·····
Sample B	Normal Stress	2000	psf	– – – –
Sample C	Normal Stress	4000	psf	————

Boring Number:	B-4
Sample Depth (ft):	5.0-6.5
Strain Rate (in/sec)	0.001

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE C-2

DIRECT SHEAR STRESS-DEFORMATION PLOT

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA TANK
MALIBU, CALIFORNIA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

211056001 | 10/20

SAMPLE LOCATION	SAMPLE DEPTH (ft)	pH [1]	RESISTIVITY [1] (ohm-cm)	SULFATE CONTENT [2]		CHLORIDE CONTENT [3] (ppm)
				(ppm)	(%)	
B-4	3.0-3.5	8.4	640	130	0.013	135

[1] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 643
[2] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 417
[3] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 422

FIGURE C-3

CORROSIVITY TEST RESULTS

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA TANK
MALIBU, CALIFORNIA

211056001 | 10/20

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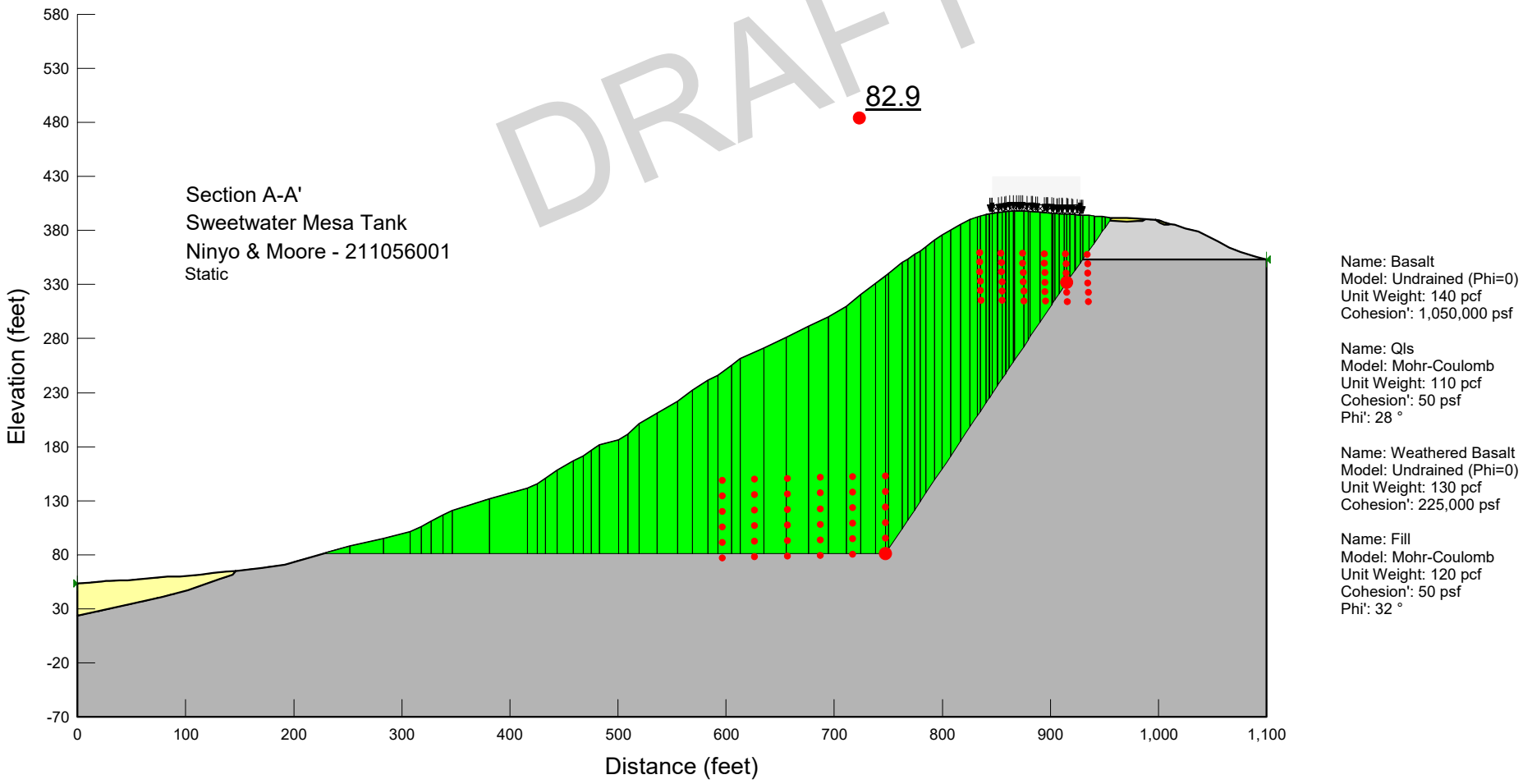
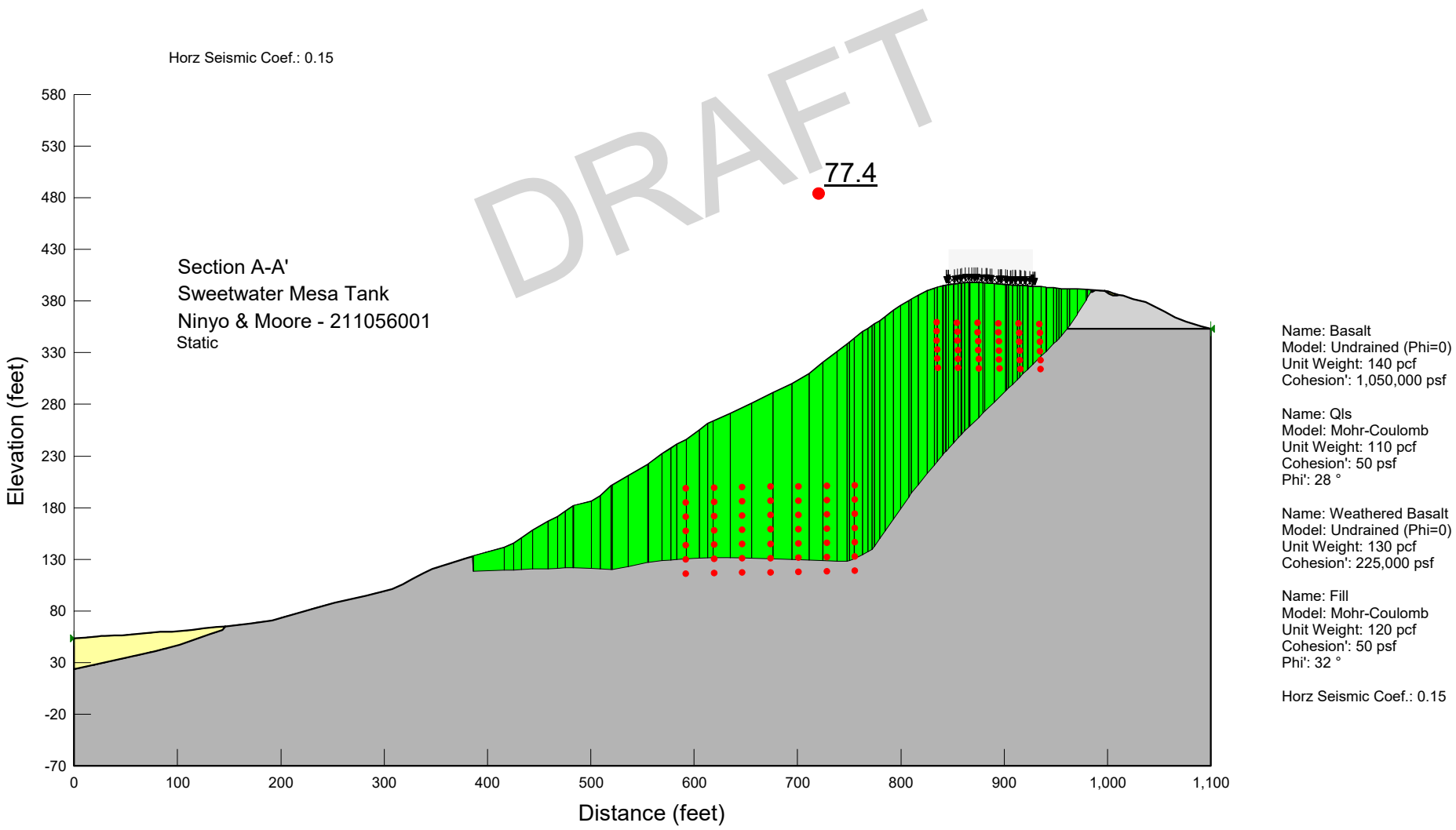
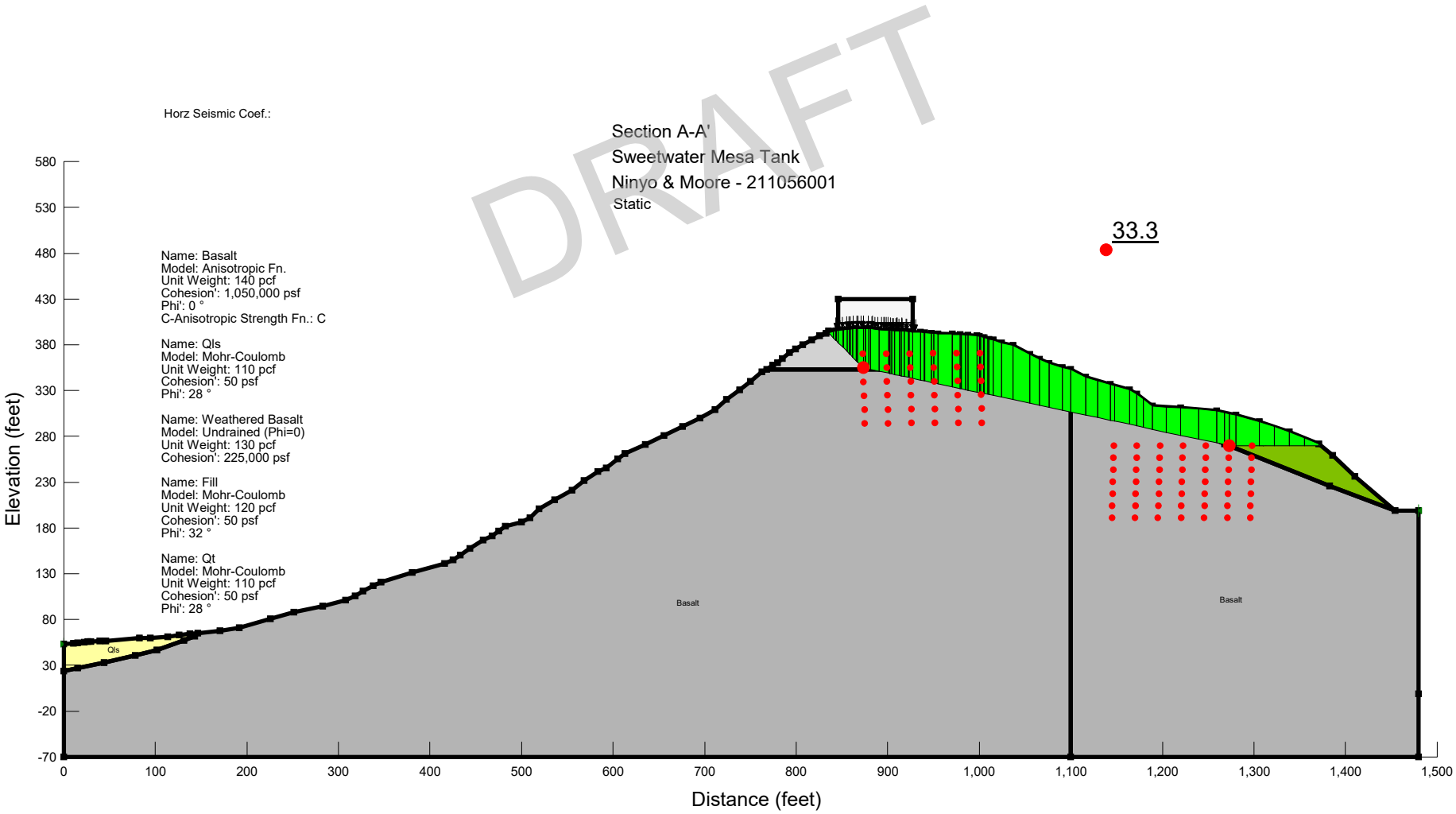
Geotechnical & Environmental Sciences Consultants

APPENDIX D

Slope Stability Analyses


DRAFT
82.9
Section A-A'
Sweetwater Mesa Tank
Ninyo & Moore - 211056001
Static
Elevation (feet)
580
530
480
430
380
330
280
230
180
130
80
30
-20
-70
0
100
200
300
400
500
600
700
800
900
1,000
1,100
Distance (feet)
Name: Basalt
Model: Undrained (Phi=0)
Unit Weight: 140 pcf
Cohesion': 1,050,000 psf
Name: Qls
Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 50 psf
Phi': 28 °
Name: Weathered Basalt
Model: Undrained (Phi=0)
Unit Weight: 130 pcf
Cohesion': 225,000 psf
Name: Fill
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 50 psf
Phi': 32 °


Horz Seismic Coef.: 0.15
DRAFT
77.4
Section A-A'
Sweetwater Mesa Tank
Ninyo & Moore - 211056001
Static
Elevation (feet)
580
530
480
430
380
330
280
230
180
130
80
30
-20
-70
0
100
200
300
400
500
600
700
800
900
1,000
1,100
Distance (feet)
Name: Basalt
Model: Undrained (Phi=0)
Unit Weight: 140 pcf
Cohesion': 1,050,000 psf
Name: Qls
Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 50 psf
Phi': 28 °
Name: Weathered Basalt
Model: Undrained (Phi=0)
Unit Weight: 130 pcf
Cohesion': 225,000 psf
Name: Fill
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 50 psf
Phi': 32 °
Horz Seismic Coef.: 0.15


Horz Seismic Coef.:
Section A-A'
Sweetwater Mesa Tank
Ninyo & Moore - 211056001
Static
DRAFT
33.3
Name: Basalt
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Unit Weight: 140 pcf
Cohesion': 1,050,000 psf
Phi': 0 °
C-Anisotropic Strength Fn.: C
Name: Qls
Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 50 psf
Phi': 28 °
Name: Weathered Basalt
Model: Undrained (Phi=0)
Unit Weight: 130 pcf
Cohesion': 225,000 psf
Name: Fill
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 50 psf
Phi': 32 °
Name: Qt
Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 50 psf
Phi': 28 °
Basalt
Basalt
Qls
Elevation (feet)
580
530
480
430
380
330
280
230
180
130
80
30
-20
-70
0
100
200
300
400
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600
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1,000
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1,300
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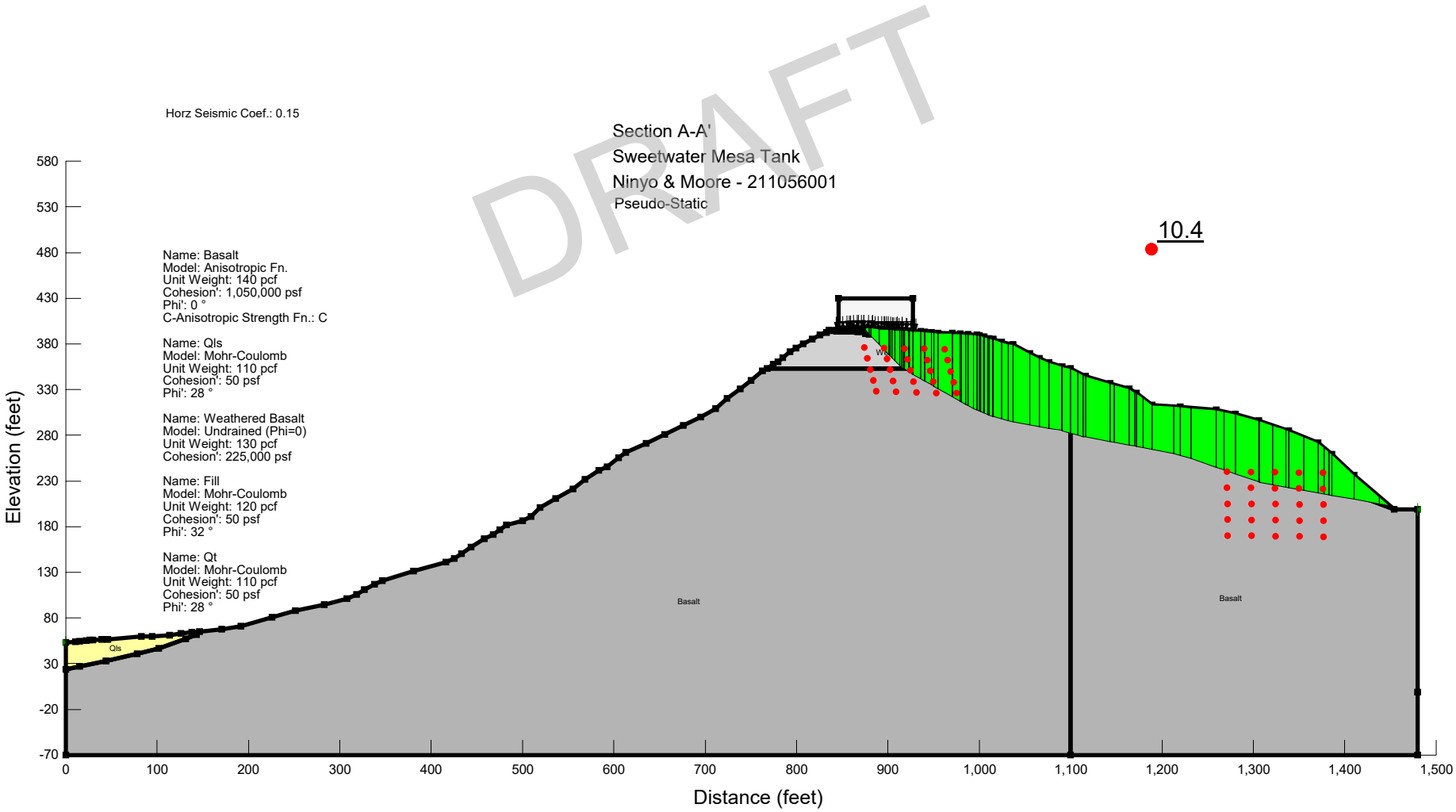
1,500
Distance (feet)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Section A-A'
Sweetwater Mesa Tank
Ninyo & Moore - 211056001
Pseudo-Static
DRAFT
10.4
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Unit Weight: 140 pcf
Cohesion': 1,050,000 psf
Phi': 0 °
C-Anisotropic Strength Fn.: C
Name: Qls
Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 50 psf
Phi': 28 °
Name: Weathered Basalt
Model: Undrained (Phi=0)
Unit Weight: 130 pcf
Cohesion': 225,000 psf
Name: Fill
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 50 psf
Phi': 32 °
Name: Qt
Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion': 50 psf
Phi': 28 °
Qls
Basalt
Basalt
WB
Elevation (feet)
580
530
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430
380
330
280
230
180
130
80
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-20
-70
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100
200
300
400
500
600
700
800
900
1,000
1,100
1,200
1,300
1,400
1,500
Distance (feet)

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Appendix D-2

Updated Geotechnical Evaluation

Updated Geotechnical Evaluation

Sweetwater Mesa Water Main Replacements
Civic Center Improvement Project
Los Angeles County Waterworks
Malibu, California

Cannon Corporation

11900 West Olympic Blvd., Ste. 530 | Los Angeles, California 90064

October 9, 2020 | Project No. 211056001





Geotechnical | Environmental | Construction Inspection & Testing | Forensic Engineering & Expert Witness

Geophysics | Engineering Geology | Laboratory Testing | Industrial Hygiene | Occupational Safety | Air Quality | GIS

Ninyo & Moore

Geotechnical & Environmental Sciences Consultants

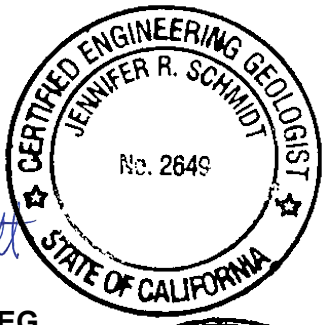
Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

Updated Geotechnical Evaluation

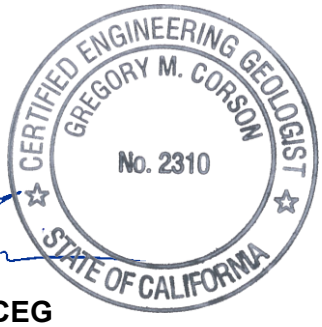
Sweetwater Mesa Water Main Replacements
Civic Center Improvement Project
Los Angeles County Waterworks
Malibu, California

Mr. Eric Porkert
Cannon Corporation
11900 West Olympic Boulevard, Suite 530 | Los Angeles, California 90064

October 9, 2020 | Project No. 211056001



Jennifer Schmidt, PG, CEG
Senior Geologist



Greg M. Corson, PG, CEG
Principal Geologist

Soumitra Guha, PhD, PE, GE
Principal Engineer

KMB/JRS/GMC/SG/mlc

Distribution: (1) Addressee (via e-mail)

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APPENDICES

1 INTRODUCTION

In accordance with your request and authorization, we have performed a geotechnical evaluation for Los Angeles County Waterworks' (District 29) Civic Center Improvement Project (aka district goal to replace and upgrade the existing water system within the district to meet requirements for fire flow and increasing domestic demands within the water district. The Sweetwater Mesa project includes the design and construction of a new water storage tank within an empty parcel on Sweetwater Mesa Road and a new water main pipeline to connect the tank to the existing water system on Pacific Coast Highway (PCH). The purpose of our geotechnical services was to evaluate the soil and geologic conditions at the water tank site and along the proposed pipeline alignment. We previously prepared our reports dated May 8 and July 23, 2020, to provide our findings, conclusions, and geotechnical design and construction recommendations for the pipeline portion of the project. These previous reports were updated herein to include review comments provided by Cannon Corporation (client) and the County of Los Angeles Department of Public Works, Geotechnical and Materials Engineering Division (GMED, 2020). Our recommendations for the water tank will be provided under separate cover.

2 SCOPE OF SERVICES

Our scope of services associated with the pipeline design included the following:

- Project coordination and planning with the client, County of Los Angeles representatives, and our drilling subcontractors.
- Review of readily available background materials, including published geologic maps, fault and seismic hazards maps, groundwater data, topographic maps, stereoscopic aerial photographs, and project related plans provided by the client.
- Preparation of traffic control and work plans for work performed along PCH.
- Acquisition of permits, including a well permit from Los Angeles County Department of Environmental Health and an encroachment permit from Caltrans.
- Geotechnical field reconnaissance to map the site geology and mark proposed exploratory boring locations in the field for Underground Service Alert notification.
- Subsurface exploration consisting of drilling, logging, and sampling of 31 hollow-stem auger (HSA) borings to depths ranging from approximately 5 to 51½ feet below the ground surface.
- Geotechnical laboratory testing of selected soil samples to evaluate in-situ moisture content and dry density, gradation, the percentage of particles finer than the No. 200 sieve, Atterberg limits, direct shear strength, and soil corrosivity.
- Data compilation and engineering analysis of the information obtained from our background review, subsurface evaluation, and laboratory testing.
- Preparation of this geotechnical report presenting our findings, conclusions, and geotechnical design and construction recommendations for the proposed water main pipeline.

3 SITE AND PROJECT DESCRIPTION

The Civic Center Improvement Project (aka Sweetwater Mesa) is a Los Angeles County Department of Public Works (LACDPW) project located in the city of Malibu (Figure 1). The project generally includes the design and construction of a new water storage tank and new water main pipeline within hilly terrain of the Santa Monica Mountains along the north side of PCH. The new tank will be constructed in an empty lot near the top of a ridgeline that descends toward the southwest and the Pacific Ocean (Figures 1 and 2). The new water tank reservoir will have a capacity of up to approximately 1.0 million-gallon (MG) and will consist of either a circular steel or concrete tank located above or below grade near the top of a ridgeline. As discussed, the proposed new water tank will be addressed in a separate report.

The pipeline portion of this project involves the design and construction of approximately 5,642 lineal feet of new 12-inch-diameter ductile steel water pipeline that will extend from the new reservoir tank to a tie-in point with an existing pipeline system on PCH at the east end of the Malibu Creek Bridge (Figures 2 through 5). From the tank, the pipeline will be located within existing private streets (Sweetwater Mesa and Serra Roads). From the south end of Serra Road at PCH, the pipeline will extend west, approximately 400 feet, along the north side of PCH to the Malibu Creek Bridge and north, approximately 1,500 feet along the east side of Serra Road. An approximately 450-foot-long section of pipeline, connecting the Serra Road segment to the Sweetwater Mesa Road segment, will follow an existing easement that crosses two lots south of the road (Figure 5). We understand that an alternate alignment includes bypassing this easement by continuing the pipeline along Sweetwater Mesa and Serra Roads (Figure 5). The east lot is currently developed with an existing County water tank and the west lot is developed with various horse corrals and fencing. At the east end of the easement segment, the pipeline will continue approximately 2,700 feet northward on Sweetwater Mesa Road to the location of the future water tank.

The proposed pipeline is anticipated to be on the order of 5 feet deep, or less, and will replace an existing water main pipeline along the alignment. Open cut-and-cover trenching is anticipated for pipeline construction. The surface of Sweetwater Mesa Road is generally paved with Portland-cement concrete (PCC) and the surfaces of Serra Road and the subject section of PCH are generally paved with asphalt concrete (AC). The easement across the two lots is unpaved. Site elevations range from approximately 20 feet above mean sea level (MSL) along PCH to approximately 395 feet above MSL near the proposed new tank location on Sweetwater Mesa Road. In general, site grades are anticipated to be on the order of 10 percent or less. However, the elevation change between the east and west sides of the easement across the two lots is approximately 100 feet with some steeper grades of up to approximately 30 percent. An overview

of the regional topography is shown on Figure 1. Pipeline alignment locations and detailed site topography with elevations are shown on (Figures 2 through 5).

The project may also include the future design and construction of a pressure regulating station near the intersection of Serra Road and Palm Canyon Road (Figure 1). We understand that LACDPW is still in the decision-making process on whether to include the pressure regulating station with the project and that plans were not available at the date of this report. At the request of the County, we performed a boring (B-32) at the potential location of the pressure regulating station (Figure 6) and laboratory testing of representative soil samples collected from the boring as a part of this evaluation. The log of the boring and associated laboratory test results are provided herein for use in future design of the pressure regulating station.

4 SUBSURFACE EVALUATION AND LABORATORY TESTING

Our subsurface exploration for the proposed pipeline alignment was conducted on August 19 through 22, 2019, January 15 through 17, 2020, and March 2 through 4, 2020, and consisted of the drilling, logging, and sampling of 31 HSA borings (B-1 through B-32) along the pipeline alignment and at the future pressure regulating station location (B-32). The approximate locations of the borings are shown on Figures 2 through 6. The HSA borings were drilled using truck-mounted and limited access track-mounted drill rigs with 8-inch-diameter augers to depths ranging from approximately 5 to 51½ feet. Prior to drilling, the upper approximately 5 feet of the borings were cleared of underground utilities using a hand-auger. The upper approximately 5 feet of borings performed on March 2 through 4, 2020, were also cleared of potential underground utilities by C-Below using 10-inch-diameter potholes. The potholes were excavated using hydro-vacuum as part of their utility locating/potholing contract performed for the project. Imported sand was used to backfill the potholes prior to our drilling. The logs of the exploratory HSA borings are presented in Appendix A. Proposed boring B-31 was located behind locked, private gates and access was not available during both mobilizations for our subsurface exploration. Due to the access difficulties at this location, this boring was not drilled.

Laboratory testing was performed on representative samples collected from the borings to evaluate the in-situ moisture content and dry density, gradation, percentage of particles finer than the No. 200 sieve, Atterberg limits, direct shear strength, and soil corrosivity. In-situ moisture content and dry density results are presented on the boring logs in Appendix A. The remaining laboratory test results are presented in Appendix B.

Our subsurface exploration of the pipeline was performed concurrently with our subsurface exploration performed for the proposed water tank utilizing two bucket-auger borings. Logs of the

bucket-auger borings and laboratory testing of samples collected from these borings will be provided with the tank report under separate cover.

5 GEOLOGIC AND SUBSURFACE CONDITIONS

The project site is in the Santa Monica Mountains of the Transverse Ranges Geomorphic Province. The province encompasses an approximately 40- to 60-mile-wide area (north to south) that extends approximately 320 miles (west to east) from Point Arguello and San Miguel Island to the Eagle and Pinto Mountains of the Mojave Desert (Norris and Webb, 1990). The province generally consists of a region of east to west-trending mountain ranges considered atypical to the predominant northwest to southeast structural fabric of California. The atypical trend of the Province is the result of a restraining bend ("the Big Bend") on the San Andreas Fault that has rotated and compressed the region to its current configuration. The compression has resulted in folding and reverse/thrust faulting with similar east to west trends, and regional uplift. The Santa Monica Mountains are the southernmost of the east to west trending ranges of the province and consist of a wide range of Mesozoic to Cenozoic-age marine and non-marine sedimentary rocks, volcanic intrusive and extrusive rocks, and metamorphic slate underlain at depth by granitic/metamorphic basement rock (Norris and Webb, 1990).

According to Dibblee (1993) and Yerkes and Campbell (1980) (Figure 6), the alignment is underlain by volcanic rocks of the Conejo Volcanics, sedimentary rock of the Topanga Formation and Monterey Shale, terrace deposits, alluvial sediments, undifferentiated colluvium/residual soils, undocumented fills associated with roadway construction, and pavements. Landslides are relatively common in the mountainous terrain of the region, but have not been mapped within the project limits by Dibblee (1993) or Yerkes and Campbell (1980). These authors indicate that the regional geologic structure generally consists of complexly faulted blocks of uplifted terrain. They indicate that the sedimentary rock in the project area has approximately west to east strikes with dips varying from approximately 20 to 70 degrees to the north. Dibblee (1993 and Yerkes and Campbell (1980) indicate that the Malibu Coast fault zone crosses beneath the alignment. Landslides are not mapped beneath the project site by either author.

Generalized descriptions of the materials encountered during our subsurface exploration, mapped during our site geologic reconnaissance, and/or mapped by Yerkes and Campbell (1980) are provided in the following sections. More detailed descriptions of the subsurface materials are presented on the boring logs in Appendix A. The geologic formation mapped during our site reconnaissance and/or presented on the geologic map by Yerkes and Campbell (1980) are provided on the boring location maps on Figures 2 through 5. Table 1 provides a summary of the

boring data from our pipeline evaluation, including boring depths, locations, and elevations, types and thicknesses of pavement sections, and depths of fill.

Table 1 – Boring Data Summary

Boring No.	Boring Location	Boring Depth (feet)	Ground Elevation (feet)	Pavement Type	Pavement Thickness (inches)	AB Thickness (inches)	Depth of Fill (feet)
B-1	Sweetwater Mesa Road	8.8	395	-	-	-	4
B-2	Sweetwater Mesa Road	9.3	390	AC/SM/AC	3/3/3	-	2
B-3	Sweetwater Mesa Road	8.8	378	AC/SM/AC	3/4/3	-	2
B-4	Sweetwater Mesa Road	10.0	340	PCC	5	-	1.5
B-5	Sweetwater Mesa Road	10.0	330	PCC	5	3	4
B-6	Sweetwater Mesa Road	9.9	295	PCC	4	-	4.5
B-7	Sweetwater Mesa Road	10.0	375	-	-	-	3.5
B-8	Sweetwater Mesa Road	10.0	263	PCC	4	-	-
B-9	Sweetwater Mesa Road	10.0	252	PCC	6	-	6
B-10	Sweetwater Mesa Road	5.0	243	PCC	3	-	5
B-11	Sweetwater Mesa Road	10.0	232	PCC	5	7	-
B-12	Sweetwater Mesa Road	10.0	220	PCC	4	-	2
B-13	Sweetwater Mesa Road	10.0	215	PCC	7	-	3
B-14	Sweetwater Mesa Road	10.0	200	PCC	5	-	2
B-15	Sweetwater Mesa Road	10.0	192	PCC	5	-	2
B-16	Sweetwater Mesa Road	9.0	164	PCC/AC	5/6	3	-
B-17	Sweetwater Mesa Road	10.0	145	PCC/AC	6/2	3	-
B-18	Sweetwater Mesa Road	10.0	138	AC	4	6	-
B-19	Serra Road	10.0	108	AC	6	6	-
B-20	Serra Road	9.3	93	AC	7	-	-
B-21	Serra Road	9.5	80	AC	5	4	-
B-22	Serra Road	10.0	74	AC	7	5	1
B-23	Serra Road	9.4	65	AC	6	-	-
B-24	Serra Road	10.0	52	AC	7	3	-
B-25	Serra Road	10.0	32	AC	7	4	-
B-26	Serra Road	10.0	25	AC	6	2	-
B-27	Serra Road	10.0	22	AC	5	-	-
B-28	Serra Road	10.0	24	AC	6	4	4
B-29	Pacific Coast Highway	51.5	20	AC	10	8	6
B-30	Easement	10.0	152	-	-	-	-
B-31	Easement	Boring Not Drilled Due to Access Restrictions					
B-32	Serra Road and Palm Canyon Lane	32.0	75	AC	4	3	-

Notes:
AC – Asphalt Concrete
AB – Aggregate Base
PCC – Portland Cement Concrete

5.1 Pavements

Sweetwater Mesa Road is generally paved by reinforced PCC pavement, except for the northeast end of the road, near the proposed water tank. This northeastern portion of Sweetwater Mesa Road, the length of Serra Road, roads at the potential pressure regulating station location, and portion of PCH within the project limits are covered by AC pavement. Based on our borings, B-4, B-5, B-6, and B-8 through B17, the PCC along Sweetwater Mesa Road ranges from approximately 3 to 7 inches in thickness and was reinforced with No. 4 rebar. The PCC at boring locations B-16 and B-17 was underlain by a layer of AC approximately 6 and 2 inches thick, respectively. The PCC pavements at borings B-5, B-11, B-16, and B-17 were underlain by approximately 3 to 7 inches of aggregate base (AB). Based on our borings B-2, B-3, B-18 through B-29, and B32, AC pavements at the project site range from approximately 3 to 10 inches in

thickness and were generally underlain by approximately 2 to 8 inches of AB. The AB encountered beneath the PCC and AC pavements consisted of light brown, moist, dense, silty gravel with sand and silty sand with gravel. AB was not encountered beneath the AC pavement at borings B-20, B-23, and B-27. Pavements were not present at borings B-1 and B-7, which were performed in dirt areas adjacent to the pavement, or in B-30, which was performed within the unpaved lot.

5.2 Fill (Af)

Variable thicknesses of undocumented fill soils were encountered beneath the pavement sections or at the ground surface of our borings. Where encountered, the fill extended to depths ranging from approximately 1 to 6 feet beneath the ground surface and consisted of brown, light brown, reddish brown, and yellow, moist, medium dense to dense, sand, silty sand and clayey sand with variable amounts of gravel; and brown to dark brown, moist, firm to hard, clay with variable amounts of sand and gravel. Some areas of fill contained intermixed construction debris of metal and concrete pieces. Information regarding the placement of existing fills, including ground preparation, remedial excavation, methods of fill placement, and the degree of compaction during placement, is unknown to this firm.

5.3 Alluvium (Qalp)

Alluvium was encountered beneath the fill or AC in borings B-26, B-27, B-28, B-29, and B-32. The alluvium consisted of dark brown, grayish brown, and dark gray, moist to wet, soft to hard, clay; and dark gray brown, light brown, and dark brown, moist, loose to medium dense, sand, silty sand, and sandy silt with variable amounts of gravel. Occasional cobbles and/or boulders were encountered in the alluvium while drilling. Alluvium was encountered to depths of approximately 7½ feet in borings B-27 and B-28, 11½ feet in boring B-32, and to the total depths drilled of approximately 10 and 51½ feet in borings B-26 and B-29, respectively.

5.4 Residual Soil/Colluvium (Undifferentiated) (Qres/Qcol)

Undifferentiated residual soil and/or colluvium (Qres/Qcol) was encountered at the ground surface in boring B-30, beneath the fill or AC pavement encountered in borings B-13, B-14, B-15, B-17, B-19, B-22, B-23, B-24, and B-25, and beneath the alluvium encountered in borings B-27 and B-28. The residual soil/colluvium generally consisted of light to dark brown, moist, stiff to hard, clay with varying amounts of sand, and dense to very dense clayey sand with scattered gravel, cobbles, and possible boulders. The residual soil/colluvium was encountered to the total depths explored of approximately 9.4 to 10 feet in these borings.

5.5 Terrace Deposits (Qts/Qtm/Qt)

Yerkes and Campbell (1980) have mapped stream (Qts), coastal nonmarine (Qtm), and coastal nonmarine (Qt) terrace deposits along the alignment consisting of interbedded gravel, sand and silt along the flanks of canyons and valleys, and the coastal terrace deposits as alluvial gravel, sand, silt and clay commonly deposited on marine platforms, respectively. In the vicinity of the project, the terrace deposits overlay sedimentary bedrock of the Monterey Shale and the Trancas Formation (not encountered in our borings or observed along the alignment), and volcanic bedrock of the Conejo Volcanics. Terrace deposits were encountered beneath fill and/or pavements to depths of approximately 6 feet in boring B-11, 4 feet in boring B-18, and to the total depths explored of approximately 9 to 10 feet in borings B-7, B-8, B-9, B-12, B-16, B-20, and B-21. The terrace deposits consisted of brown, reddish brown, light brown, yellowish brown and yellow, moist, medium dense to very dense, silty sand and poorly graded sand with variable amounts of gravel; and gray, dark brown, dark gray, very stiff to hard, clay with variable amounts of sand and gravel. Occasional cobbles and/or boulders were encountered in the terrace deposits while drilling. The terrace deposits had variable amounts of oxidation staining and carbonate stringers.

5.6 Monterey Shale (Tm)

The Miocene-age Monterey Shale is mapped by Yerkes and Campbell (1980) on the south flank of the Santa Monica Mountains and on the south side of the Malibu Coast fault. The Monterey Shale is in fault contact with the older Conejo Volcanics on the north side of the fault and is occasionally buried by terrace deposits. Yerkes and Campbell (1980) indicate that the Monterey Shale consists of marine shale and siltstone that contains dolomitic and siliceous to cherty interbeds that dip from approximately 23 to 80 degrees north-northwest and north-northeast. Weathered Monterey Shale was encountered to the depth explored of approximately 10 feet in our borings B-11 and B-18 that consisted of grayish to dark grayish brown and gray, moist, moderately soft to hard, moderately indurated, claystone with interbeds of white to light brown, moist, moderately hard, moderately cemented, sandstone. The formation was also encountered to the total depths explored of approximately 10 feet in our borings B-13, B-14, B-15, B-17, B-19, B-22, B- 23, B-24, B-25, B-27, B-28, and B-30.

5.7 Calabasas Formation (Tc)

Sedimentary bedrock was encountered beneath the alluvium encountered in boring B-32 at a depth of approximately 11½ feet. The bedrock consisted of reddish yellow, moist, moderately hard, moderately to strongly cemented, sandstone and dark brown, moist, moderately hard, moderately to strongly indurated, claystone. Based on our review of the regional geologic maps,

we have interpreted the bedrock to consist of the Miocene-age, Calabasas Formation, which has been mapped within rock outcrops west of the boring (Yerkes and Campbell, 1980) with a dip of 25 degrees to the northeast. Yerkes and Campbell (1980) describe the Calabasas Formation as consisting of marine sandstone with interbeds of siltstone, silty shale, and breccia/conglomerate. Dibblee (1993) mapped this material as Topanga Formation.

5.8 Conejo Volcanics (Tco)

Conejo Volcanics were encountered beneath the fill in borings B-1, B-2, B-3, B-4, B-5, and B-6 that generally consisted of light brown, dark brown, brown, and dark gray, moist, moderately soft to hard, weathered volcanic rock. The rock was moderately to intensely fractured with some clayey infill, carbonates, and oxidation staining along the fractures. The Conejo Volcanics are described by Dibblee (1993), Yerkes and Campbell. (1980, 2005) and Campbell, et al. (2014) as consisting of basalt, andesitic basalt, basaltic andesite, andesite and dacitic flows, flow breccias, agglomerates, volcanic breccias, and volcanic sandstones and siltstones. Specific information regarding the bedding or structure of the Conejo Volcanics in the site vicinity was not available on the referenced geologic maps by these authors.

6 GROUNDWATER

Groundwater was generally not encountered in our borings with the exception of boring B-29 where groundwater was encountered during drilling at a depth of approximately 17.3 feet. This groundwater depth is not considered a stabilized groundwater condition. According to CDMG (2001a), the historic high depth to groundwater is mapped at 10 feet within the alluvium along the west side of the site that extends beneath PCH and the southern section of Serra Road. Fluctuations in the level of groundwater may occur due to variations in ground surface topography, subsurface stratification, rainfall, irrigation practices, groundwater pumping, and other factors, which may not have been evident at the time of our field evaluation.

7 FAULTING AND SEISMICITY

The subject site is not located within a State of California Earthquake Fault Zone (EFZ) (formerly known as Alquist-Priolo Special Studies Zone) (Hart and Bryant, 2018) (Figure 7); however, the site is in a seismically active area, as is the majority of southern California, and the potential for strong ground motion in the project areas is considered significant during the design life of the proposed improvements. The approximate locations of major faults in the region and their geographic relationship to the site are shown on Figure 7. According to Yerkes and Campbell (1980) and Treiman (1994), the pipeline alignment is crossed by the Malibu Coast Fault Zone (Figures 6 and 8).

According to Treiman (1994), the Malibu Coast Fault Zone is an east-west zone of faulting along the southern boundary of the Santa Monica Mountains and is part of a larger zone of faults that defines the southern margin of the Transverse Ranges (Figure 8). This large zone includes the Santa Monica, Hollywood, and Raymond faults to the east, and the Anacapa-Dume, Santa Cruz Island, and Santa Rosa Island faults offshore and to the west. The Malibu Coast Fault Zone includes an offshore portion west of Leo Carrillo Beach, west of the site, and an onshore portion east of Leo Carrillo Beach. The onshore portion, which includes the project site, is generally made up of a complex zone of multiple fault traces. In general, the Malibu Coast fault is a reverse thrust fault that dips steeply north with a component of left-oblique slip. During the Quaternary period, the compressional movement of the fault has been considered the dominant type of fault movement, whereas the strike-slip movement of the fault is considered to have tapered off (Treiman, 1994). More recent Holocene movement on the Malibu Coast fault, classifying it as an active fault, has been a debated subject. Some segments of the fault have been zoned as EFZ by the State of California (Treiman, 1994), while the majority of the fault has not been zoned due to lack of evidence to meet the zoning requirement of being “sufficiently active.” However, the County of Los Angeles and the City of Malibu generally consider it an active fault (City of Malibu, 2014). According to Fault Evaluation Report (FER-229) prepared by Treiman (1994) (Figure 8), the project site is underlain by multiple fault splays of the Malibu Coast Fault Zone, within an area that does not meet the State zoning requirements.

The principal seismic hazards at the subject site are surface fault rupture, strong ground motion, and liquefaction. A brief description of these hazards and the potential for their occurrences on site are discussed below.

7.1 Surface Ground Rupture

Based on our review of the referenced literature (Treiman, 1994) (Dibblee, 1993) (Yerkes and Campbell, 1980), a portion of the pipeline alignment is located within a zone of faulting that consists of multiple segments of the Malibu Coast Fault Zone (Figure 8). The locations of these splays are approximate and are mapped in several different locations by Dibblee (1993) and Yerkes and Campbell (1980) (Figure 8). Based on these multiple fault splays and consideration by the County of Los Angeles and the City of Malibu that the fault may be an active fault, damage to the pipeline due to fault rupture is possible due to these fault splays. The location of potential rupture is generally unknown, but considered possible anywhere within the zone outlined on Figures 2 through 5, and 8. A potential for lurching or cracking of the ground surface also exists.

7.2 Seismic Ground Shaking

Earthquake events from one of the regional active or potentially active faults near the site could result in strong ground shaking which could affect the project area. The level of ground shaking at a given location depends on many factors, including the size and type of earthquake, distance from the earthquake, and subsurface geologic conditions.

Considering the proximity of the site to active faults capable of producing a maximum moment magnitude of 6.0 or more, the project area has a high potential for experiencing strong ground motion. The 2019 California Building Code (CBC) specifies that the risk-targeted maximum considered earthquake (MCE_R) ground motion response accelerations be used to evaluate seismic loads for design of buildings and other structures. The MCE_R ground motion response accelerations are based on the spectral response accelerations for 5 percent damping in the direction of maximum horizontal response and incorporate a target risk for structural collapse equivalent to 1 percent in 50 years with deterministic limits for near-source effects. The horizontal peak ground acceleration that corresponds to the MCE_R for the project area was calculated as 0.68g using the 2019 Structural Engineers Association of California (SEAOC)/Office of Statewide Health Planning and Development (OSHPD) seismic design tool (web-based).

The 2019 CBC specifies that the potential for liquefaction and soil strength loss be evaluated, where applicable, for the mapped maximum considered earthquake geometric mean (MCE_G) peak ground acceleration (PGA_M) with adjustment for site class effects in accordance with the American Society of Civil Engineers (ASCE) 7-16 Standard. The MCE_G PGA is based on the geometric mean PGA with a 2 percent probability of exceedance in 50 years. The PGA_M was calculated as 0.80g using the 2020 SEAOC/OSHPD seismic design tool (web-based). A site-specific ground motion analysis can be performed upon request.

7.3 Liquefaction Evaluation

Liquefaction is the phenomenon in which loosely deposited, saturated granular soils (located below the water table) undergo rapid loss of shear strength due to development of excess pore pressure during strong earthquake-induced ground shaking. Ground shaking of sufficient duration results in the loss of grain-to-grain contact due to rapid rise in pore water pressure and it eventually causes the soil to behave as a fluid for a short period of time. Liquefaction is known generally to occur in saturated or near-saturated cohesionless soils at depths shallower than 50 feet below the ground surface. Liquefaction is also known to occur in relatively fine-grained soils (i.e., sandy silt and clayey silt) with a plasticity index (PI) of less than 7. Factors known to influence liquefaction potential include composition and thickness of soil layers, grain size, relative density, groundwater level, degree of saturation, and both intensity and duration of ground shaking.

According to the State of California (CDMG, 2001b and CGS, 2007), the sections of pipeline located along PCH, along the southern approximately 450 feet of Serra Road, and at the site of the future pressure regulating station are located areas mapped as being potentially susceptible to liquefaction (Figure 9). We evaluated the liquefaction potential of these subsurface soils using the boring data and soil sampler blow counts recorded at various depths in exploratory boring B-29 on PCH, our laboratory test results, and a historic high depth to groundwater of 10 feet below the existing ground surface. The liquefaction analysis was based on the National Center for Earthquake Engineering Research procedure (Youd, et al., 2001) developed from the methods originally recommended by Seed and Idriss (1982) using the computer program Liquefy Pro (CivilTech Software, 2008). Our liquefaction analysis indicates that multiple interbeds of granular deposits encountered at boring B-29 between depths of approximately 10 and 33 feet are susceptible to liquefaction during the design seismic event (Appendix C).

7.4 Dynamic Settlement of Saturated Soils

As a result of liquefaction, the proposed pipeline alignment on PCH may be subject to liquefaction-induced settlement. In order to estimate the amount of post-earthquake settlement, the method proposed by Tokimatsu and Seed (1987) was used in which the seismically induced cyclic stress ratios and corrected N-values are related to the volumetric strain of the soil. The amount of soil settlement during a strong seismic event depends on the thickness of the liquefiable layers and the density and/or consistency of the soils.

Under the current conditions and when using the data collected for boring B-29, post-earthquake total dynamic settlement of approximately 8¼ inches is calculated for the pipeline alignment on PCH. Differential settlement is anticipated to be on the order of 4 inches over a horizontal distance of 40 feet along the PCH alignment. However, abrupt lateral change in soil types between the mapped liquefiable soils along PCH and the Monterey Shale to the north along Serra Road could result in more significant differential settlement over a short span. Although borings B-27 and B-28 indicate that lack of significant alluvial soils beneath portions of the road that do not extend below historic high depth to groundwater, varying depths of alluvium are anticipated along the southern portion of Serra Road that generally shallow to the north and may be susceptible to liquefaction. The amount of settlement associated with liquefaction and dynamic settlement along the southern end of Serra Road would vary due to these varying depths, but generally decrease to the north and be less than the settlements calculated along PCH where alluvium is anticipated to be deepest along the alignment.

7.5 Lateral Spread

Lateral spread of the ground surface during an earthquake usually takes place along weak shear zones that have formed within a liquefiable soil layer. Lateral spread has generally been observed to take place in the direction of a free-face (i.e., retaining wall, slope, channel, etc.) but has also been observed to a lesser extent on ground surfaces with gentle slopes. An empirical model developed by Youd, et al. (2002) is typically used to predict the amount of horizontal ground displacement within a site. For sites located in proximity to a free-face, the amount of lateral ground displacement is correlated with the distance of the site from the free-face. Other factors such as earthquake magnitude, distance from the causative fault, thickness of the liquefiable layers, and the fines content and particle sizes of the liquefiable layers also influence the amount of lateral ground displacement. Since the site is generally level and away from any free-face, lateral spread is not a design concern.

7.6 Tsunamis

Tsunamis are long wavelength seismic sea waves (long compared to ocean depth) generated by the sudden movements of the ocean floor during submarine earthquakes, landslides, or volcanic activity. Based on our review of hazard maps prepared by the California Emergency Management Agency (2009), the westernmost end of the pipeline is located adjacent to a mapped tsunami hazard zone (i.e., Malibu Creek). However, due to the pipeline being located below grade, the potential for pipeline damage resulting from tsunamis is low.

7.7 Seismically Induced Landslides

Landslides may be induced by strong vibratory motion produced by earthquakes. Research and historical data indicate that seismically induced landslides tend to occur in weak soil and rock on steep terrain. The process for zoning earthquake-induced landslides incorporates expected future earthquake shaking, existing landslide features, slope gradient, and strength of earth materials on the slope. According to California Geological Survey (2007), a relatively small portion of the pipeline alignment in the easement between Serra Road and Sweetwater Mesa Road is located in a State of California seismic hazard zone for landslides. Additionally, many of the adjacent hillsides along the pipeline alignment on Serra Road and Sweetwater Mesa Road may be susceptible to earthquake-induced landslides (Figure 9). Detailed slope stability analyses of the adjacent slopes were not performed as a part of the pipeline portion of the project. Slope stability analyses of slopes adjacent to the proposed water tank are provided in the separate report prepared for the water tank (Ninyo & Moore, 2020b). Since the purpose of the project is to replace an existing water line in the roadway using relatively shallow cut-and-cover trenching (generally

less than 5 feet), it is generally our opinion that the proposed construction and pipeline will have negligible impact on the existing stability of the adjacent slopes.

8 CONCLUSIONS

The purpose of our study was to evaluate the soil and geologic conditions and potential geologic hazards along the proposed pipeline alignment to provide geotechnical recommendations for design and construction of the pipeline. To accomplish this, we have performed a review of pertinent background material and aerial photographs, a site geologic reconnaissance and geologic mapping, HSA borings along the alignment, laboratory testing of representative site materials, and geotechnical data analysis. Our conclusions for the project are as follows:

- The site is generally underlain by sedimentary and volcanic bedrock mantled by variable thicknesses of undocumented fill, alluvium, undifferentiated residual soil/colluvium, and/or terrace deposits.

- In general, excavation of the on-site material should be achievable with heavy earthmoving equipment in good working condition. However, excavations in very hard basaltic volcanic layers will vary in difficulty depending the fracturing and degree of weathering of the rock. Difficult excavating conditions should be anticipated in some of the volcanic materials.

- We anticipate that excavated soils should be generally suitable for use as compacted fill provided oversize cobbles, boulders, and rock fragments are removed. Excavations in the unweathered and/or well-cemented bedrock and residual soil/colluvium along the alignments are anticipated to generate oversize rock fragments that will not be suitable for re-use as compacted fill.

- Excavations during site grading should be feasible with earthmoving equipment in good working order. We anticipate that undocumented fill, alluvium, residual soil/colluvium, terrace deposits, and processed bedrock materials should be generally suitable for use as compacted fill.

- Excavations in undocumented fill, alluvium, residual soil/colluvium, and terrace deposits are anticipated to encounter variable soil conditions consisting of silty sand and sandy silt with variable amounts of gravel, cobbles, and boulders. The contractor should anticipate handling oversize materials.

- Due to the variability of weathering in the sedimentary rock and presence of concreted zones, hard materials should be anticipated that may result in oversize materials and difficult excavation. Special excavating equipment, such as rippers, pneumatic chippers or jackhammers should be anticipated. The contractor should anticipate handling oversize materials.

- For preliminary planning purposes, the undocumented fill, alluvium, residual soil/colluvium, and terrace deposits should be considered as Type C soils and the clayey residual soil/colluvium and bedrock materials should be considered as Type B soils in accordance with Occupational Safety and Health Administration (OSHA) soil classifications. The contractor's competent person should make their own evaluation of the soil types encountered during construction.

- Groundwater was encountered in exploratory boring B-29 at a depth of approximately 17.3 feet below the ground surface. However, the groundwater depths observed at the time of drilling are not considered stabilized groundwater conditions and actual depths to groundwater will vary during construction. In general, the groundwater table is not anticipated to be encountered during project construction; however, seepage may be possible, especially along fractures/joints in the on-site formational materials.

- The portions of the pipeline alignment along PCH, along the southern approximately 450 feet of Serra Road, and at the site of the future regulating station are mapped by the State of California (CDMG, 2001b and CGS, 2007) as being susceptible to soil liquefaction. The results of our liquefaction analysis of the site conditions at boring B-29, when using a historic high depth to groundwater of 10 feet, indicate that approximately 8¼ inches of dynamic settlement may occur at this location.

- The proposed construction and pipeline will have negligible impact on the existing stability of the adjacent slopes.

- The proposed pipeline alignment is crossed by a zone of faulting that consists of multiple fault splays associated with the Malibu Coast Fault Zone. There have been no known surface ruptures along the Malibu Coast Fault Zone during historic time, but the fault zone is considered active by the County of Los Angeles and the City of Malibu and pipeline damage due to fault rupture is a project consideration.

- The westernmost end of the pipeline is located adjacent to a mapped tsunami hazard zone. (i.e., Malibu Creek). However, due to the pipeline being located below grade, the potential for damage resulting from tsunamis is considered low.

- Our limited laboratory corrosion testing indicates that the near-surface site soils can be classified as corrosive based on Caltrans (2018) corrosion guidelines. Due to the presence of corrosive soils in the project area, corrosion protection for the project should be designed by a corrosion engineer.

8.1 Los Angeles County Statement 111

In accordance with Section 111 of the Los Angeles County Building Code, we are providing our professional opinion regarding the geologic hazards of landsliding, settlement and slippage and their impact on the proposed development. It is our professional opinion that the site for the proposed improvements will not be subject to hazards from future landsliding; however, dynamic settlement of the pipeline due to liquefaction or slippage or damage of the pipeline due to fault rupturing is possible. Further, it is our opinion that the proposed construction and associated grading will not impact the geologic stability of properties outside the site, provided the recommendations of this report are incorporated into the design plans and are implemented during construction.

9 RECOMMENDATIONS

The following sections include our geotechnical recommendations for design and construction of the proposed Sweetwater Mesa water main pipeline. These recommendations are based on our

evaluation of the site geotechnical conditions and our understanding of the planned construction. The proposed site improvements should be constructed in accordance with the requirements of applicable governing agencies. Recommendations for design and construction of the proposed water tank will be provided under separate cover.

9.1 Geologic Hazards

Based on our evaluation, the proposed pipeline is subject to geologic hazards that may impact the project, including fault rupture and soil liquefaction. Appropriate mitigation measures for these geologic hazards will vary and should be based on evaluation of the hazard risk, feasibility of mitigation, and the consequences of pipeline damage. In some cases, such as low to moderate risk situations, it may be reasonable to except some risk of damage and plan on future repairs for these shallow pipelines. If, however, the pipelines are considered critical lifeline systems then more positive mitigation would be appropriate. Additional analysis and field exploration may be appropriate based on the selected approach. The following sections present general types of mitigation measures that may be considered for the various geologic hazards.

9.1.1 Fault Rupture

As indicated, the proposed pipeline alignment is crossed by the Malibu Coast Fault Zone (Figures 6 and 8) and is subject to damage associated with fault rupture. There has been no known surface rupture of this fault system during historic time. Evidence of fault movement during the Holocene epoch (last 11,000 years) is limited to a few locations and is a subject of some debate (CDMG, 1977, Treiman, 1994 and 2007). The County of Los Angeles and the City of Malibu generally consider the Malibu Coast Fault an active fault (City of Malibu, 2014), and some segments of the fault have been zoned under the Alquist-Priolo Fault Zoning Act (CGS, 2007, and Hart and Bryant, 2018); however, the project site is not located within a mapped EFZ.

Mitigation of pipeline damage due to fault rupture may include the use of emergency shut-off valves, placing the pipeline in oversize casing or buried vaults designed to allow ground movement without damaging the pipeline, the use of flexible pipes and joints, and/or construction of the pipeline above ground. Design for mitigation associated with oversized casing and vaults would typically be designed and located at specific fault splay locations under the assumption that the fault would rupture along the previous rupture plane(s) and sized based on anticipated amounts and direction of offset along the fault. The location(s) of the fault splays, direction of movement, and anticipated amount of movement is unknown at this time. Accordingly, to provide design recommendations for this type of mitigation,

extensive additional exploration, including road closures and fault trenching, would be needed to attempt to define these parameters. Consequently, it is our opinion that due to the large portion of the project area being located within the zone of faulting (Figure 8) and the current level of development in and around the project area, this type of mitigation is not practical for the planned pipeline. Flexible pipelines and joints may allow some movement of the pipeline within the trench, but the unknown parameters regarding the potential fault movement and splay locations will limit the effectiveness of this mitigation method. Accordingly, it is recommended that alternative mitigation methods be considered in the project design, including the use of emergency shut-off valves and/or constructing the pipe above ground.

9.1.2 Liquefaction Potential and Seismically Induced Settlement

The State of California Seismic Hazard Zone Map (CDMG, 2001b) indicates that the sections of pipeline located along PCH, along the southern approximately 450 feet of Serra Road, and at the site of the future pressure regulating station considered susceptible to seismically induced liquefaction (Figure 9). Soil liquefaction may result in ground settlement, which may result in pipeline damage. Liquefaction analyses performed utilizing data from boring B-29 indicate estimated seismically induced settlement of approximately 8¼ inches. The actual occurrence of liquefaction and magnitude of settlement will vary depending on the size and duration of earthquake shaking, variations in soil conditions and depths to groundwater at the time of the event. In shallow groundwater conditions, sand boils and build-up of groundwater pore pressures can also result in pipeline uplift and damage. It is anticipated that varying depths of alluvium along the southern portion of Serra Road may be susceptible to liquefaction. The amount of settlement associated with liquefaction and dynamic settlement along the southern end of Serra Road would vary due to these varying depths, but generally decrease to the north and be less than the settlements calculated along PCH where alluvium is anticipated to be deepest along the alignment. Liquefaction and dynamic settlement at the site of the future regulating station are anticipated to be relatively minor given the relatively shallow depth of alluvium (approximately 11.5 feet) relative to historic high depth to groundwater of 10 feet.

Mitigation of damage to the proposed pipeline alignments along PCH and the southern end of Serra due to liquefaction may involve supporting the pipeline on deep pile foundations (up to 50 feet deep or greater) or deep ground improvement (i.e., soil densification, stone columns, pressure grouting, etc.). Alternatively, flexible pipe material and flexible pipe connections that will tolerate up to approximately 8½ inches of soil movement, especially at

the transition between the liquefiable and non-liquefiable materials on Serra Road may be considered. However, since these mitigation methods are typically not considered to be practical for similar shallow pipelines, emergency shut-off valves should be considered in these areas of the pipeline alignment to reduce potential impacts due to soil liquefaction.

9.2 Earthwork

Based on our understanding of the project, earthwork is anticipated to consist of open cut-and-cover trenching for pipelines. Earthwork should be performed in accordance with the requirements of the appropriate governing agencies, and the recommendations presented below.

9.2.1 Pre-Construction Conference

We recommend that a pre-construction conference be held. The owner and/or their representative, the governing agencies' representatives, the civil engineer, Ninyo & Moore, and the contractor should be in attendance to discuss the work plan and project schedule and earthwork requirements.

9.2.2 Clearing and Site Preparation

Prior to performing excavations and trenching, the alignments should be cleared of pavements, debris, surface obstructions, abandoned utilities, and other deleterious materials. The existing utilities within the project limits should be located and protected from damage by construction activities. Obstructions that extend below finish grade, if any, should be removed and the resulting holes filled with compacted soils. Materials generated from the clearing operations should be removed from the project site and disposed of at a legal dumpsite.

9.2.3 Excavation Characteristics

We anticipate that excavations in the fill, alluvium, residual soil/colluvium, terrace deposits, and more weathered and fractured formational materials can be accomplished with backhoes, excavators, or other heavy earthmoving equipment in good working condition. Difficult excavating should be anticipated within the Conejo Volcanics and/or sedimentary rock with lesser degrees of weathering and/or with concreted zones/layers, which may involve special excavating equipment, such as rippers, pneumatic chippers, and jackhammers. Excavating difficulty will also depend on the degree of fracturing/jointing in the rock.

We anticipate that existing undocumented fill, alluvium, residual soil/colluvium, terrace deposits, and weathered Monterey Shale encountered during construction will be generally comprised of silty sand and sandy silt with variable amounts of gravel and of clay with variable amounts of sand and gravel. Cobbles and boulders should be anticipated within these materials. We anticipate that the sedimentary bedrock materials will generally disaggregate and/or break down with processing to be reused as fill; however, based on our experience and site observations, the degrees of weathering, decomposition, and hardness of the sedimentary rock may vary widely with relatively abrupt changes at a site. Excavations in the Conejo Volcanics are anticipated to generate oversize rock fragments that will be difficult to break apart and are not generally suitable for fill material. The contractor should be prepared to take appropriate measures to address the presence of oversize materials and hard materials and should make their own independent evaluation of the excavatability of the on-site materials prior to submitting their bids.

9.2.4 Temporary Excavations

In general, we anticipate that excavations will consist of vertically sided trenches approximately 5 feet deep or less. Subsurface materials along the pipeline alignment vary widely and will generally include loose to dense silty to clayey sand, firm to hard clay, and variably weathered and fractured bedrock. The sandier soils in the fill, alluvium, residual soil/colluvium, and terrace deposits may have little cohesion and may be prone to caving. Excavations that are close to parallel utilities may encounter loose trench zone materials, which are also potentially unstable. For planning purposes, fill, alluvium, residual soil/colluvium, and terrace deposits should be treated as “Type C” soils in accordance with the OSHA guidelines. Excavations in Conejo Volcanics, or Monterey Formation, including clayey residual soil/colluvium, should be treated as “Type B” soils in accordance with OSHA guidelines. In general, temporary slopes above the water table for Type C soils should be stable at inclinations of 1:1 (horizontal to vertical) up to a depth of about 4 feet below the existing grade and 1½:1 (horizontal to vertical) for excavations deeper than 4 feet. Temporary near-vertical excavations for Type B soils not exceeding a depth of approximately 4 feet should be feasible. Excavations that are unstable or deeper than 4 feet should be laid back to slope inclinations of approximately 1:1 (horizontal to vertical) or flatter. The contractor’s competent person should make their own evaluation of the soil types encountered during construction and adjust project requirements per OSHA accordingly.

9.2.5 Shoring

Braced shoring systems for trench excavations in clayey soil and granular soil/bedrock above the groundwater table should be designed using the lateral earth pressure values shown on Figures 10 and 11, respectively, as appropriate. The lateral earth pressures used may need to be adjusted based on the materials encountered during construction and/or if groundwater is encountered. These recommended design lateral earth pressures do not include parameters for surcharge loads, such as soil stockpiles and construction materials, within a 1:1 (horizontal to vertical) plane extending up and back from the base of the shoring system. For shoring systems subjected to the above-mentioned surcharge loads, the contractor should include the effect of these loads on the lateral earth pressures acting on the shored walls. In addition, continuous shoring systems may be appropriate where caving is severe, groundwater is encountered, and/or adjacent utilities or structures are at risk.

The contractor should retain a qualified and experienced engineer to design the shoring system. The shoring parameters presented in this report are minimum requirements, and the contractor should evaluate the adequacy of these parameters and make the appropriate modifications for their design. We recommend that the contractor take appropriate measures to protect workers. OSHA requirements pertaining to worker safety should be observed. In addition, continuous shoring systems may be appropriate where caving is severe, groundwater is encountered, and/or adjacent utilities or structures are at risk.

9.2.6 Excavation Bottom Stability

In general, we anticipate that the bottom of the pipeline trenches will remain stable and provide suitable support to the proposed pipeline and construction operations. However, excavations in alluvial soils that extend close to or below the groundwater table may be unstable. Unstable bottom conditions may be stabilized by overexcavation of the trench bottom approximately 1 to 2 feet and replacement with crushed rock or aggregate base materials. Crushed rock used to stabilize bottoms should be wrapped in filter fabric (Mirafi 140N or equivalent). Recommendations for stabilizing excavation bottoms should be based on evaluation in the field by Ninyo & Moore at the time of construction. The bottoms of the trench excavations should be observed by the project geotechnical consultant prior to placement of the pipeline and bedding materials. In the event that soft, loose, wet, and/or other unsuitable materials are encountered along the trench bottom, additional recommendations, such as overexcavation/recompaction, replacement with aggregate base wrapped in filter fabric, or other, should be provided based on the geotechnical consultant's observations.

9.2.7 Fill Material

In general, the on-site materials are considered suitable for use as general fill and trench backfill, provided they are free of trash, debris, roots, vegetation, or other deleterious materials. Fill should generally be free of rocks or lumps of material in excess of 3inches in diameter. Rocks or hard lumps larger than approximately 3 inches in diameter should be broken into smaller pieces or should be removed from the site. In addition, fill placed within 2 feet of the bottom of pavement sections have an expansion index (EI) of 50 or less in accordance with ASTM D 4829. Note that some fat clays are present on site, specifically within the residual soil/colluvium, that may not meet this requirement. On-site soils used as fill will involve moisture conditioning to achieve appropriate moisture content for compaction.

Import material, if used, should consist of clean, non-expansive, granular material, which conforms to the "Greenbook" for structure backfill. Soil should also be tested for corrosive properties prior to importing. We recommend that the imported materials satisfy the Caltrans (2018) criteria for non-corrosive soils (i.e., soils having a chloride concentration of 500 parts per million [ppm] or less, a soluble sulfate content of approximately 0.20 percent [2,000 ppm] or less, a pH value of 5.5 or more and an electrical resistivity of 1,100 ohm-centimeters [ohm-cm] or more). Import material should be submitted to Ninyo & Moore for review prior to importing to the site. The contractor should be responsible for the uniformity of import material brought to the site.

9.2.8 Fill Placement and Compaction

Fill, including trench backfill, should be compacted in horizontal lifts to a relative compaction of 90 percent as evaluated by ASTM International (ASTM) D 1557. Fill soils should be placed at or near the optimum moisture content as evaluated by ASTM D 1557. The optimum lift thickness of fill will depend on the type of compaction equipment used, but generally should not exceed 8 inches in loose thickness. Special care should be taken to avoid pipe damage when compacting trench backfill above the pipe. Placement and compaction of the fill soils should be in general accordance with local grading ordinances and good construction practice.

9.3 Pipe Bedding, Pipe Anchors, and Backfill Stabilizers

We recommend that pipelines and other utility lines be supported on 6 inches or more of granular bedding material such as sand with a sand equivalent value of 30 or more in accordance with ASTM D 2419. Bedding material should be placed and compacted around the pipe, and 12 inches or more above the top of the pipe in accordance with the latest edition of Greenbook. Special care

should be taken not to allow voids beneath and around the pipe. Bedding material and compaction requirements should be in accordance with the recommendations of this report, the project specifications, and applicable requirements of the governing agencies.

As indicated, grades along the proposed pipeline alignment are generally anticipated to be on the order of 10 percent or less with the exception of portions of the pipeline that cross the two previously mentioned lots, which will reach grades on the order of 30 percent. We recommend that pipeline trenches with ground surfaces steeper than 30 percent be backfilled in general accordance with 2000 Los Angeles County of Public Works Standard Detail 2026-1 (Type 1), which includes the placement of 2-inch-thick by 12-inch-high redwood baffle boards across the width of the trench and the installation of pipe anchors. According to the County of Los Angeles (2000), the boards should extend 12 or more inches beyond the sidewalls of the trench in a direction perpendicular to the trench, and should be placed at an interval such that the top of the lower board is even with the bottom of the next higher board along the longitudinal axis of the pipe. In addition, the County of Los Angeles (2000) indicates that the pipe anchors should consist of concrete blocks constructed and spaced per American Public Works Association (APWA) (1997) Standard Plan Detail 221. The County of Los Angeles (2000) and APWA (1997) standard plan details are provided in Appendix D.

9.4 Lateral Earth Pressures for Thrust Blocks

Thrust restraint for buried pipelines may be achieved by transferring the thrust force to the soil outside the pipe through a thrust block. Thrust blocks may be designed using the lateral passive earth pressures for clayey soil and for granular soil/bedrock are presented on Figures 12 and 13, respectively.

9.5 Modulus of Soil Reaction

The modulus of soil reaction is used to characterize the stiffness of soil backfill placed on the sides of buried flexible pipelines for the purpose of evaluating lateral deflection caused by the weight of the backfill above the pipe. We recommend that a modulus of soil reaction of 1,200 pounds per square inch be used for design, provided that granular bedding material is placed adjacent to the pipe, as recommended in this report.

9.6 Pavement Reconstruction

In general, pavement repair should match the existing pavement section and should conform to the requirements of the appropriate governing agency. Aggregate base material and asphalt

concrete should be compacted to a relative compaction of 95 percent as evaluated by ASTM D 1557.

9.7 Corrosivity

Laboratory testing was performed on representative near surface samples to evaluate soil pH, electrical resistivity, and chloride and water-soluble sulfate content. The pH and electrical resistivity tests were performed in accordance with California Test (CT) Method 643, and sulfate and chloride tests were performed in accordance with CT 417 and 422, respectively.

The results of the corrosivity testing indicated that the samples had electrical resistivity ranging from approximately 385 to 965 ohm-cm, soil pH ranging from 7.4 to 8.4, chloride contents ranging from approximately 135 to 590 ppm, and sulfate contents ranging from approximately 0.006 to 0.132 percent (i.e., 60 to 1,320 ppm). Based on the laboratory test results and Caltrans criteria, the project site can be classified as a corrosive site, which is defined as having earth materials with more than 500 ppm chlorides, more than 1,500 ppm of sulfates, a pH of 5.5 or less, and/or an electrical resistivity of less than 1,100 ohm-cm. The results of the corrosivity tests are presented in Appendix B.

9.8 Concrete

Concrete in contact with soil or water that contains high concentrations of water-soluble sulfates can be subject to premature chemical and/or physical deterioration. Based on the American Concrete Institute (ACI) criteria (2016b), the potential for sulfate attack is negligible for water-soluble sulfate contents in soil ranging from 0.00 to 0.10 percent by weight and moderate for water-soluble sulfate contents ranging from 0.10 to 0.20 percent by weight. The potential for sulfate attack is severe for water-soluble sulfate contents ranging from 0.20 to 2.00 percent by weight and very severe for water-soluble sulfate contents over 2.00 percent by weight. The soil samples tested for this evaluation, using CT 417, indicate water-soluble sulfate contents ranging from approximately 0.006 to 0.132 percent (i.e., 60 to 1,320 ppm). Accordingly, the on-site soils are considered to have a negligible to moderate potential for sulfate attack. Per ACI (2016b), Type II cement is appropriate for the site improvements. However, due to the potential variability of the soils on site, consideration should be given to using Type II/V cement for the project.

To reduce the potential for shrinkage cracks in the concrete during curing, we recommend that the concrete for the proposed structures be placed with a slump of 4 inches based on ASTM C 143. The slump should be checked periodically at the site prior to concrete placement. We further recommend that concrete cover over reinforcing steel for foundations be provided in

accordance with the 2019 CBC. The structural engineer should be consulted for additional concrete specifications.

9.9 Drainage

Appropriate surface drainage is imperative for satisfactory site performance. Positive drainage should be provided and maintained to direct surface water away from the tops of slopes. Positive drainage is defined as a slope of 2 percent or more for a distance of 5 feet or more away from tops of slopes. Runoff should then be directed using swales or pipes into a collective drainage system. Surface waters should not be allowed to pond adjacent to pavement.

10 CONSTRUCTION OBSERVATION

The recommendations provided in this report are based on our understanding of the proposed project and on our evaluation of the data collected based on subsurface conditions disclosed by widely spaced exploratory borings. It is imperative that the interpolated subsurface conditions be checked by our representative during construction. Observation and testing of compacted fill and backfill should also be performed by the project geotechnical consultant during construction. We further recommend that the project plans and specifications be reviewed by the geotechnical consultant prior to construction. It should be noted that, upon review of these documents, some recommendations presented in this report might be revised or modified.

During construction we recommend that the duties of the geotechnical consultant include, but not be limited to:

- Observing clearing, grubbing, and removals.
- Observing excavation bottoms, the placement of bedding and shading materials, and the placement and compaction of fill, including trench backfill.
- Evaluation of imported materials prior to their use as fill.
- Performance of field tests to evaluate fill compaction.

The recommendations provided in this report assume that Ninyo & Moore will be retained as the geotechnical consultant during the construction phase of this project. If another geotechnical consultant is selected, we request that the selected consultant indicate to the owner and to our firm in writing that our recommendations are understood and that they are in full agreement with our recommendations.

11 LIMITATIONS

The field evaluation, laboratory testing, and geotechnical analyses presented in this report have been conducted in accordance with current engineering practice and the standard of care exercised by reputable geotechnical consultants performing similar tasks in this area. No warranty, expressed or implied, is made regarding the conclusions, recommendations, and professional opinions expressed in this report. Variations may exist and conditions not observed or described in this report may be encountered during construction.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ninyo & Moore should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document.

The conclusions and recommendations presented in this report are based on analysis of observed conditions in thirty-one exploratory borings. If conditions are found to vary from those described in this report, the geotechnical consultant should be notified, and additional recommendations will be provided upon request. It should be understood that the conditions of a site can change with time as a result of natural processes or the activities of man at the subject site or nearby sites. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ninyo & Moore has no control.

This report is intended exclusively for use by the client. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

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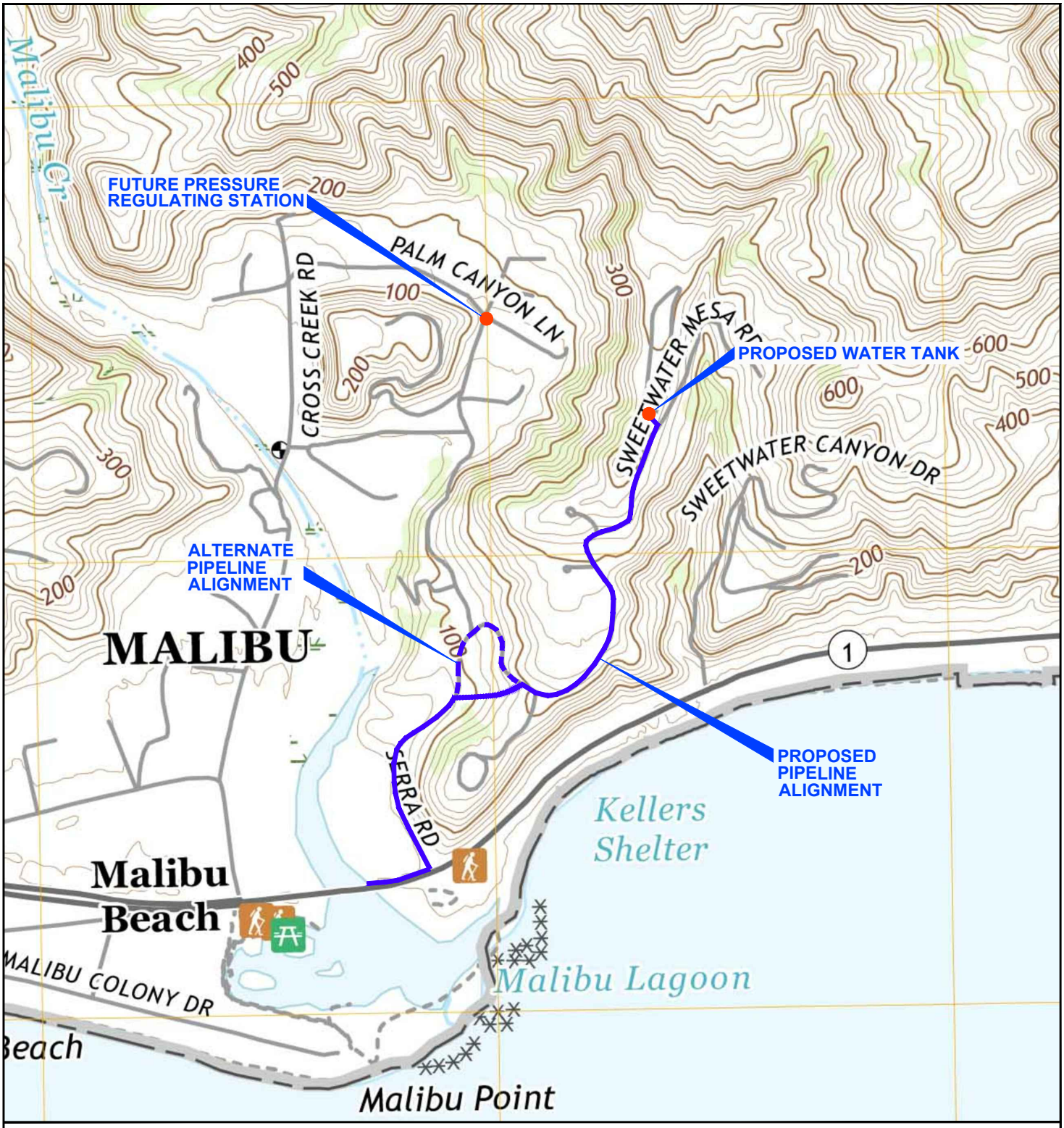
FIGURES



NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: USGS, 2018.

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FIGURE 1

SITE LOCATION

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

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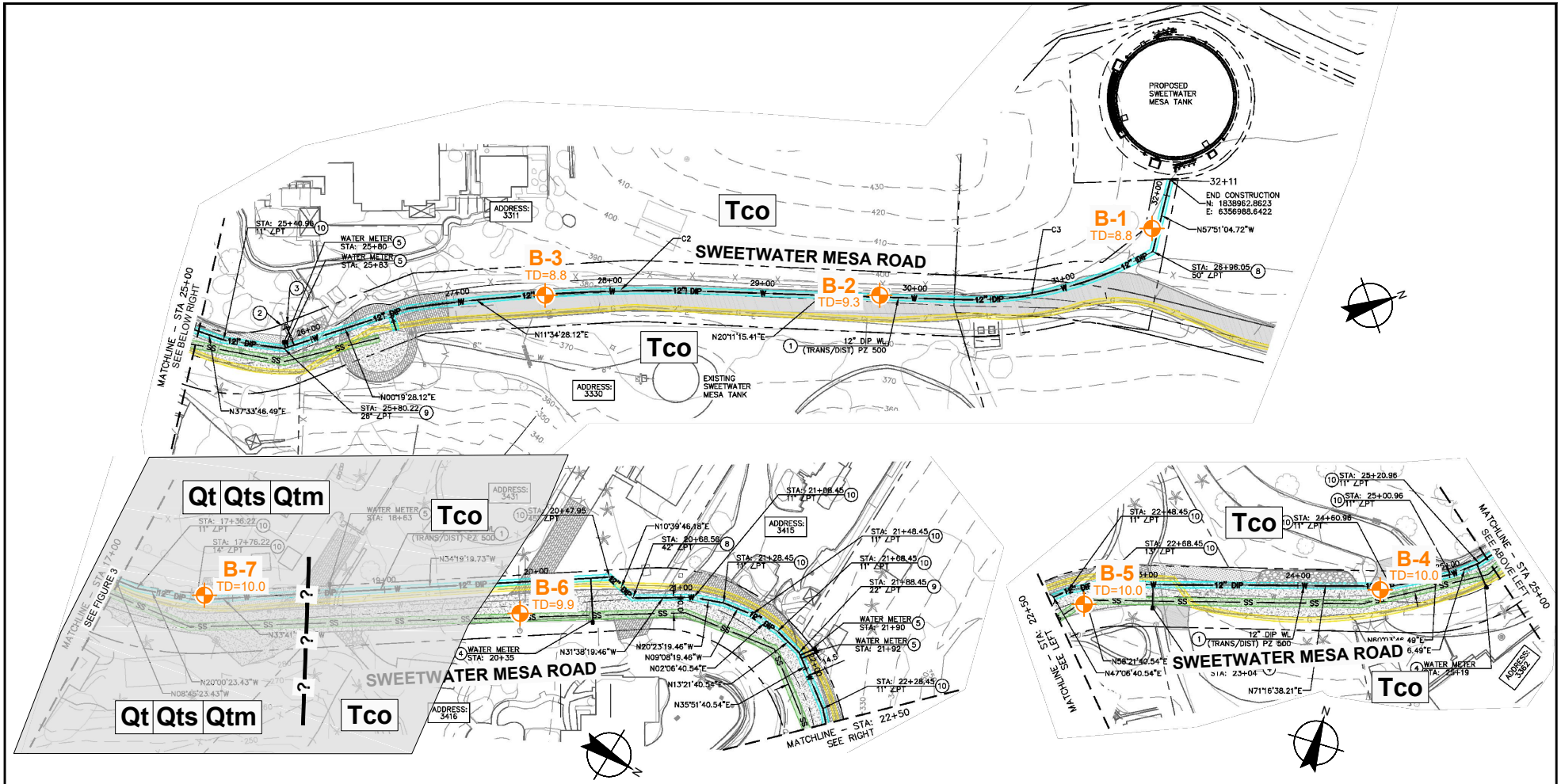

LEGEND

B-7 TD=10.0 — BORING; TD=TOTAL DEPTH IN FEET

Qt Qts Qtm — TERRACE DEPOSITS

Tco — CONEJO VOLCANICS

EXISTING WATERMAIN (4' WIDTH)

PROPOSED WATERLINE TRENCH (4' WIDTH)

FUTURE WATERLINE TRENCH (4' WIDTH)

GEOLOGIC CONTACT

EXISTING GAS MAIN TRENCH (3' WIDTH)

FUTURE SEWER MAIN TRENCH (5' WIDTH)

FUTURE RECYCLED WATER TRENCH (4' WIDTH)

ZONE OF POSSIBLE FAULTING

FEET

0 100 200

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: CANNON, 2020.

FIGURE 2

PIPELINE ALIGNMENT AND BORING LOCATIONS (B-1 THROUGH B-7)

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

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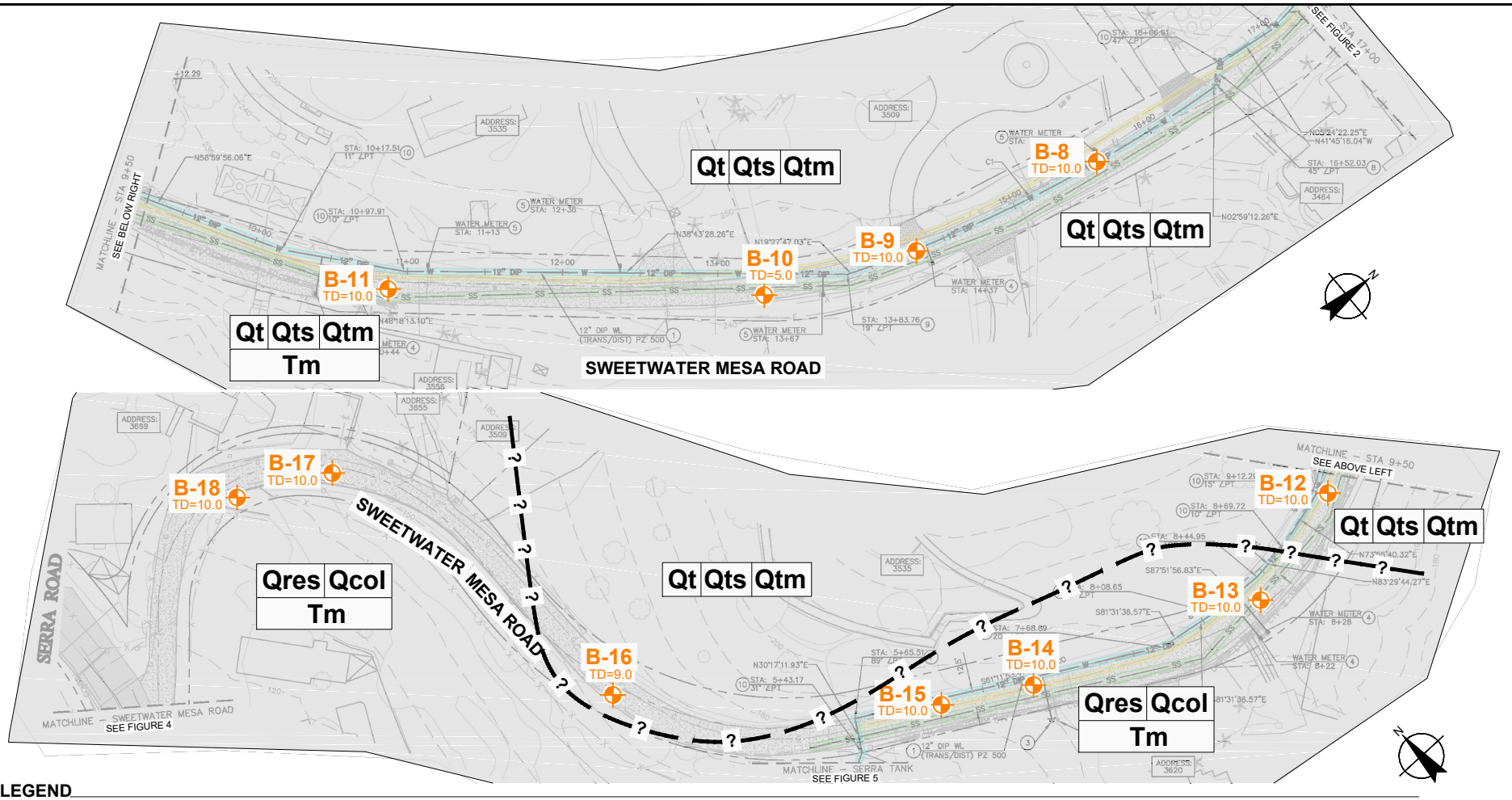

LEGEND

- B-18 TD=10.0 — BORING; TD=TOTAL DEPTH IN FEET
- Qres Qcol — RESIDUAL SOIL/COLLUVIUM
- Qt Qts Qtm — TERRACE DEPOSITS
- Tm — MONTEREY SHALE
- EXISTING WATERMAIN (4' WIDTH)
- PROPOSED WATERLINE TRENCH (4' WIDTH)
- FUTURE WATERLINE TRENCH (4' WIDTH)
- GEOLOGIC CONTACT
- EXISTING GAS MAIN TRENCH (3' WIDTH)
- FUTURE SEWER MAIN TRENCH (5' WIDTH)
- FUTURE RECYCLED WATER TRENCH (4' WIDTH)
- ZONE OF POSSIBLE FAULTING

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: CANNON, 2020.

FEET
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FIGURE 3

PIPELINE ALIGNMENT AND BORING LOCATIONS (B-8 THROUGH B-18)

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

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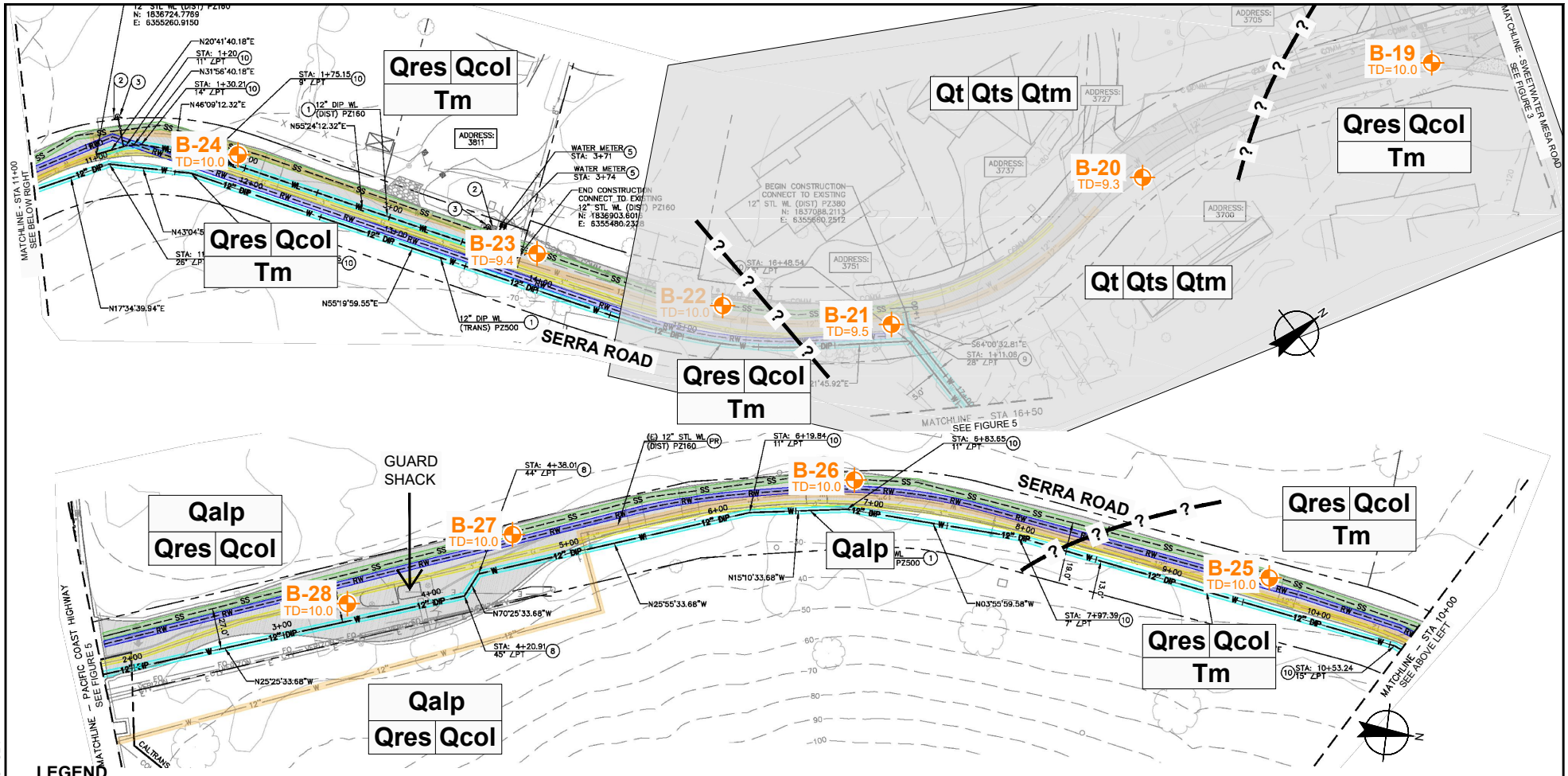
Ninyo & Moore
Geotechnical & Environmental Sciences Consultants



LEGEND

- **B-28** TD=10.0 — BORING; TD=TOTAL DEPTH IN FEET
- **Qalp** — ALLUVIUM
- **Qres Qcol** — RESIDUAL SOIL/COLLUVIUM
- **Qt Qts Qtm** — TERRACE DEPOSITS
- **Tm** — MONTEREY SHALE
- EXISTING WATERMAIN (4' WIDTH)
- PROPOSED WATERLINE TRENCH (4' WIDTH)
- FUTURE WATERLINE TRENCH (4' WIDTH)
- GEOLOGIC CONTACT
- EXISTING GAS MAIN TRENCH (3' WIDTH)
- FUTURE SEWER MAIN TRENCH (5' WIDTH)
- FUTURE RECYCLED WATER TRENCH (4' WIDTH)
- ZONE OF POSSIBLE FAULTING

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: CANNON, 2020.

FEET
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FIGURE 4

PIPELINE ALIGNMENT AND BORING LOCATIONS (B-19 THROUGH B-28)

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

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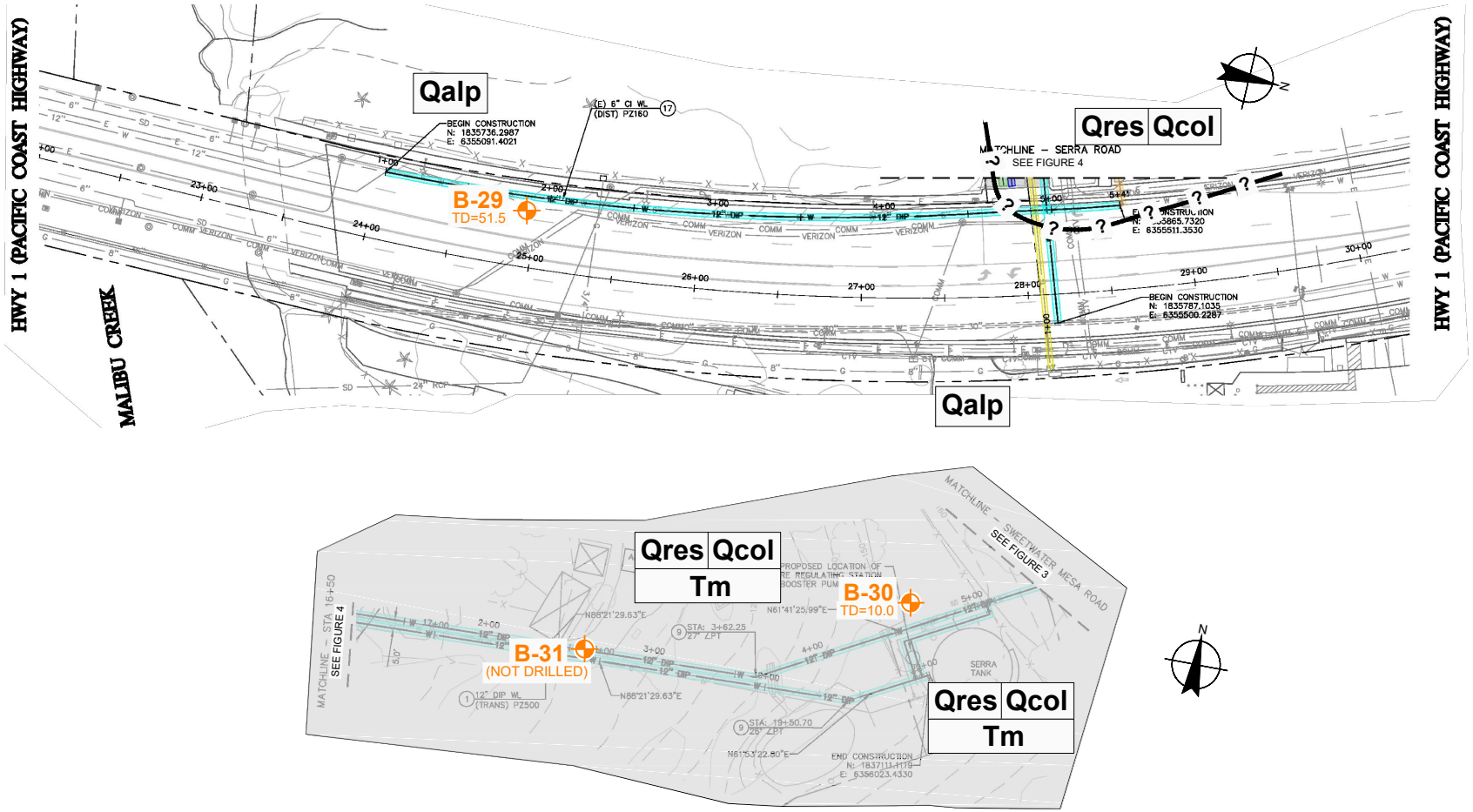
Geotechnical & Environmental Sciences Consultants



LEGEND

B-30 TD=10.0	BORING; TD=TOTAL DEPTH IN FEET
Qalp	ALLUVIUM
Qres Qcol	RESIDUAL SOIL/COLLUVIUM
Tm	MONTEREY SHALE
	EXISTING WATERMAIN (4' WIDTH)
	PROPOSED WATERLINE TRENCH (4' WIDTH)
	FUTURE WATERLINE TRENCH (4' WIDTH)
? ?	GEOLOGIC CONTACT
	EXISTING GAS MAIN TRENCH (3' WIDTH)
SS SS	FUTURE SEWER MAIN TRENCH (5' WIDTH)
RW RW	FUTURE RECYCLED WATER TRENCH (4' WIDTH)
	ZONE OF POSSIBLE FAULTING

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: CANNON, 2020.

FEET
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FIGURE 5

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PIPELINE ALIGNMENT AND BORING LOCATIONS (B-29 THROUGH B-31)

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

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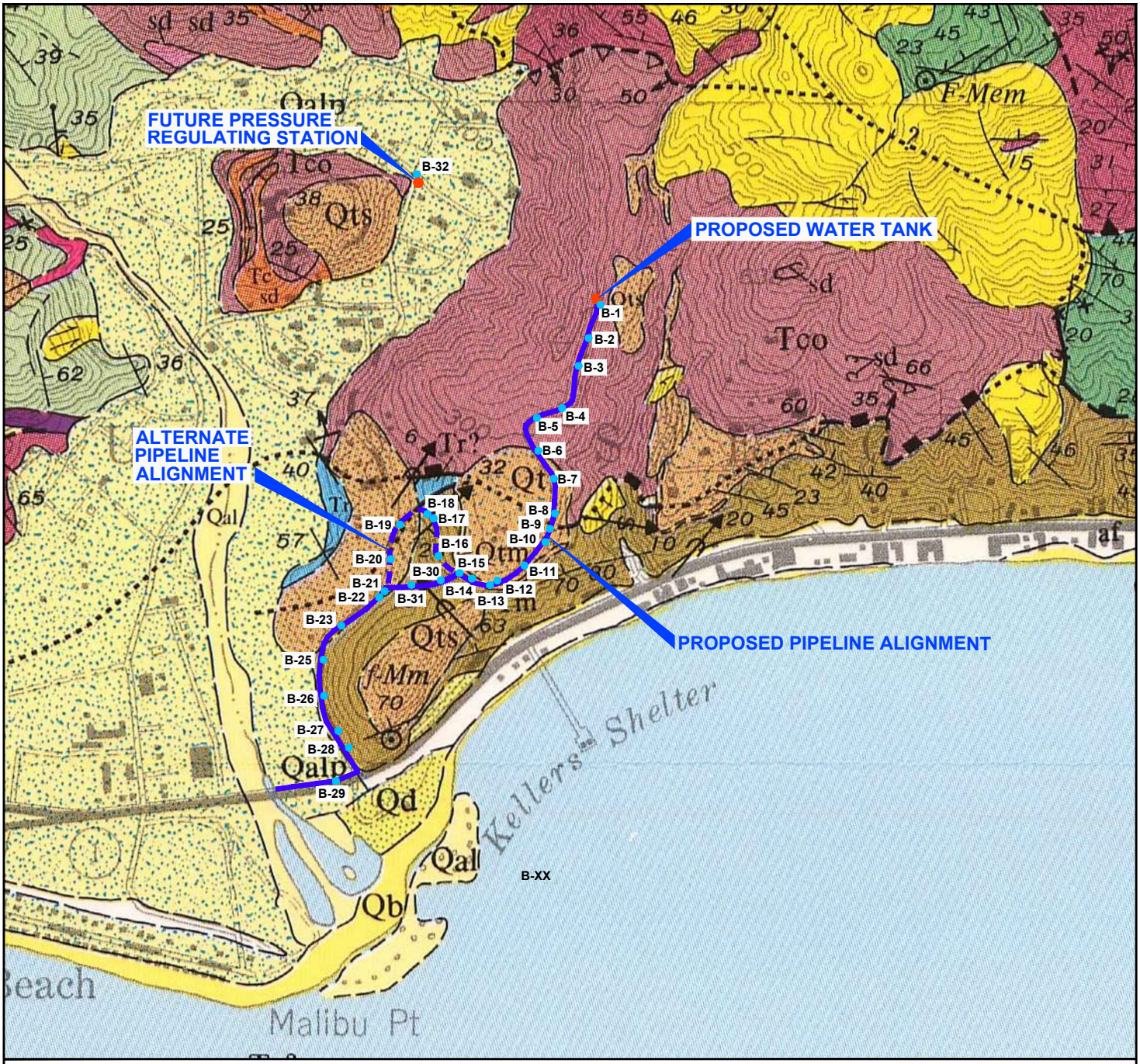

LEGEND

Qalp	ALLUVIUM	Tm	MONTEREY SHALE
Qd	DUNE DEPOSITS	Tc	CALABASAS FORMATION
Qls	LANDSLIDE DEPOSITS		GEOLOGIC CONTACT
Qt / Qts / Qtm	TERRACE DEPOSITS		FAULT; DASHED WHERE INFERRED, DOTTED WHERE CONCEALED
Tco	CONEJO VOLCANICS	70	STRIKE AND DIP OF BEDS

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FEET

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NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: YERKES, R.F. AND CAMPBELL, R.H., 1980.

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FIGURE 6

REGIONAL GEOLOGY

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

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LEGEND

CALIFORNIA FAULT ACTIVITY

- HISTORICALLY ACTIVE
- HOLOCENE ACTIVE
- LATE QUATERNARY (POTENTIALLY ACTIVE)
- QUATERNARY (POTENTIALLY ACTIVE)
- STATE/COUNTY BOUNDARY

SOURCE: U.S. GEOLOGICAL SURVEY AND CALIFORNIA GEOLOGICAL SURVEY, 2006, QUATERNARY FAULT AND FOLD DATABASE FOR THE UNITED STATES.

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MILES

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NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE.

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FIGURE 7

FAULT LOCATIONS

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

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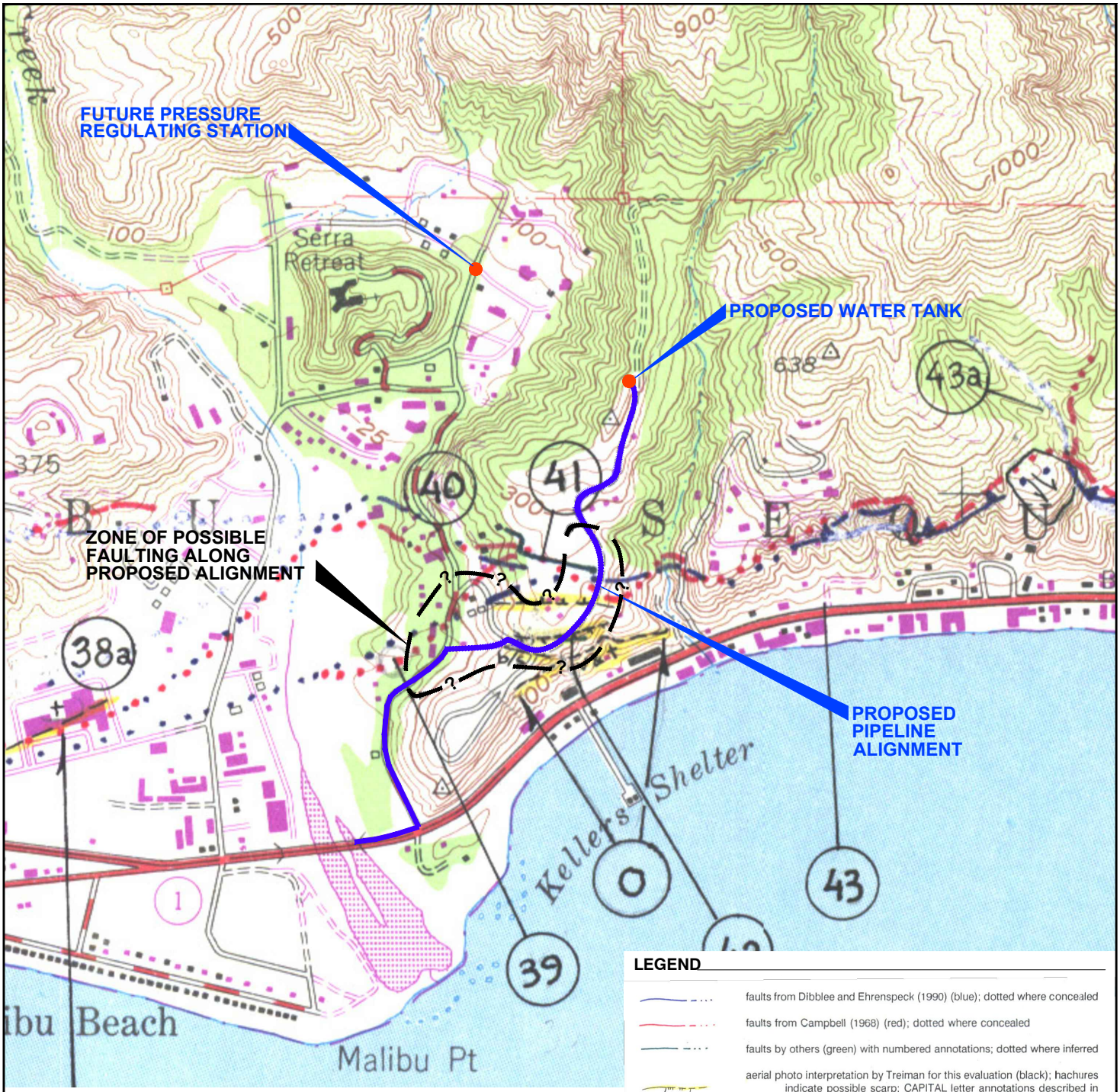
Geotechnical & Environmental Sciences Consultants



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NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

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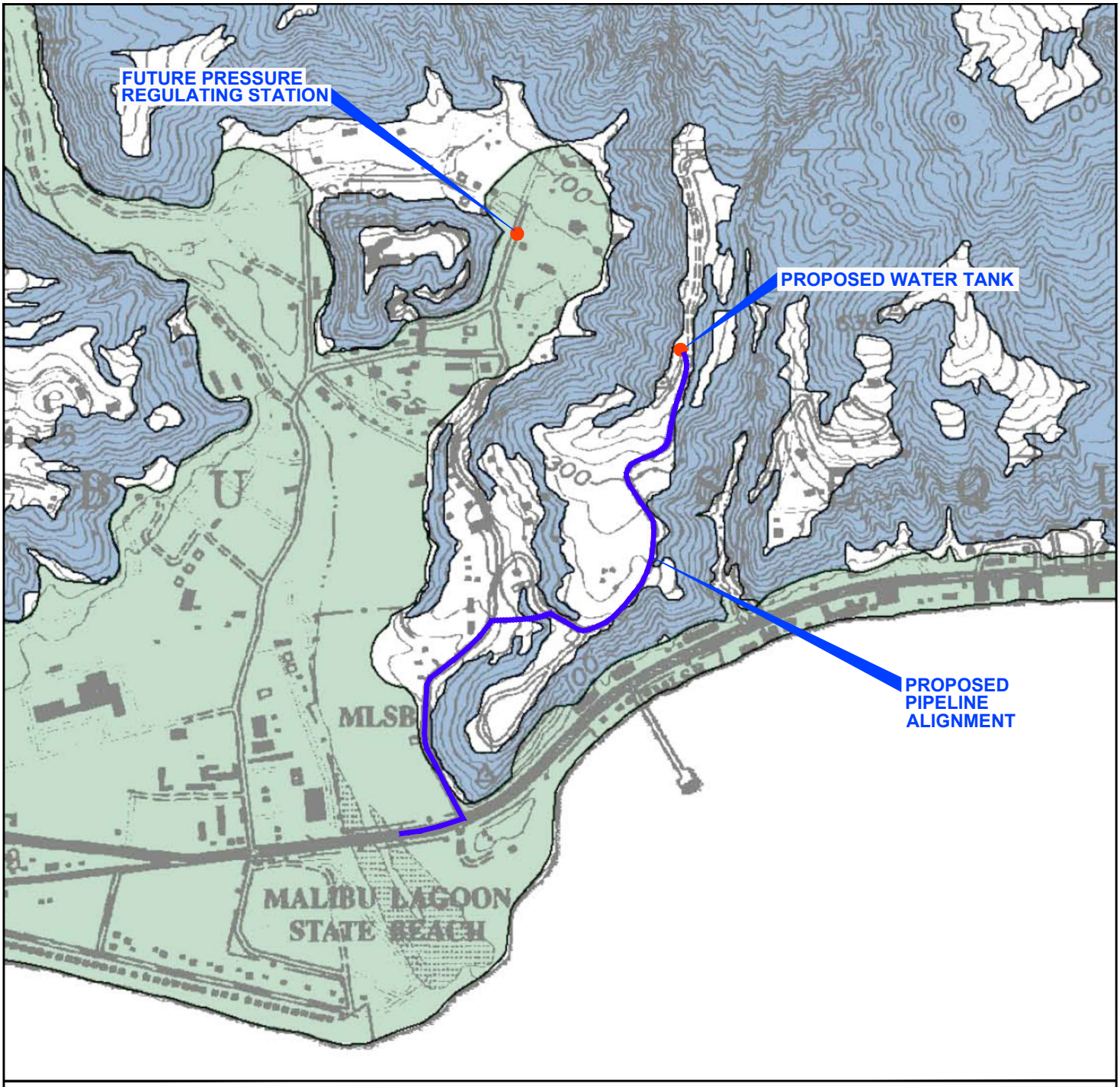
FIGURE 8

PROJECT AREA FAULTING

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

211056001 I 10/20

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants



LEGEND

EARTHQUAKE-INDUCED LANDSLIDES
Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

LIQUEFACTION
Areas where historic occurrence of liquefaction, or local geological, geotechnical and groundwater conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE:CDMG, 2001a.

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FIGURE 9

SEISMIC HAZARD ZONES

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

211056001 I 10/20

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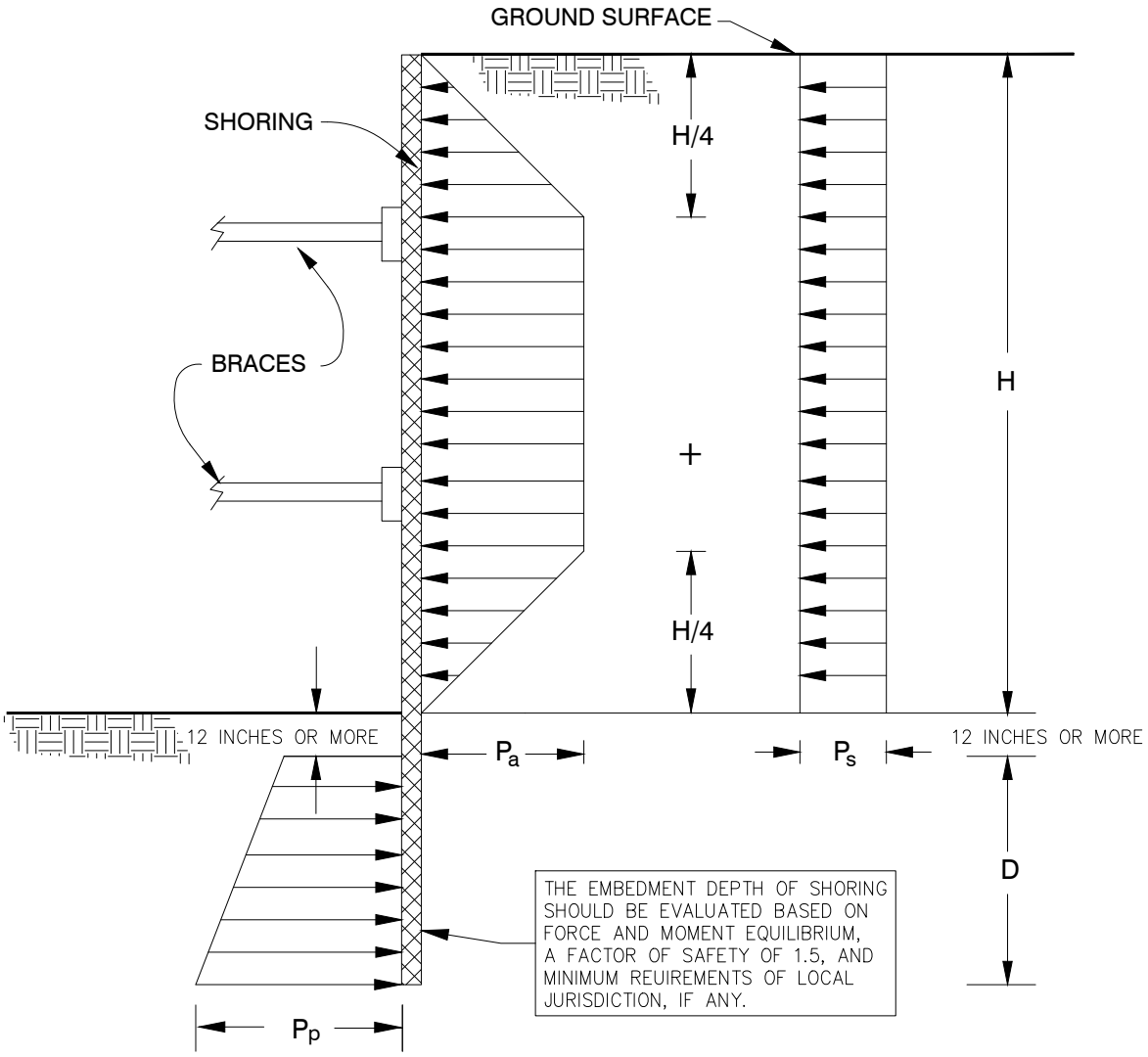
Geotechnical & Environmental Sciences Consultants



NOTES:

1. APPARENT LATERAL EARTH PRESSURE, P_a
   P_a = 48H psf
2. CONSTRUCTION TRAFFIC INDUCED SURCHARGE PRESSURE, P_s
   P_s = 120 psf
3. PASSIVE LATERAL EARTH PRESSURE, P_p
   P_p = 120D + 1,000 psf
4. ASSUMES GROUNDWATER IS NOT PRESENT
5. SURCHARGES FROM EXCAVATED SOIL OR CONSTRUCTION MATERIALS ARE NOT INCLUDED
6. H AND D ARE IN FEET

NOT TO SCALE

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FIGURE 10

LATERAL EARTH PRESSURES FOR BRACED EXCAVATION (CLAYEY SOIL)

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

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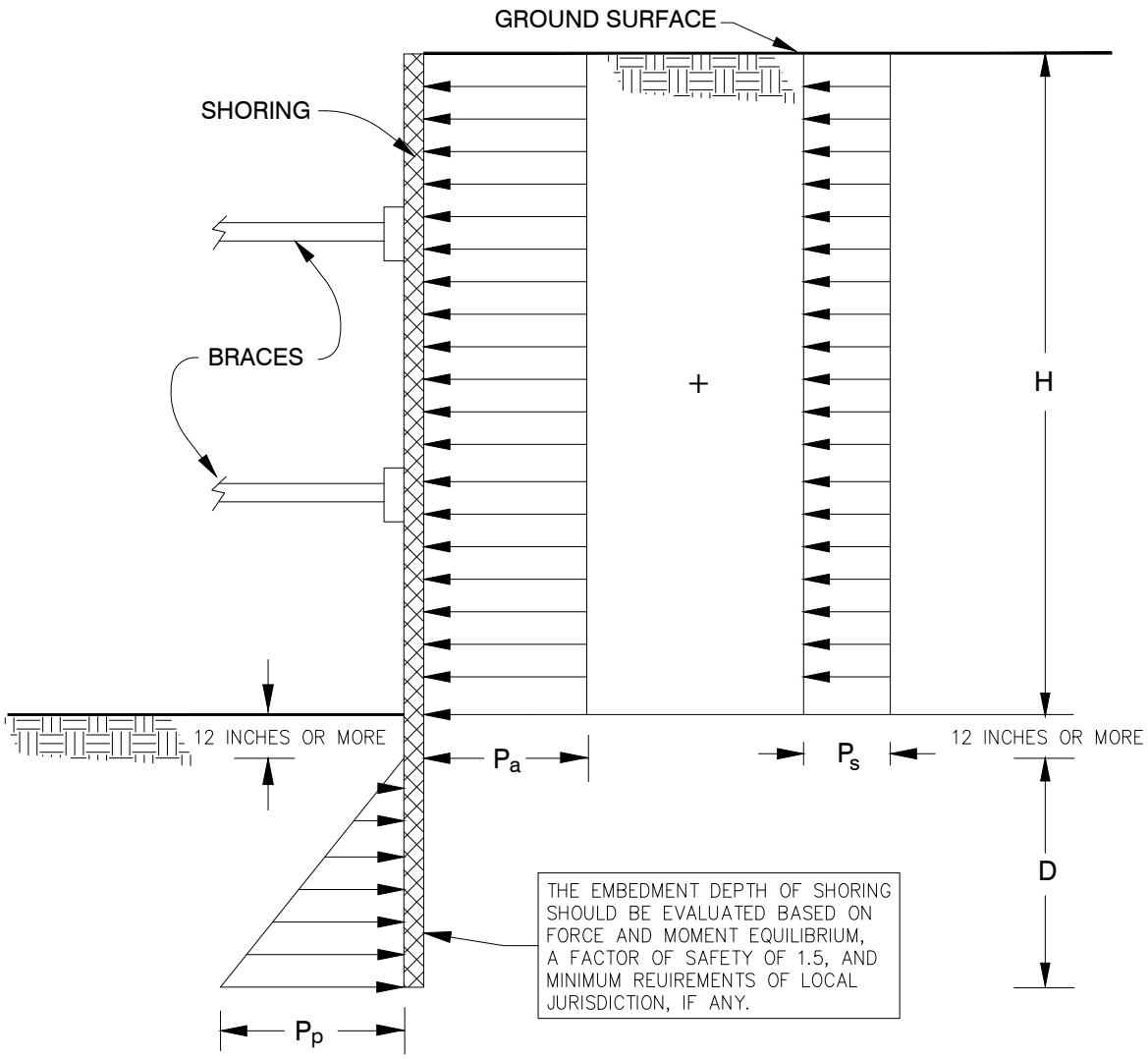

NOTES:

1. APPARENT LATERAL EARTH PRESSURE, P_a
   P_a = 21H psf
2. CONSTRUCTION TRAFFIC INDUCED SURCHARGE PRESSURE, P_s
   P_s = 120 psf
3. PASSIVE LATERAL EARTH PRESSURE, P_p
   P_p = 450D psf
4. ASSUMES GROUNDWATER IS NOT PRESENT
5. SURCHARGES FROM EXCAVATED SOIL OR CONSTRUCTION MATERIALS ARE NOT INCLUDED
6. H AND D ARE IN FEET

NOT TO SCALE

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FIGURE 11

LATERAL EARTH PRESSURES FOR BRACED EXCAVATION (GRANULAR SOIL/BEDROCK)

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

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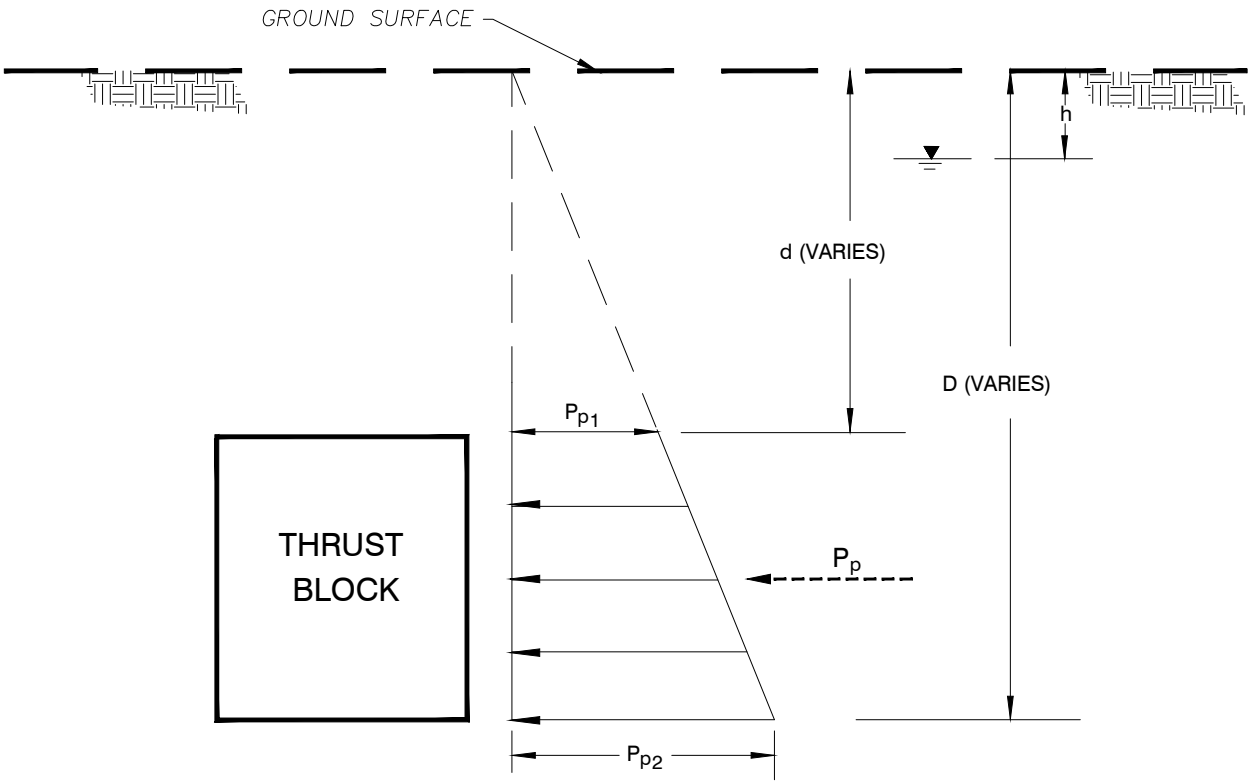

NOTES:

1. GROUNDWATER BELOW BLOCK
   $P_p = 165(D^2-d^2)$ lb/ft
2. ASSUMES BACKFILL IS GRANULAR MATERIAL
3. ASSUMES THRUST BLOCK IS ADJACENT TO COMPETENT MATERIAL
4. D, d AND h ARE IN FEET
5. GROUNDWATER TABLE

NOT TO SCALE

FIGURE 12

THRUST BLOCK LATERAL EARTH PRESSURE DIAGRAM (CLAYEY SOIL)

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

211056001 I 10/20

Ninyo & Moore
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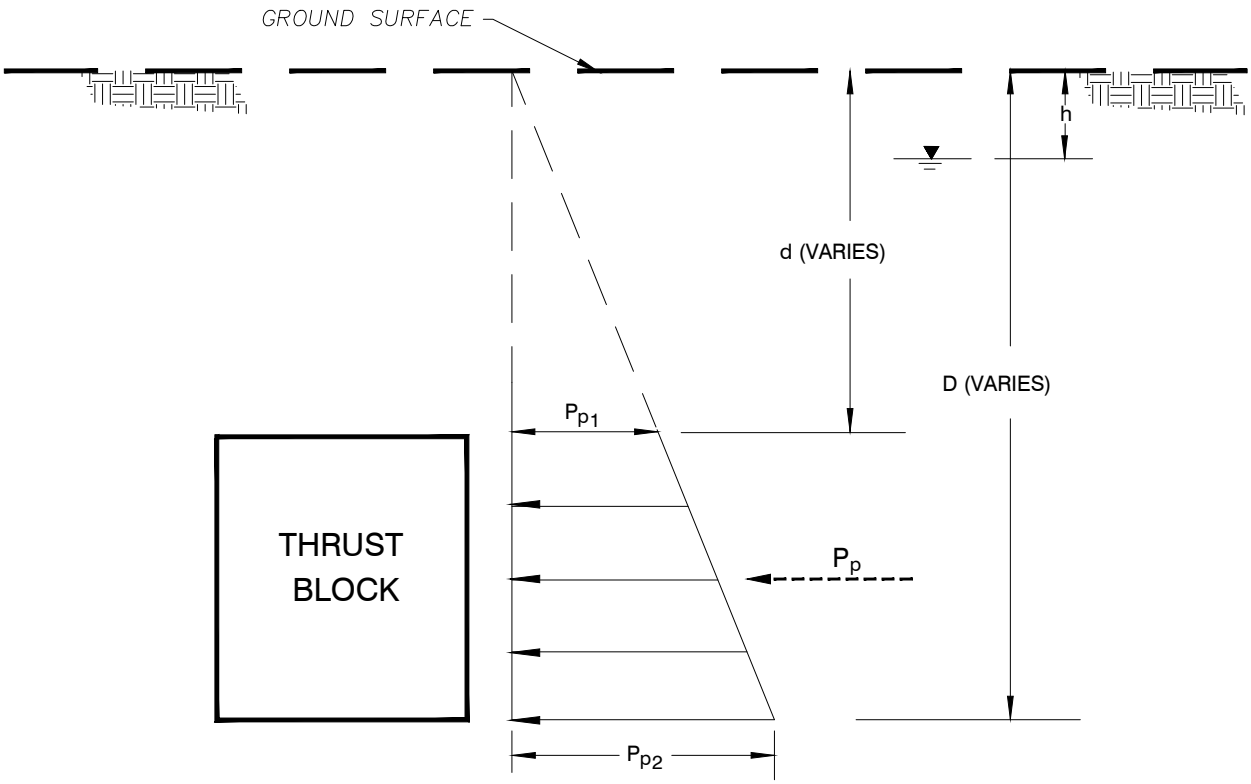

NOTES:

1. GROUNDWATER BELOW BLOCK
   $P_p = 230(D^2-d^2)$ lb/ft
2. ASSUMES BACKFILL IS GRANULAR MATERIAL
3. ASSUMES THRUST BLOCK IS ADJACENT TO COMPETENT MATERIAL
4. D, d AND h ARE IN FEET
5. GROUNDWATER TABLE

NOT TO SCALE

FIGURE 13

THRUST BLOCK LATERAL EARTH PRESSURE DIAGRAM (GRANULAR SOIL/BEDROCK)

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

211056001 I 10/20

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APPENDIX A

Boring Logs

APPENDIX A

BORING LOGS

Field Procedure for the Collection of Disturbed Samples

Disturbed soil samples were obtained in the field using the following methods.

Bulk Samples

Bulk samples of representative earth materials were obtained from the exploratory borings. The samples were bagged and transported to the laboratory for testing.

The Standard Penetration Test (SPT) Sampler

Disturbed drive samples of earth materials were obtained by means of a Standard Penetration Test sampler. The sampler is composed of a split barrel with an external diameter of 2 inches and an unlined internal diameter of 1-3/8 inches. The sampler was driven into the ground 12 to 18 inches with a 140-pound hammer falling freely from a height of 30 inches in general accordance with ASTM D 1586. The blow counts were recorded for every 6 inches of penetration; the blow counts reported on the logs are those for the last 12 inches of penetration. Soil samples were observed and removed from the sampler, bagged, sealed, and transported to the laboratory for testing.

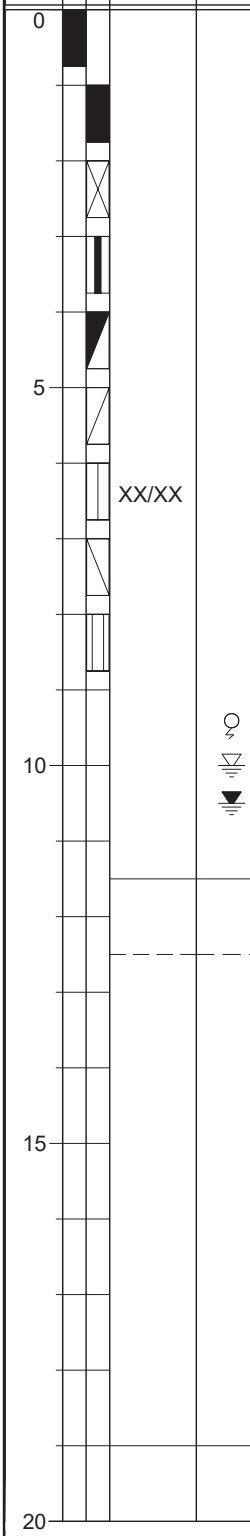
Field Procedure for the Collection of Relatively Undisturbed Samples

Relatively undisturbed soil samples were obtained in the field using the following method.

The Modified Split-Barrel Drive Sampler

The sampler, with an external diameter of 3 inches, was lined with 1-inch-long, thin brass rings with inside diameters of approximately 2.4 inches. The sample barrel was driven into the ground with the weight of a hammer in general accordance with ASTM D 3550. The driving weight was permitted to fall freely. The approximate length of the fall, the weight of the hammer, and the number of blows per foot of driving are presented on the boring logs as an index to the relative resistance of the materials sampled. The samples were removed from the sample barrel in the brass rings, sealed, and transported to the laboratory for testing.

BORING LOG EXPLANATION SHEET



Bulk sample.

Modified split-barrel drive sampler.

No recovery with modified split-barrel drive sampler.

Sample retained by others.

Standard Penetration Test (SPT).

No recovery with a SPT.

Shelby tube sample. Distance pushed in inches/length of sample recovered in inches.

No recovery with Shelby tube sampler.

Continuous Push Sample.

Seepage.

Groundwater encountered during drilling.

Groundwater measured after drilling.

SM

MAJOR MATERIAL TYPE (SOIL):

Solid line denotes unit change.

CL

Dashed line denotes material change.

Attitudes: Strike/Dip
b: Bedding
c: Contact
j: Joint
f: Fracture
F: Fault
cs: Clay Seam
s: Shear
bss: Basal Slide Surface
sf: Shear Fracture
sz: Shear Zone
sbs: Shear Bedding Surface

The total depth line is a solid line that is drawn at the bottom of the boring.

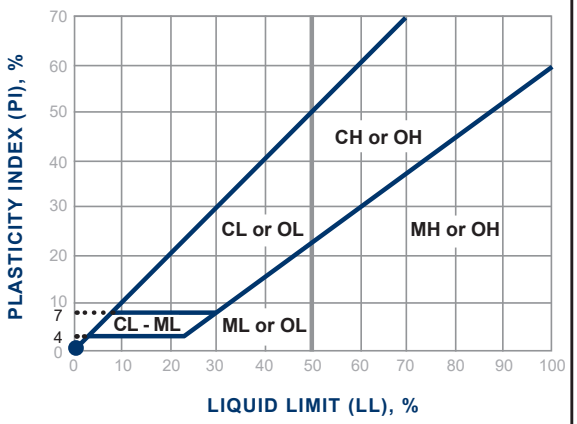
Soil Classification Chart Per ASTM D 2488

Primary Divisions			Secondary Divisions	
			Group Symbol	Group Name
COARSE-GRAINED SOILS more than 50% retained on No. 4 sieve	**GRAVEL** more than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVEL less than 5% fines	GW	well-graded GRAVEL
			GP	poorly graded GRAVEL
		GRAVEL with DUAL CLASSIFICATIONS 5% to 12% fines	GW-GM	well-graded GRAVEL with silt
			GP-GM	poorly graded GRAVEL with silt
			GW-GC	well-graded GRAVEL with clay
			GP-GC	poorly graded GRAVEL with clay
		GRAVEL with FINES more than 12% fines	GM	silty GRAVEL
			GC	clayey GRAVEL
			GC-GM	silty, clayey GRAVEL
	SAND 50% or more of coarse fraction passes No. 4 sieve	CLEAN SAND less than 5% fines	SW	well-graded SAND
			SP	poorly graded SAND
		SAND with DUAL CLASSIFICATIONS 5% to 12% fines	SW-SM	well-graded SAND with silt
			SP-SM	poorly graded SAND with silt
			SW-SC	well-graded SAND with clay
			SP-SC	poorly graded SAND with clay
		SAND with FINES more than 12% fines	SM	silty SAND
			SC	clayey SAND
			SC-SM	silty, clayey SAND
FINE-GRAINED SOILS 50% or more passes No. 200 sieve	**SILT and CLAY** liquid limit less than 50%	INORGANIC	CL	lean CLAY
			ML	SILT
			CL-ML	silty CLAY
		ORGANIC	OL (PI > 4)	organic CLAY
			OL (PI < 4)	organic SILT
	SILT and CLAY liquid limit 50% or more	INORGANIC	CH	fat CLAY
			MH	elastic SILT
		ORGANIC	OH (plots on or above "A"-line)	organic CLAY
			OH (plots below "A"-line)	organic SILT
	Highly Organic Soils		PT	Peat

Grain Size

Description		Sieve Size	Grain Size	Approximate Size
Boulders		> 12"	> 12"	Larger than basketball-sized
Cobbles		3 - 12"	3 - 12"	Fist-sized to basketball-sized
Gravel	Coarse	3/4 - 3"	3/4 - 3"	Thumb-sized to fist-sized
	Fine	#4 - 3/4"	0.19 - 0.75"	Pea-sized to thumb-sized
Sand	Coarse	#10 - #4	0.079 - 0.19"	Rock-salt-sized to pea-sized
	Medium	#40 - #10	0.017 - 0.079"	Sugar-sized to rock-salt-sized
	Fine	#200 - #40	0.0029 - 0.017"	Flour-sized to sugar-sized
Fines		Passing #200	< 0.0029"	Flour-sized and smaller

Plasticity Chart



Apparent Density - Coarse-Grained Soil

Apparent Density	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Loose	≤ 4	≤ 8	≤ 3	≤ 5
Loose	5 - 10	9 - 21	4 - 7	6 - 14
Medium Dense	11 - 30	22 - 63	8 - 20	15 - 42
Dense	31 - 50	64 - 105	21 - 33	43 - 70
Very Dense	> 50	> 105	> 33	> 70

Consistency - Fine-Grained Soil

Consis-tency	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Soft	< 2	< 3	< 1	< 2
Soft	2 - 4	3 - 5	1 - 3	2 - 3
Firm	5 - 8	6 - 10	4 - 5	4 - 6
Stiff	9 - 15	11 - 20	6 - 10	7 - 13
Very Stiff	16 - 30	21 - 39	11 - 20	14 - 26
Hard	> 30	> 39	> 20	> 26

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USCS METHOD OF SOIL CLASSIFICATION

DATE DRILLED 8/19/19 BORING NO. B-1

GROUND ELEVATION 395' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY AES LOGGED BY AES REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	FILL: Dark brown, moist, firm to stiff, lean CLAY; few to little fine sand.
						SM	Brown, moist, medium dense to dense, silty SAND; trace gravel and cobbles.
5	Driven	50/4"					CONEJO VOLCANICS: Dark brown to light brown, moist, moderately soft to moderately hard, VOLCANIC ROCK; fractured; weathered; oxidation staining.
	Driven	50/4"					
10							Total Depth = 8.8 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils on 8/19/19. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
15							
20							

FIGURE A- 1

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CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

DATE DRILLED 3/4/20 BORING NO. B-2

GROUND ELEVATION 390' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	ASPHALT CONCRETE: Approximately 3 inches thick.
						CL	AGGREGATE BASE: Brown, moist, medium dense to dense, gravelly SAND; approximately 3 inches thick.
							ASPHALT CONCRETE: Approximately 3 inches thick.
							FILL: Brown, moist, firm to stiff, lean CLAY; trace roots and metal debris.
5		76	11.2	110.7			CONEJO VOLCANICS: Dark brown, moist, moderately soft to hard, VOLCANIC ROCK; weathered; oxidation staining; moderately to highly fractured; fractures unfilled with red clay.
		50/4"					Increase in weathering.
10							Total Depth = 9.3 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with rapid-set concrete on 3/4/20.
							Notes: Boring cleared to 5 feet below the ground surface using hydro-vacuum equipment (C-Below) on 1/17/20.
							Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
15							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
20							

FIGURE A- 2

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CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

DATE DRILLED 3/4/20 BORING NO. B-3

GROUND ELEVATION 378' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	ASPHALT CONCRETE: Approximately 3 inches thick.
						CL	AGGREGATE BASE: Brown, moist, medium dense, gravelly SAND; trace roots; approximately 4 inches thick.
							ASPHALT CONCRETE: Approximately 3 inches thick.
							FILL: Brown, moist, stiff, lean CLAY.
							CONEJO VOLCANICS: Brown to dark gray, moist, moderately soft to moderately hard, VOLCANIC ROCK; weathered; moderately to highly fractured; fractures infilled with red clay.
5		50/4"					
		50/4"					
							Total Depth = 8.8 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with rapid-set concrete on 3/4/20.
10							Notes: Boring cleared to 5 feet below the ground surface using hydro-vacuum equipment (C-Below) on 1/17/20.
							Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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FIGURE A- 3

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CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

DATE DRILLED 3/3/20 BORING NO. B-4

GROUND ELEVATION 340' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							PORTLAND CEMENT CONCRETE: Approximately 5 inches thick.
						CL	FILL: Dark brown, moist, stiff, lean CLAY.
							CONEJO VOLCANICS: Brown, moist, soft to moderately soft, VOLCANIC ROCK; weathered; moderately to highly fractured; trace calcium carbonate stringers.
5	Driven	34					
	Driven	32	17.4	89.6			
10							Total Depth = 10.0 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with rapid-set concrete on 3/3/20.
							Notes: Boring cleared to 5 feet below the ground surface using hydro-vacuum equipment (C-Below) on 1/16/20.
							Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
15							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
20							

DATE DRILLED 8/19/19 BORING NO. B-5

GROUND ELEVATION 330' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							PORTLAND CEMENT CONCRETE: Approximately 5 inches thick.
						GM	AGGREGATE BASE: Dark brown, moist, dense, silty GRAVEL with sand; approximately 3 inches thick.
						CL	FILL: Dark brown, moist, very stiff to hard, lean CLAY; trace roots.
5		36	27.7	93.5			CONEJO VOLCANICS: Light brown, moist, moderately soft, VOLCANIC ROCK; weathered; moderately to highly fractured; trace calcium carbonate stringers.
		81					
10							Total Depth = 10.0 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with rapid-set concrete on 8/19/19.
							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
15							
20							

DATE DRILLED 3/4/20 BORING NO. B-6

GROUND ELEVATION 295' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	PORTLAND CEMENT CONCRETE: Approximately 4 inches thick. FILL: Dark brown, moist, firm to stiff, lean CLAY.
5		63	14.4	112.8			CONEJO VOLCANICS: Brown, moist, moderately soft to moderately hard, VOLCANIC ROCK; weathered.
		86/11"					Brown and light brown.
10							Total Depth = 9.9 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with rapid-set concrete on 3/4/20. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
15							
20							

DATE DRILLED 3/4/20 BORING NO. B-7

GROUND ELEVATION 275' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SP	FILL: Yellow, moist, medium dense, poorly graded SAND.
						CL	Dark brown, moist, stiff, lean CLAY; trace roots.
						SM	TERRACE DEPOSITS: Yellowish brown, moist, dense, silty SAND; trace roots.
5		43					Brown; trace gravel.
		51	19.3	105.8			
10							Total Depth = 10.0 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils on 3/4/20. Notes: Boring cleared to 5 feet below the ground surface using hydro-vacuum equipment (C-Below) on 1/16/20. Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
15							
20							

DATE DRILLED 3/3/20 BORING NO. B-8

GROUND ELEVATION 263' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							PORTLAND CEMENT CONCRETE: Approximately 4 inches thick.
							TERRACE DEPOSITS: Yellowish brown, moist, dense, silty SAND.
5		67	20.6	93.8			
		72					
10							Total Depth = 10.0 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with rapid-set concrete on 3/3/20.
							Notes: Boring cleared to 5 feet below the ground surface using hydro-vacuum equipment (C-Below) on 1/15/20.
							Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
15							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
20							

DATE DRILLED 8/20/19 BORING NO. B-9

GROUND ELEVATION 252' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							PORTLAND CEMENT CONCRETE: Approximately 6 inches thick.
						CL	FILL: Dark brown, moist, stiff to very stiff, lean CLAY; trace concrete.
5	Driven	26	20.7	95.8			Very stiff.
						SP	TERRACE DEPOSITS: Reddish brown to light brown, moist, medium dense, poorly graded SAND; trace gravel; oxidation staining.
	Driven	68					Dense.
10							Total Depth = 10.0 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with rapid-set concrete on 8/20/19. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
15							
20							

DATE DRILLED 1/15/20 BORING NO. B-10

GROUND ELEVATION 243' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING Hydro-Vacuum (C-Below)

DRIVE WEIGHT N/A DROP N/A

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	PORTLAND CEMENT CONCRETE: Approximately 3 inches thick. FILL: Light brown to reddish brown, moist, medium dense, silty SAND; trace gravel.
						CL	Dark brown, moist, stiff, lean CLAY; trace gravel.
5							Total Depth = 5.0 feet. Groundwater was not encountered during excavation. Backfilled with sand and capped with rapid-set concrete on 1/15/20.
							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
10							
15							
20							

DATE DRILLED 8/20/19 BORING NO. B-11

GROUND ELEVATION 232' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							PORTLAND CEMENT CONCRETE: Approximately 5 inches thick.
						GM	AGGREGATE BASE:
						CL	Dark gray, moist, medium dense, silty GRAVEL with sand; approximately 7 inches thick.
							TERRACE DEPOSITS: Gray, moist, very stiff to hard, lean CLAY; few to little gravel.
5		60					Hard.
							MONTEREY FORMATION: Grayish brown, moist, moderately indurated, CLAYSTONE.
							White to light brown, moist, moderately cemented, SANDSTONE; oxidation staining.
		59	40.3	69.6			
10							Gray, moist, moderately indurated, CLAYSTONE; interbedded with light brown claystone; calcium carbonate on bedding surfaces; oxidation staining.
							Total Depth = 10.0 feet.
							Groundwater was not encountered during drilling.
							Backfilled with on-site soils and capped with rapid-set concrete on 8/20/19.
15							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
20							

FIGURE A- 11

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Geotechnical & Environmental Sciences Consultants

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

DATE DRILLED 3/3/20 BORING NO. B-12

GROUND ELEVATION 220' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							PORTLAND CEMENT CONCRETE: Approximately 4 inches thick.
						SC	FILL: Brown, moist, medium dense, clayey SAND; trace gravel.
						SP	TERRACE DEPOSITS: Reddish brown, moist, very dense, poorly graded SAND.
5		50/4.5"	4.6	109.3			
		43					Medium dense.
10							Total Depth = 10.0 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with rapid-set concrete on 3/3/20.
							Notes: Boring cleared to 5 feet below the ground surface using hydro-vacuum equipment (C-Below) on 1/15/20.
							Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
15							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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DATE DRILLED 3/3/20 BORING NO. B-13

GROUND ELEVATION 215' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							PORTLAND CEMENT CONCRETE: Approximately 7 inches thick.
						CL	FILL: Dark brown, moist, hard, sandy lean CLAY; trace gravel.
5		41	12.5	121.7		CL	RESIDUAL SOIL/COLLUVIUM: Dark brown, moist, hard, lean CLAY.
10		41					Total Depth = 10.0 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with rapid-set concrete on 3/3/20.
15							Notes: Boring cleared to 5 feet below the ground surface using hydro-vacuum equipment (C-Below) on 1/15/20. Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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DATE DRILLED 3/3/20 BORING NO. B-14

GROUND ELEVATION 200' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							PORTLAND CEMENT CONCRETE: Approximately 5 inches thick.
						CL	FILL: Dark brown, moist, very stiff, sandy lean CLAY; trace gravel.
						CL	RESIDUAL SOIL/COLLUVIUM: Dark brown, moist, very stiff, sandy lean CLAY; trace gravel; calcium carbonate.
5		18	20.6	102.0			
		56					Hard.
10							Total Depth = 10.0 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with rapid-set concrete on 3/3/20. Notes: Boring cleared to 5 feet below the ground surface using hydro-vacuum equipment (C-Below) on 1/16/20. Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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DATE DRILLED 3/3/20 BORING NO. B-15

GROUND ELEVATION 192' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							PORTLAND CEMENT CONCRETE: Approximately 5 inches thick.
						CL	FILL: Dark brown, moist, very stiff, sandy lean CLAY; trace gravel; trace calcium carbonate; oxidation staining.
						CL	RESIDUAL SOIL/COLLUVIUM: Dark brown, moist, very stiff, sandy lean CLAY; trace gravel; trace calcium carbonate; oxidation staining.
5		25					Light brown.
		29	25.6	93.8			Hard.
10							Total Depth = 10.0 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with rapid-set concrete on 3/3/20.
15							Notes: Boring cleared to 5 feet below the ground surface using hydro-vacuum equipment (C-Below) on 1/16/20. Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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DATE DRILLED 8/22/19 BORING NO. B-16

GROUND ELEVATION 164' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							PORTLAND CEMENT CONCRETE: Approximately 5 inches thick.
							ASPHALT CONCRETE: Approximately 6 inches thick.
						GM	AGGREGATE BASE: Brown, moist, medium dense, silty GRAVEL with sand; approximately 3 inches thick.
						SM	TERRACE DEPOSITS: Brown, moist, dense to very dense, silty SAND; trace gravel.
5		74/11"	17.2	109.2			Very dense.
		50/6"					
10							Total Depth = 9.0 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with rapid-set concrete on 8/22/19. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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FIGURE A- 16

DATE DRILLED 8/22/19 BORING NO. B-17

GROUND ELEVATION 145' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							PORTLAND CEMENT CONCRETE: Approximately 6 inches thick.
						GM	ASPHALT CONCRETE: Approximately 2 inches thick.
						CH	AGGREGATE BASE: Light brown, moist, dense, silty GRAVEL with sand; approximately 3 inches thick.
							RESIDUAL SOIL/COLLUVIUM: Dark grayish brown, moist, hard, fat CLAY; intermixed with fine to coarse gravel and possible cobbles/boulders.
5		56	17.1	100.6			
		70					Few sandstone gravel and possible cobbles/boulders.
10							Total Depth = 10.0 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with rapid-set concrete on 8/22/19.
15							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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DATE DRILLED 8/22/19 BORING NO. B-18

GROUND ELEVATION 138' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 4 inches thick.
						GM	AGGREGATE BASE: Brown, moist, dense, silty GRAVEL with sand; approximately 6 inches thick.
						SM	TERRACE DEPOSITS: Brown, moist, medium dense to dense, silty SAND; trace sandstone gravel and possible cobbles/boulders.
5		45	17.7	105.2			MONTEREY FORMATION: Dark grayish brown, moist, hard, CLAYSTONE; weathered to fat clay.
		52					
10							Total Depth = 10.0 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with rapid-set concrete on 8/22/19.
15							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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DATE DRILLED 8/20/19 BORING NO. B-19

GROUND ELEVATION 108' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 6 inches thick.
						GM	AGGREGATE BASE: Brown, moist, medium dense, silty GRAVEL with sand; approximately 6 inches thick.
						CL	RESIDUAL SOIL/COLLUVIUM: Dark brown, moist, very stiff to hard, lean CLAY; trace gravel; calcium carbonate; possible cobbles/boulders.
5		61	16.9	103.1			Hard.
		52					Brown.
10							Total Depth = 10.0 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with rapid-set concrete on 8/20/19.
15							
20							

Notes:
Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

DATE DRILLED 8/20/19 BORING NO. B-20

GROUND ELEVATION 93' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 7 inches thick.
						CL	TERRACE DEPOSITS: Brown, moist, very stiff to hard, lean CLAY; trace gravel; calcium carbonate.
						SM	Yellow, moist, medium dense, silty SAND; trace gravel.
5		33					
		82/10"	20.4	98.3			Brown; very dense; possible cobbles/boulders.
10							Total Depth = 9.3 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with rapid-set concrete on 8/20/19. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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DATE DRILLED 8/20/19 BORING NO. B-21

GROUND ELEVATION 80' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 5 inches thick.
						GM	AGGREGATE BASE: Brown, moist, dense, silty GRAVEL with sand; approximately 4 inches thick.
						CL	TERRACE DEPOSITS: Dark gray, moist, very stiff to hard, sandy lean CLAY; trace gravel.
5		46	10.3	104.9			Hard.
		50/6"					
10							Total Depth = 9.5 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with rapid-set concrete on 8/20/19.
							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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FIGURE A- 21

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

DATE DRILLED 8/22/19 BORING NO. B-22

GROUND ELEVATION 74' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 7 inches thick.
						SM	AGGREGATE BASE: Light brown, moist, medium dense, gravelly SAND.
						CL	RESIDUAL SOIL/COLLUVIUM: Dark brown, moist, very stiff to hard, lean CLAY; trace gravel and calcium carbonate.
5	Driven	61					Brown; hard.
	Driven	56	14.6	115.6			
10							Total Depth = 10.0 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with rapid-set concrete on 8/22/19. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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20							

FIGURE A- 22

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

DATE DRILLED 8/21/19 BORING NO. B-23

GROUND ELEVATION 65' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 6 inches thick.
						SC	RESIDUAL SOIL/COLLUVIUM: Dark brown, moist, dense to very dense, clayey SAND; few to little gravel and possible cobbles/boulders.
5		50/6"	12.2	107.3			Very dense; intermixed/interbedded sandy silt.
		50/5"				CL	Dark brown, moist, hard, sandy lean CLAY; trace gravel.
10							Total Depth = 9.4 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with rapid-set concrete on 8/21/19. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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DATE DRILLED 8/21/19 BORING NO. B-24

GROUND ELEVATION 52' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 7 inches thick.
						SM	FILL: Light brown, moist, medium dense, silty SAND; trace gravel.
						CL	RESIDUAL SOIL/COLLUVIUM: Dark brown, moist, stiff to very stiff, sandy lean CLAY; trace gravel and possible cobbles/ boulders.
5		87	13.2	120.1			Brown; hard.
		29					Very stiff; difficult drilling on possible cobbles or boulders.
		63					Hard.
10							Total Depth = 10.0 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with rapid-set concrete on 8/21/19.
15							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
20							

DATE DRILLED 8/21/19 BORING NO. B-25

GROUND ELEVATION 32' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 7 inches thick.
						SM	FILL: Light brown, moist, medium dense, silty SAND; trace gravel.
						CL	RESIDUAL SOIL/COLLUVIUM: Dark brown, moist, hard, lean CLAY; trace gravel.
5	Driven	50/6"	14.1	109.9			
							Cobbles/boulders.
	Driven	55					Few to little gravel.
10							Total Depth = 10.0 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with rapid-set concrete on 8/21/19.
15							
20							

Notes:
Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

DATE DRILLED 8/21/19 BORING NO. B-26

GROUND ELEVATION 25' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 6 inches thick.
						SM CL	FILL: Light brown, moist, medium dense, silty SAND; trace gravel. ALLUVIUM: Dark brown, moist, firm, lean CLAY; trace gravel.
5		18	19.3	94.9		SM	Dark gray, moist, medium dense, silty SAND; trace pinhole porosity and roots.
		55					Dense; trace gravel.
10							Total Depth = 10.0 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with rapid-set concrete on 8/21/19.
15							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
20							

DATE DRILLED 8/21/19 BORING NO. B-27

GROUND ELEVATION 22' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 5 inches thick.
						CL	ALLUVIUM: Dark brown, moist, soft, lean CLAY; trace gravel and roots; possible cobbles/boulders.
5		11	16.1	91.4		SM	Dark brown, moist, loose, silty SAND; trace gravel.
		32	21.3	100.3		CL	RESIDUAL SOIL/COLLUVIUM: Dark brown, moist, hard, lean CLAY; trace gravel.
10							Total Depth = 10.0 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with rapid-set concrete on 8/21/19. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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DATE DRILLED 8/22/19 BORING NO. B-28

GROUND ELEVATION 24' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Track-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 6 inches thick.
						GM	AGGREGATE BASE: Brown, moist, dense, silty GRAVEL with sand; approximately 4 inches thick.
						SM	FILL: Brown, moist, medium dense, silty SAND with gravel; possible cobbles/boulders. Trace metal debris.
5		25	12.3	100.6		SM	ALLUVIUM: Dark brown, moist, medium dense, silty SAND; trace gravel; possible cobbles/boulders.
		39				CL	RESIDUAL SOIL/COLLUVIUM: Brown, moist, hard, lean CLAY; trace gravel.
10							Total Depth = 10.0 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with rapid-set cement on 8/22/19.
15							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
20							The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

DATE DRILLED 3/2/20 BORING NO. B-29

GROUND ELEVATION 20' ± (MSL) SHEET 1 OF 3

METHOD OF DRILLING 8" Hollow-Stem Auger Truck-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 10 inches thick.
						GP	AGGREGATE BASE: Brown, moist, dense, poorly graded GRAVEL with sand; approximately 8 inches thick.
						SC	FILL: Brown, moist, medium dense, clayey SAND; trace gravel.
5	Driven	21	6.5	110.4			
						SM	ALLUVIUM: Light brown, moist, medium dense, silty SAND.
10	Driven	5					Loose; trace gravel.
	Driven	12	12.2	95.9			Brown.
15	Driven	12				SP	Brown, moist, medium dense, poorly graded SAND; trace gravel.
			▽				@ 17.3': Groundwater was measured during drilling; wet.
20							

FIGURE A- 29

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Geotechnical & Environmental Sciences Consultants

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

DATE DRILLED 3/2/20 BORING NO. B-29

GROUND ELEVATION 20' ± (MSL) SHEET 2 OF 3

METHOD OF DRILLING 8" Hollow-Stem Auger Truck-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20		7				SP	ALLUVIUM: (Continued) Brown, wet, loose, poorly graded SAND; few gravel.
25		7					Trace gravel.
						ML	Brown, wet, medium dense, sandy SILT.
30		8					
						CL	Grayish brown, wet, stiff, lean CLAY.
35		7					
40							

FIGURE A- 30

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CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

211056001 | 10/20

DATE DRILLED 3/2/20 BORING NO. B-29

GROUND ELEVATION 20' ± (MSL) SHEET 3 OF 3

METHOD OF DRILLING 8" Hollow-Stem Auger Truck-Mounted Rig (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
40		9				CL	ALLUVIUM: (Continued) Grayish brown, wet, stiff, lean CLAY.
45		11					Dark gray; very stiff.
50		7					Stiff.
							Total Depth = 51.5 feet. Groundwater was encountered at approximately 17.3 feet during drilling. Backfilled with bentonite-cement grout and capped with rapid-set concrete on 3/2/20. Notes: Groundwater may rise to a level higher than that measured in borehole due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
55							
60							

DATE DRILLED 3/3/20 BORING NO. B-30

GROUND ELEVATION 152' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Hollow-Stem Auger Geoprobe (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						CL	RESIDUAL SOIL/COLLUVIUM: Brown, moist, stiff, lean CLAY; trace gravel.
5		10	26.4	75.1			
10		22					Hard; calcium carbonate stringers.
							Total Depth = 10.0 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils on 3/3/20. Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
15							
20							

DATE DRILLED 3/2/20 BORING NO. B-32

GROUND ELEVATION 75' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 8" Hollow-Stem Auger Truck-mounted (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 4 inches thick.
						GM	AGGREGATE BASE: Brown, moist, dense, silty GRAVEL with sand; approximately 3 inches thick.
						SM	ALLUVIUM: Brown, moist, medium dense, silty SAND; trace gravel.
5		22	9.9	107.4			Trace calcium carbonate.
						CL	Brown, moist, hard, lean CLAY; trace sandstone cobbles.
10		66/9"	14.4	107.7			
							CALABASAS FORMATION: Reddish yellow, moist, moderately hard, moderately to strongly cemented SANDSTONE.
15		50/3"					
20							

FIGURE A- 33

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CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

211056001 | 10/20

DATE DRILLED 3/2/20 BORING NO. B-32

GROUND ELEVATION 75' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 8" Hollow-Stem Auger Truck-mounted (2R Drilling, Inc.)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY ECH LOGGED BY ECH REVIEWED BY JRS/GMC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
20	Driven	50/3"					CALABASAS FORMATION: (Continued) Reddish yellow, moist, moderately hard, moderately to strongly cemented SANDSTONE.
25	Driven	50/4"	11.3	82.5			Dark brown, moist, moderately hard, moderately to strongly indurated, CLAYSTONE.
30	Driven	50/3.5"					
		75/6"					
35							Total Depth = 32.0 feet. Groundwater was not encountered during drilling. Backfilled with cement grout and capped with rapid-set concrete on 3/2/20. Notes: Boring cleared to 5 feet below the ground surface using hydro-vacuum equipment (C-Below) on 1/16/20. Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
40							

APPENDIX B

Laboratory Testing

APPENDIX B

LABORATORY TESTING

Classification
Soils were visually and texturally classified in accordance with the Unified Soil Classification System (USCS) in general accordance with ASTM D 2488. Soil classifications are indicated on the logs of the exploratory borings in Appendix B.

In-Place Moisture and Density Tests
The moisture content and dry density of relatively undisturbed samples obtained from the exploratory borings were evaluated in general accordance with ASTM D 2937. The test results are presented on the logs of the exploratory borings in Appendix A.

Gradation Analysis
Gradation analysis tests were performed on selected representative soil samples in general accordance with ASTM D 422. The grain-size distribution curves are shown on Figures B-1 and B-2. These test results were utilized in evaluating the soil classifications in accordance with the USCS.

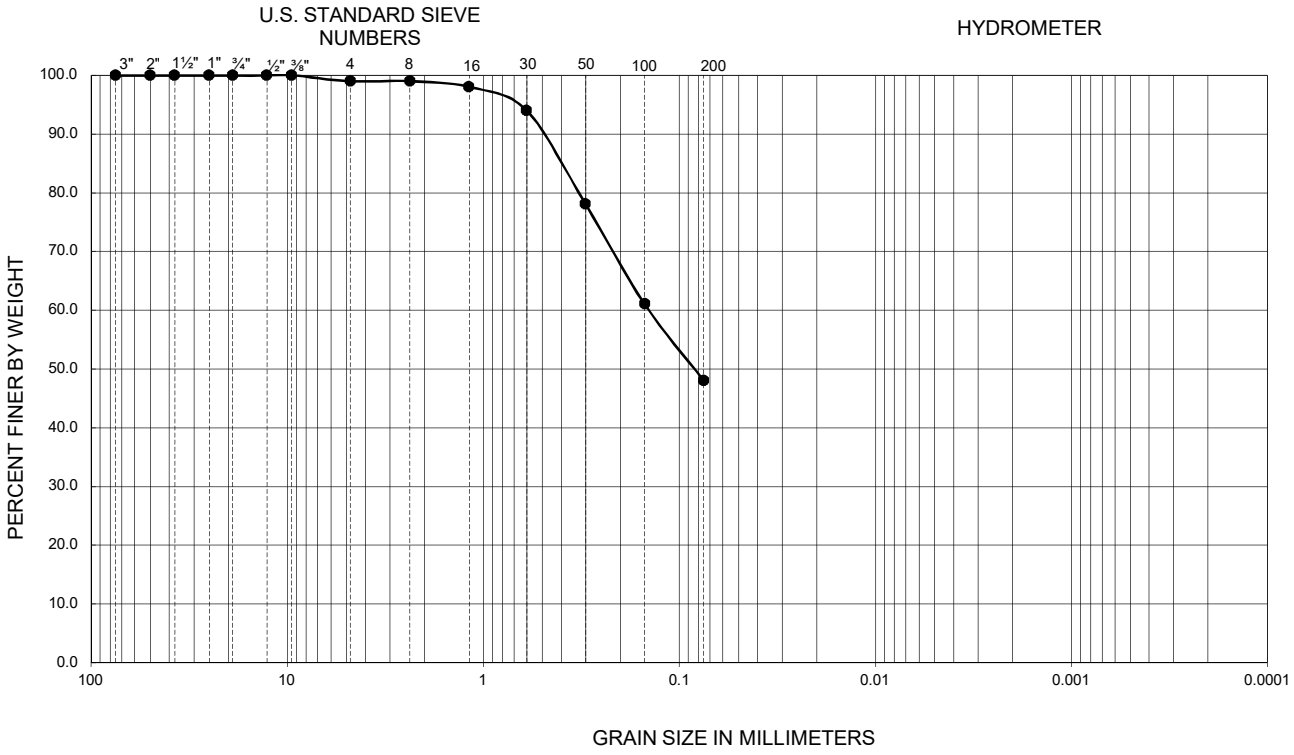
200 Wash
An evaluation of the percentage of particles finer than the No. 200 sieve in selected soil samples was performed in general accordance with ASTM D 1140. The results of these tests are presented on Figure B-3.

Atterberg Limits
Tests were performed on a selected representative fine-grained soil sample to evaluate the liquid limit, plastic limit, and plasticity index in general accordance with ASTM D 4318. These test results were utilized to evaluate the soil classification in accordance with the USCS. The test results and classification are shown on Figure B-4.

Direct Shear Tests
Direct shear tests were performed on relatively undisturbed samples in general accordance with ASTM D 3080 to evaluate the shear strength characteristics of the selected materials. The samples were inundated during shearing to represent adverse field conditions. The results are shown on Figures B-5 through B-10.

Soil Corrosivity Tests
Soil pH and resistivity tests were performed on representative samples in general accordance with California Test (CT) 643. The soluble sulfate and chloride content of the selected samples were evaluated in general accordance with CT 417 and CT 422, respectively. The test results are presented on Figure B-11.

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	B-12	1.5-2.0	--	--	--	--	--	--	--	--	48	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

FIGURE B-1

GRADATION TEST RESULTS

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

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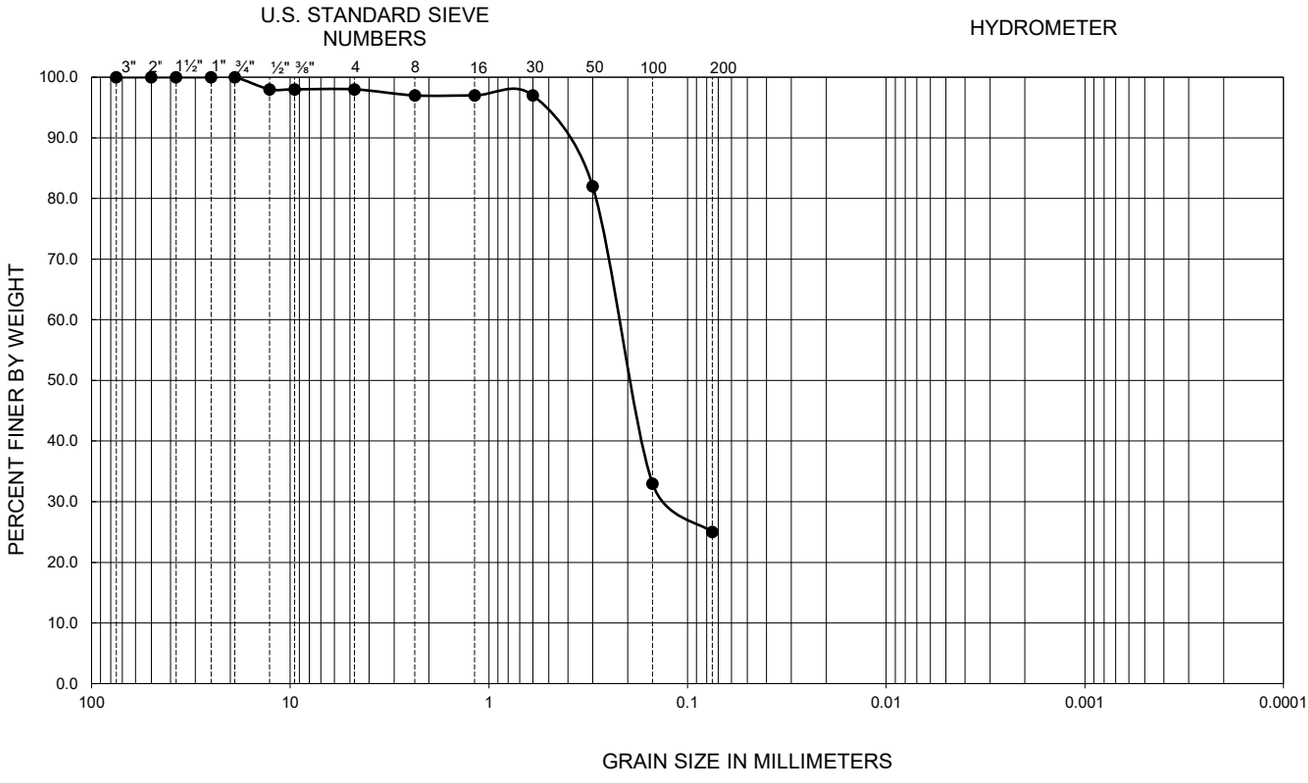
GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	B-29	10.0-11.5	--	--	--	--	--	--	--	--	25	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

FIGURE B-2

GRADATION TEST RESULTS

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

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SAMPLE LOCATION	SAMPLE DEPTH (ft)	DESCRIPTION	PERCENT PASSING NO. 4	PERCENT PASSING NO. 200	USCS (TOTAL SAMPLE)
B-7	4.0-4.5	SILTY SAND	100	42	SM
B-14	1.0-1.5	SANDY LEAN CLAY	99	56	CL
B-21	5.0-6.5	SANDY LEAN CLAY	98	52	CL
B-24	5.0-6.5	SANDY LEAN CLAY	99	60	CL
B-28	1.0-4.0	SILTY SAND WITH GRAVEL	80	31	SM
B-29	20.0-21.5	POORLY GRADED SAND	93	3	SP
B-29	30.0-31.5	SANDY SILT	100	69	ML

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 1140

FIGURE B-3

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NO. 200 SIEVE ANALYSIS TEST RESULTS

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

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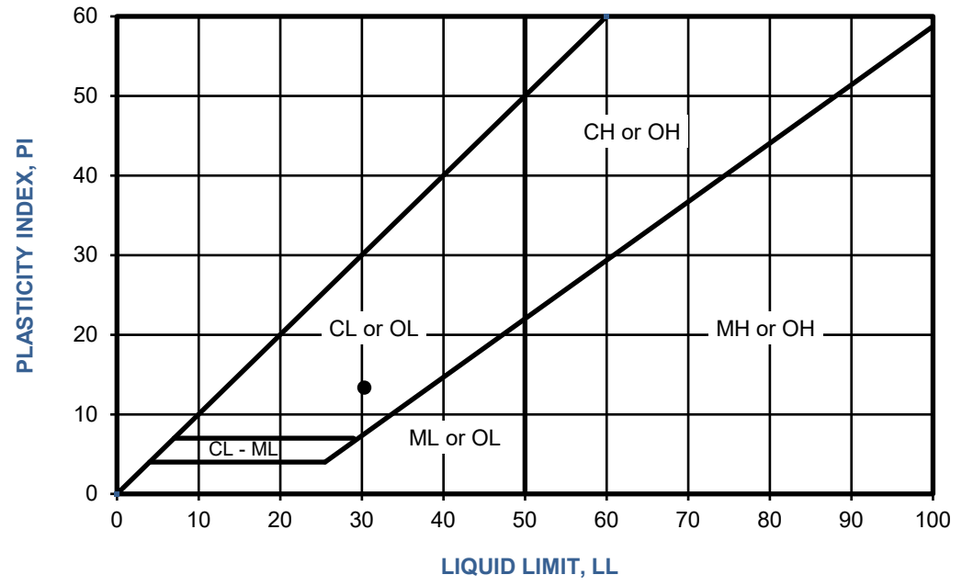
SYMBOL	LOCATION	DEPTH (ft)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	USCS CLASSIFICATION (Fraction Finer Than No. 40 Sieve)	USCS
●	B-32	10.0-11.5	30	17	13	CL	CL



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4318

FIGURE B-4

ATTERBERG LIMITS TEST RESULTS

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

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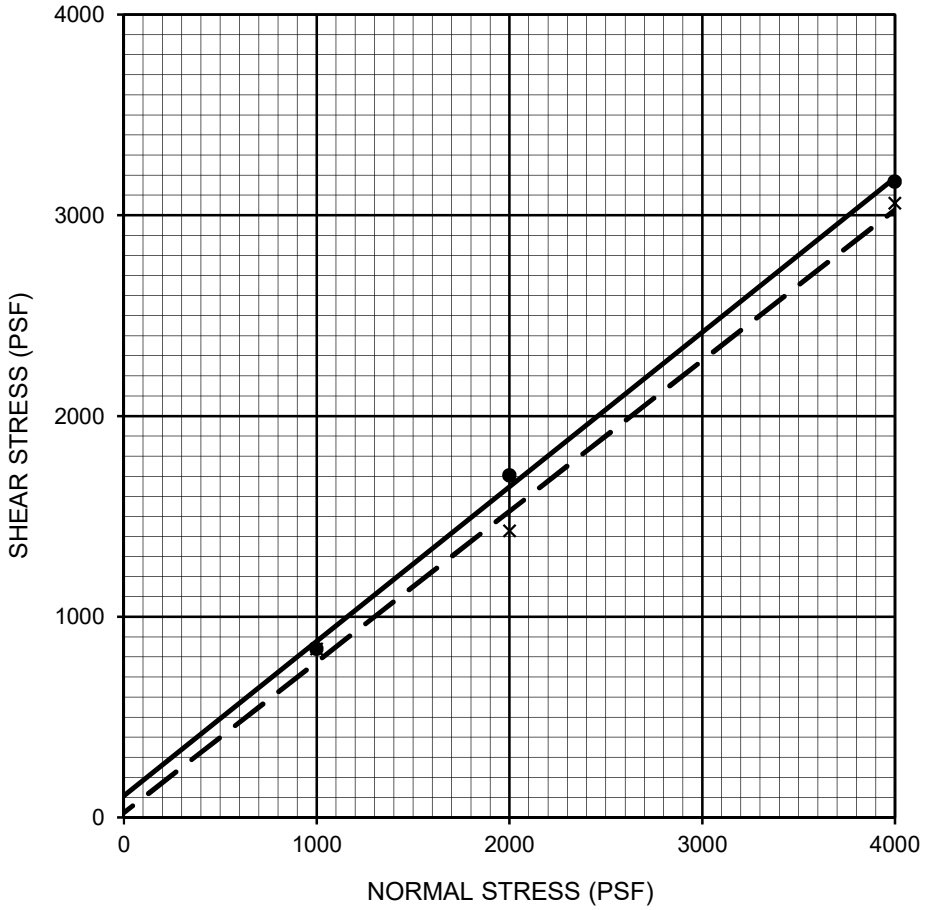

Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Equivalent Soil Type
VOLCANIC ROCK	—●—	B-4	5.0-6.5	Peak	110	38	SC
VOLCANIC ROCK	– –X– –	B-4	5.0-6.5	Ultimate	25	37	SC

Sample Number	Normal Stress (psf)	Moisture Content (%)		Dry Density (pcf)	Degree of Saturation (%)	
		Before Test	After Test		Before Test	After Test
A	1,000	26.0	34.9	79.6	64.0	85.8
B	2,000	26.4	33.4	87.6	78.8	99.7
C	4,000	25.9	34.3	82.7	68.7	90.9

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE B-5

DIRECT SHEAR TEST RESULTS

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

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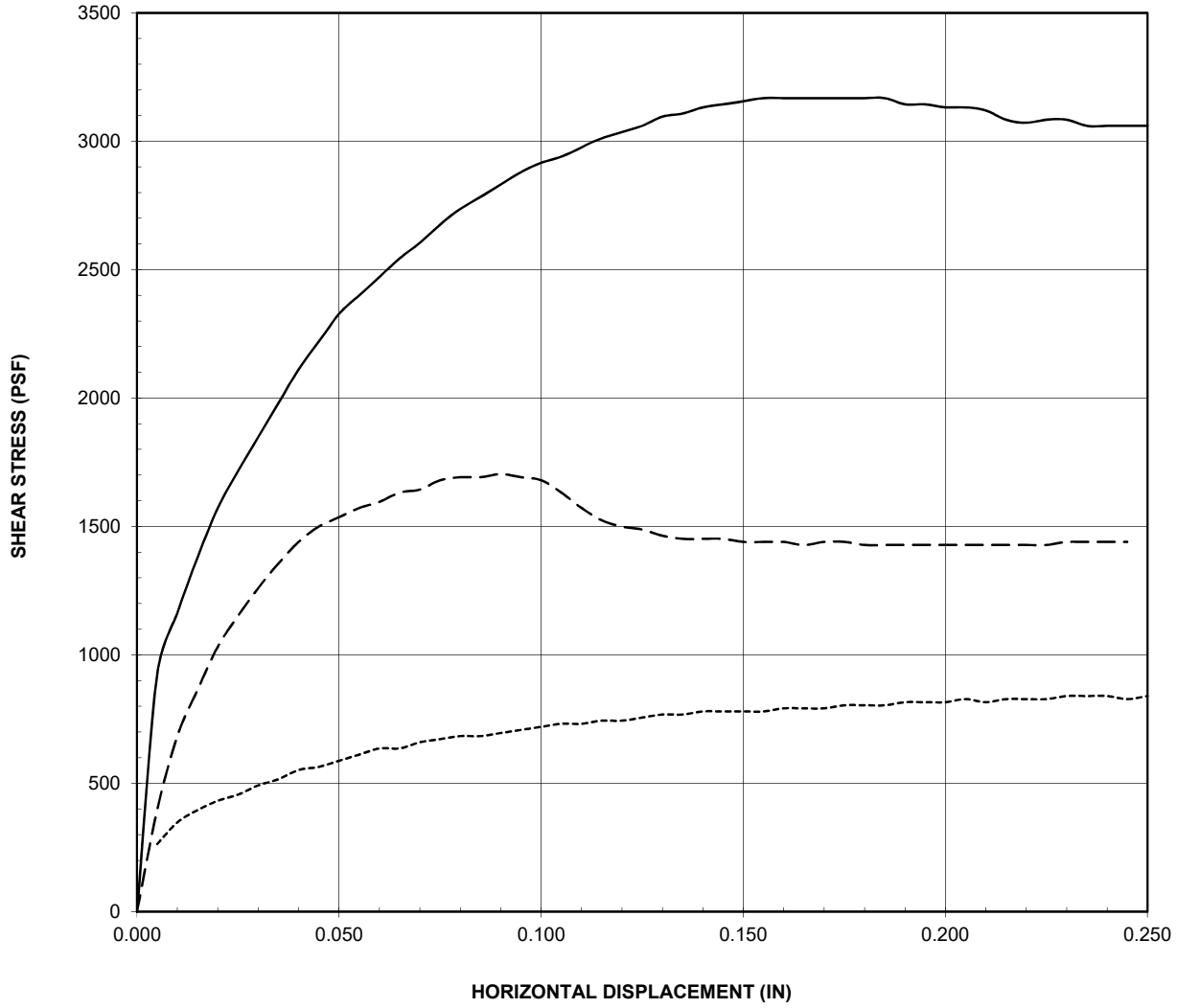

Sample A	Normal Stress	1000	psf	·····
Sample B	Normal Stress	2000	psf	– – – –
Sample C	Normal Stress	4000	psf	———

Boring Number:	B-4
Sample Depth (ft):	5.0-6.5
Strain Rate (in/sec)	0.001

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE B-6

DIRECT SHEAR STRESS-DEFORMATION PLOT

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
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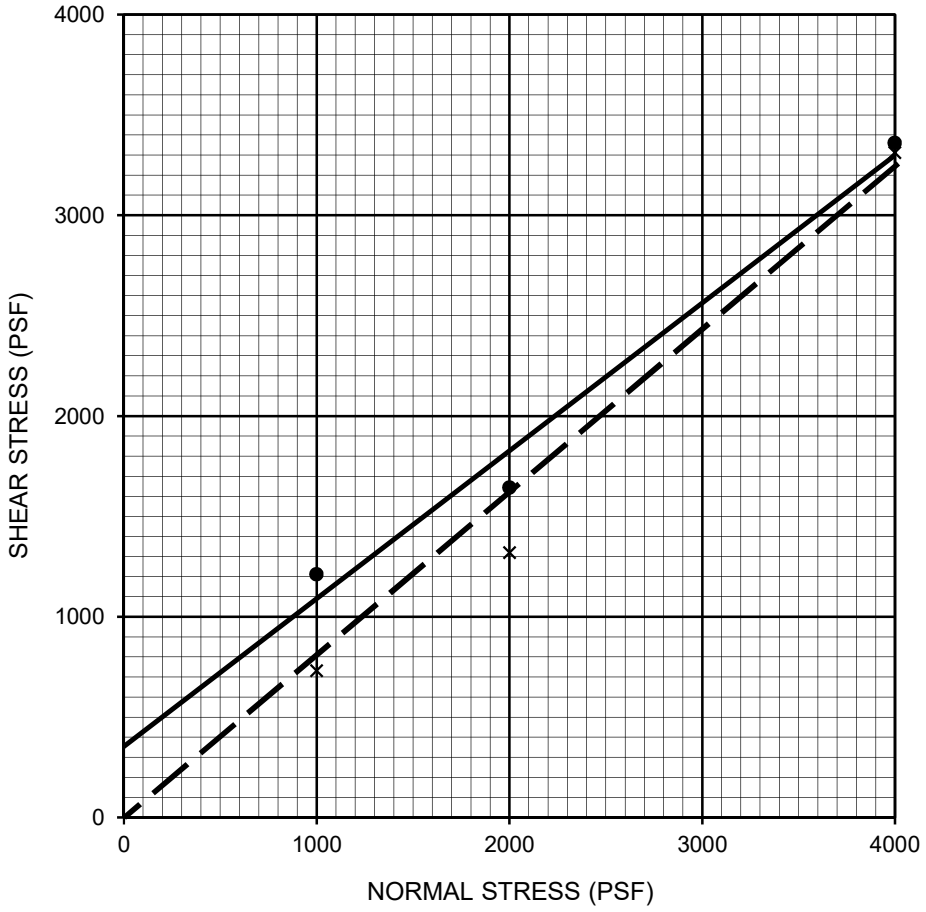

Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
SILTY SAND	—●—	B-7	5.0-6.5	Peak	355	36	SM
SILTY SAND	– –X– –	B-7	5.0-6.5	Ultimate	0	41	SM

Sample Number	Normal Stress (psf)	Moisture Content (%)		Dry Density (pcf)	Degree of Saturation (%)	
		Before Test	After Test		Before Test	After Test
A	1,000	21.0	27.8	98.3	81.6	99.9
B	2,000	22.9	30.3	91.9	75.9	99.9
C	4,000	20.3	27.3	92.0	67.5	90.7

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE B-7

DIRECT SHEAR TEST RESULTS

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
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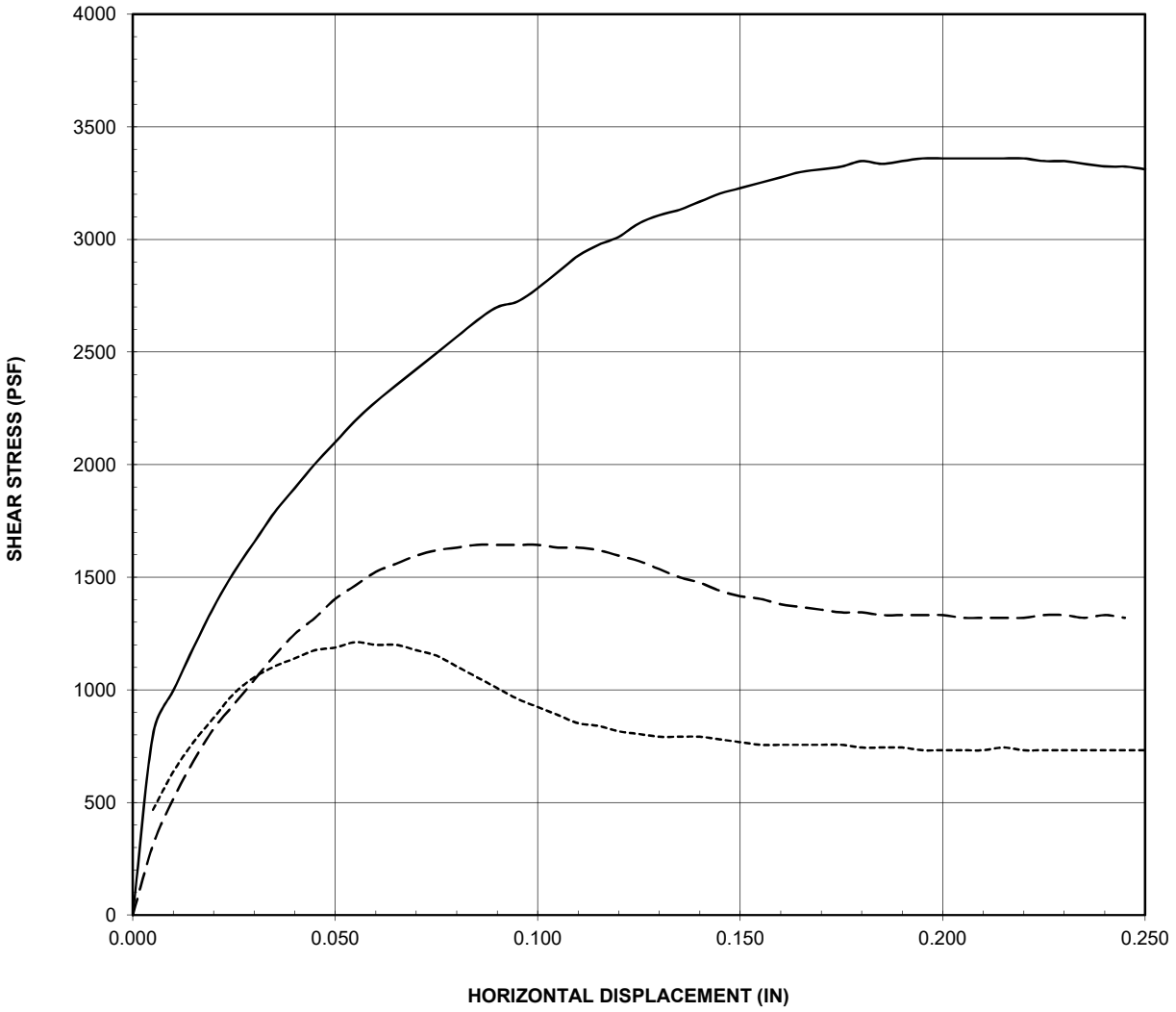

Sample A	Normal Stress	1000	psf	·····
Sample B	Normal Stress	2000	psf	– – – –
Sample C	Normal Stress	4000	psf	———

Boring Number:	B-7
Sample Depth (ft):	5.0-6.5
Strain Rate (in/sec)	0.001

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE B-8

DIRECT SHEAR STRESS-DEFORMATION PLOT

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

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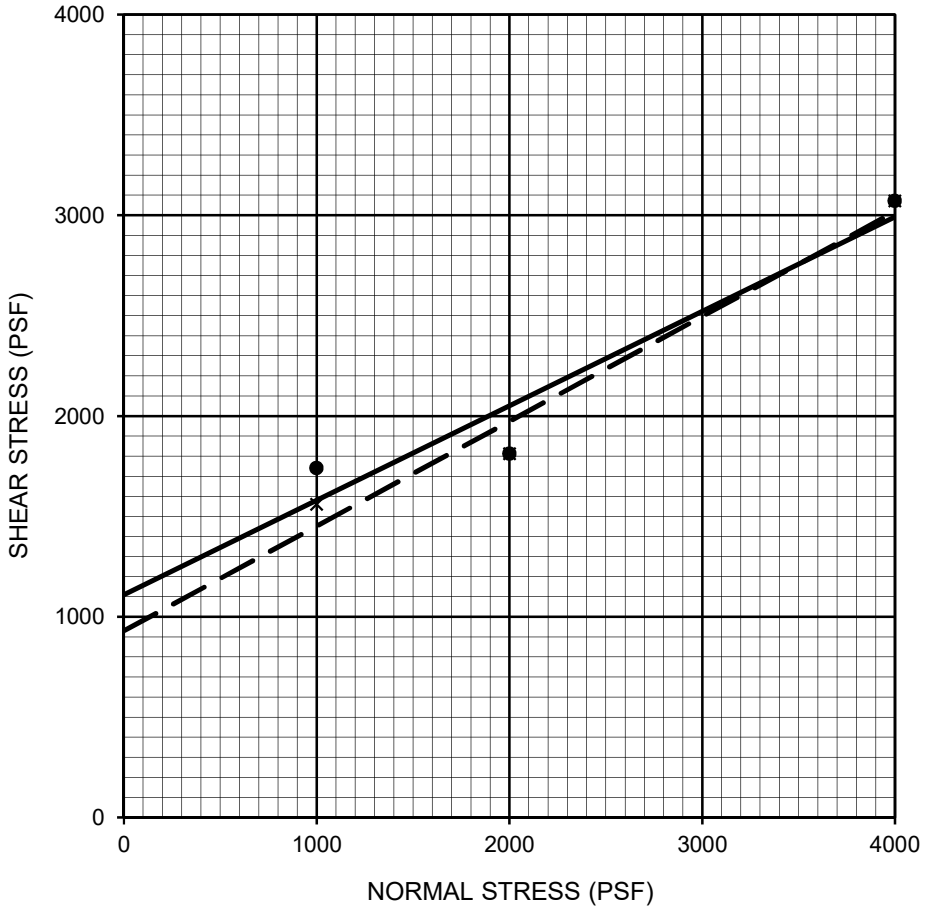

Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Equivalent Soil Type
CLAYSTONE	—●—	B-32	25.0-25.5	Peak	1,110	25	CH
CLAYSTONE	– –X– –	B-32	25.0-25.5	Ultimate	930	28	CH

Sample Number	Normal Stress (psf)	Moisture Content (%)		Dry Density (pcf)	Degree of Saturation (%)	
		Before Test	After Test		Before Test	After Test
A	1,000	15.3	24.2	82.5	40.4	63.9
B	2,000	15.6	27.6	77.1	36.1	63.9
C	4,000	14.9	28.0	78.6	35.8	67.2

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE B-9

DIRECT SHEAR TEST RESULTS

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

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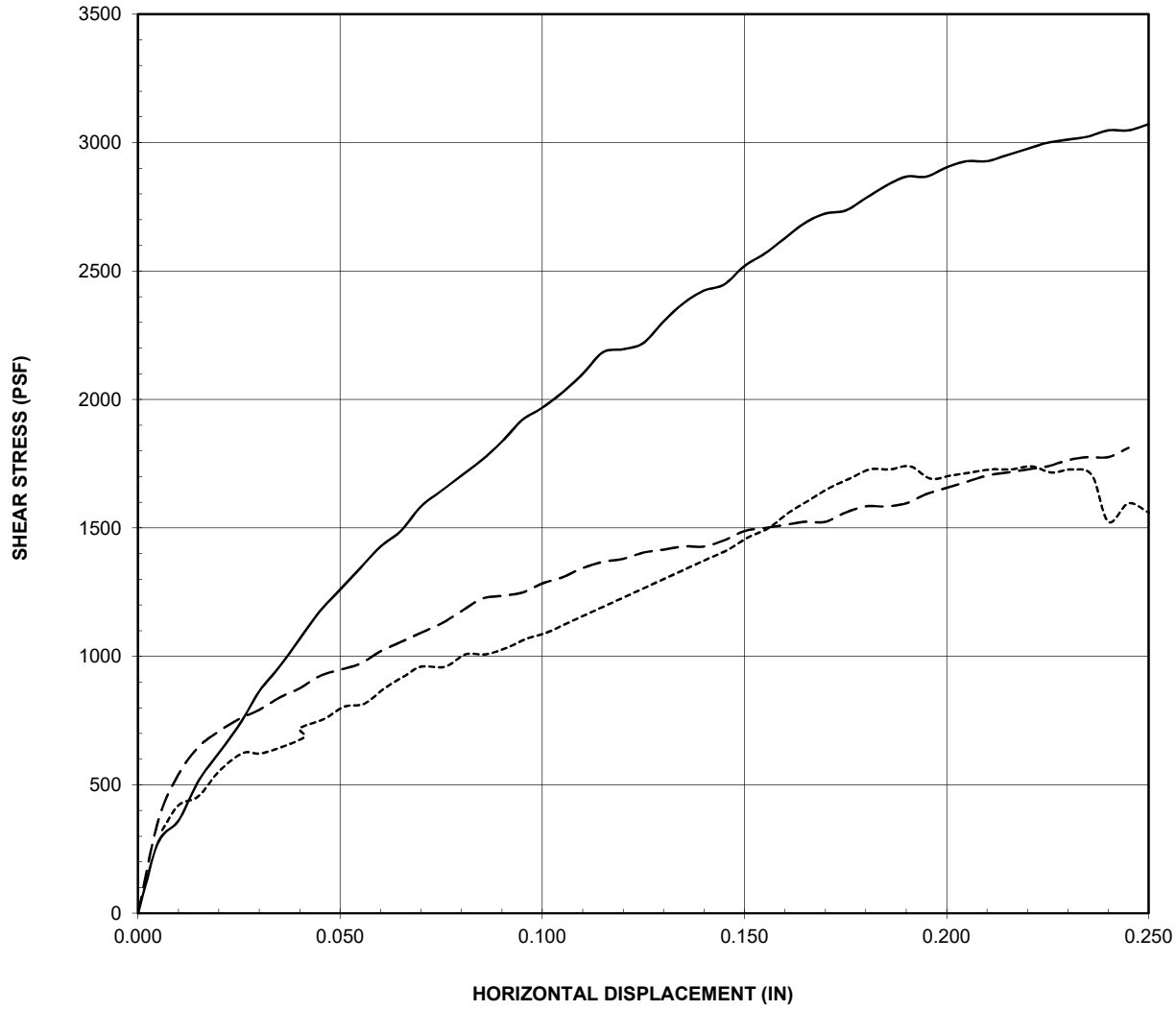

Sample A	Normal Stress	1000	psf	·····
Sample B	Normal Stress	2000	psf	– – – –
Sample C	Normal Stress	4000	psf	———

Boring Number:	B-32
Sample Depth (ft):	25.0-25.5
Strain Rate (in/sec)	0.001

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE B-10

DIRECT SHEAR STRESS-DEFORMATION PLOT

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

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SAMPLE LOCATION	SAMPLE DEPTH (ft)	pH [1]	RESISTIVITY [1] (ohm-cm)	SULFATE CONTENT [2]		CHLORIDE CONTENT [3] (ppm)
				(ppm)	(%)	
B-4	3.0-3.5	8.4	640	130	0.013	135
B-8	3.5-4.0	7.9	965	60	0.006	165
B-25	5.0-6.0	7.4	385	540	0.054	590
B-32	10.0-11.5	8.1	640	1,320	0.132	265

[1] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 643
[2] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 417
[3] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 422

FIGURE B-11

CORROSIVITY TEST RESULTS

CIVIC CENTER IMPROVEMENT PROJECT - SWEETWATER MESA PIPELINE
MALIBU, CALIFORNIA

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APPENDIX C

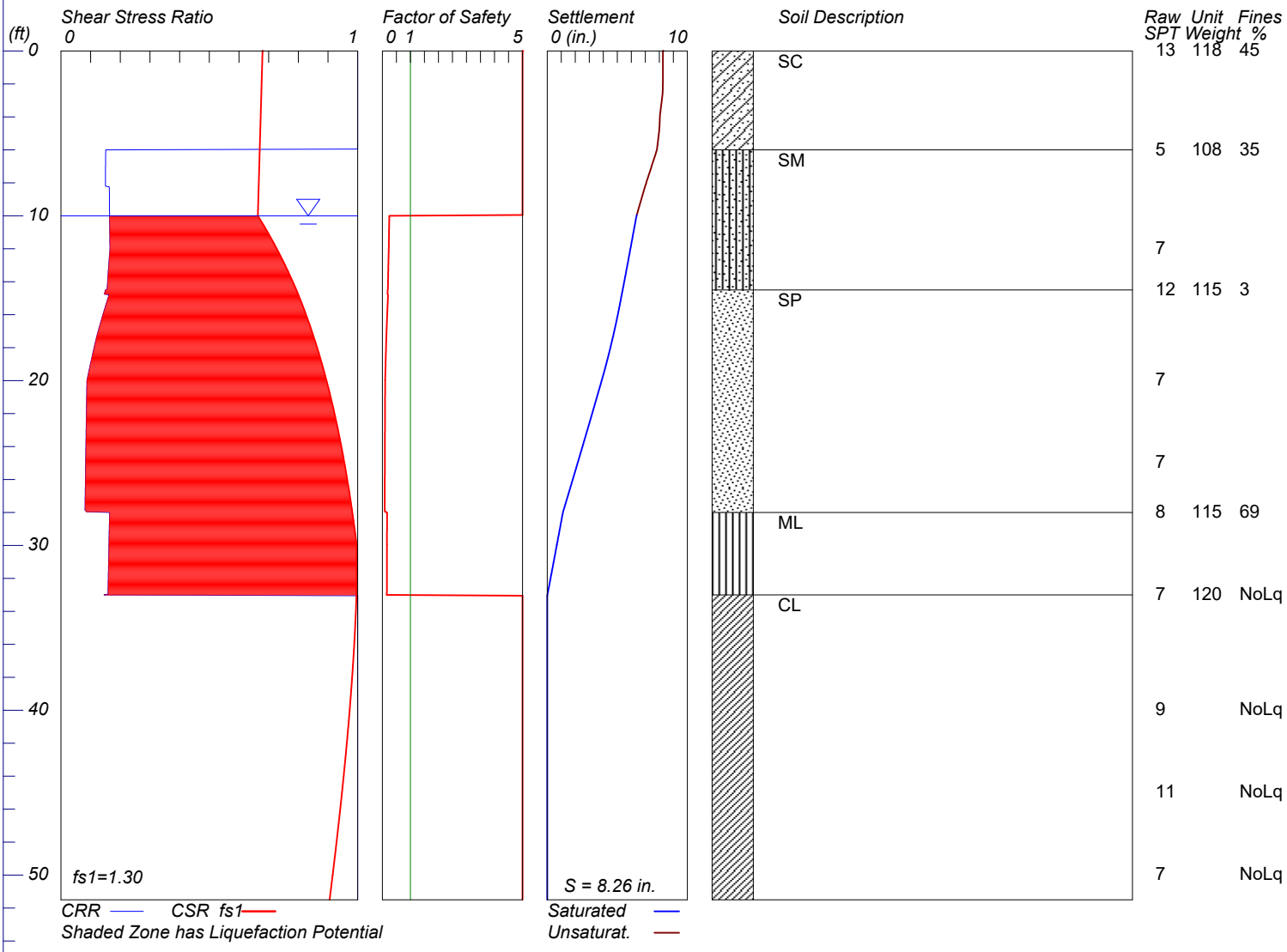
Liquefaction Analysis

LIQUEFACTION ANALYSIS

CIVIC CENTER IMPROVEMENTS PROJECT

Hole No.=B-29 Water Depth=10 ft Surface Elev.=20

Magnitude=7.7
Acceleration=.804g



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LIQUEFACTION ANALYSIS SUMMARY

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Title: CIVIC CENTER IMPROVEMENTS PROJECT
Subtitle: 211056001

Surface Elev.=20
Hole No.=B-29
Depth of Hole= 51.50 ft
Water Table during Earthquake= 10.00 ft
Water Table during In-Situ Testing= 17.30 ft
Max. Acceleration= 0.8 g
Earthquake Magnitude= 7.70

Input Data:
Surface Elev.=20
Hole No.=B-29
Depth of Hole=51.50 ft
Water Table during Earthquake= 10.00 ft
Water Table during In-Situ Testing= 17.30 ft
Max. Acceleration=0.8 g
Earthquake Magnitude=7.70

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Tokimatsu/Seed
3. Fines Correction for Liquefaction: Idriss/Seed
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1.05
8. Sampling Method, Cs= 1
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.00	13.00	118.00	45.00
5.99	13.00	118.00	45.00
6.00	5.00	108.00	35.00
12.00	7.00	108.00	35.00
14.49	7.00	108.00	35.00
14.50	12.00	115.00	3.00
20.00	7.00	115.00	3.00
25.00	7.00	115.00	3.00
27.99	7.00	115.00	3.00
28.00	8.00	115.00	69.00
32.99	8.00	115.00	69.00
33.00	7.00	120.00	NoLiq
40.00	9.00	120.00	NoLiq
45.00	11.00	120.00	NoLiq
50.00	7.00	120.00	NoLiq

Output Results:

Settlement of Saturated Sands=6.37 in.
Settlement of Unsaturated Sands=1.89 in.
Total Settlement of Saturated and Unsaturated Sands=8.26 in.
Differential Settlement=4.130 to 5.451 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	1.87	0.68	5.00	6.37	1.89	8.26
0.05	1.87	0.68	5.00	6.37	1.89	8.26
0.10	1.87	0.68	5.00	6.37	1.89	8.26
0.15	1.87	0.68	5.00	6.37	1.89	8.26
0.20	1.87	0.68	5.00	6.37	1.89	8.26
0.25	1.87	0.68	5.00	6.37	1.89	8.26
0.30	1.87	0.68	5.00	6.37	1.89	8.26
0.35	1.87	0.68	5.00	6.37	1.89	8.26
0.40	1.87	0.68	5.00	6.37	1.89	8.26
0.45	1.87	0.68	5.00	6.37	1.89	8.26
0.50	1.87	0.68	5.00	6.37	1.89	8.26
0.55	1.87	0.68	5.00	6.37	1.89	8.26
0.60	1.87	0.68	5.00	6.37	1.89	8.26
0.65	1.87	0.68	5.00	6.37	1.89	8.26
0.70	1.87	0.68	5.00	6.37	1.89	8.26
0.75	1.87	0.68	5.00	6.37	1.89	8.26
0.80	1.87	0.68	5.00	6.37	1.89	8.26
0.85	1.87	0.68	5.00	6.37	1.89	8.26
0.90	1.87	0.68	5.00	6.37	1.89	8.26
0.95	1.87	0.68	5.00	6.37	1.89	8.26

1.00	1.87	0.68	5.00	6.37	1.89	8.26
1.05	1.87	0.68	5.00	6.37	1.89	8.26
1.10	1.87	0.68	5.00	6.37	1.89	8.26
1.15	1.87	0.68	5.00	6.37	1.89	8.26
1.20	1.87	0.68	5.00	6.37	1.89	8.26
1.25	1.87	0.68	5.00	6.37	1.88	8.26
1.30	1.87	0.68	5.00	6.37	1.88	8.26
1.35	1.87	0.68	5.00	6.37	1.88	8.26
1.40	1.87	0.68	5.00	6.37	1.88	8.26
1.45	1.87	0.68	5.00	6.37	1.88	8.25
1.50	1.87	0.68	5.00	6.37	1.88	8.25
1.55	1.87	0.68	5.00	6.37	1.88	8.25
1.60	1.87	0.68	5.00	6.37	1.88	8.25
1.65	1.87	0.68	5.00	6.37	1.88	8.25
1.70	1.87	0.68	5.00	6.37	1.88	8.25
1.75	1.87	0.68	5.00	6.37	1.88	8.25
1.80	1.87	0.68	5.00	6.37	1.88	8.25
1.85	1.87	0.68	5.00	6.37	1.88	8.25
1.90	1.87	0.68	5.00	6.37	1.88	8.25
1.95	1.87	0.68	5.00	6.37	1.88	8.25
2.00	1.87	0.68	5.00	6.37	1.88	8.25
2.05	1.87	0.68	5.00	6.37	1.88	8.25
2.10	1.87	0.68	5.00	6.37	1.88	8.25
2.15	1.87	0.68	5.00	6.37	1.88	8.25
2.20	1.87	0.68	5.00	6.37	1.88	8.25
2.25	1.87	0.68	5.00	6.37	1.87	8.25
2.30	1.87	0.68	5.00	6.37	1.87	8.24
2.35	1.87	0.68	5.00	6.37	1.87	8.24
2.40	1.87	0.68	5.00	6.37	1.87	8.24
2.45	1.87	0.68	5.00	6.37	1.87	8.24
2.50	1.87	0.68	5.00	6.37	1.86	8.24
2.55	1.87	0.68	5.00	6.37	1.86	8.23
2.60	1.87	0.68	5.00	6.37	1.86	8.23
2.65	1.87	0.68	5.00	6.37	1.85	8.22
2.70	1.87	0.68	5.00	6.37	1.85	8.22
2.75	1.87	0.68	5.00	6.37	1.84	8.21
2.80	1.87	0.67	5.00	6.37	1.83	8.20
2.85	1.87	0.67	5.00	6.37	1.82	8.19
2.90	1.87	0.67	5.00	6.37	1.82	8.19
2.95	1.87	0.67	5.00	6.37	1.81	8.18
3.00	1.87	0.67	5.00	6.37	1.80	8.17
3.05	1.87	0.67	5.00	6.37	1.80	8.17
3.10	1.87	0.67	5.00	6.37	1.79	8.16
3.15	1.87	0.67	5.00	6.37	1.78	8.15
3.20	1.87	0.67	5.00	6.37	1.77	8.15
3.25	1.87	0.67	5.00	6.37	1.77	8.14
3.30	1.87	0.67	5.00	6.37	1.76	8.13
3.35	1.87	0.67	5.00	6.37	1.75	8.12
3.40	1.87	0.67	5.00	6.37	1.75	8.12
3.45	1.87	0.67	5.00	6.37	1.74	8.11

3.50	1.87	0.67	5.00	6.37	1.73	8.10
3.55	1.87	0.67	5.00	6.37	1.72	8.10
3.60	1.87	0.67	5.00	6.37	1.72	8.09
3.65	1.87	0.67	5.00	6.37	1.71	8.08
3.70	1.87	0.67	5.00	6.37	1.70	8.07
3.75	1.87	0.67	5.00	6.37	1.70	8.07
3.80	1.87	0.67	5.00	6.37	1.69	8.06
3.85	1.87	0.67	5.00	6.37	1.68	8.05
3.90	1.87	0.67	5.00	6.37	1.67	8.05
3.95	1.87	0.67	5.00	6.37	1.67	8.04
4.00	1.87	0.67	5.00	6.37	1.67	8.04
4.05	1.87	0.67	5.00	6.37	1.66	8.04
4.10	1.87	0.67	5.00	6.37	1.66	8.03
4.15	1.87	0.67	5.00	6.37	1.66	8.03
4.20	1.87	0.67	5.00	6.37	1.66	8.03
4.25	1.87	0.67	5.00	6.37	1.66	8.03
4.30	1.87	0.67	5.00	6.37	1.65	8.03
4.35	1.87	0.67	5.00	6.37	1.65	8.02
4.40	1.87	0.67	5.00	6.37	1.65	8.02
4.45	1.87	0.67	5.00	6.37	1.65	8.02
4.50	1.87	0.67	5.00	6.37	1.64	8.01
4.55	1.87	0.67	5.00	6.37	1.64	8.01
4.60	1.87	0.67	5.00	6.37	1.64	8.01
4.65	1.87	0.67	5.00	6.37	1.63	8.00
4.70	1.87	0.67	5.00	6.37	1.63	8.00
4.75	1.87	0.67	5.00	6.37	1.63	8.00
4.80	1.87	0.67	5.00	6.37	1.62	7.99
4.85	1.87	0.67	5.00	6.37	1.62	7.99
4.90	1.87	0.67	5.00	6.37	1.61	7.98
4.95	1.87	0.67	5.00	6.37	1.60	7.97
5.00	1.87	0.67	5.00	6.37	1.60	7.97
5.05	1.87	0.67	5.00	6.37	1.59	7.96
5.10	1.87	0.67	5.00	6.37	1.58	7.95
5.15	1.87	0.67	5.00	6.37	1.58	7.95
5.20	1.87	0.67	5.00	6.37	1.57	7.94
5.25	1.87	0.67	5.00	6.37	1.56	7.93
5.30	1.87	0.67	5.00	6.37	1.56	7.93
5.35	1.87	0.67	5.00	6.37	1.55	7.92
5.40	1.87	0.67	5.00	6.37	1.54	7.91
5.45	1.87	0.67	5.00	6.37	1.53	7.90
5.50	1.87	0.67	5.00	6.37	1.53	7.90
5.55	1.87	0.67	5.00	6.37	1.52	7.89
5.60	1.87	0.67	5.00	6.37	1.51	7.88
5.65	1.87	0.67	5.00	6.37	1.51	7.88
5.70	1.87	0.67	5.00	6.37	1.50	7.87
5.75	1.87	0.67	5.00	6.37	1.49	7.86
5.80	1.87	0.67	5.00	6.37	1.48	7.85
5.85	1.87	0.67	5.00	6.37	1.48	7.85
5.90	1.87	0.67	5.00	6.37	1.47	7.84
5.95	1.87	0.67	5.00	6.37	1.46	7.83

6.00	0.15	0.67	5.00	6.37	1.46	7.83
6.05	0.15	0.67	5.00	6.37	1.44	7.81
6.10	0.15	0.67	5.00	6.37	1.42	7.79
6.15	0.15	0.67	5.00	6.37	1.40	7.77
6.20	0.15	0.67	5.00	6.37	1.38	7.75
6.25	0.15	0.67	5.00	6.37	1.36	7.73
6.30	0.15	0.67	5.00	6.37	1.34	7.71
6.35	0.15	0.67	5.00	6.37	1.32	7.69
6.40	0.15	0.67	5.00	6.37	1.30	7.67
6.45	0.15	0.67	5.00	6.37	1.28	7.66
6.50	0.15	0.67	5.00	6.37	1.27	7.64
6.55	0.15	0.67	5.00	6.37	1.25	7.62
6.60	0.15	0.67	5.00	6.37	1.23	7.60
6.65	0.15	0.67	5.00	6.37	1.21	7.58
6.70	0.15	0.67	5.00	6.37	1.19	7.56
6.75	0.15	0.67	5.00	6.37	1.17	7.54
6.80	0.15	0.67	5.00	6.37	1.15	7.52
6.85	0.15	0.67	5.00	6.37	1.13	7.50
6.90	0.15	0.67	5.00	6.37	1.11	7.48
6.95	0.15	0.67	5.00	6.37	1.09	7.46
7.00	0.15	0.67	5.00	6.37	1.08	7.45
7.05	0.15	0.67	5.00	6.37	1.06	7.43
7.10	0.15	0.67	5.00	6.37	1.04	7.41
7.15	0.15	0.67	5.00	6.37	1.02	7.39
7.20	0.15	0.67	5.00	6.37	1.00	7.37
7.25	0.15	0.67	5.00	6.37	0.98	7.35
7.30	0.15	0.67	5.00	6.37	0.96	7.33
7.35	0.15	0.67	5.00	6.37	0.94	7.31
7.40	0.15	0.67	5.00	6.37	0.92	7.29
7.45	0.15	0.67	5.00	6.37	0.90	7.27
7.50	0.15	0.67	5.00	6.37	0.88	7.26
7.55	0.15	0.67	5.00	6.37	0.87	7.24
7.60	0.15	0.67	5.00	6.37	0.85	7.22
7.65	0.15	0.67	5.00	6.37	0.83	7.20
7.70	0.15	0.67	5.00	6.37	0.81	7.18
7.75	0.15	0.67	5.00	6.37	0.79	7.16
7.80	0.15	0.67	5.00	6.37	0.77	7.14
7.85	0.15	0.67	5.00	6.37	0.75	7.12
7.90	0.15	0.67	5.00	6.37	0.73	7.10
7.95	0.15	0.67	5.00	6.37	0.71	7.08
8.00	0.15	0.67	5.00	6.37	0.69	7.06
8.05	0.15	0.67	5.00	6.37	0.67	7.05
8.10	0.15	0.67	5.00	6.37	0.66	7.03
8.15	0.15	0.67	5.00	6.37	0.64	7.01
8.20	0.15	0.67	5.00	6.37	0.62	6.99
8.25	0.16	0.67	5.00	6.37	0.60	6.97
8.30	0.16	0.67	5.00	6.37	0.58	6.95
8.35	0.16	0.67	5.00	6.37	0.56	6.93
8.40	0.16	0.67	5.00	6.37	0.55	6.92
8.45	0.16	0.67	5.00	6.37	0.53	6.90

8.50	0.16	0.67	5.00	6.37	0.51	6.88
8.55	0.16	0.67	5.00	6.37	0.50	6.87
8.60	0.16	0.67	5.00	6.37	0.48	6.85
8.65	0.16	0.67	5.00	6.37	0.46	6.83
8.70	0.16	0.67	5.00	6.37	0.44	6.81
8.75	0.16	0.67	5.00	6.37	0.43	6.80
8.80	0.16	0.67	5.00	6.37	0.41	6.78
8.85	0.16	0.67	5.00	6.37	0.39	6.76
8.90	0.16	0.67	5.00	6.37	0.38	6.75
8.95	0.16	0.67	5.00	6.37	0.36	6.73
9.00	0.16	0.67	5.00	6.37	0.34	6.71
9.05	0.16	0.67	5.00	6.37	0.32	6.69
9.10	0.16	0.66	5.00	6.37	0.31	6.68
9.15	0.16	0.66	5.00	6.37	0.29	6.66
9.20	0.16	0.66	5.00	6.37	0.27	6.64
9.25	0.16	0.66	5.00	6.37	0.26	6.63
9.30	0.16	0.66	5.00	6.37	0.24	6.61
9.35	0.16	0.66	5.00	6.37	0.22	6.59
9.40	0.16	0.66	5.00	6.37	0.20	6.58
9.45	0.16	0.66	5.00	6.37	0.19	6.56
9.50	0.16	0.66	5.00	6.37	0.17	6.54
9.55	0.16	0.66	5.00	6.37	0.15	6.52
9.60	0.16	0.66	5.00	6.37	0.14	6.51
9.65	0.16	0.66	5.00	6.37	0.12	6.49
9.70	0.16	0.66	5.00	6.37	0.10	6.47
9.75	0.16	0.66	5.00	6.37	0.09	6.46
9.80	0.16	0.66	5.00	6.37	0.07	6.44
9.85	0.16	0.66	5.00	6.37	0.05	6.42
9.90	0.16	0.66	5.00	6.37	0.03	6.40
9.95	0.16	0.66	5.00	6.37	0.02	6.39
10.00	0.16	0.66	0.25*	6.37	0.00	6.37
10.05	0.16	0.67	0.25*	6.36	0.00	6.36
10.10	0.16	0.67	0.25*	6.35	0.00	6.35
10.15	0.16	0.67	0.25*	6.34	0.00	6.34
10.20	0.16	0.67	0.24*	6.33	0.00	6.33
10.25	0.16	0.67	0.24*	6.32	0.00	6.32
10.30	0.16	0.67	0.24*	6.31	0.00	6.31
10.35	0.16	0.68	0.24*	6.29	0.00	6.29
10.40	0.16	0.68	0.24*	6.28	0.00	6.28
10.45	0.16	0.68	0.24*	6.27	0.00	6.27
10.50	0.16	0.68	0.24*	6.26	0.00	6.26
10.55	0.16	0.68	0.24*	6.25	0.00	6.25
10.60	0.16	0.68	0.24*	6.24	0.00	6.24
10.65	0.16	0.69	0.24*	6.23	0.00	6.23
10.70	0.16	0.69	0.24*	6.22	0.00	6.22
10.75	0.16	0.69	0.24*	6.21	0.00	6.21
10.80	0.16	0.69	0.24*	6.20	0.00	6.20
10.85	0.16	0.69	0.24*	6.19	0.00	6.19
10.90	0.16	0.69	0.24*	6.17	0.00	6.17
10.95	0.16	0.70	0.24*	6.16	0.00	6.16

11.00	0.16	0.70	0.24*	6.15	0.00	6.15
11.05	0.16	0.70	0.24*	6.14	0.00	6.14
11.10	0.16	0.70	0.24*	6.13	0.00	6.13
11.15	0.16	0.70	0.23*	6.12	0.00	6.12
11.20	0.16	0.70	0.23*	6.11	0.00	6.11
11.25	0.16	0.70	0.23*	6.10	0.00	6.10
11.30	0.16	0.71	0.23*	6.09	0.00	6.09
11.35	0.16	0.71	0.23*	6.08	0.00	6.08
11.40	0.16	0.71	0.23*	6.07	0.00	6.07
11.45	0.16	0.71	0.23*	6.06	0.00	6.06
11.50	0.16	0.71	0.23*	6.04	0.00	6.04
11.55	0.16	0.71	0.23*	6.03	0.00	6.03
11.60	0.16	0.72	0.23*	6.02	0.00	6.02
11.65	0.17	0.72	0.23*	6.01	0.00	6.01
11.70	0.17	0.72	0.23*	6.00	0.00	6.00
11.75	0.17	0.72	0.23*	5.99	0.00	5.99
11.80	0.17	0.72	0.23*	5.98	0.00	5.98
11.85	0.17	0.72	0.23*	5.97	0.00	5.97
11.90	0.17	0.72	0.23*	5.96	0.00	5.96
11.95	0.17	0.73	0.23*	5.95	0.00	5.95
12.00	0.17	0.73	0.23*	5.94	0.00	5.94
12.05	0.17	0.73	0.23*	5.92	0.00	5.92
12.10	0.16	0.73	0.23*	5.91	0.00	5.91
12.15	0.16	0.73	0.23*	5.90	0.00	5.90
12.20	0.16	0.73	0.22*	5.89	0.00	5.89
12.25	0.16	0.73	0.22*	5.88	0.00	5.88
12.30	0.16	0.74	0.22*	5.87	0.00	5.87
12.35	0.16	0.74	0.22*	5.86	0.00	5.86
12.40	0.16	0.74	0.22*	5.85	0.00	5.85
12.45	0.16	0.74	0.22*	5.84	0.00	5.84
12.50	0.16	0.74	0.22*	5.83	0.00	5.83
12.55	0.16	0.74	0.22*	5.82	0.00	5.82
12.60	0.16	0.74	0.22*	5.81	0.00	5.81
12.65	0.16	0.75	0.22*	5.79	0.00	5.79
12.70	0.16	0.75	0.22*	5.78	0.00	5.78
12.75	0.16	0.75	0.22*	5.77	0.00	5.77
12.80	0.16	0.75	0.22*	5.76	0.00	5.76
12.85	0.16	0.75	0.22*	5.75	0.00	5.75
12.90	0.16	0.75	0.21*	5.74	0.00	5.74
12.95	0.16	0.75	0.21*	5.73	0.00	5.73
13.00	0.16	0.76	0.21*	5.72	0.00	5.72
13.05	0.16	0.76	0.21*	5.71	0.00	5.71
13.10	0.16	0.76	0.21*	5.69	0.00	5.69
13.15	0.16	0.76	0.21*	5.68	0.00	5.68
13.20	0.16	0.76	0.21*	5.67	0.00	5.67
13.25	0.16	0.76	0.21*	5.66	0.00	5.66
13.30	0.16	0.76	0.21*	5.65	0.00	5.65
13.35	0.16	0.76	0.21*	5.64	0.00	5.64
13.40	0.16	0.77	0.21*	5.63	0.00	5.63
13.45	0.16	0.77	0.21*	5.62	0.00	5.62

13.50	0.16	0.77	0.21*	5.61	0.00	5.61
13.55	0.16	0.77	0.21*	5.60	0.00	5.60
13.60	0.16	0.77	0.21*	5.58	0.00	5.58
13.65	0.16	0.77	0.21*	5.57	0.00	5.57
13.70	0.16	0.77	0.20*	5.56	0.00	5.56
13.75	0.16	0.77	0.20*	5.55	0.00	5.55
13.80	0.16	0.78	0.20*	5.54	0.00	5.54
13.85	0.16	0.78	0.20*	5.53	0.00	5.53
13.90	0.16	0.78	0.20*	5.52	0.00	5.52
13.95	0.16	0.78	0.20*	5.51	0.00	5.51
14.00	0.16	0.78	0.20*	5.49	0.00	5.49
14.05	0.16	0.78	0.20*	5.48	0.00	5.48
14.10	0.16	0.78	0.20*	5.47	0.00	5.47
14.15	0.16	0.78	0.20*	5.46	0.00	5.46
14.20	0.16	0.79	0.20*	5.45	0.00	5.45
14.25	0.16	0.79	0.20*	5.44	0.00	5.44
14.30	0.16	0.79	0.20*	5.43	0.00	5.43
14.35	0.16	0.79	0.20*	5.42	0.00	5.42
14.40	0.16	0.79	0.20*	5.40	0.00	5.40
14.45	0.16	0.79	0.20*	5.39	0.00	5.39
14.50	0.15	0.79	0.19*	5.38	0.00	5.38
14.55	0.15	0.79	0.19*	5.37	0.00	5.37
14.60	0.15	0.80	0.19*	5.36	0.00	5.36
14.65	0.15	0.80	0.19*	5.35	0.00	5.35
14.70	0.15	0.80	0.18*	5.33	0.00	5.33
14.75	0.15	0.80	0.18*	5.32	0.00	5.32
14.80	0.16	0.80	0.20*	5.31	0.00	5.31
14.85	0.16	0.80	0.20*	5.30	0.00	5.30
14.90	0.16	0.80	0.20*	5.29	0.00	5.29
14.95	0.16	0.80	0.20*	5.28	0.00	5.28
15.00	0.16	0.80	0.20*	5.27	0.00	5.27
15.05	0.16	0.81	0.20*	5.26	0.00	5.26
15.10	0.16	0.81	0.19*	5.24	0.00	5.24
15.15	0.16	0.81	0.19*	5.23	0.00	5.23
15.20	0.15	0.81	0.19*	5.22	0.00	5.22
15.25	0.15	0.81	0.19*	5.21	0.00	5.21
15.30	0.15	0.81	0.19*	5.20	0.00	5.20
15.35	0.15	0.81	0.19*	5.19	0.00	5.19
15.40	0.15	0.81	0.19*	5.18	0.00	5.18
15.45	0.15	0.81	0.18*	5.16	0.00	5.16
15.50	0.15	0.82	0.18*	5.15	0.00	5.15
15.55	0.15	0.82	0.18*	5.14	0.00	5.14
15.60	0.15	0.82	0.18*	5.13	0.00	5.13
15.65	0.15	0.82	0.18*	5.12	0.00	5.12
15.70	0.15	0.82	0.18*	5.11	0.00	5.11
15.75	0.15	0.82	0.18*	5.09	0.00	5.09
15.80	0.14	0.82	0.18*	5.08	0.00	5.08
15.85	0.14	0.82	0.17*	5.07	0.00	5.07
15.90	0.14	0.82	0.17*	5.06	0.00	5.06
15.95	0.14	0.82	0.17*	5.05	0.00	5.05

16.00	0.14	0.83	0.17*	5.04	0.00	5.04
16.05	0.14	0.83	0.17*	5.02	0.00	5.02
16.10	0.14	0.83	0.17*	5.01	0.00	5.01
16.15	0.14	0.83	0.17*	5.00	0.00	5.00
16.20	0.14	0.83	0.17*	4.99	0.00	4.99
16.25	0.14	0.83	0.17*	4.97	0.00	4.97
16.30	0.14	0.83	0.16*	4.96	0.00	4.96
16.35	0.14	0.83	0.16*	4.95	0.00	4.95
16.40	0.13	0.83	0.16*	4.94	0.00	4.94
16.45	0.13	0.83	0.16*	4.92	0.00	4.92
16.50	0.13	0.84	0.16*	4.91	0.00	4.91
16.55	0.13	0.84	0.16*	4.90	0.00	4.90
16.60	0.13	0.84	0.16*	4.89	0.00	4.89
16.65	0.13	0.84	0.16*	4.87	0.00	4.87
16.70	0.13	0.84	0.15*	4.86	0.00	4.86
16.75	0.13	0.84	0.15*	4.85	0.00	4.85
16.80	0.13	0.84	0.15*	4.83	0.00	4.83
16.85	0.13	0.84	0.15*	4.82	0.00	4.82
16.90	0.13	0.84	0.15*	4.81	0.00	4.81
16.95	0.13	0.84	0.15*	4.80	0.00	4.80
17.00	0.13	0.85	0.15*	4.78	0.00	4.78
17.05	0.12	0.85	0.15*	4.77	0.00	4.77
17.10	0.12	0.85	0.15*	4.76	0.00	4.76
17.15	0.12	0.85	0.15*	4.74	0.00	4.74
17.20	0.12	0.85	0.14*	4.73	0.00	4.73
17.25	0.12	0.85	0.14*	4.71	0.00	4.71
17.30	0.12	0.85	0.14*	4.70	0.00	4.70
17.35	0.12	0.85	0.14*	4.69	0.00	4.69
17.40	0.12	0.85	0.14*	4.67	0.00	4.67
17.45	0.12	0.85	0.14*	4.66	0.00	4.66
17.50	0.12	0.85	0.14*	4.65	0.00	4.65
17.55	0.12	0.86	0.14*	4.63	0.00	4.63
17.60	0.12	0.86	0.14*	4.62	0.00	4.62
17.65	0.12	0.86	0.14*	4.60	0.00	4.60
17.70	0.12	0.86	0.13*	4.59	0.00	4.59
17.75	0.11	0.86	0.13*	4.58	0.00	4.58
17.80	0.11	0.86	0.13*	4.56	0.00	4.56
17.85	0.11	0.86	0.13*	4.55	0.00	4.55
17.90	0.11	0.86	0.13*	4.53	0.00	4.53
17.95	0.11	0.86	0.13*	4.52	0.00	4.52
18.00	0.11	0.86	0.13*	4.51	0.00	4.51
18.05	0.11	0.86	0.13*	4.49	0.00	4.49
18.10	0.11	0.87	0.13*	4.48	0.00	4.48
18.15	0.11	0.87	0.13*	4.46	0.00	4.46
18.20	0.11	0.87	0.13*	4.45	0.00	4.45
18.25	0.11	0.87	0.13*	4.43	0.00	4.43
18.30	0.11	0.87	0.12*	4.42	0.00	4.42
18.35	0.11	0.87	0.12*	4.40	0.00	4.40
18.40	0.11	0.87	0.12*	4.39	0.00	4.39
18.45	0.11	0.87	0.12*	4.37	0.00	4.37

18.50	0.11	0.87	0.12*	4.36	0.00	4.36
18.55	0.10	0.87	0.12*	4.34	0.00	4.34
18.60	0.10	0.87	0.12*	4.33	0.00	4.33
18.65	0.10	0.87	0.12*	4.31	0.00	4.31
18.70	0.10	0.87	0.12*	4.30	0.00	4.30
18.75	0.10	0.88	0.12*	4.28	0.00	4.28
18.80	0.10	0.88	0.12*	4.27	0.00	4.27
18.85	0.10	0.88	0.12*	4.25	0.00	4.25
18.90	0.10	0.88	0.11*	4.24	0.00	4.24
18.95	0.10	0.88	0.11*	4.22	0.00	4.22
19.00	0.10	0.88	0.11*	4.21	0.00	4.21
19.05	0.10	0.88	0.11*	4.19	0.00	4.19
19.10	0.10	0.88	0.11*	4.18	0.00	4.18
19.15	0.10	0.88	0.11*	4.16	0.00	4.16
19.20	0.10	0.88	0.11*	4.14	0.00	4.14
19.25	0.10	0.88	0.11*	4.13	0.00	4.13
19.30	0.10	0.88	0.11*	4.11	0.00	4.11
19.35	0.10	0.89	0.11*	4.10	0.00	4.10
19.40	0.09	0.89	0.11*	4.08	0.00	4.08
19.45	0.09	0.89	0.11*	4.07	0.00	4.07
19.50	0.09	0.89	0.11*	4.05	0.00	4.05
19.55	0.09	0.89	0.10*	4.03	0.00	4.03
19.60	0.09	0.89	0.10*	4.02	0.00	4.02
19.65	0.09	0.89	0.10*	4.00	0.00	4.00
19.70	0.09	0.89	0.10*	3.98	0.00	3.98
19.75	0.09	0.89	0.10*	3.97	0.00	3.97
19.80	0.09	0.89	0.10*	3.95	0.00	3.95
19.85	0.09	0.89	0.10*	3.93	0.00	3.93
19.90	0.09	0.89	0.10*	3.92	0.00	3.92
19.95	0.09	0.89	0.10*	3.90	0.00	3.90
20.00	0.09	0.89	0.10*	3.88	0.00	3.88
20.05	0.09	0.90	0.10*	3.87	0.00	3.87
20.10	0.09	0.90	0.10*	3.85	0.00	3.85
20.15	0.09	0.90	0.10*	3.83	0.00	3.83
20.20	0.09	0.90	0.10*	3.82	0.00	3.82
20.25	0.09	0.90	0.10*	3.80	0.00	3.80
20.30	0.09	0.90	0.10*	3.78	0.00	3.78
20.35	0.09	0.90	0.10*	3.77	0.00	3.77
20.40	0.09	0.90	0.10*	3.75	0.00	3.75
20.45	0.09	0.90	0.10*	3.73	0.00	3.73
20.50	0.09	0.90	0.10*	3.71	0.00	3.71
20.55	0.09	0.90	0.10*	3.70	0.00	3.70
20.60	0.09	0.90	0.10*	3.68	0.00	3.68
20.65	0.09	0.90	0.10*	3.66	0.00	3.66
20.70	0.09	0.90	0.10*	3.65	0.00	3.65
20.75	0.09	0.91	0.10*	3.63	0.00	3.63
20.80	0.09	0.91	0.10*	3.61	0.00	3.61
20.85	0.09	0.91	0.10*	3.60	0.00	3.60
20.90	0.09	0.91	0.10*	3.58	0.00	3.58
20.95	0.09	0.91	0.10*	3.56	0.00	3.56

21.00	0.09	0.91	0.10*	3.55	0.00	3.55
21.05	0.09	0.91	0.10*	3.53	0.00	3.53
21.10	0.09	0.91	0.10*	3.51	0.00	3.51
21.15	0.09	0.91	0.10*	3.49	0.00	3.49
21.20	0.09	0.91	0.09*	3.48	0.00	3.48
21.25	0.09	0.91	0.09*	3.46	0.00	3.46
21.30	0.09	0.91	0.09*	3.44	0.00	3.44
21.35	0.09	0.91	0.09*	3.43	0.00	3.43
21.40	0.09	0.91	0.09*	3.41	0.00	3.41
21.45	0.09	0.91	0.09*	3.39	0.00	3.39
21.50	0.09	0.92	0.09*	3.38	0.00	3.38
21.55	0.09	0.92	0.09*	3.36	0.00	3.36
21.60	0.09	0.92	0.09*	3.34	0.00	3.34
21.65	0.09	0.92	0.09*	3.32	0.00	3.32
21.70	0.09	0.92	0.09*	3.31	0.00	3.31
21.75	0.09	0.92	0.09*	3.29	0.00	3.29
21.80	0.09	0.92	0.09*	3.27	0.00	3.27
21.85	0.09	0.92	0.09*	3.26	0.00	3.26
21.90	0.09	0.92	0.09*	3.24	0.00	3.24
21.95	0.09	0.92	0.09*	3.22	0.00	3.22
22.00	0.09	0.92	0.09*	3.20	0.00	3.20
22.05	0.09	0.92	0.09*	3.19	0.00	3.19
22.10	0.09	0.92	0.09*	3.17	0.00	3.17
22.15	0.09	0.92	0.09*	3.15	0.00	3.15
22.20	0.09	0.92	0.09*	3.14	0.00	3.14
22.25	0.09	0.93	0.09*	3.12	0.00	3.12
22.30	0.09	0.93	0.09*	3.10	0.00	3.10
22.35	0.09	0.93	0.09*	3.08	0.00	3.08
22.40	0.09	0.93	0.09*	3.07	0.00	3.07
22.45	0.09	0.93	0.09*	3.05	0.00	3.05
22.50	0.09	0.93	0.09*	3.03	0.00	3.03
22.55	0.09	0.93	0.09*	3.02	0.00	3.02
22.60	0.09	0.93	0.09*	3.00	0.00	3.00
22.65	0.09	0.93	0.09*	2.98	0.00	2.98
22.70	0.09	0.93	0.09*	2.96	0.00	2.96
22.75	0.09	0.93	0.09*	2.95	0.00	2.95
22.80	0.09	0.93	0.09*	2.93	0.00	2.93
22.85	0.09	0.93	0.09*	2.91	0.00	2.91
22.90	0.08	0.93	0.09*	2.90	0.00	2.90
22.95	0.08	0.93	0.09*	2.88	0.00	2.88
23.00	0.08	0.93	0.09*	2.86	0.00	2.86
23.05	0.08	0.93	0.09*	2.84	0.00	2.84
23.10	0.08	0.94	0.09*	2.83	0.00	2.83
23.15	0.08	0.94	0.09*	2.81	0.00	2.81
23.20	0.08	0.94	0.09*	2.79	0.00	2.79
23.25	0.08	0.94	0.09*	2.78	0.00	2.78
23.30	0.08	0.94	0.09*	2.76	0.00	2.76
23.35	0.08	0.94	0.09*	2.74	0.00	2.74
23.40	0.08	0.94	0.09*	2.72	0.00	2.72
23.45	0.08	0.94	0.09*	2.71	0.00	2.71

23.50	0.08	0.94	0.09*	2.69	0.00	2.69
23.55	0.08	0.94	0.09*	2.67	0.00	2.67
23.60	0.08	0.94	0.09*	2.65	0.00	2.65
23.65	0.08	0.94	0.09*	2.64	0.00	2.64
23.70	0.08	0.94	0.09*	2.62	0.00	2.62
23.75	0.08	0.94	0.09*	2.60	0.00	2.60
23.80	0.08	0.94	0.09*	2.59	0.00	2.59
23.85	0.08	0.94	0.09*	2.57	0.00	2.57
23.90	0.08	0.94	0.09*	2.55	0.00	2.55
23.95	0.08	0.94	0.09*	2.53	0.00	2.53
24.00	0.08	0.95	0.09*	2.52	0.00	2.52
24.05	0.08	0.95	0.09*	2.50	0.00	2.50
24.10	0.08	0.95	0.09*	2.48	0.00	2.48
24.15	0.08	0.95	0.09*	2.46	0.00	2.46
24.20	0.08	0.95	0.09*	2.45	0.00	2.45
24.25	0.08	0.95	0.09*	2.43	0.00	2.43
24.30	0.08	0.95	0.09*	2.41	0.00	2.41
24.35	0.08	0.95	0.09*	2.39	0.00	2.39
24.40	0.08	0.95	0.09*	2.38	0.00	2.38
24.45	0.08	0.95	0.09*	2.36	0.00	2.36
24.50	0.08	0.95	0.09*	2.34	0.00	2.34
24.55	0.08	0.95	0.09*	2.33	0.00	2.33
24.60	0.08	0.95	0.09*	2.31	0.00	2.31
24.65	0.08	0.95	0.09*	2.29	0.00	2.29
24.70	0.08	0.95	0.09*	2.27	0.00	2.27
24.75	0.08	0.95	0.09*	2.26	0.00	2.26
24.80	0.08	0.95	0.09*	2.24	0.00	2.24
24.85	0.08	0.95	0.09*	2.22	0.00	2.22
24.90	0.08	0.95	0.09*	2.20	0.00	2.20
24.95	0.08	0.95	0.09*	2.19	0.00	2.19
25.00	0.08	0.96	0.09*	2.17	0.00	2.17
25.05	0.08	0.96	0.09*	2.15	0.00	2.15
25.10	0.08	0.96	0.09*	2.13	0.00	2.13
25.15	0.08	0.96	0.09*	2.12	0.00	2.12
25.20	0.08	0.96	0.09*	2.10	0.00	2.10
25.25	0.08	0.96	0.09*	2.08	0.00	2.08
25.30	0.08	0.96	0.09*	2.06	0.00	2.06
25.35	0.08	0.96	0.09*	2.05	0.00	2.05
25.40	0.08	0.96	0.09*	2.03	0.00	2.03
25.45	0.08	0.96	0.09*	2.01	0.00	2.01
25.50	0.08	0.96	0.09*	1.99	0.00	1.99
25.55	0.08	0.96	0.09*	1.98	0.00	1.98
25.60	0.08	0.96	0.09*	1.96	0.00	1.96
25.65	0.08	0.96	0.09*	1.94	0.00	1.94
25.70	0.08	0.96	0.09*	1.92	0.00	1.92
25.75	0.08	0.96	0.09*	1.91	0.00	1.91
25.80	0.08	0.96	0.09*	1.89	0.00	1.89
25.85	0.08	0.96	0.09*	1.87	0.00	1.87
25.90	0.08	0.96	0.09*	1.85	0.00	1.85
25.95	0.08	0.96	0.09*	1.84	0.00	1.84

26.00	0.08	0.96	0.09*	1.82	0.00	1.82
26.05	0.08	0.97	0.09*	1.80	0.00	1.80
26.10	0.08	0.97	0.09*	1.78	0.00	1.78
26.15	0.08	0.97	0.09*	1.77	0.00	1.77
26.20	0.08	0.97	0.09*	1.75	0.00	1.75
26.25	0.08	0.97	0.09*	1.73	0.00	1.73
26.30	0.08	0.97	0.09*	1.71	0.00	1.71
26.35	0.08	0.97	0.08*	1.70	0.00	1.70
26.40	0.08	0.97	0.08*	1.68	0.00	1.68
26.45	0.08	0.97	0.08*	1.66	0.00	1.66
26.50	0.08	0.97	0.08*	1.64	0.00	1.64
26.55	0.08	0.97	0.08*	1.63	0.00	1.63
26.60	0.08	0.97	0.08*	1.61	0.00	1.61
26.65	0.08	0.97	0.08*	1.59	0.00	1.59
26.70	0.08	0.97	0.08*	1.57	0.00	1.57
26.75	0.08	0.97	0.08*	1.56	0.00	1.56
26.80	0.08	0.97	0.08*	1.54	0.00	1.54
26.85	0.08	0.97	0.08*	1.52	0.00	1.52
26.90	0.08	0.97	0.08*	1.50	0.00	1.50
26.95	0.08	0.97	0.08*	1.49	0.00	1.49
27.00	0.08	0.97	0.08*	1.47	0.00	1.47
27.05	0.08	0.97	0.08*	1.45	0.00	1.45
27.10	0.08	0.97	0.08*	1.43	0.00	1.43
27.15	0.08	0.98	0.08*	1.42	0.00	1.42
27.20	0.08	0.98	0.08*	1.40	0.00	1.40
27.25	0.08	0.98	0.08*	1.38	0.00	1.38
27.30	0.08	0.98	0.08*	1.36	0.00	1.36
27.35	0.08	0.98	0.08*	1.34	0.00	1.34
27.40	0.08	0.98	0.08*	1.33	0.00	1.33
27.45	0.08	0.98	0.08*	1.31	0.00	1.31
27.50	0.08	0.98	0.08*	1.29	0.00	1.29
27.55	0.08	0.98	0.08*	1.27	0.00	1.27
27.60	0.08	0.98	0.08*	1.26	0.00	1.26
27.65	0.08	0.98	0.08*	1.24	0.00	1.24
27.70	0.08	0.98	0.08*	1.22	0.00	1.22
27.75	0.08	0.98	0.08*	1.20	0.00	1.20
27.80	0.08	0.98	0.08*	1.19	0.00	1.19
27.85	0.08	0.98	0.08*	1.17	0.00	1.17
27.90	0.08	0.98	0.09*	1.15	0.00	1.15
27.95	0.08	0.98	0.09*	1.13	0.00	1.13
28.00	0.16	0.98	0.17*	1.12	0.00	1.12
28.05	0.16	0.98	0.17*	1.10	0.00	1.10
28.10	0.16	0.98	0.17*	1.09	0.00	1.09
28.15	0.16	0.98	0.17*	1.08	0.00	1.08
28.20	0.16	0.98	0.17*	1.07	0.00	1.07
28.25	0.16	0.98	0.17*	1.06	0.00	1.06
28.30	0.16	0.98	0.17*	1.05	0.00	1.05
28.35	0.16	0.98	0.17*	1.04	0.00	1.04
28.40	0.16	0.99	0.17*	1.03	0.00	1.03
28.45	0.16	0.99	0.17*	1.02	0.00	1.02

28.50	0.16	0.99	0.17*	1.01	0.00	1.01
28.55	0.16	0.99	0.17*	1.00	0.00	1.00
28.60	0.16	0.99	0.17*	0.98	0.00	0.98
28.65	0.16	0.99	0.17*	0.97	0.00	0.97
28.70	0.16	0.99	0.17*	0.96	0.00	0.96
28.75	0.16	0.99	0.17*	0.95	0.00	0.95
28.80	0.16	0.99	0.16*	0.94	0.00	0.94
28.85	0.16	0.99	0.16*	0.93	0.00	0.93
28.90	0.16	0.99	0.16*	0.92	0.00	0.92
28.95	0.16	0.99	0.16*	0.91	0.00	0.91
29.00	0.16	0.99	0.16*	0.90	0.00	0.90
29.05	0.16	0.99	0.16*	0.89	0.00	0.89
29.10	0.16	0.99	0.16*	0.88	0.00	0.88
29.15	0.16	0.99	0.16*	0.86	0.00	0.86
29.20	0.16	0.99	0.16*	0.85	0.00	0.85
29.25	0.16	0.99	0.16*	0.84	0.00	0.84
29.30	0.16	0.99	0.16*	0.83	0.00	0.83
29.35	0.16	0.99	0.16*	0.82	0.00	0.82
29.40	0.16	0.99	0.16*	0.81	0.00	0.81
29.45	0.16	0.99	0.16*	0.80	0.00	0.80
29.50	0.16	0.99	0.16*	0.79	0.00	0.79
29.55	0.16	0.99	0.16*	0.78	0.00	0.78
29.60	0.16	0.99	0.16*	0.77	0.00	0.77
29.65	0.16	0.99	0.16*	0.75	0.00	0.75
29.70	0.16	0.99	0.16*	0.74	0.00	0.74
29.75	0.16	1.00	0.16*	0.73	0.00	0.73
29.80	0.16	1.00	0.16*	0.72	0.00	0.72
29.85	0.16	1.00	0.16*	0.71	0.00	0.71
29.90	0.16	1.00	0.16*	0.70	0.00	0.70
29.95	0.16	1.00	0.16*	0.69	0.00	0.69
30.00	0.16	1.00	0.16*	0.68	0.00	0.68
30.05	0.16	1.00	0.16*	0.67	0.00	0.67
30.10	0.16	1.00	0.16*	0.66	0.00	0.66
30.15	0.16	1.00	0.16*	0.64	0.00	0.64
30.20	0.16	1.00	0.16*	0.63	0.00	0.63
30.25	0.16	1.00	0.16*	0.62	0.00	0.62
30.30	0.16	1.00	0.16*	0.61	0.00	0.61
30.35	0.16	1.00	0.16*	0.60	0.00	0.60
30.40	0.16	1.00	0.16*	0.59	0.00	0.59
30.45	0.16	1.00	0.16*	0.58	0.00	0.58
30.50	0.16	1.00	0.16*	0.57	0.00	0.57
30.55	0.16	1.00	0.16*	0.56	0.00	0.56
30.60	0.16	1.00	0.16*	0.55	0.00	0.55
30.65	0.16	1.00	0.16*	0.53	0.00	0.53
30.70	0.16	1.00	0.16*	0.52	0.00	0.52
30.75	0.16	1.00	0.16*	0.51	0.00	0.51
30.80	0.16	1.00	0.16*	0.50	0.00	0.50
30.85	0.16	1.00	0.16*	0.49	0.00	0.49
30.90	0.16	1.00	0.16*	0.48	0.00	0.48
30.95	0.16	1.00	0.16*	0.47	0.00	0.47

31.00	0.16	1.00	0.16*	0.46	0.00	0.46
31.05	0.16	1.00	0.16*	0.45	0.00	0.45
31.10	0.16	1.00	0.16*	0.43	0.00	0.43
31.15	0.16	1.00	0.16*	0.42	0.00	0.42
31.20	0.16	1.00	0.16*	0.41	0.00	0.41
31.25	0.16	1.00	0.16*	0.40	0.00	0.40
31.30	0.16	1.00	0.16*	0.39	0.00	0.39
31.35	0.16	1.00	0.16*	0.38	0.00	0.38
31.40	0.16	1.00	0.16*	0.37	0.00	0.37
31.45	0.16	1.00	0.16*	0.36	0.00	0.36
31.50	0.16	1.00	0.16*	0.35	0.00	0.35
31.55	0.16	1.00	0.16*	0.33	0.00	0.33
31.60	0.16	1.00	0.16*	0.32	0.00	0.32
31.65	0.16	1.00	0.16*	0.31	0.00	0.31
31.70	0.16	1.00	0.16*	0.30	0.00	0.30
31.75	0.16	1.00	0.16*	0.29	0.00	0.29
31.80	0.16	1.00	0.16*	0.28	0.00	0.28
31.85	0.16	1.00	0.16*	0.27	0.00	0.27
31.90	0.16	1.00	0.16*	0.26	0.00	0.26
31.95	0.16	1.00	0.16*	0.25	0.00	0.25
32.00	0.16	1.00	0.16*	0.23	0.00	0.23
32.05	0.16	1.00	0.16*	0.22	0.00	0.22
32.10	0.16	1.00	0.16*	0.21	0.00	0.21
32.15	0.16	1.00	0.16*	0.20	0.00	0.20
32.20	0.16	1.00	0.16*	0.19	0.00	0.19
32.25	0.16	1.00	0.16*	0.18	0.00	0.18
32.30	0.16	1.00	0.16*	0.17	0.00	0.17
32.35	0.16	1.00	0.16*	0.16	0.00	0.16
32.40	0.16	1.00	0.16*	0.15	0.00	0.15
32.45	0.16	1.00	0.16*	0.13	0.00	0.13
32.50	0.16	1.00	0.16*	0.12	0.00	0.12
32.55	0.16	1.00	0.16*	0.11	0.00	0.11
32.60	0.16	1.00	0.16*	0.10	0.00	0.10
32.65	0.16	1.00	0.16*	0.09	0.00	0.09
32.70	0.16	1.00	0.16*	0.08	0.00	0.08
32.75	0.16	1.00	0.16*	0.07	0.00	0.07
32.80	0.16	1.00	0.16*	0.06	0.00	0.06
32.85	0.16	1.00	0.16*	0.05	0.00	0.05
32.90	0.16	1.00	0.16*	0.03	0.00	0.03
32.95	0.16	1.00	0.16*	0.02	0.00	0.02
33.00	0.15	1.00	0.15*	0.01	0.00	0.01
33.05	2.00	1.00	5.00	0.00	0.00	0.00
33.10	2.00	1.00	5.00	0.00	0.00	0.00
33.15	2.00	1.00	5.00	0.00	0.00	0.00
33.20	2.00	1.00	5.00	0.00	0.00	0.00
33.25	2.00	1.00	5.00	0.00	0.00	0.00
33.30	2.00	1.00	5.00	0.00	0.00	0.00
33.35	2.00	1.00	5.00	0.00	0.00	0.00
33.40	2.00	1.00	5.00	0.00	0.00	0.00
33.45	2.00	1.00	5.00	0.00	0.00	0.00

33.50	2.00	0.99	5.00	0.00	0.00	0.00
33.55	2.00	0.99	5.00	0.00	0.00	0.00
33.60	2.00	0.99	5.00	0.00	0.00	0.00
33.65	2.00	0.99	5.00	0.00	0.00	0.00
33.70	2.00	0.99	5.00	0.00	0.00	0.00
33.75	2.00	0.99	5.00	0.00	0.00	0.00
33.80	2.00	0.99	5.00	0.00	0.00	0.00
33.85	2.00	0.99	5.00	0.00	0.00	0.00
33.90	2.00	0.99	5.00	0.00	0.00	0.00
33.95	2.00	0.99	5.00	0.00	0.00	0.00
34.00	2.00	0.99	5.00	0.00	0.00	0.00
34.05	2.00	0.99	5.00	0.00	0.00	0.00
34.10	2.00	0.99	5.00	0.00	0.00	0.00
34.15	2.00	0.99	5.00	0.00	0.00	0.00
34.20	2.00	0.99	5.00	0.00	0.00	0.00
34.25	2.00	0.99	5.00	0.00	0.00	0.00
34.30	2.00	0.99	5.00	0.00	0.00	0.00
34.35	2.00	0.99	5.00	0.00	0.00	0.00
34.40	2.00	0.99	5.00	0.00	0.00	0.00
34.45	2.00	0.99	5.00	0.00	0.00	0.00
34.50	2.00	0.99	5.00	0.00	0.00	0.00
34.55	2.00	0.99	5.00	0.00	0.00	0.00
34.60	2.00	0.99	5.00	0.00	0.00	0.00
34.65	2.00	0.99	5.00	0.00	0.00	0.00
34.70	2.00	0.99	5.00	0.00	0.00	0.00
34.75	2.00	0.99	5.00	0.00	0.00	0.00
34.80	2.00	0.99	5.00	0.00	0.00	0.00
34.85	2.00	0.99	5.00	0.00	0.00	0.00
34.90	2.00	0.99	5.00	0.00	0.00	0.00
34.95	2.00	0.99	5.00	0.00	0.00	0.00
35.00	2.00	0.99	5.00	0.00	0.00	0.00
35.05	2.00	0.99	5.00	0.00	0.00	0.00
35.10	2.00	0.99	5.00	0.00	0.00	0.00
35.15	2.00	0.99	5.00	0.00	0.00	0.00
35.20	2.00	0.99	5.00	0.00	0.00	0.00
35.25	2.00	0.99	5.00	0.00	0.00	0.00
35.30	2.00	0.99	5.00	0.00	0.00	0.00
35.35	2.00	0.99	5.00	0.00	0.00	0.00
35.40	2.00	0.99	5.00	0.00	0.00	0.00
35.45	2.00	0.99	5.00	0.00	0.00	0.00
35.50	2.00	0.99	5.00	0.00	0.00	0.00
35.55	2.00	0.99	5.00	0.00	0.00	0.00
35.60	2.00	0.99	5.00	0.00	0.00	0.00
35.65	2.00	0.99	5.00	0.00	0.00	0.00
35.70	2.00	0.99	5.00	0.00	0.00	0.00
35.75	2.00	0.99	5.00	0.00	0.00	0.00
35.80	2.00	0.99	5.00	0.00	0.00	0.00
35.85	2.00	0.99	5.00	0.00	0.00	0.00
35.90	2.00	0.99	5.00	0.00	0.00	0.00
35.95	2.00	0.99	5.00	0.00	0.00	0.00

36.00	2.00	0.99	5.00	0.00	0.00	0.00
36.05	2.00	0.99	5.00	0.00	0.00	0.00
36.10	2.00	0.99	5.00	0.00	0.00	0.00
36.15	2.00	0.99	5.00	0.00	0.00	0.00
36.20	2.00	0.99	5.00	0.00	0.00	0.00
36.25	2.00	0.99	5.00	0.00	0.00	0.00
36.30	2.00	0.99	5.00	0.00	0.00	0.00
36.35	2.00	0.99	5.00	0.00	0.00	0.00
36.40	2.00	0.99	5.00	0.00	0.00	0.00
36.45	2.00	0.99	5.00	0.00	0.00	0.00
36.50	2.00	0.99	5.00	0.00	0.00	0.00
36.55	2.00	0.99	5.00	0.00	0.00	0.00
36.60	2.00	0.99	5.00	0.00	0.00	0.00
36.65	2.00	0.99	5.00	0.00	0.00	0.00
36.70	2.00	0.99	5.00	0.00	0.00	0.00
36.75	2.00	0.99	5.00	0.00	0.00	0.00
36.80	2.00	0.99	5.00	0.00	0.00	0.00
36.85	2.00	0.99	5.00	0.00	0.00	0.00
36.90	2.00	0.99	5.00	0.00	0.00	0.00
36.95	2.00	0.99	5.00	0.00	0.00	0.00
37.00	2.00	0.99	5.00	0.00	0.00	0.00
37.05	2.00	0.98	5.00	0.00	0.00	0.00
37.10	2.00	0.98	5.00	0.00	0.00	0.00
37.15	2.00	0.98	5.00	0.00	0.00	0.00
37.20	2.00	0.98	5.00	0.00	0.00	0.00
37.25	2.00	0.98	5.00	0.00	0.00	0.00
37.30	2.00	0.98	5.00	0.00	0.00	0.00
37.35	2.00	0.98	5.00	0.00	0.00	0.00
37.40	2.00	0.98	5.00	0.00	0.00	0.00
37.45	2.00	0.98	5.00	0.00	0.00	0.00
37.50	2.00	0.98	5.00	0.00	0.00	0.00
37.55	2.00	0.98	5.00	0.00	0.00	0.00
37.60	2.00	0.98	5.00	0.00	0.00	0.00
37.65	2.00	0.98	5.00	0.00	0.00	0.00
37.70	2.00	0.98	5.00	0.00	0.00	0.00
37.75	2.00	0.98	5.00	0.00	0.00	0.00
37.80	2.00	0.98	5.00	0.00	0.00	0.00
37.85	2.00	0.98	5.00	0.00	0.00	0.00
37.90	2.00	0.98	5.00	0.00	0.00	0.00
37.95	2.00	0.98	5.00	0.00	0.00	0.00
38.00	2.00	0.98	5.00	0.00	0.00	0.00
38.05	2.00	0.98	5.00	0.00	0.00	0.00
38.10	2.00	0.98	5.00	0.00	0.00	0.00
38.15	2.00	0.98	5.00	0.00	0.00	0.00
38.20	2.00	0.98	5.00	0.00	0.00	0.00
38.25	2.00	0.98	5.00	0.00	0.00	0.00
38.30	2.00	0.98	5.00	0.00	0.00	0.00
38.35	2.00	0.98	5.00	0.00	0.00	0.00
38.40	2.00	0.98	5.00	0.00	0.00	0.00
38.45	2.00	0.98	5.00	0.00	0.00	0.00

38.50	2.00	0.98	5.00	0.00	0.00	0.00
38.55	2.00	0.98	5.00	0.00	0.00	0.00
38.60	2.00	0.98	5.00	0.00	0.00	0.00
38.65	2.00	0.98	5.00	0.00	0.00	0.00
38.70	2.00	0.98	5.00	0.00	0.00	0.00
38.75	2.00	0.98	5.00	0.00	0.00	0.00
38.80	2.00	0.98	5.00	0.00	0.00	0.00
38.85	2.00	0.98	5.00	0.00	0.00	0.00
38.90	2.00	0.98	5.00	0.00	0.00	0.00
38.95	2.00	0.98	5.00	0.00	0.00	0.00
39.00	2.00	0.98	5.00	0.00	0.00	0.00
39.05	2.00	0.98	5.00	0.00	0.00	0.00
39.10	2.00	0.98	5.00	0.00	0.00	0.00
39.15	2.00	0.98	5.00	0.00	0.00	0.00
39.20	2.00	0.98	5.00	0.00	0.00	0.00
39.25	2.00	0.98	5.00	0.00	0.00	0.00
39.30	2.00	0.98	5.00	0.00	0.00	0.00
39.35	2.00	0.98	5.00	0.00	0.00	0.00
39.40	2.00	0.98	5.00	0.00	0.00	0.00
39.45	2.00	0.98	5.00	0.00	0.00	0.00
39.50	2.00	0.98	5.00	0.00	0.00	0.00
39.55	2.00	0.97	5.00	0.00	0.00	0.00
39.60	2.00	0.97	5.00	0.00	0.00	0.00
39.65	2.00	0.97	5.00	0.00	0.00	0.00
39.70	2.00	0.97	5.00	0.00	0.00	0.00
39.75	2.00	0.97	5.00	0.00	0.00	0.00
39.80	2.00	0.97	5.00	0.00	0.00	0.00
39.85	2.00	0.97	5.00	0.00	0.00	0.00
39.90	2.00	0.97	5.00	0.00	0.00	0.00
39.95	2.00	0.97	5.00	0.00	0.00	0.00
40.00	2.00	0.97	5.00	0.00	0.00	0.00
40.05	2.00	0.97	5.00	0.00	0.00	0.00
40.10	2.00	0.97	5.00	0.00	0.00	0.00
40.15	2.00	0.97	5.00	0.00	0.00	0.00
40.20	2.00	0.97	5.00	0.00	0.00	0.00
40.25	2.00	0.97	5.00	0.00	0.00	0.00
40.30	2.00	0.97	5.00	0.00	0.00	0.00
40.35	2.00	0.97	5.00	0.00	0.00	0.00
40.40	2.00	0.97	5.00	0.00	0.00	0.00
40.45	2.00	0.97	5.00	0.00	0.00	0.00
40.50	2.00	0.97	5.00	0.00	0.00	0.00
40.55	2.00	0.97	5.00	0.00	0.00	0.00
40.60	2.00	0.97	5.00	0.00	0.00	0.00
40.65	2.00	0.97	5.00	0.00	0.00	0.00
40.70	2.00	0.97	5.00	0.00	0.00	0.00
40.75	2.00	0.97	5.00	0.00	0.00	0.00
40.80	2.00	0.97	5.00	0.00	0.00	0.00
40.85	2.00	0.97	5.00	0.00	0.00	0.00
40.90	2.00	0.97	5.00	0.00	0.00	0.00
40.95	2.00	0.97	5.00	0.00	0.00	0.00

41.00	2.00	0.97	5.00	0.00	0.00	0.00
41.05	2.00	0.97	5.00	0.00	0.00	0.00
41.10	2.00	0.97	5.00	0.00	0.00	0.00
41.15	2.00	0.97	5.00	0.00	0.00	0.00
41.20	2.00	0.97	5.00	0.00	0.00	0.00
41.25	2.00	0.97	5.00	0.00	0.00	0.00
41.30	2.00	0.97	5.00	0.00	0.00	0.00
41.35	2.00	0.97	5.00	0.00	0.00	0.00
41.40	2.00	0.97	5.00	0.00	0.00	0.00
41.45	2.00	0.97	5.00	0.00	0.00	0.00
41.50	2.00	0.97	5.00	0.00	0.00	0.00
41.55	2.00	0.97	5.00	0.00	0.00	0.00
41.60	2.00	0.97	5.00	0.00	0.00	0.00
41.65	2.00	0.97	5.00	0.00	0.00	0.00
41.70	2.00	0.96	5.00	0.00	0.00	0.00
41.75	2.00	0.96	5.00	0.00	0.00	0.00
41.80	2.00	0.96	5.00	0.00	0.00	0.00
41.85	2.00	0.96	5.00	0.00	0.00	0.00
41.90	2.00	0.96	5.00	0.00	0.00	0.00
41.95	2.00	0.96	5.00	0.00	0.00	0.00
42.00	2.00	0.96	5.00	0.00	0.00	0.00
42.05	2.00	0.96	5.00	0.00	0.00	0.00
42.10	2.00	0.96	5.00	0.00	0.00	0.00
42.15	2.00	0.96	5.00	0.00	0.00	0.00
42.20	2.00	0.96	5.00	0.00	0.00	0.00
42.25	2.00	0.96	5.00	0.00	0.00	0.00
42.30	2.00	0.96	5.00	0.00	0.00	0.00
42.35	2.00	0.96	5.00	0.00	0.00	0.00
42.40	2.00	0.96	5.00	0.00	0.00	0.00
42.45	2.00	0.96	5.00	0.00	0.00	0.00
42.50	2.00	0.96	5.00	0.00	0.00	0.00
42.55	2.00	0.96	5.00	0.00	0.00	0.00
42.60	2.00	0.96	5.00	0.00	0.00	0.00
42.65	2.00	0.96	5.00	0.00	0.00	0.00
42.70	2.00	0.96	5.00	0.00	0.00	0.00
42.75	2.00	0.96	5.00	0.00	0.00	0.00
42.80	2.00	0.96	5.00	0.00	0.00	0.00
42.85	2.00	0.96	5.00	0.00	0.00	0.00
42.90	2.00	0.96	5.00	0.00	0.00	0.00
42.95	2.00	0.96	5.00	0.00	0.00	0.00
43.00	2.00	0.96	5.00	0.00	0.00	0.00
43.05	2.00	0.96	5.00	0.00	0.00	0.00
43.10	2.00	0.96	5.00	0.00	0.00	0.00
43.15	2.00	0.96	5.00	0.00	0.00	0.00
43.20	2.00	0.96	5.00	0.00	0.00	0.00
43.25	2.00	0.96	5.00	0.00	0.00	0.00
43.30	2.00	0.96	5.00	0.00	0.00	0.00
43.35	2.00	0.96	5.00	0.00	0.00	0.00
43.40	2.00	0.96	5.00	0.00	0.00	0.00
43.45	2.00	0.96	5.00	0.00	0.00	0.00

43.50	2.00	0.96	5.00	0.00	0.00	0.00
43.55	2.00	0.96	5.00	0.00	0.00	0.00
43.60	2.00	0.95	5.00	0.00	0.00	0.00
43.65	2.00	0.95	5.00	0.00	0.00	0.00
43.70	2.00	0.95	5.00	0.00	0.00	0.00
43.75	2.00	0.95	5.00	0.00	0.00	0.00
43.80	2.00	0.95	5.00	0.00	0.00	0.00
43.85	2.00	0.95	5.00	0.00	0.00	0.00
43.90	2.00	0.95	5.00	0.00	0.00	0.00
43.95	2.00	0.95	5.00	0.00	0.00	0.00
44.00	2.00	0.95	5.00	0.00	0.00	0.00
44.05	2.00	0.95	5.00	0.00	0.00	0.00
44.10	2.00	0.95	5.00	0.00	0.00	0.00
44.15	2.00	0.95	5.00	0.00	0.00	0.00
44.20	2.00	0.95	5.00	0.00	0.00	0.00
44.25	2.00	0.95	5.00	0.00	0.00	0.00
44.30	2.00	0.95	5.00	0.00	0.00	0.00
44.35	2.00	0.95	5.00	0.00	0.00	0.00
44.40	2.00	0.95	5.00	0.00	0.00	0.00
44.45	2.00	0.95	5.00	0.00	0.00	0.00
44.50	2.00	0.95	5.00	0.00	0.00	0.00
44.55	2.00	0.95	5.00	0.00	0.00	0.00
44.60	2.00	0.95	5.00	0.00	0.00	0.00
44.65	2.00	0.95	5.00	0.00	0.00	0.00
44.70	2.00	0.95	5.00	0.00	0.00	0.00
44.75	2.00	0.95	5.00	0.00	0.00	0.00
44.80	2.00	0.95	5.00	0.00	0.00	0.00
44.85	2.00	0.95	5.00	0.00	0.00	0.00
44.90	2.00	0.95	5.00	0.00	0.00	0.00
44.95	2.00	0.95	5.00	0.00	0.00	0.00
45.00	2.00	0.95	5.00	0.00	0.00	0.00
45.05	2.00	0.95	5.00	0.00	0.00	0.00
45.10	2.00	0.95	5.00	0.00	0.00	0.00
45.15	2.00	0.95	5.00	0.00	0.00	0.00
45.20	2.00	0.95	5.00	0.00	0.00	0.00
45.25	2.00	0.95	5.00	0.00	0.00	0.00
45.30	2.00	0.95	5.00	0.00	0.00	0.00
45.35	2.00	0.95	5.00	0.00	0.00	0.00
45.40	2.00	0.94	5.00	0.00	0.00	0.00
45.45	2.00	0.94	5.00	0.00	0.00	0.00
45.50	2.00	0.94	5.00	0.00	0.00	0.00
45.55	2.00	0.94	5.00	0.00	0.00	0.00
45.60	2.00	0.94	5.00	0.00	0.00	0.00
45.65	2.00	0.94	5.00	0.00	0.00	0.00
45.70	2.00	0.94	5.00	0.00	0.00	0.00
45.75	2.00	0.94	5.00	0.00	0.00	0.00
45.80	2.00	0.94	5.00	0.00	0.00	0.00
45.85	2.00	0.94	5.00	0.00	0.00	0.00
45.90	2.00	0.94	5.00	0.00	0.00	0.00
45.95	2.00	0.94	5.00	0.00	0.00	0.00

46.00	2.00	0.94	5.00	0.00	0.00	0.00
46.05	2.00	0.94	5.00	0.00	0.00	0.00
46.10	2.00	0.94	5.00	0.00	0.00	0.00
46.15	2.00	0.94	5.00	0.00	0.00	0.00
46.20	2.00	0.94	5.00	0.00	0.00	0.00
46.25	2.00	0.94	5.00	0.00	0.00	0.00
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46.65	2.00	0.94	5.00	0.00	0.00	0.00
46.70	2.00	0.94	5.00	0.00	0.00	0.00
46.75	2.00	0.94	5.00	0.00	0.00	0.00
46.80	2.00	0.94	5.00	0.00	0.00	0.00
46.85	2.00	0.94	5.00	0.00	0.00	0.00
46.90	2.00	0.94	5.00	0.00	0.00	0.00
46.95	2.00	0.94	5.00	0.00	0.00	0.00
47.00	2.00	0.94	5.00	0.00	0.00	0.00
47.05	2.00	0.93	5.00	0.00	0.00	0.00
47.10	2.00	0.93	5.00	0.00	0.00	0.00
47.15	2.00	0.93	5.00	0.00	0.00	0.00
47.20	2.00	0.93	5.00	0.00	0.00	0.00
47.25	2.00	0.93	5.00	0.00	0.00	0.00
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47.55	2.00	0.93	5.00	0.00	0.00	0.00
47.60	2.00	0.93	5.00	0.00	0.00	0.00
47.65	2.00	0.93	5.00	0.00	0.00	0.00
47.70	2.00	0.93	5.00	0.00	0.00	0.00
47.75	2.00	0.93	5.00	0.00	0.00	0.00
47.80	2.00	0.93	5.00	0.00	0.00	0.00
47.85	2.00	0.93	5.00	0.00	0.00	0.00
47.90	2.00	0.93	5.00	0.00	0.00	0.00
47.95	2.00	0.93	5.00	0.00	0.00	0.00
48.00	2.00	0.93	5.00	0.00	0.00	0.00
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48.15	2.00	0.93	5.00	0.00	0.00	0.00
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48.35	2.00	0.93	5.00	0.00	0.00	0.00
48.40	2.00	0.93	5.00	0.00	0.00	0.00
48.45	2.00	0.93	5.00	0.00	0.00	0.00

48.50	2.00	0.93	5.00	0.00	0.00	0.00
48.55	2.00	0.93	5.00	0.00	0.00	0.00
48.60	2.00	0.92	5.00	0.00	0.00	0.00
48.65	2.00	0.92	5.00	0.00	0.00	0.00
48.70	2.00	0.92	5.00	0.00	0.00	0.00
48.75	2.00	0.92	5.00	0.00	0.00	0.00
48.80	2.00	0.92	5.00	0.00	0.00	0.00
48.85	2.00	0.92	5.00	0.00	0.00	0.00
48.90	2.00	0.92	5.00	0.00	0.00	0.00
48.95	2.00	0.92	5.00	0.00	0.00	0.00
49.00	2.00	0.92	5.00	0.00	0.00	0.00
49.05	2.00	0.92	5.00	0.00	0.00	0.00
49.10	2.00	0.92	5.00	0.00	0.00	0.00
49.15	2.00	0.92	5.00	0.00	0.00	0.00
49.20	2.00	0.92	5.00	0.00	0.00	0.00
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49.45	2.00	0.92	5.00	0.00	0.00	0.00
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49.55	2.00	0.92	5.00	0.00	0.00	0.00
49.60	2.00	0.92	5.00	0.00	0.00	0.00
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49.70	2.00	0.92	5.00	0.00	0.00	0.00
49.75	2.00	0.92	5.00	0.00	0.00	0.00
49.80	2.00	0.92	5.00	0.00	0.00	0.00
49.85	2.00	0.92	5.00	0.00	0.00	0.00
49.90	2.00	0.92	5.00	0.00	0.00	0.00
49.95	2.00	0.92	5.00	0.00	0.00	0.00
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50.05	2.00	0.92	5.00	0.00	0.00	0.00
50.10	2.00	0.91	5.00	0.00	0.00	0.00
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50.40	2.00	0.91	5.00	0.00	0.00	0.00
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50.55	2.00	0.91	5.00	0.00	0.00	0.00
50.60	2.00	0.91	5.00	0.00	0.00	0.00
50.65	2.00	0.91	5.00	0.00	0.00	0.00
50.70	2.00	0.91	5.00	0.00	0.00	0.00
50.75	2.00	0.91	5.00	0.00	0.00	0.00
50.80	2.00	0.91	5.00	0.00	0.00	0.00
50.85	2.00	0.91	5.00	0.00	0.00	0.00
50.90	2.00	0.91	5.00	0.00	0.00	0.00
50.95	2.00	0.91	5.00	0.00	0.00	0.00

51.00	2.00	0.91	5.00	0.00	0.00	0.00
51.05	2.00	0.91	5.00	0.00	0.00	0.00
51.10	2.00	0.91	5.00	0.00	0.00	0.00
51.15	2.00	0.91	5.00	0.00	0.00	0.00
51.20	2.00	0.91	5.00	0.00	0.00	0.00
51.25	2.00	0.91	5.00	0.00	0.00	0.00
51.30	2.00	0.91	5.00	0.00	0.00	0.00
51.35	2.00	0.91	5.00	0.00	0.00	0.00
51.40	2.00	0.91	5.00	0.00	0.00	0.00
51.45	2.00	0.91	5.00	0.00	0.00	0.00
51.50	2.00	0.91	5.00	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Depth = ft, Stress or Pressure = atm (tsf), Unit Weight = pcf, Settlement = in.

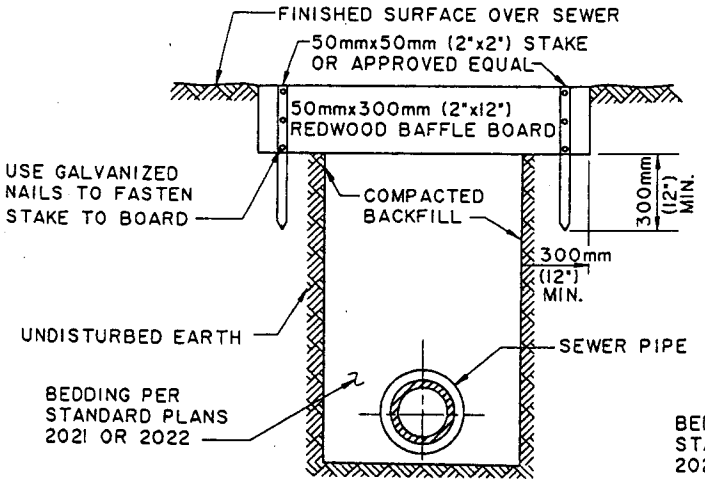
---

1 atm (atmosphere) = 1 tsf (ton/ft2)
CRRm Cyclic resistance ratio from soils
CSRsf Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat Settlement from saturated sands
S_dry Settlement from Unsaturated Sands
S_all Total Settlement from Saturated and Unsaturated Sands
NoLiq No-Liquefy Soils

APPENDIX D

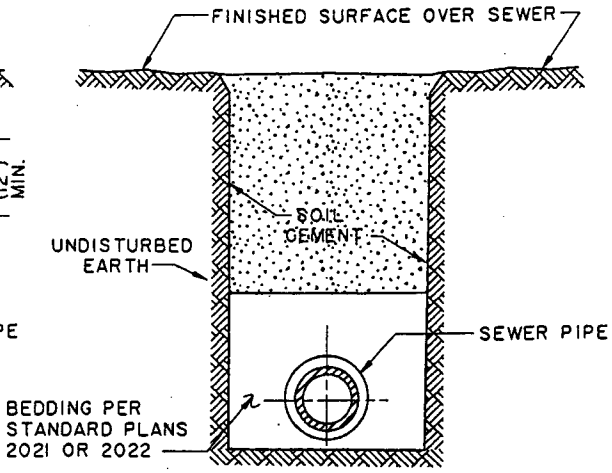
Los Angeles County Department of Public Works and APWA Standard Plan Sheets for Erosion Protection, Pipe Anchors, and Backfill Stabilizers

TO BE USED IN EASEMENTS WHERE THE SURFACE GRADE IS GREATER THAN 30% OR WHEN DESIGNATED ON THE PLAN



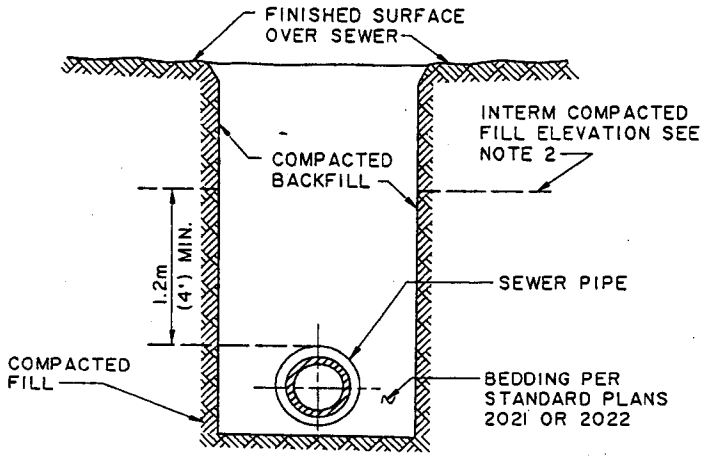
CASE I
BAFFLE BOARD

1. TO BE USED WHEN TRENCH IS EXCAVATED IN UNDISTURBED NATURAL SOIL. UNLESS CASE II APPLIES.
2. THE BAFFLE BOARDS SHALL BE SPACED SO THAT THE TOP OF THE LOWER BOARD IS LEVEL WITH THE BOTTOM OF THE NEXT HIGHER BOARD.
3. THE UPPER 300mm(1') LAYER OF THE BACKFILL IS TO BE TOP SOIL TAMPED IN PLACE. PLANTED WITH MUSTARD AND RYE GRASS AND ADEQUATELY WATERED UNTIL GROWTH IS RESTORED.



CASE II
SOIL CEMENT BACKFILL

1. TO BE USED IN SOFT SANDSTONE. SHALE, OR ROCK WHEN REQUIRED BY THE COUNTY ENGINEER: OR MAY BE USED IN LIEU OF CASE I, WITH THE APPROVAL OF THE DEPARTMENT.
2. THE ENTIRE TRENCH SHALL BE BACKFILLED WITH SOIL - CEMENT ABOVE THE BEDDING SHOWN TO THE FINISHED SURFACE UNLESS OTHERWISE NOTED ON THE PLANS.
3. THE SOIL - CEMENT SHALL CONSIST OF ONE SACK OF PORTLAND CEMENT PER CUBIC YARD OF BACKFILL MATERIAL WITH SUFFICIENT FINES TO FILL ALL VOIDS. THE SOIL AND CEMENT SHALL BE THOROUGHLY DRY MIXED. AFTER MIXING, WATER SHALL BE ADDED IN A QUANTITY SUFFICIENT ONLY TO SLIGHTLY MOISTEN THE MIXTURE SO THAT IT CAN BE PACKED BY HAND INTO A BALL AND RETAIN ITS SHAPE BUT NOT WET THE HANDS. THE SOIL-CEMENT SHALL THEN BE MECHANICALLY RAMMED INTO PLACE IN THE TRENCH IMMEDIATELY AFTER THE WATER IS ADDED.



CASE III
CERTIFIED COMPACTION

1. TO BE USED WHEN SEWER IS LOCATED IN A COMPACTED FILL AREA BEING PLACED ACCORDING TO AN APPROVED GRADING PLAN.
2. THE SEWER PIPE MUST BE LAID IN A TRENCH EXCAVATED IN THE COMPACTED FILL SLOPE AND DEEP ENOUGH TO PROVIDE AT LEAST 1.2m (4') OF COVER OVER THE PIPE.
3. CERTIFICATION IS REQUIRED BY A SOIL TESTING LABORATORY AND SOILS ENGINEER THAT THE COMPACTION FOR THE BACKFILL MEETS THE GRADING PLAN REQUIREMENTS.

NOTES:

1. IN ALL CASES ANCHOR BLOCKS WILL BE REQUIRED IN ACCORDANCE WITH APWA STANDARD PLAN 221 UNLESS OTHERWISE NOTED ON THE PLANS.
2. ANY ALTERNATE MATERIALS, PLANS OR METHODS MUST BE SPECIFICALLY APPROVED BY THE DEPARTMENT.
3. DIMENSIONS SHOWN ON THE PLAN FOR METRIC AND ENGLISH UNITS ARE NOT EXACTLY EQUAL VALUES. IF METRIC UNITS ARE USED, ALL VALUES USED FOR CONSTRUCTION SHALL BE METRIC VALUES. IF ENGLISH UNITS ARE USED, ALL VALUES USED FOR CONSTRUCTION SHALL BE ENGLISH VALUES.

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS

EROSION PROTECTION IN STEEP SLOPES

STANDARD PLAN METRIC

2026-1

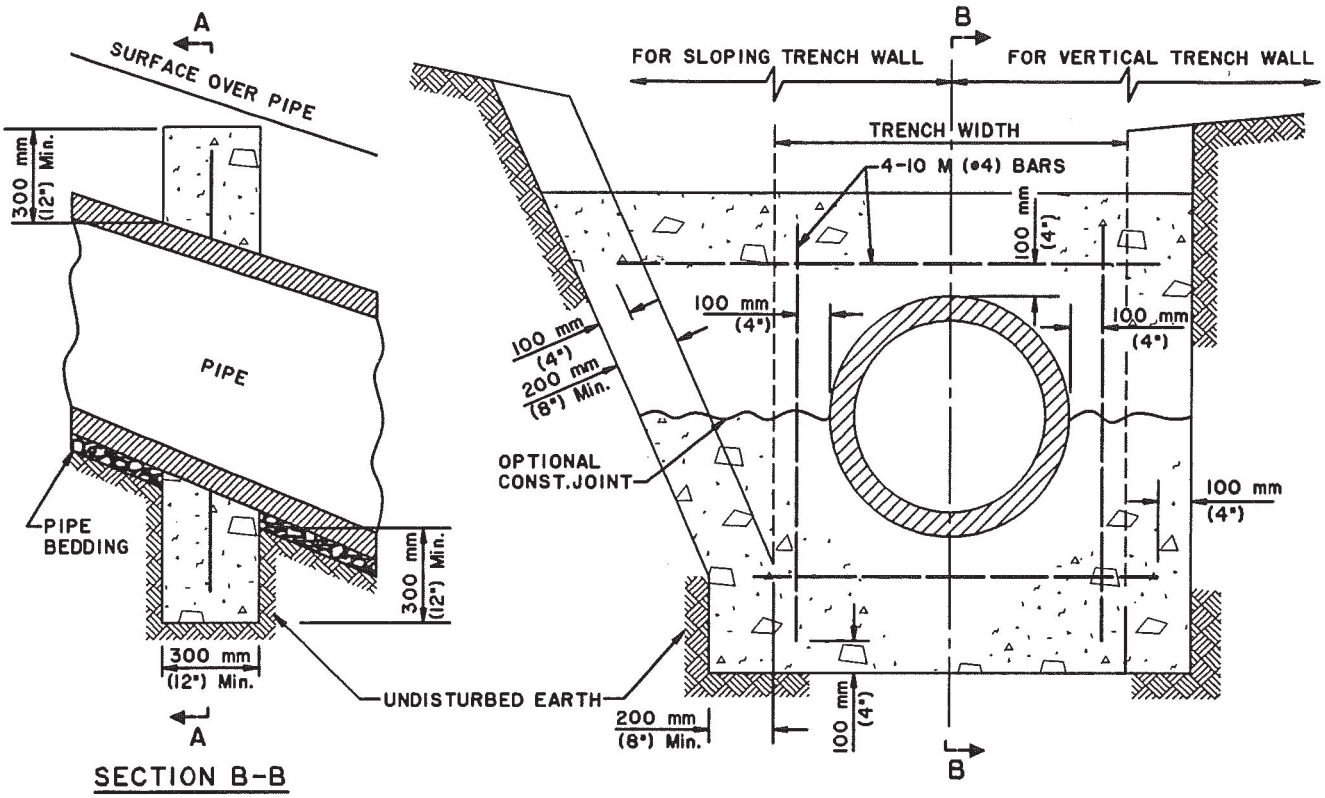
SHEET 1 OF 1

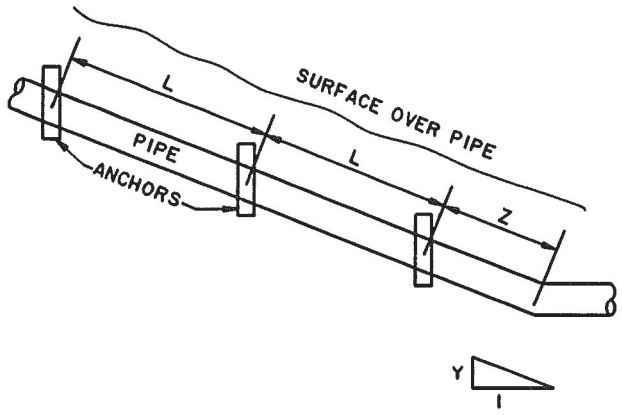
APPROVED Thomas A. Tidemanson 5/31/1992

DIRECTOR OF PUBLIC WORKS — DATE

1999

REVISIONS





ELEVATION
PIPE ANCHORS

TABLE A

PIPE SLOPE(%) Y:1(100)	L DISTANCE (MAX.)	Z DISTANCE (MAX.)
100	3.65 m (12')	1.20 m (4')
67	4.25 m (14')	2.40 m (8')
50	4.90 m (16')	3.65 m (12')
40	5.50 m (18')	5.50 m (18')
33	6.00 m (20')	6.00 m (20')

NOTES:

1. ANCHORS SHALL BE CLASS 265C14 (450-C-2000) CONCRETE.
2. FOR CLAY PIPE, ANCHORS SHALL NOT BE PLACED WITHIN 150 mm (6 INCHES) OF THE PIPE JOINT.
3. TRENCH SHALL BE BACKFILL PER NOTE 4 ON SHEET 2.
4. SPACING OF ANCHORS FOR PIPE SLOPES BETWEEN VALUES SHOWN IN TABLE "A" MAY BE PROPORTIONED.
5. DIMENSIONS SHOWN ON THIS PLAN FOR METRIC AND ENGLISH UNITS ARE NOT EXACT EQUAL VALUES. IF METRIC UNITS ARE USED, ALL VALUES USED FOR CONSTRUCTION SHALL BE METRIC VALUES WITH THE EXCEPTION OF REINFORCING BAR SIZES FOR WHICH ENGLISH (IMPERIAL) BAR SIZES MAY BE SUBSTITUTED FOR METRIC BAR SIZES. IF ENGLISH UNITS ARE USED, ALL VALUES USED FOR CONSTRUCTION SHALL BE ENGLISH VALUES.

ANCHORS

AMERICAN PUBLIC WORKS ASSOCIATION - SOUTHERN CALIFORNIA CHAPTER

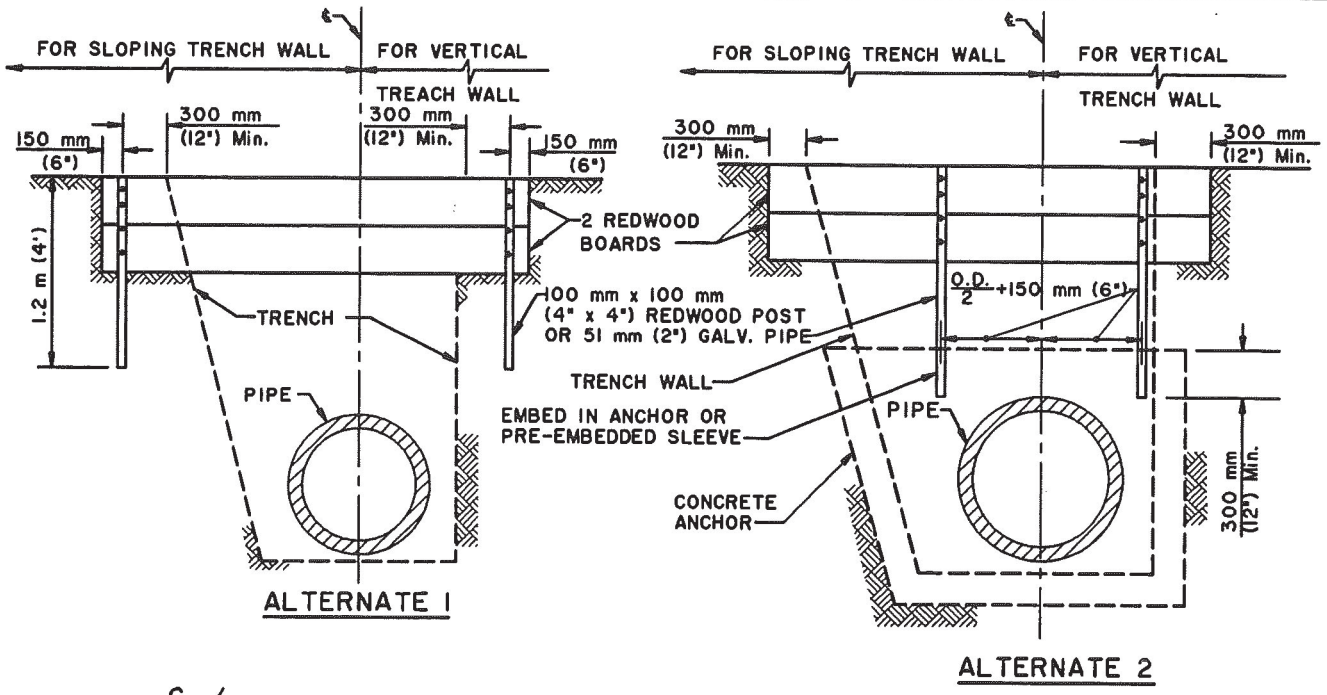
PROMULGATED BY THE PUBLIC WORKS STANDARDS INC., GREENBOOK COMMITTEE 1984 REV. 1996

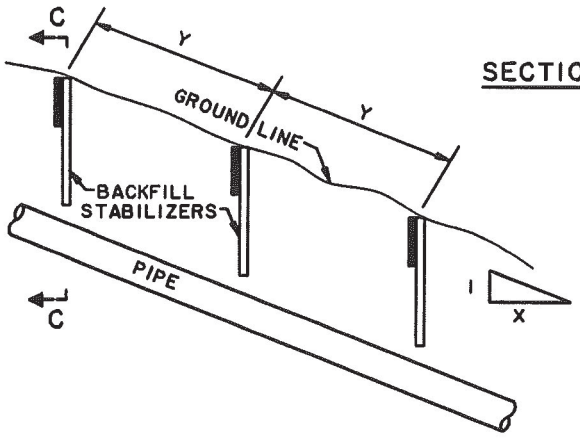
PIPE ANCHORS AND BACKFILL STABILIZERS

USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

STANDARD PLAN METRIC 221 - 1

SHEET 1 OF 2





SECTION C-C

ELEVATION

BACKFILL STABILIZERS

TABLE B

GROUND SLOPE X:1	TABLE B Y(MAX.)
1:1	1.5 m (5')
1 1/2:1	2.75 m (9')
2:1	3.65 m (12')
2 1/2:1	4.9 m (16')
3:1	6.0 m (20')

NOTES:

1. REDWOOD BOARDS SHALL BE 50 mm x 300 mm (2 IN. x 12 IN.) WHERE DEPTH OF COVER OVER PIPE PERMITS, OTHERWISE USE 50 mm x 250 mm (2 IN. x 10 IN.)
2. REDWOOD BOARDS SHALL BE PLACED ON THE HIGH GROUND SIDE OF THE POSTS.
3. EACH REDWOOD BOARD SHALL BE FASTENED BY USING 2-16d NAILS TO EACH REDWOOD POST OR A 10 mm (3/8 IN.) BOLT AND NUT WITH WASHERS TO EACH GALVANIZED PIPE. ALL HARDWARE SHALL BE GALVANIZED.
4. TRENCH BACKFILL SHALL BE CONSOLIDATED BY MECHANICAL COMPACTION. IN LIEU OF MECHANICALLY COMPACTION, SOIL CEMENT MAY BE USED, HOWEVER, THE TOP 300 mm (12 IN.) OF BACKFILL SHALL BE NATIVE SOIL, MECHANICALLY COMPACTED.
5. SPACING OF STABILIZERS FOR GROUND SLOPES BETWEEN VALUES SHOWN IN TABLE "B" MAY BE PROPORTIONED.
6. THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE DOUGLAS FIR FOR THE REDWOOD PROVIDED IT HAS BEEN TREATED WITH PRESERVATIVES.

STABILIZERS

AMERICAN PUBLIC WORKS ASSOCIATION - SOUTHERN CALIFORNIA CHAPTER

PIPE ANCHORS AND BACKFILL STABILIZERS

STANDARD PLAN METRIC
221 - 1
SHEET 2 OF 2

APPENDIX E

GMED Geotechnical Review Comments
dated August 17, 2020

August 17, 2020

GMED GEOTECHNICAL REVIEW
SWEETWATER MESA WATER MAIN REPLACEMENTS
CIVIC CENTER IMPROVEMENT PROJECT

Current Review:

- Updated Geotechnical Evaluation, Sweetwater Mesa Water Main Replacements, Civic Center Improvement Project, Los Angeles County Waterworks, Malibu, California, draft report prepared by Geo-Logic Associates, dated July 23, 2020.

Comments:

1. Consultant provided an unsigned draft report. Report will not be accepted until report is signed.
2. Consultant must include 'Residual Soil/Colluvium' under Heading 5: Geologic and Subsurface Conditions, which appears to be a major unit along the alignment.
   a. Described from borings: B-13, B14, B-15, B-17, B-19, B-22, B-23, B-24, B-25, B-27, B-28, B-30.
   b. Figures 2 through 5 need to be revised to estimate limits of residual/colluvium.
3. The consultant must evaluate slope stability adjacent to the proposed waterline improvements. Particularly those areas adjacent to slopes that are subject to seismically induced landsliding.
4. Areas underlain by colluvium may require additional characterization, such as thickness and nature of the contact with underlying geologic units and to identify any conditions that could adversely impact the waterline.
5. Colluvial materials have been excluded from trench excavation considerations and must be evaluated.
6. Consultant will need to illustrate distribution of geologic materials on project alignment sections.
7. Based on the State of California Seismic Hazard Maps, a portion of the proposed pipeline on Serra Road is within a liquefaction zone. The report provides recommendations for the portion of the pipeline on PCH, discuss if the recommendations also apply for the pipeline along Serra Road.
8. A factor of safety (FS) of 1.30 should be used in the liquefaction analysis. Revise the analysis as need, in addition provide the output in verification of the input parameters used.
9. Provide lab test data used for the liquefaction analysis.
10. Provide the stress-strain diagrams and supporting data for the provided direct shear graphs.

GMED: KB, KM

Ninyo & Moore

Geotechnical & Environmental Sciences Consultants

475 Goddard, Suite 200 | Irvine, California 92618 | p. 949.753.7070

ARIZONA | CALIFORNIA | COLORADO | NEVADA | TEXAS | UTAH

www.ninyoandmoore.com

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

October 9, 2020
Project No. 211056001

Mr. Eric Porkert
Cannon Corporation
11900 West Olympic Boulevard, Suite 530
Los Angeles, California 90064

Subject: Responses to GMED Geotechnical Review Comments
Sweetwater Mesa Water Main Replacements
Civic Center Improvement Project
Malibu, California

References: County of Los Angeles Department of Public Works, Geotechnical and Materials Engineering Division, 2020, GMED Geotechnical Review, Sweetwater Mesa Water Main Replacements, Civic Center Improvement Project, dated August 17.

Ninyo & Moore, 2020, Updated Geotechnical Evaluation (DRAFT), Sweetwater Mesa Water Main Replacements, Civic Center Improvement Project, Los Angeles County Waterworks, Malibu, California, Project No. 211056001, dated July 23.

Dear Mr. Porkert:

In accordance with your request, we have prepared the following responses to geotechnical review comments provided by the County of Los Angeles Department of Public Works, Geotechnical and Materials Engineering Division [GMED] (2020) regarding our geotechnical evaluation report (Ninyo & Moore, 2020) for the proposed Sweetwater Mesa Water Main Replacements project in Malibu, California. For your convenience, each GMED review comment is reiterated below prior to our response. The geotechnical review sheet (GMED, 2020) is included as Attachment A.

REVIEW COMMENT NO. 1

Consultant provided an unsigned draft report. Report will not be accepted until report is signed.

Response

A final signed/stamped report (Ninyo & Moore, 2020) has been prepared concurrently with this response letter. The final report has been updated to address the geotechnical review comments provided by GMED (2020) where applicable and as further discussed below.

REVIEW COMMENT NO. 2

Consultant must include 'Residual Soil/Colluvium' under Heading 5: Geologic and Subsurface Conditions, which appears to be a major unit along the alignment.

a. Described from borings: B-13, B-14, B-15, B-17, B-19, B-22, B-23, B-24, B-25, B-27, B-28, B-30.

b. Figures 2 through 5 need to be revised to estimate limits of residual/colluvium.

Response

Section 5.4 has been added to the updated report providing a separate description of the Residual Soil/Colluvium encountered in borings B-13, B-14, B-15, B-17, B-19, B-22, B-23, B-24, B-25, B-27, B-28, and B-30. Estimated limits of the Residual Soil/Colluvium have been added to Figures 2 through 5, as requested.

REVIEW COMMENT NO. 3

The consultant must evaluate slope stability adjacent to the proposed waterline improvements. Particularly these areas adjacent to slopes that are subject to seismically induced landsliding.

Response

Based on our review of aerial photographs, our site reconnaissance, and review of regional geologic maps, landslides were not observed at the site that could potentially impact the pipeline alignment. Detailed slope evaluation, including slope stability analyses to evaluate the global stability of the adjacent slopes, was beyond our scope of work for the pipeline portion of the project. Slope stability analyses, however, have been performed for the tank portion of the project using structural geologic data collected from large-diameter borings. Since the purpose of the project is to replace an existing water line in the roadway using relatively shallow cut-and-cover trenching (generally less than 5 feet), it is our opinion that the proposed construction and pipeline will have negligible impact on the existing stability of the adjacent slopes.

REVIEW COMMENT NO. 4

Areas underlain by colluvium may require additional characterization, such as thickness and nature of the contact with underlying geologic units and to identify any conditions that could adversely impact the waterline.

Response

Based on our subsurface exploration, undifferentiated residual soil/colluvium was encountered in twelve of our borings as discussed above in Review Comment No. 2. In ten of these borings (B-13, B-14, B-15, B-17, B-19, B-22, B-23, B-24, B-25, and B-30), the residual soil/colluvium extended below the bottom of the pavement section or shallow fill (on the order of 2 feet or less) to depths of 10 feet or more below the ground surface. Accordingly, the pipeline (proposed invert depth on the order of 5 feet) will be founded on/within the undifferentiated residual soil/colluvium materials at these

locations. At the locations of borings B-27 and B-28, the undifferentiated residual soil/colluvium was encountered beneath alluvium at depths of approximately 7.5 feet, so the pipeline is anticipated to be underlain by alluvium above the residual soil/colluvium at these locations. The residual soil/colluvium encountered in our borings consisted of very stiff to hard, lean to fat clay and dense to very dense, clayey sand. The blow counts ranged from approximately 18 to more than 50 for 6 inches of penetration. Stiff lean clay was encountered at only one location (B-30) with a blow count of 10.

Given the relatively dense/stiff nature of these soils, it is our opinion that the residual soil/colluvium will provide adequate support for the proposed pipeline and that settlement within these materials will be negligible. It is further our opinion that further evaluation of these materials is not warranted given the relative uniformity of the materials encountered. We recommend that the bottoms of the trench excavations be observed by the project geotechnical consultant during construction. If soft, wet, and/or other unsuitable materials are encountered during construction, additional recommendations, such as overexcavation and recompaction, removal and replacement with gravel wrapped in geofabric, or other, will be provided based on the observed conditions. This recommendation has been clarified in Section 9.2.6 of our updated report.

REVIEW COMMENT NO. 5

Colluvial materials have been excluded from trench excavation considerations and must be evaluated.

Response

Discussion regarding the Residual soil/colluvium was inadvertently left out of Sections 9.2.3 (Excavation Characteristics) and 9.2.4 (Temporary Excavations). Our report has been revised to include discussion of the residual soil/colluvium in these sections.

REVIEW COMMENT NO. 6

Consultant will need to illustrate distribution of geologic materials on project alignment sections.

Response

It is generally our opinion that this type of illustration would suggest more accuracy regarding the subsurface conditions along the alignment than can be achieved through the widely spaced borings that have been performed for this project, especially given the developed nature of the site which could result in relatively abrupt changes in the subsurface conditions due to past grading activities. In our opinion, such sections would place significantly more risk on the County and the design consultants versus the contractor. Accordingly, we would recommend additional borings at a closer

spacing than that performed in order to provide this level of requested accuracy and reduce the risk of changed site condition claim.

REVIEW COMMENT NO. 7

Based on the State of California Seismic Hazard Maps, a portion of the proposed pipeline on Serra Road is within a liquefaction zone. The report provides recommendations for the portion of the pipeline on PCH, discuss if the recommendations also apply for the pipeline along Serra Road.

Response

We are in agreement that the southern end of Serra Road is located within a California Seismic Hazard Zone. Our report has been updated to include further discussion of this area. In general, the same recommendations provided in our report regarding the section of pipeline in PCH will also apply for this section of pipeline.

REVIEW COMMENT NO. 8

A factor of safety (FS) of 1.30 should be used in the liquefaction analysis. Revise the analysis as needed, in addition provide the output in verification of the input parameters used.

Response

The revised liquefaction analysis is presented in Appendix C of our updated report.

REVIEW COMMENT NO. 9

Provide lab test data used for the liquefaction analysis.

Response

Laboratory test data for boring B-29 are provided in Appendix B of the updated report.

REVIEW COMMENT NO. 10

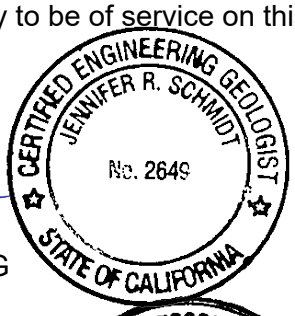
Provide the stress-strain diagrams and supporting data for the provided direct shear graphs.

Response

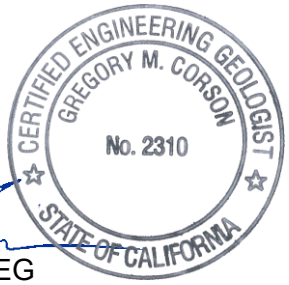
The applicable stress-deformation plots for the direct shear tests performed have been included in Appendix B of the updated report.

We appreciate the opportunity to be of service on this project.

Respectfully submitted,
NINYO & MOORE



Jennifer R. Schmidt, PG, CEG
Senior Geologist



Greg M. Corson, PG, CEG
Principal Geologist

Soumitra Guha, PhD, PE, GE
Principal Engineer

JRS/SG/GMC/mlc

Attachment: Attachment A – County of Los Angeles Department of Public Works Review Comments

Distribution: (1) Addressee (via e-mail)

ATTACHMENT A

County of Los Angeles Department of Public Works Review Comments

August 17, 2020

GMED GEOTECHNICAL REVIEW
SWEETWATER MESA WATER MAIN REPLACEMENTS
CIVIC CENTER IMPROVEMENT PROJECT

Current Review:

- Updated Geotechnical Evaluation, Sweetwater Mesa Water Main Replacements, Civic Center Improvement Project, Los Angeles County Waterworks, Malibu, California, draft report prepared by Geo-Logic Associates, dated July 23, 2020.

Comments:

1. Consultant provided an unsigned draft report. Report will not be accepted until report is signed.
2. Consultant must include 'Residual Soil/Colluvium' under Heading 5: Geologic and Subsurface Conditions, which appears to be a major unit along the alignment.
   a. Described from borings: B-13, B14, B-15, B-17, B-19, B-22, B-23, B-24, B-25, B-27, B-28, B-30.
   b. Figures 2 through 5 need to be revised to estimate limits of residual/colluvium.
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9. Provide lab test data used for the liquefaction analysis.
10. Provide the stress-strain diagrams and supporting data for the provided direct shear graphs.

GMED: KB, KM

Appendix E

EDR Hazardous Materials Database Report

Civic Center Improvements
Not Reported
Malibu, CA 90265

Inquiry Number: 6256201.2s
November 05, 2020

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

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

NOT REPORTED
MALIBU, CA 90265

COORDINATES

Latitude (North):	34.0436960 - 34° 2' 37.30''
Longitude (West):	118.6758130 - 118° 40' 32.92''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	345309.8
UTM Y (Meters):	3768073.0
Elevation:	415 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5630751 MALIBU BEACH, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140513
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
NOT REPORTED
MALIBU, CA 90265

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
1	ALLIE BURNS	22866 BECKLEDGE TERR	RCRA NonGen / NLR	Lower	1128, 0.214, SE
A2	SHELL #204-4698-0300	22729 PACIFIC COAST	LUST, HIST CORTESE, CERS	Lower	2205, 0.418, SE
A3	SHELL #204-4698-0300	22729 PACIFIC COAST	LUST, Cortese	Lower	2205, 0.418, SE
A4	SHELL STATION (FORME	22729 PACIFIC COAST	LUST, Cortese, CERS	Lower	2205, 0.418, SE
5	ARCO #1033	22661 PACIFIC COAST	LUST, Cortese, HIST CORTESE, CERS	Lower	2513, 0.476, SE

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-SQG ---------- RCRA - Small Quantity Generators
RCRA-VSQG ---------- RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System

US ENG CONTROLS..... Engineering Controls Sites List
US INST CONTROLS..... Institutional Controls Sites List

Federal ERNS list

ERNS..... Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE..... State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR..... EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF..... Solid Waste Information System

State and tribal leaking storage tank lists

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
AST..... Aboveground Petroleum Storage Tank 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
DEBRIS REGION 9..... Torres Martinez Reservation Illegal Dump Site Locations
ODI..... Open Dump Inventory

IHS OPEN DUMPS - Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL - Delisted National Clandestine Laboratory Register
AOCONCERN - Key Areas of Concerns in Los Angeles County
HIST Cal-Sites - Historical Calsites Database
SCH - School Property Evaluation Program
CDL - Clandestine Drug Labs
Toxic Pits - Toxic Pits Cleanup Act Sites
CERS HAZ WASTE - CERS HAZ WASTE
US CDL - National Clandestine Laboratory Register
PFAS - PFAS Contamination Site Location Listing

Local Lists of Registered Storage Tanks

SWEEPS UST - SWEEPS UST Listing
HIST UST - Hazardous Substance Storage Container Database
CERS TANKS - California Environmental Reporting System (CERS) Tanks
CA FID UST - Facility Inventory Database

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

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

EXECUTIVE SUMMARY

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
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
UXO	Unexploded Ordnance Sites
ECHO	Enforcement & Compliance History Information
DOCKET HWC	Hazardous Waste Compliance Docket Listing
FUELS PROGRAM	EPA Fuels Program Registered Listing
CA BOND EXP. PLAN	Bond Expenditure Plan
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
LOS ANGELES CO. HMS	HMS: Street Number 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
LA Co. Site Mitigation	Site Mitigation List
UIC	UIC Listing
UIC GEO	UIC GEO (GEOTRACKER)
WASTEWATER PITS	Oil Wastewater Pits Listing
WDS	Waste Discharge System
WIP	Well Investigation Program Case List
MILITARY PRIV SITES	MILITARY PRIV SITES (GEOTRACKER)
PROJECT	PROJECT (GEOTRACKER)
WDR	Waste Discharge Requirements Listing
CIWQS	California Integrated Water Quality System
CERS	CERS
NON-CASE INFO	NON-CASE INFO (GEOTRACKER)
OTHER OIL GAS	OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS	PROD WATER PONDS (GEOTRACKER)
SAMPLING POINT	SAMPLING POINT (GEOTRACKER)
WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)
HWTS	Hazardous Waste Tracking System
LOS ANGELES CO LF METHANE	Methane Producing Landfills
MINES MRDS	Mineral Resources Data System

EXECUTIVE SUMMARY

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP---------- EDR Proprietary Manufactured Gas Plants
EDR Hist Auto---------- EDR Exclusive Historical Auto Stations
EDR Hist Cleaner---------- EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF---------- Recovered Government Archive Solid Waste Facilities List
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

State and tribal leaking storage tank lists

LUST: 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.

A review of the LUST list, as provided by EDR, has revealed that there are 4 LUST sites within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
SHELL #204-4698-0300	***22729 PACIFIC COAST***	***SE 1/4 - 1/2 (0.418 mi.)***	***A2***	***11***
Database: LUST, Date of Government Version: 06/08/2020 Status: Completed - Case Closed Global Id: T0603702875 Global Id: T0603715472				
SHELL #204-4698-0300	***22729 PACIFIC COAST***	***SE 1/4 - 1/2 (0.418 mi.)***	***A3***	***16***
Database: LUST REG 4, Date of Government Version: 09/07/2004 Facility Id: I-02982 Status: Case Closed				

Global ID: T0603702875

SHELL STATION (FORME ***22729 PACIFIC COAST*** ***SE 1/4 - 1/2 (0.418 mi.)*** ***A4*** ***18***
Database: LUST REG 4, Date of Government Version: 09/07/2004
Facility Id: I-02982A
Status: Preliminary site assessment workplan submitted
Global ID: T0603715472

ARCO #1033 ***22661 PACIFIC COAST*** ***SE 1/4 - 1/2 (0.476 mi.)*** ***5*** ***20***
Database: LUST REG 4, Date of Government Version: 09/07/2004
Database: LUST, Date of Government Version: 06/08/2020
Status: Completed - Case Closed
Facility Id: I-06026
Status: Remedial action (cleanup) Underway
Global Id: T0603703157
Global ID: T0603703157

ADDITIONAL ENVIRONMENTAL RECORDS

Other Ascertainable Records

RCRA NonGen / NLR: 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.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 06/15/2020 has revealed that there is 1 RCRA NonGen / NLR site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
ALLIE BURNS EPA ID:: CAC002993965	22866 BECKLEDGE TERR	SE 1/8 - 1/4 (0.214 mi.)	1	9

Cortese: 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).

A review of the Cortese list, as provided by EDR, and dated 06/22/2020 has revealed that there are 3 Cortese sites within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
SHELL #204-4698-0300 Cleanup Status: COMPLETED - CASE CLOSED	***22729 PACIFIC COAST***	***SE 1/4 - 1/2 (0.418 mi.)***	***A3***	***16***
SHELL STATION (FORME Cleanup Status: COMPLETED - CASE CLOSED	***22729 PACIFIC COAST***	***SE 1/4 - 1/2 (0.418 mi.)***	***A4***	***18***
ARCO #1033 Cleanup Status: COMPLETED - CASE CLOSED	***22661 PACIFIC COAST***	***SE 1/4 - 1/2 (0.476 mi.)***	***5***	***20***

EXECUTIVE SUMMARY

HIST CORTESE: 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.

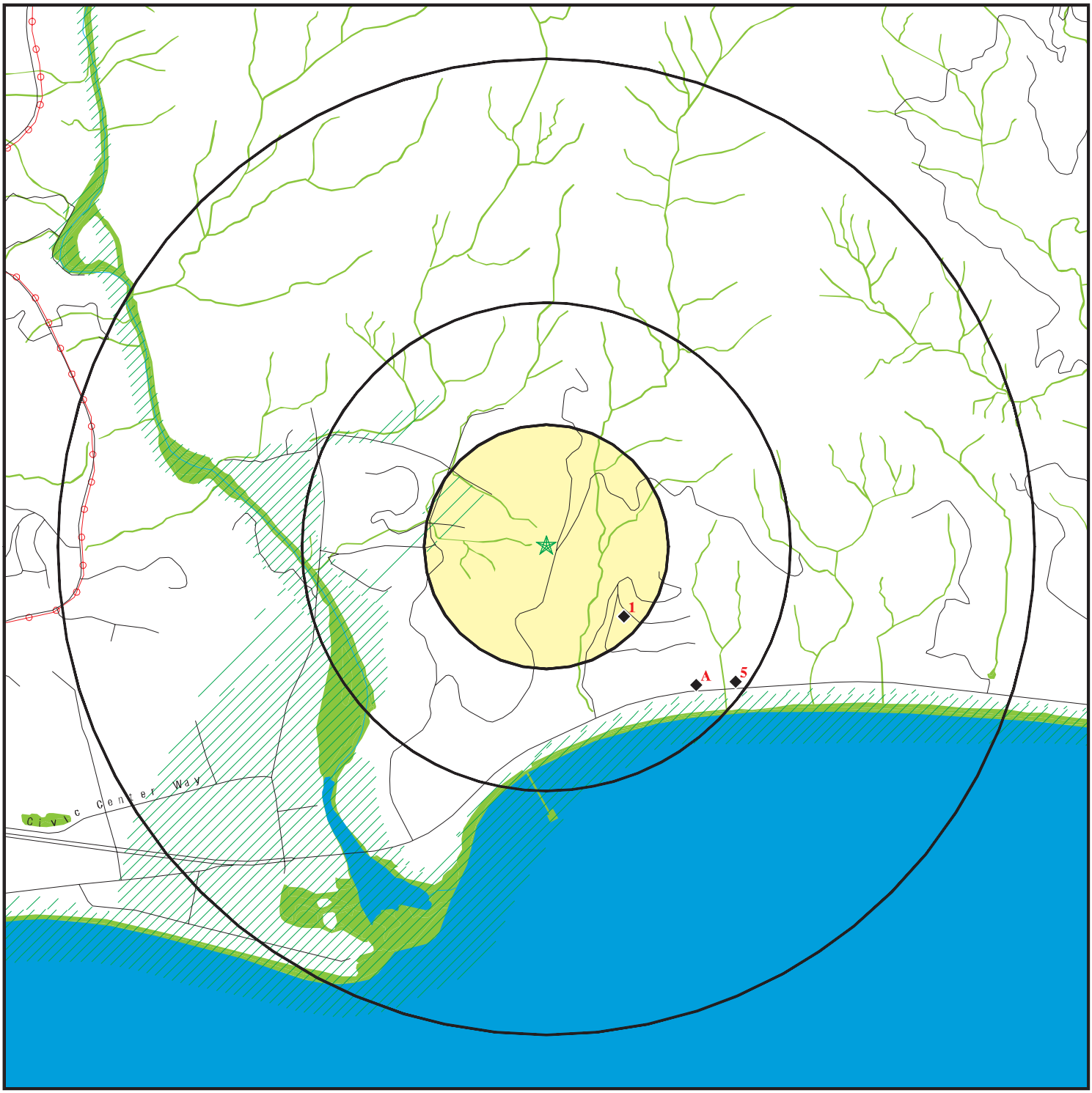
A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there are 2 HIST CORTESE sites within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
SHELL #204-4698-0300	***22729 PACIFIC COAST***	***SE 1/4 - 1/2 (0.418 mi.)***	***A2***	***11***
ARCO #1033	***22661 PACIFIC COAST***	***SE 1/4 - 1/2 (0.476 mi.)***	***5***	***20***
Reg Id: I-06026				

EXECUTIVE SUMMARY

There were no unmapped sites in this report.

OVERVIEW MAP - 6256201.2S



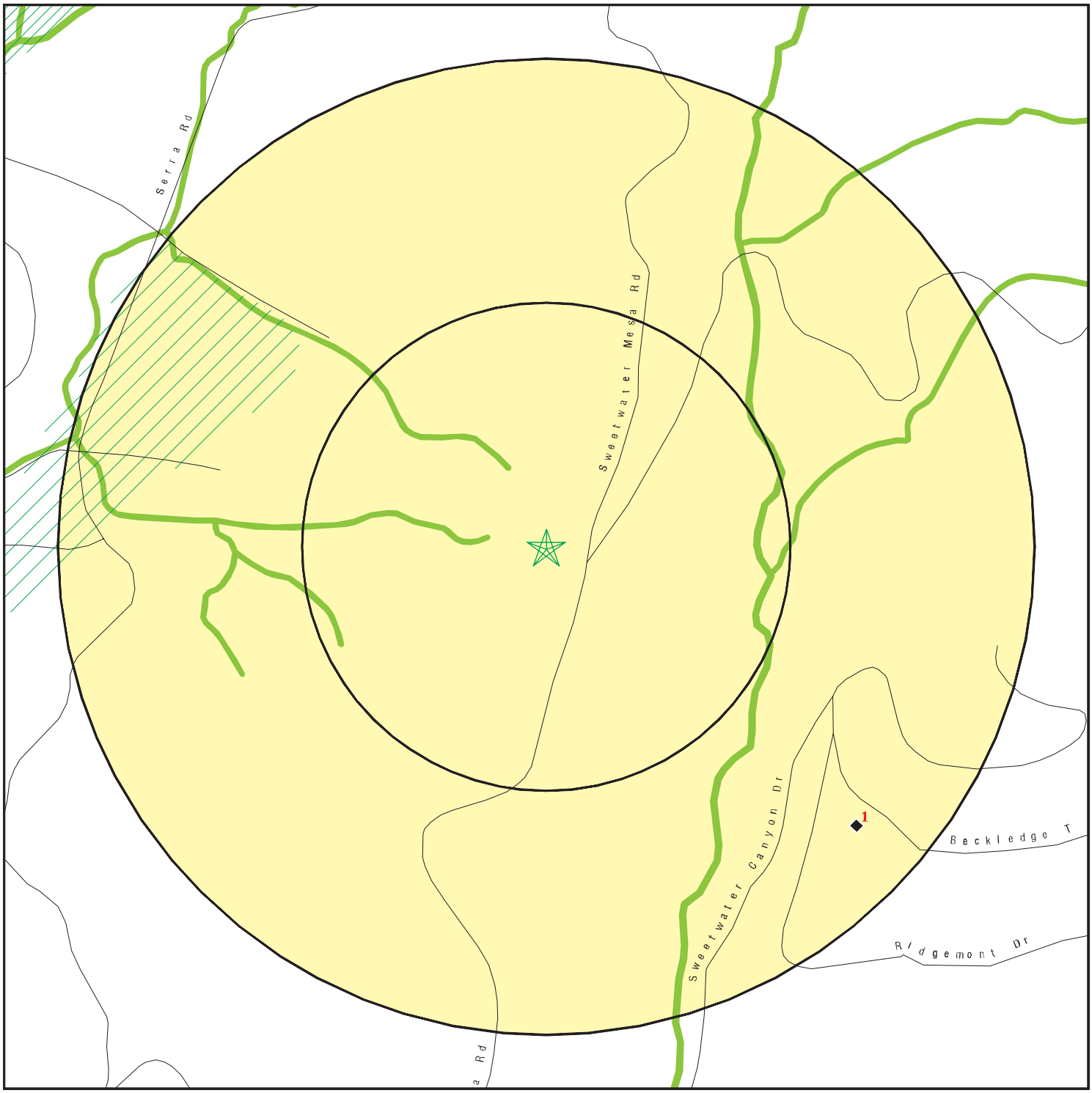
0 1/4 1/2 1 Miles

- 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
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Civic Center Improvements	CLIENT:	Psomas
ADDRESS:	Not Reported Malibu CA 90265	CONTACT:	Megan Larum
LAT/LONG:	34.043696 / 118.675813	INQUIRY #:	6256201.2s
		DATE:	November 05, 2020 7:52 pm

DETAIL MAP - 6256201.2S



- 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

0 1/16 1/8 1/4 Miles

- Indian Reservations BIA
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Civic Center Improvements	CLIENT: Psomas
ADDRESS: Not Reported Malibu CA 90265	CONTACT: Megan Larum
LAT/LONG: 34.043696 / 118.675813	INQUIRY #: 6256201.2s DATE: November 05, 2020 7:54 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	1.000		0	0	0	0	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		0	0	NR	NR	NR	0
RCRA-VSQG	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 CONTROLS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	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	0	NR	0
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	4	NR	NR	4

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		0	0	NR	NR	NR	0
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	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	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	TP		NR	NR	NR	NR	NR	0
AOCONCERN	1.000		0	0	0	0	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
PFAS	0.500		0	0	0	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
CERS TANKS	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	TP		NR	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
LIENS 2	TP		NR	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
CHMIRS	TP		NR	NR	NR	NR	NR	0
LDS	TP		NR	NR	NR	NR	NR	0
MCS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	1	NR	NR	NR	1
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	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	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	3	NR	NR	3
CUPA Listings	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
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	TP		NR	NR	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
HAZNET	TP		NR	NR	NR	NR	NR	0
ICE	TP		NR	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	2	NR	NR	2
LOS ANGELES CO. HMS	TP		NR	NR	NR	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
PEST LIC	TP		NR	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
LA Co. Site Mitigation	TP		NR	NR	NR	NR	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
UIC GEO	TP		NR	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	TP		NR	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
MILITARY PRIV SITES	TP		NR	NR	NR	NR	NR	0
PROJECT	TP		NR	NR	NR	NR	NR	0
WDR	TP		NR	NR	NR	NR	NR	0
CIWQS	TP		NR	NR	NR	NR	NR	0
CERS	TP		NR	NR	NR	NR	NR	0
NON-CASE INFO	TP		NR	NR	NR	NR	NR	0
OTHER OIL GAS	TP		NR	NR	NR	NR	NR	0
PROD WATER PONDS	TP		NR	NR	NR	NR	NR	0
SAMPLING POINT	TP		NR	NR	NR	NR	NR	0
WELL STIM PROJ	TP		NR	NR	NR	NR	NR	0
HWTS	TP		NR	NR	NR	NR	NR	0
LOS ANGELES CO LF METHANE	0.500		0	0	0	NR	NR	0
MINES MRDS	TP		NR	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		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		0	0	1	9	0	0	10

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

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1
SE
1/8-1/4
0.214 mi.
1128 ft.

ALLIE BURNS
22866 BECKLEDGE TERRACE
MALIBU, CA 90265

RCRA NonGen / NLR

1024774044
CAC002993965

Relative:
Lower

Actual:
254 ft.

RCRA NonGen / NLR:

Date Form Received by Agency:	2018-12-20 00:00:00.0
Handler Name:	ALLIE BURNS
Handler Address:	22866 BECKLEDGE TERRACE
Handler City,State,Zip:	MALIBU, CA 90265
EPA ID:	CAC002993965
Contact Name:	ALLIE BURNS
Contact Address:	22866 BECKLEDGE TERRACE
Contact City,State,Zip:	MALIBU, CA 90265
Contact Telephone:	414-732-9950
Contact Fax:	Not reported
Contact Email:	CAROLYN.KBEINC@GMAIL.COM
Contact Title:	Not reported
EPA Region:	09
Land Type:	Not reported
Federal Waste Generator Description:	Not a generator, verified
Non-Notifier:	Not reported
Biennial Report Cycle:	Not reported
Accessibility:	Not reported
Active Site Indicator:	Handler Activities
State District Owner:	Not reported
State District:	Not reported
Mailing Address:	22866 BECKLEDGE TERRACE
Mailing City,State,Zip:	MALIBU, CA 90265
Owner Name:	ALLIE BURNS
Owner Type:	Other
Operator Name:	ALLIE BURNS
Operator Type:	Other
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	Yes
Universal Waste Destination Facility:	Yes
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported

ALLIE BURNS (Continued) **1024774044**

Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	2019-02-22 19:39:06.0
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Handler - Owner Operator:

Owner/Operator Indicator:	Owner
Owner/Operator Name:	ALLIE BURNS
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	22866 BECKLEDGE TERRACE
Owner/Operator City,State,Zip:	MALIBU, CA 90265
Owner/Operator Telephone:	414-732-9950
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Operator
Owner/Operator Name:	ALLIE BURNS
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	22866 BECKLEDGE TERRACE
Owner/Operator City,State,Zip:	MALIBU, CA 90265
Owner/Operator Telephone:	414-732-9950
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

ALLIE BURNS (Continued) **1024774044**

Historic Generators:

Receive Date:	2018-12-20 00:00:00.0
Handler Name:	ALLIE BURNS
Federal Waste Generator Description:	Not a generator, verified
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	Yes
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

List of NAICS Codes and Descriptions:

NAICS Code:	56299
NAICS Description:	ALL OTHER WASTE MANAGEMENT SERVICES

Facility Has Received Notices of Violations:

Violations:	No Violations Found

Evaluation Action Summary:

Evaluations:	No Evaluations Found

A2 **SHELL #204-4698-0300** **LUST** **S105126344**
SE **22729 PACIFIC COAST** **HIST CORTESE** **N/A**
1/4-1/2 **MALIBU, CA 90265** **CERS**
0.418 mi.
2205 ft. **Site 1 of 3 in cluster A**

Relative:
Lower

Actual:
23 ft.

LUST:

Name:	SHELL #204-4698-0300
Address:	22729 PACIFIC COAST HWY
City,State,Zip:	MALIBU, CA 90265
Lead Agency:	LOS ANGELES RWQCB (REGION 4)
Case Type:	LUST Cleanup Site
Geo Track:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0603702875
Global Id:	T0603702875
Latitude:	34.039679
Longitude:	-118.67047
Status:	Completed - Case Closed
Status Date:	08/29/1996
Case Worker:	YR
RB Case Number:	I-02982
Local Agency:	LOS ANGELES COUNTY
File Location:	Not reported
Local Case Number:	Not reported
Potential Media Affect:	Aquifer used for drinking water supply
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

LUST:

Global Id:	T0603702875
Contact Type:	Local Agency Caseworker
Contact Name:	JOHN AWUJO

SHELL #204-4698-0300 (Continued) **S105126344**

Organization Name: LOS ANGELES COUNTY
Address: 900 S FREMONT AVE
City: ALHAMBRA
Email: jawujo@dpw.lacounty.gov
Phone Number: 6264583507

Global Id: T0603702875
Contact Type: Regional Board Caseworker
Contact Name: YUE RONG
Organization Name: LOS ANGELES RWQCB (REGION 4)
Address: 320 W. 4TH ST., SUITE 200
City: Los Angeles
Email: yrong@waterboards.ca.gov
Phone Number: Not reported

LUST:
Global Id: T0603702875
Action Type: Other
Date: 07/28/1988
Action: Leak Discovery

Global Id: T0603702875
Action Type: Other
Date: 07/28/1988
Action: Leak Stopped

Global Id: T0603702875
Action Type: Other
Date: 07/29/1988
Action: Leak Reported

LUST:
Global Id: T0603702875
Status: Open - Case Begin Date
Status Date: 07/28/1988

Global Id: T0603702875
Status: Open - Site Assessment
Status Date: 08/07/1990

Global Id: T0603702875
Status: Completed - Case Closed
Status Date: 08/29/1996

Name: SHELL STATION (FORMER)
Address: 22729 PACIFIC COAST HWY.
City,State,Zip: MALIBU, CA 90265
Lead Agency: LOS ANGELES RWQCB (REGION 4)
Case Type: LUST Cleanup Site
Geo Track: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0603715472
Global Id: T0603715472
Latitude: 34.039677
Longitude: -118.67047
Status: Completed - Case Closed
Status Date: 05/23/2005

SHELL #204-4698-0300 (Continued) **S105126344**

Case Worker: WXT
RB Case Number: I-02982A
Local Agency: LOS ANGELES COUNTY
File Location: Regional Board
Local Case Number: 2884-026397
Potential Media Affect: Aquifer used for drinking water supply
Potential Contaminants of Concern: Gasoline
Site History: Not reported

LUST:
Global Id: T0603715472
Contact Type: Local Agency Caseworker
Contact Name: TIM SMITH
Organization Name: LOS ANGELES COUNTY
Address: 900 S. FREMONT AVE.
City: ALHAMBRA
Email: tsmith@dpw.lacounty.gov
Phone Number: Not reported

Global Id: T0603715472
Contact Type: Regional Board Caseworker
Contact Name: WEIXING TONG
Organization Name: LOS ANGELES RWQCB (REGION 4)
Address: Not reported
City: R4 UNKNOWN
Email: wtong@waterboards.ca.gov
Phone Number: Not reported

LUST:
Global Id: T0603715472
Action Type: ENFORCEMENT
Date: 03/02/2004
Action: Staff Letter

Global Id: T0603715472
Action Type: ENFORCEMENT
Date: 05/09/2005
Action: Notification - Preclosure

Global Id: T0603715472
Action Type: ENFORCEMENT
Date: 05/23/2005
Action: Closure/No Further Action Letter

Global Id: T0603715472
Action Type: ENFORCEMENT
Date: 05/03/2005
Action: Site Visit / Inspection / Sampling

Global Id: T0603715472
Action Type: ENFORCEMENT
Date: 06/15/2004
Action: Staff Letter

Global Id: T0603715472
Action Type: Other
Date: 05/30/2002

SHELL #204-4698-0300 (Continued) **S105126344**

Action:	Leak Discovery
Global Id:	T0603715472
Action Type:	RESPONSE
Date:	02/06/2004
Action:	Other Report / Document
Global Id:	T0603715472
Action Type:	RESPONSE
Date:	09/30/2004
Action:	Soil and Water Investigation Report
Global Id:	T0603715472
Action Type:	RESPONSE
Date:	10/15/2004
Action:	Monitoring Report - Quarterly
Global Id:	T0603715472
Action Type:	RESPONSE
Date:	04/15/2004
Action:	Preliminary Site Assessment Workplan
Global Id:	T0603715472
Action Type:	Other
Date:	05/30/2002
Action:	Leak Stopped
Global Id:	T0603715472
Action Type:	RESPONSE
Date:	04/15/2005
Action:	Monitoring Report - Quarterly
Global Id:	T0603715472
Action Type:	RESPONSE
Date:	08/30/2005
Action:	Unknown
Global Id:	T0603715472
Action Type:	REMEDIATION
Date:	06/13/2002
Action:	Excavation
Global Id:	T0603715472
Action Type:	RESPONSE
Date:	01/15/2005
Action:	Monitoring Report - Quarterly
Global Id:	T0603715472
Action Type:	Other
Date:	06/26/2002
Action:	Leak Reported
Global Id:	T0603715472
Action Type:	ENFORCEMENT
Date:	12/04/2003
Action:	Staff Letter

SHELL #204-4698-0300 (Continued) **S105126344**

Global Id: T0603715472
Action Type: ENFORCEMENT
Date: 01/15/2004
Action: * Verbal Communication

LUST:
Global Id: T0603715472
Status: Open - Case Begin Date
Status Date: 05/30/2002

Global Id: T0603715472
Status: Open - Site Assessment
Status Date: 06/26/2002

Global Id: T0603715472
Status: Open - Site Assessment
Status Date: 04/05/2004

Global Id: T0603715472
Status: Open - Site Assessment
Status Date: 04/15/2004

Global Id: T0603715472
Status: Open - Site Assessment
Status Date: 09/01/2004

Global Id: T0603715472
Status: Completed - Case Closed
Status Date: 05/23/2005

HIST CORTESE:
edr_fname: SHELL #204-4698-0300
edr_fadd1: 22729 PACIFIC COAST
City,State,Zip: MALIBU, CA 90265
Region: CORTESE
Facility County Code: Not reported
Reg By: Not reported
Reg Id: Not reported

CERS:
Name: SHELL #204-4698-0300
Address: 22729 PACIFIC COAST HWY
City,State,Zip: MALIBU, CA 90265
Site ID: 222442
CERS ID: T0603702875
CERS Description: Leaking Underground Storage Tank Cleanup Site

Affiliation:
Affiliation Type Desc: Local Agency Caseworker
Entity Name: JOHN AWUJO - LOS ANGELES COUNTY
Entity Title: Not reported
Affiliation Address: 900 S FREMONT AVE
Affiliation City: ALHAMBRA
Affiliation State: CA
Affiliation Country: Not reported

SHELL #204-4698-0300 (Continued) **S105126344**

Affiliation Zip:	Not reported
Affiliation Phone:	6264583507
Affiliation Type Desc:	Regional Board Caseworker
Entity Name:	YUE RONG - LOS ANGELES RWQCB (REGION 4)
Entity Title:	Not reported
Affiliation Address:	320 W. 4TH ST., SUITE 200
Affiliation City:	Los Angeles
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

A3 **SHELL #204-4698-0300** **LUST** **S101297481**
SE **22729 PACIFIC COAST HWY** **Cortese** **N/A**
1/4-1/2 **MALIBU, CA 90265**
0.418 mi.
2205 ft. **Site 2 of 3 in cluster A**

Relative: **Lower**

Actual: **23 ft.**

LUST REG 4:

Region:	4	
Regional Board:	04	
County:	Los Angeles	
Facility Id:	I-02982	
Status:	Case Closed	
Substance:	Gasoline	
Substance Quantity:	Not reported	
Local Case No:	Not reported	
Case Type:	Groundwater	
Abatement Method Used at the Site:		Not reported
Global ID:	T0603702875	
W Global ID:	Not reported	
Staff:	UNK	
Local Agency:	19000	
Cross Street:	Not reported	
Enforcement Type:	Not reported	
Date Leak Discovered:	7/28/1988	
Date Leak First Reported:		7/29/1988
Date Leak Record Entered:	9/11/1988	
Date Confirmation Began:	Not reported	
Date Leak Stopped:	7/28/1988	
Date Case Last Changed on Database:		2/26/1997
Date the Case was Closed:		8/29/1996
How Leak Discovered:	OM	
How Leak Stopped:	Not reported	
Cause of Leak:	Other Cause	
Leak Source:	Piping	
Operator:	AVANTI MANAGEMENT INC.	
Water System:	Not reported	
Well Name:	Not reported	
Approx. Dist To Production Well (ft):		39527.779307488141866897642895
Source of Cleanup Funding:		Piping
Preliminary Site Assessment Workplan Submitted:		Not reported
Preliminary Site Assessment Began:		8/7/1990
Pollution Characterization Began:		Not reported
Remediation Plan Submitted:		Not reported
Remedial Action Underway:		Not reported

SHELL #204-4698-0300 (Continued) **S101297481**

Post Remedial Action Monitoring Began:	Not reported
Enforcement Action Date:	Not reported
Historical Max MTBE Date:	Not reported
Hist Max MTBE Conc in Groundwater:	Not reported
Hist Max MTBE Conc in Soil:	Not reported
Significant Interim Remedial Action Taken:	Not reported
GW Qualifier:	Not reported
Soil Qualifier:	Not reported
Organization:	Not reported
Owner Contact:	Not reported
Responsible Party:	SHELL OIL PRODUCTS CO
RP Address:	P.O. BOX 25370, SANTA ANA CA 92799
Program:	LUST
Lat/Long:	34.0389647 / -1
Local Agency Staff:	Not reported
Beneficial Use:	Not reported
Priority:	Not reported
Cleanup Fund Id:	Not reported
Suspended:	Not reported
Assigned Name:	Not reported
Summary:	CONSULTANT INSTALLING MONITORING SYSTEM--SEE REPORT ABANDONMENT REPORT 02/26/97

WELL

CORTESE:

Name:	SHELL #204-4698-0300
Address:	22729 PACIFIC COAST HWY
City,State,Zip:	MALIBU, CA 90265
Region:	CORTESE
Envirostor Id:	Not reported
Global ID:	T0603702875
Site/Facility Type:	LUST CLEANUP SITE
Cleanup Status:	COMPLETED - CASE CLOSED
Status Date:	Not reported
Site Code:	Not reported
Latitude:	Not reported
Longitude:	Not reported
Owner:	Not reported
Enf Type:	Not reported
Swat R:	Not reported
Flag:	active
Order No:	Not reported
Waste Discharge System No:	Not reported
Effective Date:	Not reported
Region 2:	Not reported
WID Id:	Not reported
Solid Waste Id No:	Not reported
Waste Management Uit Name:	Not reported
File Name:	Active Open

A4 **SHELL STATION (FORMER)** **LUST** **S106116274**
SE **22729 PACIFIC COAST HWY.** **Cortese** **N/A**
1/4-1/2 **MALIBU, CA 90265** **CERS**
0.418 mi.
2205 ft. **Site 3 of 3 in cluster A**

Relative: **Lower**

Actual: **23 ft.**

LUST REG 4:

Region:	4	
Regional Board:	04	
County:	Los Angeles	
Facility Id:	I-02982A	
Status:	Preliminary site assessment workplan submitted	
Substance:	Gasoline	
Substance Quantity:	Not reported	
Local Case No:	2884-026397	
Case Type:	Undefined	
Abatement Method Used at the Site:		Not reported
Global ID:	T0603715472	
W Global ID:	Not reported	
Staff:	WXT	
Local Agency:	19000	
Cross Street:	Not reported	
Enforcement Type:	DLSEL	
Date Leak Discovered:	5/30/2002	
Date Leak First Reported:		6/26/2002
Date Leak Record Entered:	Not reported	
Date Confirmation Began:	6/26/2002	
Date Leak Stopped:	5/30/2002	
Date Case Last Changed on Database:		Not reported
Date the Case was Closed:		Not reported
How Leak Discovered:	OM	
How Leak Stopped:	Close Tank	
Cause of Leak:	UNK	
Leak Source:	UNK	
Operator:	Not reported	
Water System:	Not reported	
Well Name:	Not reported	
Approx. Dist To Production Well (ft):		Not reported
Source of Cleanup Funding:		UNK
Preliminary Site Assessment Workplan Submitted:		4/15/2004
Preliminary Site Assessment Began:		4/5/2004
Pollution Characterization Began:		Not reported
Remediation Plan Submitted:		Not reported
Remedial Action Underway:		Not reported
Post Remedial Action Monitoring Began:		Not reported
Enforcement Action Date:		Not reported
Historical Max MTBE Date:		Not reported
Hist Max MTBE Conc in Groundwater:		Not reported
Hist Max MTBE Conc in Soil:		Not reported
Significant Interim Remedial Action Taken:		Not reported
GW Qualifier:	Not reported	
Soil Qualifier:	Not reported	
Organization:	Not reported	
Owner Contact:	Not reported	
Responsible Party:	MR. EDWARD PADEN	
RP Address:	8281 COMMONWEALTH AVE.	
Program:	LUST	
Lat/Long:	0 / 0	
Local Agency Staff:	Not reported	

SHELL STATION (FORMER) (Continued) **S106116274**

Beneficial Use:	Not reported
Priority:	Not reported
Cleanup Fund Id:	Not reported
Suspended:	Not reported
Assigned Name:	Not reported
Summary:	Not reported

CORTESE:

Name:	SHELL STATION (FORMER)
Address:	22729 PACIFIC COAST HWY.
City,State,Zip:	MALIBU, CA 90265
Region:	CORTESE
Envirostor Id:	Not reported
Global ID:	T0603715472
Site/Facility Type:	LUST CLEANUP SITE
Cleanup Status:	COMPLETED - CASE CLOSED
Status Date:	Not reported
Site Code:	Not reported
Latitude:	Not reported
Longitude:	Not reported
Owner:	Not reported
Enf Type:	Not reported
Swat R:	Not reported
Flag:	active
Order No:	Not reported
Waste Discharge System No:	Not reported
Effective Date:	Not reported
Region 2:	Not reported
WID Id:	Not reported
Solid Waste Id No:	Not reported
Waste Management Uit Name:	Not reported
File Name:	Active Open

CERS:

Name:	SHELL STATION (FORMER)
Address:	22729 PACIFIC COAST HWY.
City,State,Zip:	MALIBU, CA 90265
Site ID:	243212
CERS ID:	T0603715472
CERS Description:	Leaking Underground Storage Tank Cleanup Site

Affiliation:

Affiliation Type Desc:	Local Agency Caseworker
Entity Name:	TIM SMITH - LOS ANGELES COUNTY
Entity Title:	Not reported
Affiliation Address:	900 S. FREMONT AVE.
Affiliation City:	ALHAMBRA
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Regional Board Caseworker
Entity Name:	WEIXING TONG - LOS ANGELES RWQCB (REGION 4)
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	R4 UNKNOWN

SHELL STATION (FORMER) (Continued) **S106116274**

Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

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5 **ARCO #1033** **LUST** **S101297480**
SE **22661 PACIFIC COAST HWY** **Cortese** **N/A**
1/4-1/2 **MALIBU, CA 90265** **HIST CORTESE**
0.476 mi. **CERS**
2513 ft.

Relative:
Lower

Actual:
25 ft.

LUST:
Name: ARCO #1033
Address: 22661 PACIFIC COAST HWY
City,State,Zip: MALIBU, CA 90265
Lead Agency: LOS ANGELES RWQCB (REGION 4)
Case Type: LUST Cleanup Site
Geo Track: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0603703157
Global Id: T0603703157
Latitude: 34.0391477
Longitude: -118.6718805
Status: Completed - Case Closed
Status Date: 12/20/2004
Case Worker: DMB
RB Case Number: I-06026
Local Agency: LOS ANGELES COUNTY
File Location: Not reported
Local Case Number: Not reported
Potential Media Affect: Aquifer used for drinking water supply
Potential Contaminants of Concern: Gasoline
Site History: Not reported

LUST:
Global Id: T0603703157
Contact Type: Regional Board Caseworker
Contact Name: DAVID M. BJOSTAD
Organization Name: LOS ANGELES RWQCB (REGION 4)
Address: 320 W. 4th Street, Suite 200
City: Los Angeles
Email: dave.bjostad@waterboards.ca.gov
Phone Number: Not reported

Global Id: T0603703157
Contact Type: Local Agency Caseworker
Contact Name: JOHN AWUJO
Organization Name: LOS ANGELES COUNTY
Address: 900 S FREMONT AVE
City: ALHAMBRA
Email: jawujo@dpw.lacounty.gov
Phone Number: 6264583507

LUST:
Global Id: T0603703157
Action Type: ENFORCEMENT
Date: 05/12/2004
Action: Site Visit / Inspection / Sampling

ARCO #1033 (Continued) **S101297480**

Global Id: T0603703157
Action Type: ENFORCEMENT
Date: 12/20/2004
Action: Closure/No Further Action Letter

Global Id: T0603703157
Action Type: RESPONSE
Date: 04/15/2002
Action: Monitoring Report - Quarterly

Global Id: T0603703157
Action Type: RESPONSE
Date: 07/15/2002
Action: Monitoring Report - Quarterly

Global Id: T0603703157
Action Type: RESPONSE
Date: 10/15/2002
Action: Monitoring Report - Quarterly

Global Id: T0603703157
Action Type: RESPONSE
Date: 04/15/2003
Action: Monitoring Report - Quarterly

Global Id: T0603703157
Action Type: RESPONSE
Date: 04/15/2003
Action: CAP/RAP - Other Report

Global Id: T0603703157
Action Type: RESPONSE
Date: 01/15/2003
Action: Monitoring Report - Quarterly

Global Id: T0603703157
Action Type: RESPONSE
Date: 01/15/2003
Action: Soil and Water Investigation Workplan

Global Id: T0603703157
Action Type: RESPONSE
Date: 02/18/2003
Action: Interim Remedial Action Plan

Global Id: T0603703157
Action Type: Other
Date: 10/01/1987
Action: Leak Discovery

Global Id: T0603703157
Action Type: RESPONSE
Date: 07/15/2003
Action: Monitoring Report - Quarterly

Global Id: T0603703157
Action Type: RESPONSE

ARCO #1033 (Continued) **S101297480**

Date: 10/15/2003
Action: Monitoring Report - Quarterly

Global Id: T0603703157
Action Type: RESPONSE
Date: 01/15/2004
Action: Monitoring Report - Quarterly

Global Id: T0603703157
Action Type: RESPONSE
Date: 07/15/2004
Action: Monitoring Report - Quarterly

Global Id: T0603703157
Action Type: Other
Date: 10/09/1987
Action: Leak Stopped

Global Id: T0603703157
Action Type: RESPONSE
Date: 10/15/2004
Action: Monitoring Report - Quarterly

Global Id: T0603703157
Action Type: RESPONSE
Date: 03/15/2005
Action: Unknown

Global Id: T0603703157
Action Type: REMEDIATION
Date: 11/01/2001
Action: Excavation

Global Id: T0603703157
Action Type: REMEDIATION
Date: 11/01/2000
Action: Pump & Treat (P&T) Groundwater

Global Id: T0603703157
Action Type: REMEDIATION
Date: 12/01/2001
Action: Pump & Treat (P&T) Groundwater

Global Id: T0603703157
Action Type: REMEDIATION
Date: 01/01/2003
Action: Pump & Treat (P&T) Groundwater

Global Id: T0603703157
Action Type: ENFORCEMENT
Date: 01/31/2003
Action: Staff Letter

Global Id: T0603703157
Action Type: ENFORCEMENT
Date: 10/29/2004
Action: Notification - Preclosure

ARCO #1033 (Continued) **S101297480**

Global Id: T0603703157
Action Type: RESPONSE
Date: 04/15/2004
Action: Monitoring Report - Quarterly

Global Id: T0603703157
Action Type: Other
Date: 03/07/1988
Action: Leak Reported

Global Id: T0603703157
Action Type: ENFORCEMENT
Date: 09/29/2000
Action: Staff Letter

Global Id: T0603703157
Action Type: ENFORCEMENT
Date: 11/15/2002
Action: Staff Letter

Global Id: T0603703157
Action Type: ENFORCEMENT
Date: 04/08/2003
Action: Staff Letter

Global Id: T0603703157
Action Type: RESPONSE
Date: 04/15/2003
Action: Soil and Water Investigation Workplan

LUST:
Global Id: T0603703157
Status: Open - Case Begin Date
Status Date: 10/01/1987

Global Id: T0603703157
Status: Open - Remediation
Status Date: 01/15/2001

Global Id: T0603703157
Status: Open - Site Assessment
Status Date: 01/15/2001

Global Id: T0603703157
Status: Completed - Case Closed
Status Date: 12/20/2004

LUST REG 4:
Region: 4
Regional Board: 04
County: Los Angeles
Facility Id: I-06026
Status: Remedial action (cleanup) Underway
Substance: Gasoline
Substance Quantity: Not reported

ARCO #1033 (Continued) **S101297480**

Local Case No:	Not reported	
Case Type:	Groundwater	
Abatement Method Used at the Site:		Not reported
Global ID:	T0603703157	
W Global ID:	Not reported	
Staff:	TCS	
Local Agency:	19000	
Cross Street:	SWEETWATER	
Enforcement Type:	SI	
Date Leak Discovered:	10/1/1987	
Date Leak First Reported:		3/7/1988
Date Leak Record Entered:	3/28/1988	
Date Confirmation Began:	Not reported	
Date Leak Stopped:	10/9/1987	
Date Case Last Changed on Database:		7/15/2002
Date the Case was Closed:		Not reported
How Leak Discovered:	Tank Test	
How Leak Stopped:	Not reported	
Cause of Leak:	Other Cause	
Leak Source:	Other Source	
Operator:	RANDALL, EDWARD	
Water System:	Not reported	
Well Name:	Not reported	
Approx. Dist To Production Well (ft):		39318.167441902060877555019112
Source of Cleanup Funding:		Other Source
Preliminary Site Assessment Workplan Submitted:		Not reported
Preliminary Site Assessment Began:		Not reported
Pollution Characterization Began:		1/15/2001
Remediation Plan Submitted:		1/15/2001
Remedial Action Underway:		1/15/2001
Post Remedial Action Monitoring Began:		10/17/1997
Enforcement Action Date:		Not reported
Historical Max MTBE Date:		1/1/1965
Hist Max MTBE Conc in Groundwater:		1000000
Hist Max MTBE Conc in Soil:		940000
Significant Interim Remedial Action Taken:		Not reported
GW Qualifier:	Not reported	
Soil Qualifier:	=	
Organization:	Not reported	
Owner Contact:	Not reported	
Responsible Party:	MS. RACHEL HANDSBURY	
RP Address:	4 CENTERPOINTE DR.	
Program:	LUST	
Lat/Long:	34.0391477 / -1	
Local Agency Staff:	Not reported	
Beneficial Use:	Not reported	
Priority:	Not reported	
Cleanup Fund Id:	Not reported	
Suspended:	Not reported	
Assigned Name:	Not reported	
Summary:	SITE IS 0.5 MILES FROM PAC. OCEAN. HAS HIGH TPH/BTEX/MTBE (1,000 PPM) CONTAMINATION IN GW. (2 WELLS HAVE F.P. SHEEN). SOIL CONTAMINATION IN UST/AREA-LOP APPROVED SOIL RAP; 1/23/01 WELL DESTRUCTION; 4/13/01 1STQTR GW MON RPT	

CORTESE:
Name: ARCO #1033

ARCO #1033 (Continued) **S101297480**

Address:	22661 PACIFIC COAST HWY
City,State,Zip:	MALIBU, CA 90265
Region:	CORTESE
Envirostor Id:	Not reported
Global ID:	T0603703157
Site/Facility Type:	LUST CLEANUP SITE
Cleanup Status:	COMPLETED - CASE CLOSED
Status Date:	Not reported
Site Code:	Not reported
Latitude:	Not reported
Longitude:	Not reported
Owner:	Not reported
Enf Type:	Not reported
Swat R:	Not reported
Flag:	active
Order No:	Not reported
Waste Discharge System No:	Not reported
Effective Date:	Not reported
Region 2:	Not reported
WID Id:	Not reported
Solid Waste Id No:	Not reported
Waste Management Uit Name:	Not reported
File Name:	Active Open

HIST CORTESE:

edr_fname:	ARCO #1033
edr_fadd1:	22661 PACIFIC COAST
City,State,Zip:	MALIBU, CA 90265
Region:	CORTESE
Facility County Code:	19
Reg By:	LTNKA
Reg Id:	I-06026

CERS:

Name:	ARCO #1033
Address:	22661 PACIFIC COAST HWY
City,State,Zip:	MALIBU, CA 90265
Site ID:	243707
CERS ID:	T0603703157
CERS Description:	Leaking Underground Storage Tank Cleanup Site

Affiliation:

Affiliation Type Desc:	Local Agency Caseworker
Entity Name:	JOHN AWUJO - LOS ANGELES COUNTY
Entity Title:	Not reported
Affiliation Address:	900 S FREMONT AVE
Affiliation City:	ALHAMBRA
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	6264583507

Affiliation Type Desc:	Regional Board Caseworker
Entity Name:	DAVID M. BJOSTAD - LOS ANGELES RWQCB (REGION 4)
Entity Title:	Not reported
Affiliation Address:	320 W. 4th Street, Suite 200
Affiliation City:	Los Angeles

ARCO #1033 (Continued) **S101297480**

Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	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: 07/29/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 08/25/2020
Number of Days to Update: 22

Source: EPA
Telephone: N/A
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/11/2021
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 3
Telephone 215-814-5418

EPA Region 4
Telephone 404-562-8033

EPA Region 5
Telephone 312-886-6686

EPA Region 10
Telephone 206-553-8665

EPA Region 6
Telephone: 214-655-6659

EPA Region 7
Telephone: 913-551-7247

EPA Region 8
Telephone: 303-312-6774

EPA Region 9
Telephone: 415-947-4246

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: 07/29/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 08/25/2020
Number of Days to Update: 22

Source: EPA
Telephone: N/A
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/11/2021
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

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: 07/29/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 08/25/2020
Number of Days to Update: 22

Source: EPA
Telephone: N/A
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/11/2021
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: 04/03/2019
Date Data Arrived at EDR: 04/05/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/11/2021
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: 07/29/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 08/25/2020
Number of Days to Update: 22

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/25/2021
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: 07/29/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 08/25/2020
Number of Days to Update: 22

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 10/06/2020
Next Scheduled EDR Contact: 01/25/2021
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: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 87

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
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: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/18/2020
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
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: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/18/2020
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

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: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/18/2020
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly 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). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/18/2020
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
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: 05/15/2020
Date Data Arrived at EDR: 05/19/2020
Date Made Active in Reports: 06/18/2020
Number of Days to Update: 30

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 08/04/2020
Next Scheduled EDR Contact: 11/23/2020
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: 02/13/2020
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 05/15/2020
Number of Days to Update: 85

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/24/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List

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: 02/13/2020
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 05/15/2020
Number of Days to Update: 85

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/24/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: Varies

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: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 87

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
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: 07/27/2020
Date Data Arrived at EDR: 07/27/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 73

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/26/2020
Next Scheduled EDR Contact: 02/08/2021
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: 07/27/2020
Date Data Arrived at EDR: 07/27/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 73

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/26/2020
Next Scheduled EDR Contact: 02/08/2021
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: 05/11/2020
Date Data Arrived at EDR: 05/12/2020
Date Made Active in Reports: 07/27/2020
Number of Days to Update: 76

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 11/23/2020
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

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 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 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.

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: No Update Planned

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

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: 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: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Quarterly

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 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: No Update Planned

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
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: 04/29/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

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: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84
Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
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: 04/14/2020
Date Data Arrived at EDR: 05/26/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 78
Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
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: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84
Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

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: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
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: 04/15/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
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: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84
Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
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: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Varies

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: No Update Planned

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: No Update Planned

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: No Update Planned

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: No Update Planned

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: No Update Planned

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: No Update Planned

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: No Update Planned

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: 02/01/2020
Date Data Arrived at EDR: 03/19/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 82
Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Varies

MILITARY UST SITES: Military UST Sites (GEOTRACKER)
Military ust sites

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/20/2020
Number of Days to Update: 72
Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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: 05/26/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/20/2020
Number of Days to Update: 72
Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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: 09/15/2020
Next Scheduled EDR Contact: 12/28/2020
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: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 85
Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
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: 04/29/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84
Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

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: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84
Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
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: 04/03/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
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: 04/14/2020
Date Data Arrived at EDR: 05/26/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 78

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

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: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
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: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
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: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/23/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

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: 09/16/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Varies

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

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.

Date of Government Version: 07/27/2020
Date Data Arrived at EDR: 07/27/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 73

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/26/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Quarterly

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: 06/22/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/04/2020
Number of Days to Update: 74

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
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: 06/01/2020
Date Data Arrived at EDR: 06/02/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 09/15/2020
Next Scheduled EDR Contact: 12/28/2020
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.

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: 10/20/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 05/28/2020
Date Data Arrived at EDR: 05/29/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 75

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 08/04/2020
Next Scheduled EDR Contact: 11/23/2020
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: 10/20/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Varies

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

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: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
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: 10/30/2020
Next Scheduled EDR Contact: 02/08/2021
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: 03/18/2020
Date Data Arrived at EDR: 03/19/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 82

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/19/2020
Next Scheduled EDR Contact: 12/07/2020
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: 07/27/2020
Date Data Arrived at EDR: 07/27/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 73

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/26/2020
Next Scheduled EDR Contact: 02/08/2021
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: 06/30/2019
Date Data Arrived at EDR: 05/28/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 11/03/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Varies

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: 07/20/2020
Date Data Arrived at EDR: 07/21/2020
Date Made Active in Reports: 10/07/2020
Number of Days to Update: 78

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Quarterly

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: 03/18/2020
Date Data Arrived at EDR: 03/19/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 82

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/19/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: Quarterly

PFAS: PFAS Contamination Site Location Listing

A listing of PFAS contaminated sites included in the GeoTracker database.

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Varies

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: 05/20/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/06/2020
Number of Days to Update: 78

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 08/17/2020
Next Scheduled EDR Contact: 12/07/2020
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: 08/03/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/22/2020
Number of Days to Update: 78

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

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: 07/20/2020
Date Data Arrived at EDR: 07/21/2020
Date Made Active in Reports: 10/07/2020
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Quarterly

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.

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

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: 05/28/2020
Date Data Arrived at EDR: 05/29/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 75

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/25/2020
Next Scheduled EDR Contact: 12/14/2020
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: 07/29/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 08/25/2020
Number of Days to Update: 22

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/11/2021
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: 06/01/2020
Date Data Arrived at EDR: 06/02/2020
Date Made Active in Reports: 08/14/2020
Number of Days to Update: 73

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 08/31/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 06/22/2020
Date Data Arrived at EDR: 06/23/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 86

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
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: 06/30/2020
Date Data Arrived at EDR: 07/21/2020
Date Made Active in Reports: 10/07/2020
Number of Days to Update: 78

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
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: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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.

Date of Government Version: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/18/2020
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
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: 08/05/2020
Date Data Arrived at EDR: 08/13/2020
Date Made Active in Reports: 10/21/2020
Number of Days to Update: 69

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 08/13/2020
Next Scheduled EDR Contact: 11/30/2020
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: 10/13/2020
Next Scheduled EDR Contact: 01/25/2021
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: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 10/08/2020
Next Scheduled EDR Contact: 01/18/2021
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: 08/05/2020
Next Scheduled EDR Contact: 11/23/2020
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: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/10/2020
Number of Days to Update: 80

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

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: 11/02/2020
Next Scheduled EDR Contact: 02/15/2021
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: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 08/06/2020
Next Scheduled EDR Contact: 11/16/2020
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: 06/17/2020
Date Made Active in Reports: 09/10/2020
Number of Days to Update: 85

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 09/18/2020
Next Scheduled EDR Contact: 12/28/2020
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: 12/31/2018
Date Data Arrived at EDR: 08/14/2020
Date Made Active in Reports: 11/04/2020
Number of Days to Update: 82

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 08/14/2020
Next Scheduled EDR Contact: 11/30/2020
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: 07/20/2020
Date Data Arrived at EDR: 07/21/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 79

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Annually

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: 07/29/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 08/25/2020
Number of Days to Update: 22

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 12/14/2020
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: 07/24/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 10/21/2020
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 10/14/2020
Next Scheduled EDR Contact: 02/01/2021
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: 04/27/2020
Date Data Arrived at EDR: 05/06/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 34

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 11/16/2020
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: 10/09/2019
Date Data Arrived at EDR: 10/11/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 70

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Annually

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: 10/01/2020
Next Scheduled EDR Contact: 01/18/2021
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: No Update Planned

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: No Update Planned

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: 08/05/2020
Date Data Arrived at EDR: 08/10/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 59

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 01/31/2021
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 01/15/2020
Number of Days to Update: 42
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 09/04/2020
Next Scheduled EDR Contact: 12/14/2020
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: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 08/31/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 08/06/2020
Next Scheduled EDR Contact: 11/16/2020
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: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 09/24/2020
Next Scheduled EDR Contact: 01/11/2021
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: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 10/27/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Quarterly

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.

Date of Government Version: 06/30/2020
Date Data Arrived at EDR: 07/15/2020
Date Made Active in Reports: 07/21/2020
Number of Days to Update: 6

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/18/2021
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: 09/22/2020
Next Scheduled EDR Contact: 01/04/2021
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: 10/06/2020
Next Scheduled EDR Contact: 01/18/2021
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: 08/08/2017
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 07/28/2020
Next Scheduled EDR Contact: 11/16/2020
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: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 08/21/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 07/29/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 08/25/2020
Number of Days to Update: 22

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/11/2021
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

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: 05/01/2020
Date Data Arrived at EDR: 05/21/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 84

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 08/25/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: Semi-Annually

MINES VIOLATIONS: MSHA Violation Assessment Data

Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 05/28/2020
Date Data Arrived at EDR: 05/28/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 77

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 09/10/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Quarterly

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: 05/06/2020
Date Data Arrived at EDR: 05/27/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 78

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 08/28/2020
Next Scheduled EDR Contact: 12/07/2020
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: 08/28/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: Varies

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: 06/22/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/10/2020
Number of Days to Update: 80

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 09/16/2020
Next Scheduled EDR Contact: 12/21/2020
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: 02/03/2020
Date Data Arrived at EDR: 03/03/2020
Date Made Active in Reports: 05/28/2020
Number of Days to Update: 86

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 09/15/2020
Next Scheduled EDR Contact: 12/14/2020
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: 06/27/2020
Date Data Arrived at EDR: 07/02/2020
Date Made Active in Reports: 09/28/2020
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 10/06/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites
A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 07/02/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 77
Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 10/08/2020
Next Scheduled EDR Contact: 01/25/2021
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: 05/31/2018
Date Data Arrived at EDR: 07/26/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 71
Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 08/19/2020
Next Scheduled EDR Contact: 12/07/2020
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.

Date of Government Version: 08/17/2020
Date Data Arrived at EDR: 08/17/2020
Date Made Active in Reports: 10/21/2020
Number of Days to Update: 65
Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 08/17/2020
Next Scheduled EDR Contact: 11/30/2020
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: 06/22/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/04/2020
Number of Days to Update: 74
Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 09/23/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing
list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 05/14/2019
Date Made Active in Reports: 07/17/2019
Number of Days to Update: 64
Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 08/14/2020
Next Scheduled EDR Contact: 11/23/2020
Data Release Frequency: Varies

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 08/19/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 09/04/2020
Number of Days to Update: 14

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 08/17/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: Varies

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 05/28/2020
Date Data Arrived at EDR: 05/29/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 75

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 08/25/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Varies

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: 06/04/2020
Date Data Arrived at EDR: 06/05/2020
Date Made Active in Reports: 08/17/2020
Number of Days to Update: 73

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 08/24/2020
Next Scheduled EDR Contact: 12/14/2020
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: 12/31/2018
Date Data Arrived at EDR: 06/16/2020
Date Made Active in Reports: 08/28/2020
Number of Days to Update: 73

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 09/18/2020
Next Scheduled EDR Contact: 12/28/2020
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: 07/20/2020
Date Data Arrived at EDR: 07/21/2020
Date Made Active in Reports: 10/07/2020
Number of Days to Update: 78

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 07/13/2020
Date Data Arrived at EDR: 07/16/2020
Date Made Active in Reports: 09/29/2020
Number of Days to Update: 75

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
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: 08/05/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 79

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 08/04/2020
Next Scheduled EDR Contact: 11/23/2020
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: 12/31/2019
Date Data Arrived at EDR: 04/15/2020
Date Made Active in Reports: 07/02/2020
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 10/05/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 05/18/2020
Date Data Arrived at EDR: 05/19/2020
Date Made Active in Reports: 07/31/2020
Number of Days to Update: 73

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 08/17/2020
Next Scheduled EDR Contact: 11/30/2020
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: 05/18/2020
Date Data Arrived at EDR: 05/18/2020
Date Made Active in Reports: 07/31/2020
Number of Days to Update: 74

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/17/2020
Next Scheduled EDR Contact: 11/30/2020
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: 07/06/2020
Date Data Arrived at EDR: 07/07/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 72

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 10/06/2020
Next Scheduled EDR Contact: 01/18/2021
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: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71
Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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: 05/28/2020
Date Data Arrived at EDR: 06/02/2020
Date Made Active in Reports: 08/14/2020
Number of Days to Update: 73
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 08/31/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 08/10/2020
Date Data Arrived at EDR: 08/10/2020
Date Made Active in Reports: 10/29/2020
Number of Days to Update: 80
Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 08/10/2020
Next Scheduled EDR Contact: 11/23/2020
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: 06/01/2020
Date Data Arrived at EDR: 06/02/2020
Date Made Active in Reports: 08/14/2020
Number of Days to Update: 73
Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 08/31/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Quarterly

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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: 08/21/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 08/27/2020
Number of Days to Update: 6
Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 08/20/2020
Next Scheduled EDR Contact: 12/28/2020
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 06/06/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/20/2020
Number of Days to Update: 72
Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71
Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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: 11/19/2019
Date Data Arrived at EDR: 01/07/2020
Date Made Active in Reports: 03/09/2020
Number of Days to Update: 62
Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 10/09/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Varies

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: 08/11/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: No Update Planned

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: 09/16/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: No Update Planned

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing

In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/20/2020
Number of Days to Update: 72

Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Quarterly

CIWQS: 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: 06/01/2020
Date Data Arrived at EDR: 06/02/2020
Date Made Active in Reports: 08/14/2020
Number of Days to Update: 73

Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 08/31/2020
Next Scheduled EDR Contact: 12/14/2020
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

Date of Government Version: 07/20/2020
Date Data Arrived at EDR: 07/21/2020
Date Made Active in Reports: 10/07/2020
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)
Produced water ponds sites

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)
Sampling point - public sites

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (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: 06/08/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/19/2020
Number of Days to Update: 71

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Varies

MINES MRDS: Mineral Resources Data System
Mineral Resources Data System

Date of Government Version: 04/06/2018
Date Data Arrived at EDR: 10/21/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 3

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 08/28/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: Varies

PCS ENF: Enforcement data
No description is available for this data

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29

Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Varies

PCS: Permit Compliance System
PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 07/14/2011
Date Data Arrived at EDR: 08/05/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 55

Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Semi-Annually

PCS INACTIVE: Listing of Inactive PCS Permits
An inactive permit is a facility that has shut down or is no longer discharging.

Date of Government Version: 11/05/2014
Date Data Arrived at EDR: 01/06/2015
Date Made Active in Reports: 05/06/2015
Number of Days to Update: 120

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Semi-Annually

HWTS: Hazardous Waste Tracking System

DTSC maintains the Hazardous Waste Tracking System that stores ID number information since the early 1980s and manifest data since 1993. The system collects both manifest copies from the generator and destination facility.

Date of Government Version: 10/13/2020
Date Data Arrived at EDR: 10/14/2020
Date Made Active in Reports: 11/03/2020
Number of Days to Update: 20

Source: Department of Toxic Substances Control
Telephone: 916-324-2444
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/18/2021
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.

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

COUNTY RECORDS

ALAMEDA COUNTY:

CS ALAMEDA: 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: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 53

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 06/30/2020
Date Data Arrived at EDR: 07/01/2020
Date Made Active in Reports: 07/17/2020
Number of Days to Update: 16

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA AMADOR: CUPA Facility List
Cupa Facility List

Date of Government Version: 05/18/2020
Date Data Arrived at EDR: 05/19/2020
Date Made Active in Reports: 06/01/2020
Number of Days to Update: 13

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA BUTTE: 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: 10/01/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 06/17/2020
Date Data Arrived at EDR: 06/18/2020
Date Made Active in Reports: 09/02/2020
Number of Days to Update: 76

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/06/2020
Date Data Arrived at EDR: 04/23/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 78

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 07/16/2020
Date Data Arrived at EDR: 07/22/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 78

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 10/20/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 08/13/2020
Date Made Active in Reports: 10/22/2020
Number of Days to Update: 70

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 10/20/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/13/2020
Date Data Arrived at EDR: 08/13/2020
Date Made Active in Reports: 10/22/2020
Number of Days to Update: 70

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 10/20/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: 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: 06/30/2020
Date Data Arrived at EDR: 07/01/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 78

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: 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: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: No Update Planned

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 05/19/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 06/15/2020
Number of Days to Update: 26

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 08/11/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 07/14/2020
Date Data Arrived at EDR: 07/16/2020
Date Made Active in Reports: 09/29/2020
Number of Days to Update: 75

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: 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: 08/11/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Varies

KERN COUNTY:

CUPA KERN: CUPA Facility List
A listing of sites included in the Kern County Hazardous Material Business Plan.

Date of Government Version: 07/28/2020
Date Data Arrived at EDR: 07/30/2020
Date Made Active in Reports: 10/13/2020
Number of Days to Update: 75

Source: Kern County Public Health
Telephone: 661-321-3000
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 07/28/2020
Date Data Arrived at EDR: 07/30/2020
Date Made Active in Reports: 10/14/2020
Number of Days to Update: 76

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: 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: 05/11/2020
Date Data Arrived at EDR: 05/12/2020
Date Made Active in Reports: 07/27/2020
Number of Days to Update: 76

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 08/21/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List
Cupa facility list

Date of Government Version: 08/13/2020
Date Data Arrived at EDR: 08/13/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 71

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 10/07/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/30/2020
Date Data Arrived at EDR: 01/31/2020
Date Made Active in Reports: 04/09/2020
Number of Days to Update: 69

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

LOS ANGELES COUNTY:

AOCONCERN: Key Areas of Concerns in Los Angeles County
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

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: N/A
Telephone: N/A
Last EDR Contact: 09/10/2020
Next Scheduled EDR Contact: 12/28/2020
Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 07/06/2020
Date Data Arrived at EDR: 07/10/2020
Date Made Active in Reports: 09/28/2020
Number of Days to Update: 80

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 10/01/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 07/13/2020
Date Data Arrived at EDR: 07/13/2020
Date Made Active in Reports: 09/29/2020
Number of Days to Update: 78

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 10/09/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 01/15/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 51

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 10/07/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Varies

LOS ANGELES AST: Active & Inactive AST Inventory
A listing of active & inactive above ground petroleum storage tank site locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58
Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 09/25/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Varies

LOS ANGELES CO LF METHANE: Methane Producing Landfills
This data was created on April 30, 2012 to represent known disposal sites in Los Angeles County that may produce and emanate methane gas. The shapefile contains disposal sites within Los Angeles County that once accepted degradable refuse material. Information used to create this data was extracted from a landfill survey performed by County Engineers (Major Waste System Map, 1973) as well as historical records from CalRecycle, Regional Water Quality Control Board, and Los Angeles County Department of Public Health

Date of Government Version: 04/30/2012
Date Data Arrived at EDR: 04/17/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 42
Source: Los Angeles County Department of Public Works
Telephone: 626-458-6973
Last EDR Contact: 10/12/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: No Update Planned

LOS ANGELES HM: Active & Inactive Hazardous Materials Inventory
A listing of active & inactive hazardous materials facility locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58
Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 09/25/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Varies

LOS ANGELES UST: Active & Inactive UST Inventory
A listing of active & inactive underground storage tank site locations and underground storage tank historical sites, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58
Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 09/25/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 03/25/2020
Date Data Arrived at EDR: 04/14/2020
Date Made Active in Reports: 07/01/2020
Number of Days to Update: 78
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 10/09/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Annually

UST EL SEGUNDO: 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: 10/07/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: No Update Planned

UST LONG BEACH: City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 04/22/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 65

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 06/27/2019
Date Data Arrived at EDR: 07/30/2019
Date Made Active in Reports: 10/02/2019
Number of Days to Update: 64

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 10/05/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: 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: 08/10/2020
Date Data Arrived at EDR: 08/12/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 72

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 08/04/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 09/23/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 07/28/2020
Date Data Arrived at EDR: 07/30/2020
Date Made Active in Reports: 07/31/2020
Number of Days to Update: 1

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 05/15/2020
Date Data Arrived at EDR: 06/02/2020
Date Made Active in Reports: 08/14/2020
Number of Days to Update: 73

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 08/19/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 07/13/2020
Date Data Arrived at EDR: 07/15/2020
Date Made Active in Reports: 07/31/2020
Number of Days to Update: 16

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 09/23/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

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: 08/19/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 09/05/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 08/19/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 07/29/2020
Date Data Arrived at EDR: 07/30/2020
Date Made Active in Reports: 10/13/2020
Number of Days to Update: 75

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 10/20/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 06/10/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 10/19/2020
Number of Days to Update: 77

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/02/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 07/02/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 79

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/02/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 07/01/2020
Date Data Arrived at EDR: 08/03/2020
Date Made Active in Reports: 10/19/2020
Number of Days to Update: 77

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/03/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 06/08/2020
Date Data Arrived at EDR: 06/10/2020
Date Made Active in Reports: 08/24/2020
Number of Days to Update: 75

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 08/25/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/26/2019
Number of Days to Update: 64

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 10/06/2020
Date Data Arrived at EDR: 10/07/2020
Date Made Active in Reports: 11/03/2020
Number of Days to Update: 27

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/15/2020
Next Scheduled EDR Contact: 12/28/2020
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 10/06/2020
Date Data Arrived at EDR: 10/07/2020
Date Made Active in Reports: 11/03/2020
Number of Days to Update: 27
Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/10/2020
Next Scheduled EDR Contact: 12/28/2020
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/18/2020
Date Data Arrived at EDR: 03/31/2020
Date Made Active in Reports: 06/15/2020
Number of Days to Update: 76
Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Quarterly

ML SACRAMENTO: 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: 02/24/2020
Date Data Arrived at EDR: 03/31/2020
Date Made Active in Reports: 06/17/2020
Number of Days to Update: 78
Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List
Cupa facility list

Date of Government Version: 08/04/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/22/2020
Number of Days to Update: 78
Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: 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: 08/04/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/26/2020
Number of Days to Update: 82
Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: 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: 06/01/2020
Date Data Arrived at EDR: 06/02/2020
Date Made Active in Reports: 08/14/2020
Number of Days to Update: 73

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 08/31/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Quarterly

LF SAN DIEGO: 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: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

SAN DIEGO CO LOP: 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: 07/14/2020
Date Data Arrived at EDR: 07/16/2020
Date Made Active in Reports: 09/29/2020
Number of Days to Update: 75

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

SAN DIEGO CO SAM: 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: 08/25/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

CUPA SAN FRANCISCO CO: CUPA Facility Listing

Cupa facilities

Date of Government Version: 08/03/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/22/2020
Number of Days to Update: 78

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

LUST SAN FRANCISCO: 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: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: No Update Planned

UST SAN FRANCISCO: Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 08/03/2020
Date Data Arrived at EDR: 08/05/2020
Date Made Active in Reports: 10/26/2020
Number of Days to Update: 82

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: 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: 09/10/2020
Next Scheduled EDR Contact: 12/28/2020
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 07/27/2020
Date Data Arrived at EDR: 08/12/2020
Date Made Active in Reports: 10/26/2020
Number of Days to Update: 75

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 08/11/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 02/20/2020
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 04/24/2020
Number of Days to Update: 64

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 09/11/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/29/2019
Date Data Arrived at EDR: 03/29/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 61

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 09/01/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: 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: 08/11/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: No Update Planned

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 05/08/2020
Date Data Arrived at EDR: 05/12/2020
Date Made Active in Reports: 07/27/2020
Number of Days to Update: 76

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 08/11/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Varies

HIST LUST SANTA CLARA: 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

LUST SANTA CLARA: 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: 08/19/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: No Update Planned

SAN JOSE HAZMAT: Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 07/30/2020
Date Data Arrived at EDR: 07/31/2020
Date Made Active in Reports: 10/16/2020
Number of Days to Update: 77

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: 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: 08/11/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: 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: 08/11/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 08/13/2019
Number of Days to Update: 68

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 08/25/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 08/25/2020
Date Data Arrived at EDR: 08/26/2020
Date Made Active in Reports: 09/16/2020
Number of Days to Update: 21

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 08/25/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 07/07/2020
Date Data Arrived at EDR: 07/08/2020
Date Made Active in Reports: 09/25/2020
Number of Days to Update: 79

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 09/16/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 07/01/2020
Date Data Arrived at EDR: 07/02/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 77

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 09/16/2020
Next Scheduled EDR Contact: 01/04/2021
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 02/04/2020
Date Data Arrived at EDR: 02/05/2020
Date Made Active in Reports: 04/15/2020
Number of Days to Update: 70

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 10/02/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 05/26/2020
Date Data Arrived at EDR: 05/28/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 77

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 08/25/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 08/11/2020
Date Data Arrived at EDR: 08/12/2020
Date Made Active in Reports: 10/26/2020
Number of Days to Update: 75

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 07/14/2020
Date Data Arrived at EDR: 07/16/2020
Date Made Active in Reports: 09/29/2020
Number of Days to Update: 75

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 08/06/2020
Date Data Arrived at EDR: 08/06/2020
Date Made Active in Reports: 10/26/2020
Number of Days to Update: 81

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 10/28/2020
Next Scheduled EDR Contact: 02/15/2021
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: 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: 10/13/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: 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: 07/10/2020
Date Data Arrived at EDR: 07/22/2020
Date Made Active in Reports: 10/08/2020
Number of Days to Update: 78

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Quarterly

LF VENTURA: 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: 09/23/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: No Update Planned

LUST VENTURA: 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: 08/04/2020
Next Scheduled EDR Contact: 11/23/2020
Data Release Frequency: No Update Planned

MED WASTE VENTURA: 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: 07/10/2020
Date Data Arrived at EDR: 07/22/2020
Date Made Active in Reports: 10/07/2020
Number of Days to Update: 77

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 10/19/2020
Next Scheduled EDR Contact: 02/01/2021
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 05/26/2020
Date Data Arrived at EDR: 06/09/2020
Date Made Active in Reports: 08/20/2020
Number of Days to Update: 72

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 06/23/2020
Date Data Arrived at EDR: 06/29/2020
Date Made Active in Reports: 09/15/2020
Number of Days to Update: 78

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 10/07/2020
Next Scheduled EDR Contact: 01/11/2021
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 08/06/2020
Date Data Arrived at EDR: 08/07/2020
Date Made Active in Reports: 10/26/2020
Number of Days to Update: 80

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 11/03/2020
Next Scheduled EDR Contact: 02/08/2021
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: 08/10/2020
Date Data Arrived at EDR: 10/20/2020
Date Made Active in Reports: 11/02/2020
Number of Days to Update: 13

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 10/20/2020
Next Scheduled EDR Contact: 11/23/2020
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/16/2019
Number of Days to Update: 36

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 10/09/2020
Next Scheduled EDR Contact: 01/18/2021
Data Release Frequency: Annually

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: 01/01/2019
Date Data Arrived at EDR: 04/29/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 72

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 10/30/2020
Next Scheduled EDR Contact: 02/08/2021
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/19/2019
Date Made Active in Reports: 09/10/2019
Number of Days to Update: 53

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 10/07/2020
Next Scheduled EDR Contact: 01/25/2021
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 10/02/2019
Date Made Active in Reports: 12/10/2019
Number of Days to Update: 69

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 08/11/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 09/02/2020
Next Scheduled EDR Contact: 12/21/2020
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: Endeavor Business Media
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 Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data
Source: Endeavor Business Media
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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.

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

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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 and Wildlife
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

CIVIC CENTER IMPROVEMENTS
NOT REPORTED
MALIBU, CA 90265

TARGET PROPERTY COORDINATES

Latitude (North):	34.043696 - 34° 2' 37.31''
Longitude (West):	118.675813 - 118° 40' 32.93''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	345309.8
UTM Y (Meters):	3768073.0
Elevation:	415 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5630751 MALIBU BEACH, 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 principle 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).

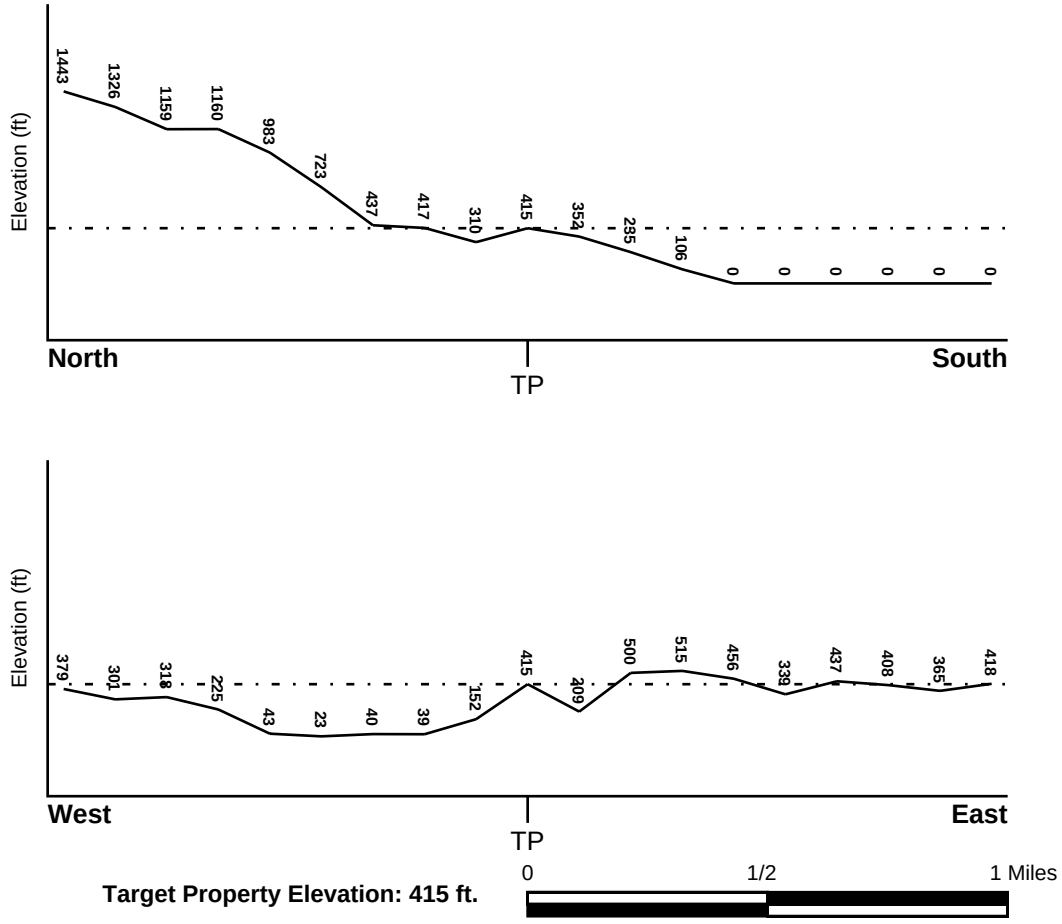
TOPOGRAPHIC INFORMATION

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 WSW

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
06037C1541F	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06037C1537F	FEMA FIRM Flood data
06037C1543F	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
MALIBU BEACH	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

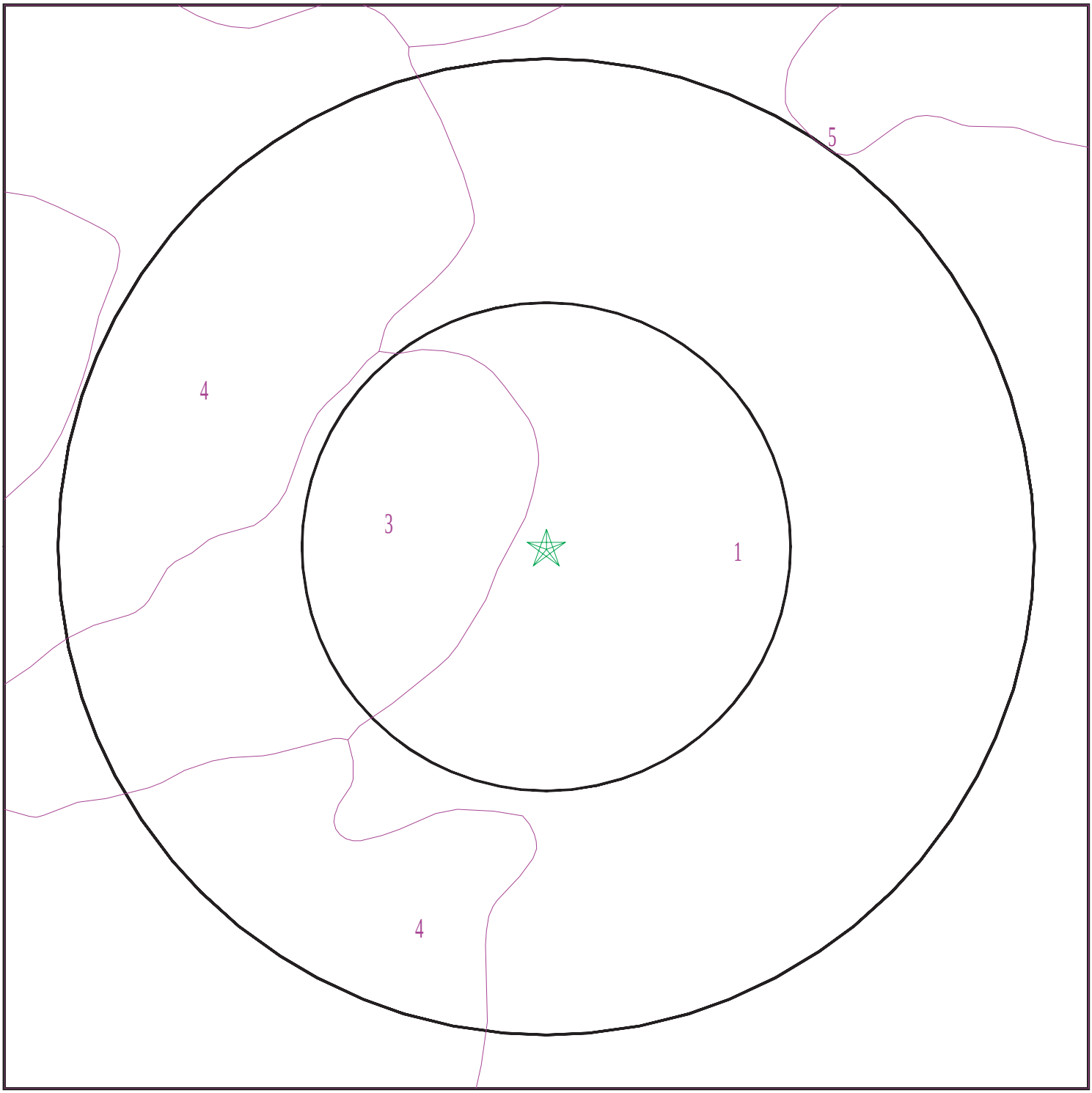
Era:	Cenozoic
System:	Tertiary
Series:	Miocene
Code:	Tm *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratified Sequence

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 - 6256201.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Civic Center Improvements	CLIENT:	Psomas
ADDRESS:	Not Reported Malibu CA 90265	CONTACT:	Megan Larum
LAT/LONG:	34.043696 / 118.675813	INQUIRY #:	6256201.2s
		DATE:	November 05, 2020 7:55 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: Chumash

Soil Surface Texture: gravelly loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

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	gravelly loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.06 Min: 0	Max: Min:
2	7 inches	8 inches	weathered bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.06 Min: 0	Max: Min:

Soil Map ID: 2

Soil Component Name: Tongva

Soil Surface Texture: moderately decomposed plant material

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: 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	1 inches	moderately decomposed plant material	Not reported	Not reported	Max: 0.06 Min: 0	Max: Min:
2	1 inches	3 inches	loam	Not reported	Not reported	Max: 0.06 Min: 0	Max: Min:
3	3 inches	29 inches	loam	Not reported	Not reported	Max: 0.06 Min: 0	Max: Min:
4	29 inches	29 inches	weathered bedrock	Not reported	Not reported	Max: 0.06 Min: 0	Max: Min:

Soil Map ID: 3

Soil Component Name: Sapwi

Soil Surface Texture: moderately decomposed plant material

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: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 96 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	0 inches	moderately decomposed plant material	Not reported	Not reported	Max: 0.06 Min: 0	Max: Min:

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	0 inches	3 inches	loam	Not reported	Not reported	Max: 0.06 Min: 0	Max: Min:
3	3 inches	23 inches	stony clay loam	Not reported	Not reported	Max: 0.06 Min: 0	Max: Min:
4	23 inches	37 inches	very stony clay loam	Not reported	Not reported	Max: 0.06 Min: 0	Max: Min:
5	37 inches	37 inches	unweathered bedrock	Not reported	Not reported	Max: 0.06 Min: 0	Max: Min:

Soil Map ID: 4

Soil Component Name: Urban land

Soil Surface Texture: moderately decomposed plant material

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:
Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

No Layer Information available.

Soil Map ID: 5

Soil Component Name: Rock outcrop

Soil Surface Texture: moderately decomposed plant material

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:

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 55 inches

Depth to Watertable Min: > 0 inches

No Layer Information available.

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 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	USGS40000139992	1/2 - 1 Mile WSW
2	USGS40000140053	1/2 - 1 Mile WNW
3	USGS40000139960	1/2 - 1 Mile SW
A4	USGS40000139958	1/2 - 1 Mile SW
A5	USGS40000139954	1/2 - 1 Mile SW
6	USGS40000139946	1/2 - 1 Mile SW
A7	USGS40000139951	1/2 - 1 Mile SW
A8	USGS40000139955	1/2 - 1 Mile SW
B9	USGS40000139950	1/2 - 1 Mile SW
C10	USGS40000139920	1/2 - 1 Mile SSW
C11	USGS40000139921	1/2 - 1 Mile SSW
C12	USGS40000139919	1/2 - 1 Mile SSW
13	USGS40000139935	1/2 - 1 Mile SW
B14	USGS40000139942	1/2 - 1 Mile SW
C15	USGS40000139916	1/2 - 1 Mile SSW
C16	USGS40000139915	1/2 - 1 Mile SSW
D17	USGS40000139917	1/2 - 1 Mile SSW
18	USGS40000139961	1/2 - 1 Mile SW
D19	USGS40000139918	1/2 - 1 Mile SSW
20	USGS40000139924	1/2 - 1 Mile SW
21	USGS40000139940	1/2 - 1 Mile SW

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

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

No Wells Found

PHYSICAL SETTING SOURCE MAP - 6256201.2s

0 1/4 1/2 1 Miles

- 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:	Civic Center Improvements	CLIENT:	Psomas
ADDRESS:	Not Reported Malibu CA 90265	CONTACT:	Megan Larum
		INQUIRY #:	6256201.2s
LAT/LONG:	34.043696 / 118.675813	DATE:	November 05, 2020 7:55 pm

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

1
WSW **FED USGS** **USGS40000139992**
1/2 - 1 Mile
Lower

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001S017W32F006S	Type:	Well
Description:	Not Reported	HUC:	Not Reported
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	20030102	Well Depth:	25
Well Depth Units:	ft	Well Hole Depth:	25
Well Hole Depth Units:	ft		

2
WNW **FED USGS** **USGS40000140053**
1/2 - 1 Mile
Lower

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001S017W32C001S	Type:	Well
Description:	Not Reported	HUC:	Not Reported
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Unconfined single aquifer
Construction Date:	20030203	Well Depth:	30
Well Depth Units:	ft	Well Hole Depth:	30
Well Hole Depth Units:	ft		

3
SW **FED USGS** **USGS40000139960**
1/2 - 1 Mile
Lower

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001S017W32K004S	Type:	Well
Description:	Not Reported	HUC:	Not Reported
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Other aquifers	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	Not Reported
Well Depth:	25	Well Depth Units:	ft
Well Hole Depth:	25	Well Hole Depth Units:	ft

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

A4
SW
1/2 - 1 Mile
Lower

FED USGS **USGS40000139958**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001S017W32K001S	Type:	Well
Description:	Not Reported	HUC:	Not Reported
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Other aquifers	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	Not Reported
Well Depth:	24.9	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

---

A5
SW
1/2 - 1 Mile
Lower

FED USGS **USGS40000139954**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001S017W32K002S	Type:	Well
Description:	Not Reported	HUC:	Not Reported
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Other aquifers	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	Not Reported
Well Depth:	52.8	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

---

6
SW
1/2 - 1 Mile
Lower

FED USGS **USGS40000139946**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001S017W32K003S	Type:	Well
Description:	Not Reported	HUC:	Not Reported
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Other aquifers	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	Not Reported
Well Depth:	13.9	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

A7
SW
1/2 - 1 Mile
Lower

FED USGS **USGS40000139951**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001S017W32L008S	Type:	Well
Description:	Not Reported	HUC:	Not Reported
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Other aquifers	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	Not Reported
Well Depth:	22.5	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

---

A8
SW
1/2 - 1 Mile
Lower

FED USGS **USGS40000139955**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001S017W32L009S	Type:	Well
Description:	Not Reported	HUC:	Not Reported
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Other aquifers	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	Not Reported
Well Depth:	19.3	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

---

B9
SW
1/2 - 1 Mile
Lower

FED USGS **USGS40000139950**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001S017W32P005S	Type:	Well
Description:	Not Reported	HUC:	Not Reported
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

C10
SSW
1/2 - 1 Mile
Lower

FED USGS **USGS40000139920**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	MALIBU LAGOON BERM PIEZOMETER 5FT		
Type:	Well: Test hole not completed as a well		
Description:	LAGOON BERM SITE-PIEZOMETER REMOVED AFTER SAMPLING		
HUC:	Not Reported	Drainage Area:	Not Reported
Drainage Area Units:	Not Reported	Contrib Drainage Area:	Not Reported
Contrib Drainage Area Unts:	Not Reported	Aquifer:	Other aquifers
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	20090723	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

C11
SSW
1/2 - 1 Mile
Lower

FED USGS **USGS40000139921**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	MALIBU LAGOON BERM PIEZOMETER 12FT		
Type:	Well: Test hole not completed as a well		
Description:	LAGOON BERM SITE-PIEZOMETER REMOVED AFTER SAMPLING		
HUC:	Not Reported	Drainage Area:	Not Reported
Drainage Area Units:	Not Reported	Contrib Drainage Area:	Not Reported
Contrib Drainage Area Unts:	Not Reported	Aquifer:	Not Reported
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	20100420	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

C12
SSW
1/2 - 1 Mile
Lower

FED USGS **USGS40000139919**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	MALIBU LAGOON BERM PIEZO		
Type:	Well: Test hole not completed as a well		
Description:	LOGOON BERM SITE-PIEZOMETER REMOVED AFTER SAMPLING		
HUC:	Not Reported	Drainage Area:	Not Reported
Drainage Area Units:	Not Reported	Contrib Drainage Area:	Not Reported
Contrib Drainage Area Unts:	Not Reported	Aquifer:	Other aquifers
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	20090723	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

13
SW
1/2 - 1 Mile
Lower

FED USGS **USGS40000139935**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001S017W32P001S	Type:	Well
Description:	Not Reported	HUC:	Not Reported
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Other aquifers	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	Not Reported
Well Depth:	14.5	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

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B14
SW
1/2 - 1 Mile
Lower

FED USGS **USGS40000139942**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001S017W32P006S	Type:	Well
Description:	Not Reported	HUC:	Not Reported
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	14.7
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

C15
SSW
1/2 - 1 Mile
Lower

FED USGS **USGS40000139916**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	MALIBU LAGOON BERM - DEE		
Type:	Well: Test hole not completed as a well		
Description:	PIEZOMETER REMOVED AFTER SAMPLING		
HUC:	Not Reported	Drainage Area:	Not Reported
Drainage Area Units:	Not Reported	Contrib Drainage Area:	Not Reported
Contrib Drainage Area Unts:	Not Reported	Aquifer:	Other aquifers
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	20090723	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

C16
SSW
1/2 - 1 Mile
Lower

FED USGS **USGS40000139915**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	MALIBU LAGOON BERM - SHA		
Type:	Well: Test hole not completed as a well		
Description:	PIEZOMETER REMOVED AFTER SAMPLING		
HUC:	Not Reported	Drainage Area:	Not Reported
Drainage Area Units:	Not Reported	Contrib Drainage Area:	Not Reported
Contrib Drainage Area Unts:	Not Reported	Aquifer:	Other aquifers
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	20090723	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

D17
SSW
1/2 - 1 Mile
Lower

FED USGS **USGS40000139917**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001S017W32Q001S	Type:	Well
Description:	Not Reported	HUC:	Not Reported
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Other aquifers	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	Not Reported
Well Depth:	14.5	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

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18
SW
1/2 - 1 Mile
Lower

FED USGS **USGS40000139961**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001S017W32M004S	Type:	Well
Description:	Not Reported	HUC:	Not Reported
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Other aquifers	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	Not Reported
Well Depth:	14.8	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

D19
SSW
1/2 - 1 Mile
Lower

FED USGS **USGS40000139918**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001S017W32Q002S	Type:	Well
Description:	Not Reported	HUC:	Not Reported
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Other aquifers	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	Not Reported
Well Depth:	14.3	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

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20
SW
1/2 - 1 Mile
Lower

FED USGS **USGS40000139924**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001S017W32P002S	Type:	Well
Description:	Not Reported	HUC:	Not Reported
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Other aquifers	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	Not Reported
Well Depth:	33.1	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

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21
SW
1/2 - 1 Mile
Lower

FED USGS **USGS40000139940**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	001S017W32P004S	Type:	Well
Description:	Not Reported	HUC:	Not Reported
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Other aquifers	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	Not Reported
Well Depth:	7.1	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

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RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
90265	67	6

Federal EPA Radon Zone for LOS ANGELES 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 LOS ANGELES COUNTY, CA

Number of sites tested: 63

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.711 pCi/L	98%	2%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	0.933 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 and Wildlife
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: Dept of Conservation, Geologic Energy Management Division
Telephone: 916-323-1779
Oil and Gas well locations in the state.

California Earthquake Fault Lines
Source: California Division of Mines and Geology
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.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
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.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

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.

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 F

Noise Calculations

Construction Generated Noise

Building Type	Industrial, Parking Garage, Religious, Amusement & Retail		**Distance (ft)**
Construction Noise at 50 Feet (dBA Leq)			50
Construction Phase	**All Applicable Equipment in Use**[1]	**Minimum Required Equipment in Use**[1]	
Ground Clearing/Demolition	84	83	
Excavation	89	71	
Foundation Construction	77	77	
Building Construction	84	72	
Finishing and Site Cleanup	89	74	

Land Use1			
Maximum Construction Noise (dBA Leq)			250
Construction Phase	**All Applicable Equipment in Use**[1]	**Minimum Required Equipment in Use**[1]	
Ground Clearing/Demolition	70	69	
Excavation (Site Preparation)	75	57	
Foundation Construction	63	63	
Building Construction	70	58	
Paving	75	60	
Average Construction Noise (dBA Leq)			250
Construction Phase	**All Applicable Equipment in Use**[1]	**Minimum Required Equipment in Use**[1]	
Ground Clearing/Demolition	70	69	
Excavation (Site Preparation)	75	57	
Foundation Construction	63	63	
Building Construction	70	58	
Paving	75	60	

Source: Bolt, Beranek and Newman, "Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances," prepared for the USEPA, December 31, 1971. Based on analysis for Office Building, Hotel, Hospital, School, and Public Works.

Receptor	Distance from work area - feet	Noise Level at Receptor: All activities except paving		Paving	
		Lmax	Leq	Lmax	Leq
Watermains					
Serra Rd 1	400	66	63	66	62
Serra Rd 2	40	86	83	86	82
Sweetwater Mesa Rd 1	60	82	80	82	79
Sweetwater Mesa Rd 2	20	92	89	92	88
Sweetwater Mesa Rd 3	55	83	81	83	80
Sweetwater Mesa Rd 4-home	55	83	81	83	80
Sweetwater Mesa Rd 4-ADU	25	90	87	90	86
Sweetwater Mesa Rd 5	55	83	81	83	80
Sweetwater Mesa Rd 6	65	82	79	82	78
Pressure Regulating Stations					
Serra Rd/Palm Canyon Rd	170	73	71	73	70
Serra Rd/Mariposa de Oro Rd	60	82	80	82	79
Serra Tank Site	120	76	74	76	73
Watermains					
Min		66	63	63	62
Max		92	89	92	88

Equipment	Maximum Noise Level at 50'	Typical Duty Cycle	Leq at 50'
All activities except paving			
Backhoe	80	40%	76.0
Dump truck	84	40%	80.0
sum	84.0		81.5
Paving			
Roller	74	40%	70.0
Dump truck	84	40%	80.0
sum	84.0		80.4

Construction Generated Vibration

Land Use1		Closest Distance (feet):	20
	Approximate RMS a 66	Approximate RMS 73.000	
Equipment	inch/second	inch/second	
Vibratory roller	0.21	0.293	
Large bulldozer	0.089	0.124	
Small bulldozer	0.003	0.004	
Jackhammer	0.035	0.049	
Loaded trucks	0.076	0.106	
	Criteria	0.250	1700
Land Use2		Closest Distance (feet):	60
	Approximate RMS a Velocity at 25 ft,	Approximate RMS Velocity Level,	
Equipment	inch/second	inch/second	
Vibratory roller	0.21	0.056	
Large bulldozer	0.089	0.024	
Small bulldozer	0.003	0.001	
Jackhammer	0.035	0.009	
Loaded trucks	0.076	0.020	
	Criteria	0.250	
Land Use3		Closest Distance (feet):	250
	Approximate RMS a Velocity at 25 ft,	Approximate RMS Velocity Level,	
Equipment	inch/second	inch/second	
Vibratory roller	0.21	0.007	
Large bulldozer	0.089	0.003	
Small bulldozer	0.003	0.000	
Jackhammer	0.035	0.001	
Loaded trucks	0.076	0.002	
	Criteria	0.250	

Based on distance to nearest structure

[1.] Determined based on use of jackhammers or pneumatic hammers that may be used for pavement demolition at a distance of 25 feet

Notes: RMS velocity calculated from vibration level (VdB) using the reference of one microinch/second.

Source: Based on methodology from the United States Department of Transportation Federal Transit Administration, *Transit Noise and Vibration Impact Assessment* (2006).

Appendix G

Mitigation Monitoring Program

Mitigation Program	Implementing Action(s)	Time of Verification	Responsible Party
BIOLOGICAL RESOURCES			
BIO-1. Should construction occur between November 1 and March 1, a pre-construction monarch overwintering roost survey shall be conducted by a qualified Biologist in the Eucalyptus groves on, and immediately adjacent to, the Project site. If a roosting population is detected, and the Biologist determines that roosting activities may be disrupted by increased Project activity in the area, the Biologist will determine an appropriate protective buffer depending on the nature of the construction activity. The protective buffer shall be no less than 200 feet and no more than 500 feet. The roosting area will be protected within the designated buffer until roosting has ended. Any protective buffers will be mapped on construction plans and designated as "Environmentally Sensitive Areas". Construction can proceed within the protective buffer when the qualified Biologist has determined that the roost is no longer active.	Pre-construction monarch overwintering roost survey	Construction activities between November 1 and March 1	District Construction Contractor
MBIO-2. To the extent possible, vegetation removal will be conducted during the non-breeding season (September 1 to February 28) in order to minimize direct impacts on nesting birds and raptors. If construction activities would be initiated during the breeding season for nesting birds/raptors (March 1–August 31), a pre-construction survey will be conducted by a qualified Biologist within three days prior to the initiation of construction (including demolition of structures). The area will be surveyed for 2 hours between dawn and 10:00 a.m. on five occasions with at least one week between surveys. If there is appropriate habitat for owls on site, on at least three of the surveys, surveys will also be conducted during the period immediately before nightfall. The nesting bird/raptor survey area will include a buffer of 300 feet around the work area for nesting birds and a buffer of 500 feet around the work area for nesting raptors (including burrowing owl). If the Biologist does not find any active nests in or immediately adjacent to the impact area, construction activities can proceed. If the Biologist detects an active nest within or immediately adjacent to the construction area and determines that the nest may be impacted or breeding activities substantially disrupted by increased activity around the nest, the Biologist will determine an appropriate protective buffer around the nest depending on the sensitivity of the species and the nature of the construction activity. The protective buffer shall be between 25 to 300 feet for nesting birds; 300 to 500 feet for nesting raptors. The active nest will be protected within the designated buffer until nesting activity has ended. Any protective buffers will be mapped on construction plans and designated as "Environmentally Sensitive Areas". Construction can proceed within the protective buffer when the qualified Biologist has determined that the nest is no longer active (i.e., fledglings have left the nest or the nest has failed).	Pre-construction nesting bird survey	Three days prior to the initiation of construction during the breeding season (March 1 to August 31)	District Construction Contractor
CULTURAL RESOURCES			
CULT-1. The District shall retain a qualified Project Archaeologist who meets the Secretary of the Interior's Standards and Guidelines for Archaeology and a professional Native American Monitor (Tribal Representative) approved by the Tribe that requested AB 52 consultation prior to the initiation of ground-disturbing activities to observe all ground-disturbing activities within native sediment at the Project site. If cultural resources are encountered, the qualified archaeologist and Native American monitor, in	Conduct archaeological observation and salvage during excavation activities	Verify implementation during construction	District Construction Contractor

Mitigation Program	Implementing Action(s)	Time of Verification	Responsible Party
consultation with the Engineer, will have the authority to halt ground disturbing activities within a minimum 100-foot buffer of the find and for a reasonable period of time to assess and document potential finds in real time as approved by the Engineer. In the event that archaeological resources are discovered at the Project site, the handling of the discovered resources shall occur, as described below. All artifacts discovered shall be inventoried and analyzed by the Project Archaeologist. If any artifacts of Native American origin are discovered, the Project Archaeologist shall notify the Engineer and property owner and all activities in the immediate vicinity of the find shall halt, in consultation with the Engineer, within a minimum 100-foot buffer of the find and for a reasonable period of time as determined by the Project Archaeologist and Tribal Representative. The Project Archaeologist and Tribal Representative will analyze the Native American artifacts for identification as everyday life and/or religious or sacred items, cultural affiliation, temporal placement, and function, as deemed possible. The significance of Native American resources shall be evaluated in accordance with the provisions of CEQA and shall consider the religious beliefs, customs, and practices of the affiliated tribes. All items found in association with Native American human remains shall be considered grave goods or sacred in origin and subject to special handling. Non-Native American artifacts shall be inventoried, assessed, and analyzed for cultural affiliation, personal affiliation (prior ownership), function, and temporal placement. After analysis and reporting, these artifacts shall be subjected to curation or returned to the property owner, as deemed appropriate. Non-Native American artifacts shall be inventoried, assessed, and analyzed for cultural affiliation, personal affiliation (prior ownership), function, and temporal placement. After analysis and reporting, these artifacts shall be subjected to curation or returned to the property owner, as deemed appropriate. Once grading activities have ceased or the Project Archaeologist, in consultation with the lead agency and Tribal Representative, determines that monitoring is no longer necessary, monitoring activities can be discontinued. A report of findings, including an itemized inventory of recovered artifacts, shall be prepared upon completion of the steps outlined above. A copy of the report shall also be filed with the SCCIC.			

Mitigation Program	Implementing Action(s)	Time of Verification	Responsible Party
GEOLOGY AND SOILS			
GEO-1. Prior to approval of final plans and specifications for the proposed Project, the Engineer, or his/her designee, shall review the Project plans to confirm that all recommendations in the *Geotechnical Evaluation, Sweetwater Mesa Tank, Civic Center Improvement Project, Los Angeles County Waterworks, Malibu, California* (dated October 9, 2020 and prepared by Ninyo & Moore) and the *Updated Geotechnical Evaluation, Sweetwater Mesa Water Main Replacements, Civic Center Improvement Project, Los Angeles County Waterworks, Malibu, California* (dated October 9, 2020 and prepared by Ninyo & Moore) in addition to any future geotechnical reports have been fully and appropriately incorporated. These recommendations include, but are not limited to: • Geologic Hazards including fault rupture and liquefaction potential, and seismically induced settlement • Earthwork, including pre-construction conference, clearing and site preparation, tank pad and retaining wall foundation preparation, excavation characteristics, temporary excavations, shoring, excavation bottom stability, fill material, fill placement and compaction. • Pipe Bedding, Pipe Anchors, and Backfill Stabilizers • Seismic Design Considerations • Foundations • Tank Slab-On-Grade • Retaining Walls • Underground Utilities including excavation bottom stability, pipe bedding, trench backfill, lateral earth pressures for thrust blocks, modulus of soil reaction, pavement reconstruction • Corrosivity • Concrete • Drainage	Incorporation of geotechnical recommendations	Prior to approval of final plans and specifications	District Construction Contractor
GEO-2. Prior to the initiation of grading, the District shall retain a qualified Paleontologist to be available "on-call" throughout the duration of grading activities that exceed five feet in depth in previously undisturbed soils. In the event that prehistoric or historic subsurface cultural resources are discovered during ground-disturbing activities, all work within 50 feet of the resources will be halted and the District will consult with the qualified Paleontologist to assess the significance of the find according to Section 15064.5 of the California Environmental Quality Act (CEQA) Guidelines. If any find is determined to be significant, the District and the Paleontologist will meet to determine the appropriate avoidance measures or other appropriate mitigation. The District will make the final determination. All significant cultural materials recovered will be reviewed by the consulting Paleontologist and discussed with the District. The District and the consulting	Retain a qualified professional paleontologist	Prior to the initiation of grading	District Construction Contractor

Mitigation Program	Implementing Action(s)	Time of Verification	Responsible Party
Paleontologist will discuss the subject to scientific analysis, professional museum curation, and documentation according to current professional standards and the District will make the final determination. The qualified Paleontologist shall be retained to review Project design plans and to consult with the District as to when and where monitoring is required during construction. Based on observations, monitoring may be reduced or discontinued if the qualified Paleontologist determines that the possibility of encountering fossiliferious deposits is low. The qualified Paleontologist will prepare a final monitoring report to be submitted to the District.			
HYDROLOGY AND WATER QUALITY			
HYDRO-1. Prior to initiation of construction, EMWD shall ensure the development and implementation of an SWPPP for the proposed Project site, as required by and in compliance with, the NPDES Construction General Permit. Prior to initiation of construction, EMWD shall ensure that a Notice of Intent with the State Water Resources Control Board (SWRCB) has been filed in order to obtain coverage under the Construction General Permit. Pursuant to the permit requirements, the Construction Contractor shall develop a Storm Water Pollution Prevention Plan (SWPPP) that incorporates Best Management Practices (BMPs) for reducing or eliminating construction-related pollutants in the site runoff. The SWPPP shall include erosion- and sediment-control BMPs that meet or exceed measures required by the NPDES Construction General Permit, as well as BMPs that control the other potential construction-related pollutants. The SWPPP would be designed and implemented to address site-specific conditions related to Project construction and BMPs would be selected and implemented based on the phase of construction and weather conditions. The SWPPP would identify and describe the sources of sediment and other pollutants that may affect the quality of storm water discharges; it would also ensure the implementation and maintenance of BMPs to reduce or eliminate sediment, pollutants adhering to sediment, and other non-sediment pollutants in storm water and non-storm water discharges. Examples of BMPs that may be used include: • synthetic non-biodegradable rolled erosion control products (RECPs) including plastic netting, plastic mesh, synthetic fiber with netting, and bonded synthetic fibers; • biodegradable RECPs including erosion control blankets/mates made of jute, wood fiber, straw, coconut fiber, and straw coconut fiber; • chemical dust suppressants including mulch and fiber-based dust palliatives, salts and brines, non-petroleum based organics, petroleum based organics, synthetic polymers, clay additives, and electrochemical products; • street sweeping and vacuuming; • storm drain inlet protection consisting of a sediment filter or impounding area; and • water conservation practices to avoid leaks and discharges.	File Notice of Intent with State Water Resources Control Board/ Develop a SWPPP	Prior to initiation of construction/ verify implementation during construction	District Construction Contractor

Mitigation Program	Implementing Action(s)	Time of Verification	Responsible Party
TRIBAL CULTURAL RESOURCES			
TO BE COMPLETED ONCE THE AB 52 PROCESS IS CONCLUDED.			
TCR-1. If cultural resources are encountered, the Native American monitor, in conjunction with a qualified archaeologist, who meets the Secretary of the Interior's Standards and Guidelines for Archaeology, will have the authority to halt ground disturbing activities, in consultation with the Engineer, within a minimum 100-foot buffer of the find and for a reasonable period of time to assess and document potential finds in real time as approved by the Engineer.	Retain a Native American Monitor	Prior to the commencement of earthwork activities	District Construction Contractor
TCR-2. If human remains or funerary objects are encountered during any activities associated with the project, work in the immediate vicinity (within a 100-foot buffer of the find) shall cease and the County Coroner shall be contacted pursuant to State Health and Safety Code §7050.5 and that code enforced for the duration of the project.	Notify County coroner if Native American human remains are encountered	During earthwork activities	District Construction Contractor
TCR-3. The Lead Agency and/or applicant shall, in good faith, consult with the tribe that requested AB 52 consultation on the disposition and treatment of any Tribal Cultural Resource encountered during all ground disturbing activities.	Tribal consultation on the disposition and treatment of any resources encountered	During ground disturbing activities	District Construction Contractor
TCR-4. Any and all archaeological/cultural documents created as a part of the Project (isolate records, site records, survey reports, testing reports, and monitoring reports) shall be provided to the tribe that requested AB 52 consultation.	Provide archaeological/cultural documents to Tribes	Commencement of earthwork activities	District Construction Contractor

Appendix H

Curriculum Vitae

CONTACT INFORMATION

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Santa Ana, CA 92707
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714.481.8041

EDUCATION

1999/BS/Natural Resources, Planning and Interpretation/Humboldt State University

PROFESSIONAL EXPERIENCE (EMPLOYMENT)

With Psomas for 24 years; with other firms for 1 year

PROFESSIONAL AFFILIATIONS

American Society of Civil Engineers

Environmental and Water Resources Institute

Jennifer Marks – Psomas

Principal-in-Charge/Project Director

Summary

Principal with 23 years of experience in environmental documentation and analysis consistent with CEQA and NEPA. Career has focused on a wide variety of projects, including public works assignments related to water resources, and various utility infrastructure projects. Has also performed environmental consulting services for mixed-use, residential, office, higher education, and resort developments. Managed multiple water and wastewater infrastructure projects, including projects for the Santa Margarita Water District; Irvine Ranch Water District; City of Anaheim Public Utilities Department for water projects and Public Works Department for sewer projects; and the Water Replenishment District of Southern California. Prepared environmental documentation and supplemental information to meet specific agency requirements, including those for the following agencies: Caltrans; State Water Resources Control Board; U.S. Bureau of Reclamation; U.S. Environmental Protection Agency; USACE; USFWS; CDFW; various local planning and development departments; and private developers.

Project Experience

City of Anaheim, Groundwater Treatment Plants Phase B and Groundwater Supply Wells IS/MND and CEQA-Plus Documentation – Anaheim, CA: Project Manager for the preparation of an IS/MND and supplemental CEQA-Plus Documentation for the installation of ion-exchange groundwater treatment systems at the five locations in the City of Anaheim. The ion-exchange systems are intended to remove perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) from groundwater. Two new groundwater supply wells would be installed at one location and additional wells would be rehabilitated due to age. Psomas prepared a mitigated negative declaration for this project and completed additional technical studies to comply with CEQA-Plus guidelines pursuant to the Clean Water State Revolving Fund requirements.

Eastern Municipal Water District, Wellhead Treatment Facility Constraints Analysis and IS/MND (Well 56) – Perris, CA: Project Manager for an Initial Study and Mitigated Negative Declaration and related technical analyses to evaluate the impacts of the construction of a wellhead treatment facility for the purpose of removal of perfluorooctonoic acid (PFOA) and perfluorooctane sulfonate (PFOS). A constraints analysis was prepared to evaluate several potential locations for the proposed wellhead treatment facilities. The site options were reduced to five feasible alternatives and Psomas prepared the CEQA documentation to fully evaluate each alternative.

City of Santa Ana, Well Number 29 Rehabilitation IS/MND – Santa Ana, CA: Project Manager for the IS/MND to rehabilitate the City's existing Well 29; relocate an existing tennis court; and construct a building, pertinent related site improvements, and water pumping equipment. Coordinated with the City on all site survey work and analyses and participated in tribal consultation calls with interested tribal representatives.

Santiago Creek Dam Outlet Tower and Spillway Improvement – County of Orange, CA: Project Manager for preparing key technical analyses to help inform IRWD of the environmental document that will be required to comply with CEQA to abandon the existing Santiago Creek Dam outlet tower and construct a new inclined outlet structure, as well as provide input into the design process. Documents included a biological constraints report with a jurisdictional delineation; cultural resources report including archaeological and paleontological surveys; an historic analysis of the existing dam and spillway; and a full Initial Study to support a future CEQA document, including preparation of an air quality and GHG study, a noise analysis.

Eastern Municipal Water District, Murrieta Road Transmission Pipeline Project IS/MND – Menifee, CA: Project Manager for the IS/MND to construct and operate a 36- to 42-inch diameter water transmission line from the Perris II Desalter Complex (Desalter) in the City of Menifee approximately 1.33 miles south to La Piedra Road, where the proposed pipeline will connect to an existing 36-inch-diameter water main. Worked closely with the District to ensure that all concerns from the California Department of Fish and Wildlife were addressed. Coordinated key biological and cultural survey efforts, including an on-site meeting with interested Tribal Representatives.

Rosecrans Booster Pump Station Replacement IS/MND – Buena Park, CA: Environmental Project Manager for preparation of an IS/MND involving construction of a new pump station at the site of the existing Rosecrans Booster Pump Station in order to serve residents and properties in the upper zones of the Buena Park potable water system. Current pumping capacity is less than 3,500 GPM, which does not meet peak-hour (3,531 GPM) or maximum-day-plus-fire (5,395 GPM) demands. Coordinated closely with the City following public comment regarding use of the site as a former shooting range. Managed preparation of a Phase I Environmental Analysis was performed to rule out potential hazards associated with buried bullet casings.

Irvine Ranch Water District, Irvine Lake Pipeline Conversion Project IS/MND – Orange County, CA: Project Manager for preparation of environmental documentation for conversion of the northern segment of the Irvine Lake Pipeline from an untreated water pipeline to a recycled water pipeline. This project represents the first task order associated with Psomas' On-Call CEQA and NEPA Consultation Services agreement with IRWD. The project involves construction of a new recycled water storage tank, installation of recycled water pipelines, and conversion of existing domestic water facilities to accommodate the recycled water supply. Psomas prepared a mitigated negative declaration for this project and completed additional technical studies to comply with CEQA-Plus guidelines pursuant to the Clean Water State Revolving Fund requirements.

Irvine Ranch Water District, Rattlesnake Reservoir Pump Station IS/MND – Irvine, CA: Project Manager for the IS/MND for replacement of the existing Rattlesnake Reservoir Pump Station No. 2 with a new Zone A to Rattlesnake Reservoir Pump Station at the Rattlesnake Reservoir Complex. The proposed project includes demolition and replacement of the existing RRPS2, as well as demolition of other appurtenant equipment, extension of existing sewer piping, and construction of related equipment and facilities.

Jennifer Marks (Continued)

Santa Margarita Water District On-Call CEQA/NEPA Consultant Services – Orange County, CA: Assistant Project Manager for 15 projects for SMWD. These have included the preparation of environmental documents for infrastructure projects, such as sewer lift stations, reservoir sites, and pump stations. These projects provided the necessary improvements to serve existing development as well as new development communities within the SMWD service area. An IS/MND was prepared for the groundwater seepage extraction program in the Arroyo Trabuco. This program utilizes sump pumps to extract groundwater to create an additional source of recycled water. Prepared the IS/MND for the groundwater seepage extraction program in the Arroyo Trabuco. This program utilizes sump pumps to extract groundwater to create an additional source of recycled water. Through these projects, obtained an understanding of the complexity of operations associated with water and sewer systems.

CONTACT INFORMATION

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714.751.7373

EDUCATION

2006/BS/Environmental Policy Analysis and Planning/University of California, Davis

PROFFESSIONAL EXPERIENCE

With Psomas for 10 years; with other firms for 2 years

PROFESSIONAL AFFILIATIONS

Association of Environmental Professionals

Megan Larum – Psomas

Environmental Planner

Summary

Assistant Project Manager with 12 years of experience in environmental documentation and analysis consistent with CEQA and NEPA. Experience in cultural resources management and has participated in Native American Heritage Commission (NAHC) requests, records searches, and Phase I Cultural Resources Assessments.

Project Experience

Valencia Avenue Landscape Median Enhancement Project Notice of Exemption/Categorical Exemption – Brea, CA: Assistant Project Manager for the preparation of a Notice of Exemption/Categorical Exemption (NOE/CE) for this project, which involves the construction of new landscape medians with up-lighting for median trees. Proposed improvements would be limited to existing roadway right-of-way and the project would solely be funded through local funds. Megan assisted in preparation of the NOE/CE.

CR&R South County Materials Recovery Facility Initial Study/Mitigated Negative Declaration – Orange County, CA:

Environmental Planner for the preparation of an IS/MND for the CR&R South Orange County Materials Recovery Facility (MRF) Project. The project allowed for many of the operations that currently exist at the CR&R South County Operations Center on Ortega Highway to be relocated to a site on La Pata Avenue. As a component of this project, a MRF would be constructed that would process municipal solid waste and separate recyclables in lieu of transporting these commodities for processing to the CR&R North County Facilities in the City of Stanton. The fully enclosed MRF would sort municipal solid wastes from southern Orange County municipalities to recover recyclable materials and thereby eliminate these materials from the landfill. Megan assisted in preparation of the IS/MND.

Trabuco Creek Road Improvement Project Initial Study/Mitigated Negative Declaration – Orange County, CA: Environmental Planner for preparation of an IS/MND for this project, which would install a 2.8-mile road composed of disintegrated granite over aggregate base along the length of the project site and would improve 2 areas where the road crosses the creek and a tributary to the creek. The purpose of the proposed project is to improve (1) safety along the access road for the public; (2) access to the Cleveland National Forest; and (3) the Orange County Fire Authority's (OCFA) ability to perform fire-fighting and fire-suppression activities. Megan assisted in preparation of the IS/MND.

San Juan Creek Bike Trail Improvements Project Preliminary Environmental Study – Orange County, CA: Environmental Planner for preparation of a Preliminary Environmental Study (PES) for this project, which consisted of improvements to a segment of the existing San Juan Creek Bike Trail in and adjacent to Doheny State Beach Park. Project implementation would include replacement of the deteriorating concrete

trail and the wooden flood wall with a permanent U-shaped concrete channel in the San Juan Creek Bike Trail from the upstream face of the Camino Las Ramblas Bridge. In addition, an existing Caltrans storm drain outlet, which currently drains onto the bike trail and ultimately into San Juan Creek, would be rerouted under the bike trail to drain directly into San Juan Creek. As a result, the existing bike trail would be raised approximately three feet to accommodate the new storm drain outlet. The existing pavement would be removed and replaced with the concrete U-channel. Megan assisted in preparation of the PES.

17th Street Rehabilitation Project Preliminary Environmental Study – Tustin, CA: Environmental Planner for the preparation of the Preliminary Environmental Study (PES) for this project, which involved pavement maintenance and rehabilitation. In general, 17th Street between Prospect Avenue and Newport Avenue would receive an overlay of 0.20-foot asphalt rubber hot-mix concrete, preceded by (1) reconstruction/retrofitting of existing curb ramps to address Americans with Disabilities Act (ADA) requirements; (2) remedial asphalt repair work; (3) reconstruction of the number two travel lane in each direction along an approximately 1.1-mile-long stretch of 17th Street; and (4) installation of eight bus pads. Megan assisted in preparation of the PES.

Fullerton Maintenance Facility Initial Study/Mitigated Negative Declaration – Fullerton, CA: Environmental Planner for the preparation of an IS/MND for a City Maintenance Facility on an approximate 3.8-acre site in the City of Fullerton. The Maintenance Facility would include 144 parking spaces for City vehicles and trucks, a compressed natural gas refueling station, and approximately 11,176 square feet (sf) of various support buildings. The CEQA analysis focused on site access and internal circulation related to City trucks accessing the refueling station and daily use of the parking area. Megan assisted in distributing the Notice of Intent (NOI) and Final IS/MND.

City of Buena Park, Rosecrans Booster Pump Station Replacement Initial Study/Mitigated Negative Declaration – Buena Park, CA: Environmental Planner for preparation of an IS/MND involving construction of a new pump station at the site of the existing Rosecrans Booster Pump Station in order to serve residents and properties in the upper zones of the Buena Park potable water system. Current pumping capacity is less than 3,500 GPM, which does not meet peak-hour (3,531 GPM) or maximum-day-plus-fire (5,395 GPM) demands.

City of Santa Ana, Well Number 29 Rehabilitation Initial Study/Mitigated Negative Declaration – Santa Ana, CA: Environmental Planner for the IS/MND to rehabilitate the City's existing Well 29; relocate an existing tennis court; and construct a building, pertinent related site improvements, and water pumping equipment.

Edinger Avenue Bridge Replacement Environmental Documents – Seal Beach, CA: Assistant Project Manager for this project. The County of Orange, in cooperation with Caltrans and the Federal Highway Administration (FHWA), proposed to demolish the 15-span timber bridge over the Bolsa Chica Channel that provides access to Sunset Aquatic Regional Park. A four-span precise concrete bridge would be constructed in its place. An IS/MND and supporting documentation were prepared in accordance with Caltrans standards. Megan assisted in preparation of the IS/MND.

Anaheim Resort Specific Plan and Convention Center Expansion Supplemental Environmental Impact Report – Anaheim, CA: Environmental Planner for the preparation of the Supplemental EIR for the Anaheim Resort Specific Plan. The Supplemental EIR is a supplement to a Master EIR prepared in 1992 that has been validated every five years, as required by CEQA. This Supplemental EIR also evaluates the expansion of the Anaheim Convention Center, including hotels and additional meeting and convention/exhibit hall square footage. Megan assisted in preparation of the Supplemental EIR.

Ramada Maingate Project Initial Study/Mitigated Negative Declaration – Anaheim, CA: Environmental Planner for preparation of an IS/MND for this project, which involved partial reconstruction of the Ramada Maingate Hotel. The project would involve an increase of 13 motel rooms beyond what currently exists (an increase from 186 to 199 rooms) as well as a minor (782 foot) increase in retail space. Megan assisted in preparation of the IS/MND.

Hyatt Place Initial Study/Mitigated Negative Declaration – Anaheim, CA: Environmental Planner for the preparation of the IS/MND, which involved development of the project site with a hotel. A 5-story, 178-room all-suites hotel would be developed above a 1-level subterranean parking garage. In addition to the guest rooms, the hotel would contain 1,200 square feet (sf) of meeting rooms, a restaurant/bar, a fitness center, and an outdoor pool and deck. Megan assisted in preparation of the IS/MND.

Ball Road Basin Park Project – Anaheim, CA: Environmental Planner for the Ball Road Basin Park EIR. The project proposes to develop a former 19.5-acre water recharge basin as an active park to serve the residents and workforce of the City. Project elements would include soccer playing fields, a children's play area, improvements to the regional riding and hiking trail, and meeting space. On-site parking and lighting elements are also proposed. The project requires an amendment to the Anaheim General Plan to redesignate the site from Open Space to Parks and a Zoning Reclassification from transition to public recreation.

City of Anaheim, Groundwater Treatment Plants Phase B and Groundwater Supply Wells IS/MND and CEQA-Plus Documentation – Anaheim, CA: Assistant Project Manager for the preparation of an IS/MND and supplemental CEQA-Plus Documentation for the installation of ion-exchange groundwater treatment systems at the five locations in the City of Anaheim. The ion-exchange systems are intended to remove perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) from groundwater. Two new groundwater supply wells would be installed at one location and additional wells would be rehabilitated due to age. Psomas prepared a mitigated negative declaration for this project and completed additional technical studies to comply with CEQA-Plus guidelines pursuant to the Clean Water State Revolving Fund requirements.

Catalina Island Conservancy Infrastructure Repair and Upgrade Program Environmental Consulting Services – Avalon, CA: Assistant Project Manager for this project, which includes providing environmental consulting services to the Catalina Island Conservancy for various infrastructure improvement projects. The tasks for these projects include (1) preparation of CEQA documentation; (2) preparation of a biological constraints analysis; (3) preparation of jurisdictional delineation assessments; (4) performance of special status botanical surveys; (5)

preparation of regulatory agency permit applications for the USACE, Los Angeles RWQCB, and CDFW; and (6) regulatory permit processing. The projects include the White's Landing Pier Replacement Project; the Middle Canyon Bridge Replacement Project; the Overall Road Maintenance and Repair Project; the Trail Creation Project; and the Black Jack Campground Upgrade Project. Megan coordinated the Categorical Exemptions for the White's Landing Pier Replacement and the Middle Canyon Bridge Replacement Projects. She also completed an IS/MND for the Catalina Island Trails Project.

Glassell Yard Campus Stormwater Low Impact Development Retrofit Project Notice of Exemption/Categorical Exemption – Orange, CA: Assistant Project Manager for the preparation of a Notice of Exemption/Categorical Exemption for the Glassell Yard Campus Stormwater Low Impact Development (LID) Retrofit Project. The purpose of the proposed project is to filter and remove pollutants, infiltrate, and reduce stormwater runoff on the approximate 9.4-acre Glassell Yard Campus. Stormwater runoff from the site would be reduced by removing existing impervious surfaces and constructing landscaped infiltration strips and bioretention LID best management practices (BMPs), including permeable paving, flow-through planters, bioswales, modular wetlands, and a subsurface cistern, the latter in Parcel 3. Megan assisted in preparation of the Notice of Exemption/Categorical Exemption.

Eastern Municipal Water District, Murrieta Road Transmission Pipeline Project Initial Study/Mitigated Negative Declaration – Menifee, CA: Assistant Project Manager for the IS/MND to construct and operate a 36- to 42-inch-diameter water transmission line from the Perris II Desalter Complex (Desalter) in the City of Menifee approximately 1.33 miles south, mostly in the Murrieta Road right-of-way, to La Piedra Road, where the proposed pipeline will connect to an existing 36-inch-diameter water main in La Piedra Road about 250 feet east of its intersection with Murrieta Road.

Rosedale Highway (SR-58) Environmental Impact Report/Environmental Impact Statement, Natural Environment Study, Focused Biological Surveys, Jurisdictional Delineation, Biological Assessment Services – Bakersfield, CA: Environmental Planner for the preparation of the Preliminary Environmental Analysis Report (PEAR) and the IS/EA for the widening of a six-mile portion of State Route (SR) 58, including a rail line grade separation, in the City of Bakersfield and unincorporated Kern County. The project traverses residential areas and the urban core of Bakersfield. Caltrans was the NEPA lead agency and the City of Bakersfield was the CEQA lead agency. SR-58 provides a primary east-west route for the metropolitan Bakersfield area. Because of its visibility to the community, this project was identified as a key priority for the City. All technical studies and the environmental document were prepared consistent with Caltrans' Standard Environmental Reference. Key issues included community impacts, biological resources, and noise impacts. Megan assisted in preparation of the PEAR and the IS/EA.

Gisler Residential Project Initial Study/Mitigated Negative Declaration – Huntington Beach, CA: Environmental Planner for the Gisler Residential Project IS/MND. The project involves construction of an 85-unit single-family detached residential development on an approximately

13.9-acre site with a density of 6.1 dwelling units per gross acre. The site is surrounded by single-family residential to the north, east and west, and Gisler Park to the south. The Project site is currently developed with a school campus and associated site improvements, which would be demolished to accommodate the project.

Integra Perris Distribution Center Environmental Impact Report – Perris, CA: Assistant Project Manager for the preparation of an EIR for this project, which involves the expansion of the Integra Perris Distribution Center (IPDC) to include an approximately 10.2-acre parcel located immediately southwest of the IPDC site. Megan assisted in preparation of the EIR.

Irvine Ranch Water District, Rattlesnake Reservoir Pump Station IS/MND – Irvine, CA: Environmental Planner for the IS/MND for replacement of the existing Rattlesnake Reservoir Pump Station No. 2 with a new Zone A to Rattlesnake Reservoir Pump Station at the Rattlesnake Reservoir Complex. The proposed project includes demolition and replacement of the existing RRPS2, as well as demolition of other appurtenant equipment, extension of existing sewer piping, and construction of related equipment and facilities.

Santiago Creek Dam Outlet Tower and Spillway Improvement – Orange, CA: Environmental Analyst for preparing key technical analyses to help inform IRWD of the environmental document that will be required to comply with the California Environmental Quality Act (CEQA) to abandon the existing Santiago Creek Dam outlet tower and construct a new inclined outlet structure, as well as provide input into the design process. Documents included a biological constraints report with a jurisdictional delineation; cultural resources report including archaeological and paleontological surveys; an historic analysis of the existing dam and spillway; and a full Initial Study to support a future CEQA document, including preparation of an air quality and GHG study, a noise analysis.

Brookhurst Street Widening Improvements Initial Study/Mitigated Negative Declaration and Environmental Assessment/Finding of No Significant Impact – Anaheim, CA: Environmental Planner for this project, which involves improvements to Brookhurst Street between Ball Road and Katella Avenue, including roadway widening; full property takes of up to 22 single-family residences; construction of a new soundwall along the eastern side of the roadway; and partial right-of-way takes along the western side of the roadway within unincorporated County of Orange jurisdiction. Megan assisted in preparation of the IS/MND.

Los Angeles Holocaust Museum, Supported Categorical Exemption – Los Angeles, CA: Environmental Planner for preparation of a Class 32 In-Fill Categorical Exemption and supporting technical analyses. The project involves the expansion of the Holocaust Museum LA, located in the Pan Pacific Park in the City of Los Angeles. The proposed expansion includes the construction of canopy structures to house a train car exhibit and Children's Memorial, as well as renovation of existing park bathrooms, and renovation of the existing museum and administrative spaces. Psomas prepared a detailed categorical exemption to support the project's qualification for a Class 32 In-Fill Development CE. The analyses specifically addressed traffic, noise, air quality, and water quality impacts through the preparation of technical analysis to support less than significant findings. Psomas also addressed exceptions to the application of a CE

related to location, cumulative impact, significant effect, scenic highways, hazardous waste sites, and historic resources.

City of Moorpark Civic Center Master Plan Project – Moorpark, CA: Environmental Planner for this project, which consists of the phased development of a new Civic Center for the City of Moorpark. The project would be gradually developed over four phases and would ultimately include a City Library building and a City Hall building, as well as other commercial and residential uses. Psomas prepared environmental technical studies and the Environmental Impact Report for this project.

Morningside Golf and Tennis Center Project – Fullerton, CA: Environmental Planner for mitigation planning tasks provided for property improvement activities performed within the Morningside Retirement Community's facilities. The community is proposing to build a small pitch and putt golf course and pickle ball court for its residents. Compensatory mitigation was required for impacts to CDFW jurisdictional areas that resulted from fuel modification clearing activities performed in response to an order from the City of Fullerton Fire Department. Compensatory mitigation included the incorporation of native plant species and natural park interpretive and educational elements into the adjacent golf course landscape design.

Mt. SAC Technology and Health Building IS/MND – Walnut, CA: Assistant Project Manager for preparation on an Initial Study/Mitigated Negative Declaration. The project involves construction of a new four-story Technology and Health building north of Temple Avenue and west of Bonita Drive on the Mt. SAC campus in the City of Walnut. The project will increase instructional space capacity, consolidate the Technology and Health Division into a single facility, and support industry standards for technology in career technical education and health related occupations. As part of the project, several buildings will be demolished and a modular structure will be relocated offsite. Key issues include noise and vibration impacts. Megan assisted in preparation of the AB 52 notification process.

Mt. San Antonio College, Radio and Communications Tower Replacement, Environmental Services – Walnut, CA: Assistant Project Manager for preparation on an Initial Study/Mitigated Negative Declaration. The project involves demolition limited to grading for tower foundation and construction of a new self-supporting 100-foot-high communication tower and related improvements located south of West Temple Avenue and west of west of Bonita Drive within the southeastern portion of the Mt. SAC campus in the City of Walnut. Key issues include aesthetics due to the height of the new structure. Megan assisted in preparation of the AB 52 notification process.

Mt. San Antonio College, Volleyball, Wildlife Sanctuary, and Lot Improvement Project – Walnut, CA: Assistant Project Manager for preparation on an Addendum. The project involves construction of an approximately, 28,000 square foot (sf) Sand Volleyball facility, a new Wildlife Sanctuary entry development, and reconstruction of Parking Lot W located south of West Temple Drive and East of Mt. SAC Way on the Mt. SAC campus in the City of Walnut. This project is a modification of an approved project, and it was determined that, compared to the previously certified 2018 Educational and Facilities Master Plan Environmental Impact Report, no new impacts would occur nor would there be any substantial

increase in the severity of previously identified impacts. Megan assisted in preparation of the AB 52 notification process.

The Triangle Specific Plan Subsequent Environmental Impact Report – Murrieta, CA: Assistant Project Manager or preparation of and EIR for the Triangle Specific Plan mixed-use development project, which involves up to 1.77 MSF of development on an approximate 64.3-acre site. Proposed uses include retail uses; small and large retail stores, entertainment uses, and possibly offices; mid- and high-rise professional office space, served by parking structures; and hospitality uses. The project is located at the confluence of I-215 and I-5 and involved revisions to the original Murrieta Springs Mall Specific Plan. The EIR analysis focused on project compatibility with surrounding uses as well as circulation and access for passenger cars, construction vehicles, and delivery trucks throughout the phased implementation and ultimate buildout of the project. Megan assisted in preparation of the EIR.

Newport Banning Ranch Environmental Impact Report – Newport Beach, CA: Environmental Planner for this project, which would allow for the development of 1,375 residential dwelling units, 75,000 square feet (sf) of commercial uses, a 75-room resort inn, and approximately 51 acres of public parks on the 401-acre active oilfield site. Approximately 252 acres (approximately 63 percent) of the site are proposed for permanent open space including restored habitat, public trails, and consolidated oil production facilities (the latter comprising approximately 16.5 acres on 2 sites). Upon the future cessation of oil operations, the oil consolidation sites would be remediated and converted to an open space use. Project implementation required approvals from the City including a General Plan Circulation Element Amendment, Master Development Plan, zone change, Planned Community Development Plan, Development Agreement, and Tract Map. Additional permits and approvals are required from agencies including the California Coastal Commission, the CDFW, the USFWS, the USACE, the Local Agency Formation Commission (LAFCO), the RWQCB, and the Orange County Transportation Association (OCTA). The City Council approved the project and certified the Final EIR in July 2012. Megan assisted in preparation of the EIR.

Newport Banning Ranch Environmental – Newport Beach, CA: Environmental Planner for this project, which would allow for the development of 1,375 residential dwelling units, 75,000 square feet (sf) of commercial uses, a 75-room resort inn, and approximately 51 acres of public parks on the 401-acre active oilfield site. Approximately 252 acres (approximately 63 percent) of the site are proposed for permanent open space including restored habitat, public trails, and consolidated oil production facilities (the latter comprising approximately 16.5 acres on 2 sites). Upon the future cessation of oil operations, the oil consolidation sites would be remediated and converted to an open space use. Project implementation required approvals from the City including a General Plan Circulation Element Amendment, Master Development Plan, zone change, Planned Community Development Plan, Development Agreement, and Tract Map. Additional permits and approvals are required from agencies including the California Coastal Commission, the CDFW, the USFWS, the USACE, the Local Agency Formation Commission (LAFCO), the RWQCB, and the Orange County Transportation Association (OCTA). The City Council approved the project and certified the Final EIR in July 2012.

Megan Larum (Continued)

Sunset Ridge Park Environmental Impact Report – Newport Beach, CA: Environmental Planner for the preparation of an EIR for this project, which proposed to develop the approximate 18.9-acre site with active and passive recreational uses. Components of the park project would include one baseball field; two youth soccer fields; a playground area including a tot lot; a picnic area with shade structures, picnic tables, and seating areas; a memorial garden; an overlook area with a shade structure and seating; and restroom facilities. The park is also proposed to include three pedestrian access areas: one along West Coast Highway and two along Superior Avenue. Megan assisted in preparation of the EIR.

Harbor Pointe Senior Living Project Environmental Impact Report – Newport Beach, CA: Environmental Planner for preparation of an EIR for the Harbor Pointe Senior Living Project, which consists of demolition of an existing 8,800 SF restaurant, and development of a three-story, approximately 85,000 SF assisted living facility (101 assisted living and congregate care units), associated ancillary uses, and subsurface parking. Key issues were the massing of the building; compatibility with surrounding land uses; aesthetics, including shade and shadow; and construction noise.

OC Zoo General Development Plan Initial Study/Mitigated Declaration and Supporting Technical Documentation – Orange County, CA: Assistant Project Manager for this project, which included improvements to modernize the zoo infrastructure and animal exhibits; to enhance the visitor experience; and to improve the relational and aesthetic aspects of the zoo. Psomas prepared the IS/MND and technical analyses for biological resources; State and federal jurisdictional waters and wetland resources; air quality; greenhouse gas emissions; and noise. Megan assisted in preparation of the IS/MND.

Wagon Wheel Creek Restoration Project Initial Study/Mitigated Negative Declaration, Biological Technical Report, Focused Surveys, and Jurisdictional Delineation – Coto De Caza, CA: Assistant Project Manager for the preparation of an IS/MND for this project, which included a number of improvements along Wagon Wheel Creek located within the General Thomas F. Riley Wilderness Park. The goal of the Wagon Wheel Creek Restoration Plan is to stabilize Wagon Wheel Creek for public safety and to protect the remaining oak and sycamore woodland and other riparian vegetation resources through the strategic placement of specific improvements within the creek. Megan assisted in preparation of the IS/MND.

Glenarm BESS Project Initial Study/Mitigated Negative Declaration – , : Environmental Planner for the preparation of an IS/MND for Pasadena Water and Power's (PWP's) Glenarm BESS Project. In addition to the IS/MND analyzing the potential impacts of the proposed project, Psomas' in-house technical experts are preparing all technical assessments, including air quality, energy, greenhouse gas emissions, and noise. Megan is the main author of the IS/MND and collaborates with the technical team in preparing their IS/MND sections.

Pelican Industrial Project Environmental Impact Report – Perris, CA: Assistant Project Manager of an EIR for this project, which consists of the construction and operation of up to 600,000 gross square feet of light industrial warehouse uses in two industrial buildings. Building 1 would accommodate a high-cube warehouse/distribution center and Building 2 would accommodate general light industrial uses. The EIR analyzed the

project's compliance with the Perris Valley Commerce Center Specific Plan and also focused on evaluation of required roadway improvements to the local circulation system to accommodate a net total of 2,117 passenger car equivalent trip-ends per day, including approximately 818 2-, 3-, and 4-axle truck trips. Megan assisted in preparation of the EIR.

Harbor Walk Specific Plan Initial Study/Mitigated Negative Declaration – Fullerton, CA: Environmental Planner for this infill project, which involves the redevelopment of the approximate 2.8-acre site being used for automobile-related uses with a mixed-use development. The Specific Plan allows for a combination of multi-family residential (up to 150 units), commercial, and live/work units and associated parking, recreational, and support uses.

Rancho Las Lomas Project Biological Services and Initial Study/Mitigated Negative Declaration – Portola Hills, CA: Assistant Project Manager for a privately owned, 21.4-acre event facility in unincorporated Orange County. The project would complete the development of 33 structures that were started in the 1980s and the 1990s without approved permitting; allow for the construction of one additional structure; and allow for the replacement of three existing bridges. Primary project issues include (1) the retroactive documentation of previously completed site development and associated impacts; (2) the assessment of completed activities and impacts during the completion of the IS/MND and during CDFW, USACE, and RWQCB permitting procedures; (3) the incorporation of Foothill/Trabuco Specific Plan requirements into the project plans and into coast live oak management programs; and (4) the incorporation of non-native species control requirements set forth in CDFW permits into ongoing site landscape management procedures. Megan assisted in preparation of the IS/MND.

Addendum to Final Environmental Impact Report No. 584 for the Planning Area 2 Zone A and Zone 1 Reservoirs – Orange County, CA: Environmental Planner for the preparation of an Addendum for the Planning Area 2 Zone A and Zone 1 Reservoirs Project. The Santa Margarita Water District (SMWD) proposed the construction of up to four water reservoirs, two for domestic water use and two for non-domestic (recycled) use. The improvements would require the grading of a building pad, grading and construction of access roads, and pipeline and power facilities and granting of additional access easements to SMWD. The project, when implemented, would serve Planning Areas 1 and 2 and a portion of Planning Area 3 of the Ranch Plan Planned Community. Megan assisted in preparation of the Addendum.

La Jolla Centre 3 Project Environmental Impact Report – San Diego, CA: Environmental Planner for this infill project, which consisted of the construction and operation of a 15-story, approximate 398,000 SF office building and 6-level parking structure (including 1.5 levels of subterranean parking) on 5.3 acres. Megan assisted in preparation of the EIR.

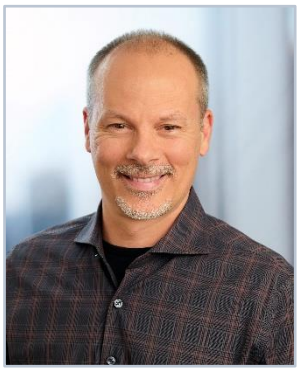
Planning Area 33 General Plan Amendment and Zone Change Environmental Impact Report – Irvine, CA: Environmental Planner for this project, which involved a General Plan Amendment and Zone Change to allow for the development of an additional 1,350 dwelling units (apartments at a density of approximately 55 units per net acre) in Planning Area 33. Megan assisted in preparation of the EIR.

Megan Larum (Continued)

University of California, Riverside, Student Success Center Initial Study/Mitigated Negative Declaration – Riverside, CA: Environmental Planner for the preparation of an IS/MND's Student Success Center, a new 3- to 4- story facility with a maximum building capacity of 80,000 gross square feet (GSF), and approximately 1,070 general assignment classroom seats. The project would provide (1) general assignment classrooms designed for modern pedagogy and technology; (2) multipurpose student life spaces for use by student organizations and areas for scholarly activity such as tutoring, mentoring, and study; and (3) (shelled) dining services venue. The IS/MND was tiered from UCR 2005 Long-Range Development Plan EIR and the 2005 Long-Range Development Plan Amendment 2 EIR. Megan provided assistance on the IS/MND.

University of California, Riverside, School of Medicine Building II IS/MND – Riverside, CA: Environmental Planner for preparation of a tiered IS/MND. The project involves construction of a new facility consisting of instructional, collaboration, and student life space, as well as office and support spaces. The project would be located in an area currently developed as a surface parking lot and the School of Medicine modular trailer. The IS/MND was tiered from the UCR 2005 Long Range Development Plan EIR and the 2005 Long Range Development Plan Amendment 2 EIR.

NorthLake Specific Plan Supplemental Environmental Impact Report – Castaic, CA: Environmental Planner for preparation of environmental documentation for development of an approximate 1,330-acre project site near Castaic Lake in unincorporated Los Angeles County. This project involves development of a mix of single-family units; multi-family units; commercial, industrial, and recreational uses; open space and trails; and school and park facilities.



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EDUCATION

1997/MS/Applied Ecology and Conservation Biology/Frostburg State University. Frostburg, MD

1994/BS/Environmental Biology/California State University, Northridge

PROFESSIONAL EXPERIENCE

With Psomas for 19 years; with other firms for 8 years

PUBLICATIONS AND PRESENTATIONS

SERCAL 2023 Annual Conference Presentation of Berkshire Creek Restoration Project

Status of *Clintonia alleghaniensis*. 1997; Masters Thesis; Frostburg State University Pub.

CERTIFICATIONS

Independent Researcher for Psomas' CDFW Entity Scientific Collecting Permit/SC-190410001/California Department of Fish and Wildlife

10(a)(1)(A) Permit for coastal California gnatcatcher and Southwestern willow flycatcher/TE834489-6/U.S. Fish and Wildlife Service

Marc Blain – Psomas

Biological Resources Manager

Summary

Associate/Senior Project Manager with 32 years of experience in wildlife biology, conservation biology, natural resource planning, and training in various other areas in the environmental field. Serves as the lead biologist for the Psomas Pasadena office. Expert on the biology and ecology of Southern California wildlife and possesses not only the ability to identify and classify the plants, animals and plant communities of the region, but also the ability to develop sustainable management practices. More specific areas of expertise include avian ecology, wildlife movement, and conservation biology. Experienced with the natural resources regulations and compliance requirements of the Federal Endangered Species Act (FESA), the California Endangered Species Act (CESA), CEQA, NEPA, the NCCP, the CWA, the MBTA, the California Fish and Game Code, and other biological statutes of regional Counties and Cities.

Project Experience

Castaic Lake Water Agency Recycled Water Master Plan Program Environmental Impact Report – Los Angeles County, CA: Biologist for this Program EIR. The project included the construction of a distribution system throughout the City of Santa Clarita and some unincorporated areas of Los Angeles County; eight aboveground reservoir tanks; recycled water pump station(s); booster pump stations; and aquifer storage and recovery-related facilities. Sources of recycled water would include the Valencia Water Reclamation Plant, the Berry Petroleum Oil Field, and the Newhall Ranch Water Reclamation Plant. The first phase of implementation involved the Northwest Spur Pipeline, which was analyzed at a project level in the EIR. Conducted a general plant and wildlife survey and mapped vegetation for the Northwest Spur Pipeline component of the Castaic Lake Water Agency's Recycled Water Master Plan. Prepared the CEQA-level Biological Resource Assessment, which is included as an appendix to the Program EIR.

Santa Clarita Valley Sanitation District Reduced Discharge Technical Biological Study of the Upper Santa Clara River – Los Angeles County, CA: Project Manager for a biological study, which involved detailed analysis of the existing river conditions throughout the study area, including hydrology, vegetation, substrate, and stream bed morphology. Field studies included monitoring for flow change over 24-hour periods at various locations in the river. Modeling was prepared to assess potential project changes on stream flows within the section of the river. Using the field study results, hydrological modeling, and historical analysis, the potential effects of the projected changes in stream flow were assessed. The findings were documented in detail in a technical report which provided the client with necessary data to proceed with project design and regulatory compliance. Responsible for managing the technical study and directed surveys to determine presence or absence and relative abundance of special status fish species with special attention to the federally Threatened unarmored three-spine stickleback.

Los Angeles County Department of Public Works, Stormwater Maintenance Division As-Needed Biological Services Contract – Los Angeles County, CA: Project Manager for an As-Needed services contract with the Los Angeles County Department of Public Works (LACDPW), Stormwater Maintenance Division. Responsible for managing a variety of projects and on-going consultation services. Projects range from focused surveys for special status plants and animals within County-operated flood-control channels to emergency Section 7 Consultations with the USFWS; conducted CEQA documentation for long-term maintenance permits from the CDFW. Responsibilities involve daily communication with LACDPW staff to assist in environmental compliance issues as they arise. Projects frequently require communication directly with regulatory agencies such as the USACE, the CDFW, the RWQCB, and the USFWS to resolve potential impacts issues.

West Fork Road Emergency Bank Stabilization Project Biological Mitigation and Monitoring – Los Angeles County, CA: Project Manager for this project for the Los Angeles County Department of Public Works (LACDPW). The project involved potential impacts resulting from repair work to federally Endangered species in a section of the West Fork of the San Gabriel River. Coordinated biological monitoring and mitigation requirements among several State and federal agencies and the LACDPW. Biological surveys, fish surveys, and construction monitoring for several special status species were conducted. The project was successfully completed following the submittal of a detailed Biological Assessment to the regulatory agencies.

Los Angeles County Department of Public Works Bouquet Channel Emergency Clearing and Biological Monitoring – County of Los Angeles, CA: Project Manager for the Bouquet Channel Emergency Clearing project. This project involved potential impacts from repair activities to a State- and federally-listed Endangered fish species, and required oversight of the listed species' capture and relocation and the preparation of the associated documents. Directed biological monitoring to ensure biological resources protection during channel vegetation clearing activities. Coordinated among several State and federal agencies and Los Angeles County Department of Public Works (LACDPW) maintenance and management personnel, and negotiated with resource agencies to determine the most appropriate measures to ensure minimal impacts to sensitive resources.

Silver Lake Reservoir Improvement Project Biological Study and Public Outreach – Silver Lake, CA: Project Manager for a biological study and outreach program for the Silver Lake Reservoir Improvement project. Managed a study to determine the potential effects on wildlife resources that might result from allowing public access to the "meadow area" of the Silver Lake Reservoir. A substantial element of this project was public outreach, and assisted the City of Los Angeles by speaking to members of the community to reassure them of the project's sensitivity to biological resources.

Monk Hill Treatment Project Habitat Assessment – Pasadena, CA: Biologist for a biological assessment of this project. A habitat assessment was conducted to determine potential biological constraints to the proposed pipeline repair project located on the Jet Propulsion Laboratory (JPL) facility in Pasadena. Based on the thorough documentation Prepared for the

assessment, the City was able to convince the USFWS that protocol surveys for the California gnatcatcher were not warranted. Nesting bird surveys were recommended and successfully conducted within the impact area, and the project was completed with minimal constraints.

Arroyo Seco Drainage Improvement Projects, Biological Survey Coordination and Documentation – Pasadena, CA: Project Manager for a series of projects associated with the Arroyo Seco drainage improvements in Pasadena. In the Upper Arroyo Seco, projects included focused surveys for the California red-legged frog, a habitat assessment for the California gnatcatcher, nesting bird surveys, and a review of a CDFW Streambed Alteration Agreement issued for a bridge replacement project. Lower Arroyo Seco projects have consisted of nesting bird surveys, nesting raptor surveys, streambed maintenance monitoring, and individual plant identification for preservation within a restoration area. Responsible for coordinating all biological surveys and documentation associated with the various projects and providing consultation services to City staff.

Los Angeles County Public Works As-Needed Environmental Services for Water Resources Core Service Area – Los Angeles County, CA: Project Manager for the County of Los Angeles Public Works Waterworks District to provide environmental review, biological, and cultural support services on various water resources projects that include maintenance, repair, and construction of facilities, channels and streams, dams, and bridges.

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EDUCATION

2008/MS/European Archaeology/University of Edinburgh, United Kingdom

2004/BA/Anthropology/California State University, Los Angeles

PROFESSIONAL EXPERIENCE

With Psomas for 6 years; with other firms for 13 years

PUBLICATIONS AND PRESENTATIONS

Late Prehistoric Subsistence Practices and Landscape Archaeology in the Cronise Basin (2016)

Who Was Rawley Duntley: The Barbeque King of Kern County (2014)

When Worlds Collide: The struggle for Power in the Mojave Desert (2013)

Archaic Period Hunting and Milling in the Western Great Basin: Evidence from NAS Fallon (2012)

People on the Move: Their Travels, Transmissions, and Transformations (2010)

Trade and Mortuary Ritual Among the Serrano at CA-LAN-949 in the Southwestern Mojave Desert (2005)

Charles Cisneros, MS, RPA – Psomas

Senior Project Manager, Cultural Resources Manager, Archaeologist

Summary

Registered professional archaeologist with 19 years of experience in archaeological assessment and field experience in California and Nevada. Directed numerous field projects in support of compliance with the California Environmental Quality Act (CEQA), the National Environmental Policy Act (NEPA), and Sections 106 and 110 of the National Historic Preservation Act (NHPA). Managed a wide range of projects involving archaeological survey, testing, data recovery, monitoring, and laboratory analysis. Skilled at research and data management, as well as maintaining and organizing digital and print publications. Training and background meet the U.S. Secretary of the Interior's Professional Qualifications Standards for prehistoric and historic archaeology and is a California Energy Commission approved archaeologist for desert archaeology.

Project Experience

Irvine Ranch Water District, Rattlesnake Reservoir Pump Station IS/MND – Irvine, CA: Senior Archaeologist for the IS/MND for replacement of the existing Rattlesnake Reservoir Pump Station No. 2 with a new Zone A to Rattlesnake Reservoir Pump Station at the Rattlesnake Reservoir Complex. The proposed project includes demolition and replacement of the existing RRPS2, as well as demolition of other appurtenant equipment, extension of existing sewer piping, and construction of related equipment and facilities.

Eastern Municipal Water District, Murrieta Road Transmission Pipeline Project IS/MND – Menifee, CA: Archaeologist for the IS/MND to construct and operate a 36- to 42-inch-diameter water transmission line from the Perris II Desalter Complex (Desalter) in the City of Menifee approximately 1.33 miles south, mostly in the Murrieta Road right-of-way, to La Piedra Road, where the proposed pipeline will connect to an existing 36-inch-diameter water main in La Piedra Road about 250 feet east of its intersection with Murrieta Road. Jennifer worked closely with the District to ensure that all concerns from the California Department of Fish and Wildlife were addressed. Jennifer also coordinated key biological and cultural survey efforts, including an on-site meeting with interested Tribal Representatives.

Eastern Municipal Water District, Wellhead Treatment Facility Constraints Analysis and IS/MND (Well 56) – Perris, CA: Cultural Resources Manager for an Initial Study and Mitigated Negative Declaration and related technical analyses to evaluate the impacts of the construction of a wellhead treatment facility for the purpose of removal of perfluorooctonoic acid (PFOA) and perfluorooctane sulfonate (PFOS). A constraints analysis was prepared to evaluate several potential locations for the proposed wellhead treatment facilities. The site options were reduced to five feasible alternatives and Psomas prepared the CEQA documentation to fully evaluate each alternative.

City of Anaheim, Groundwater Treatment Plants Phase B and Groundwater Supply Wells IS/MND and CEQA-Plus Documentation – Anaheim, CA: Cultural Resources Manager for the preparation of an IS/MND and supplemental CEQA-Plus Documentation for the installation of ion-exchange groundwater treatment systems at the five locations in the City of Anaheim. The ion-exchange systems are intended to remove perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) from groundwater. Two new groundwater supply wells would be installed at one location and additional wells would be rehabilitated due to age. Psomas prepared a Mitigated Negative Declaration for this project and completed additional technical studies to comply with CEQA-Plus guidelines pursuant to the Clean Water State Revolving Fund requirements.

Santa Margarita Water District, Coto de Caza Emergency Storage Basin Initial Study/Mitigated Negative Declaration – Coto de Caza, CA: Senior Archaeologist for the IS/MND for construction of an emergency storage basin to contain potential sanitary sewer overflows associated with the existing Coto de Caza Lift Station. The project involves construction of a concrete-lined structure to accommodate up to 85,000 gallons of sewer overflow. Psomas prepared a mitigated negative declaration for this project and has completed technical analyses, including air quality and greenhouse gas emissions, noise, cultural resources, and a biological site survey.

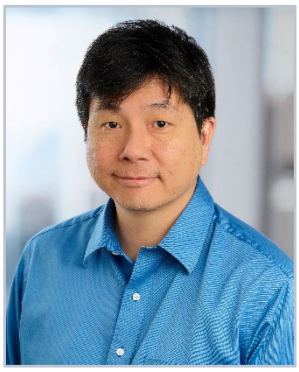
Irvine Ranch Water District, Santiago Creek Dam Outlet Tower and Spillway Improvements – Orange, CA: Archaeologist for preparing key technical analyses to help inform IRWD of the environmental document that will be required to comply with CEQA to abandon the existing Santiago Creek Dam outlet tower and construct a new inclined outlet structure, as well as provide input into the design process. Documents included a biological constraints report with a jurisdictional delineation; cultural resources report including archaeological and paleontological surveys; an historic analysis of the existing dam and spillway; and a full Initial Study to support a future CEQA document, including preparation of an air quality and GHG study, a noise analysis.

Irvine Ranch Water District, 3.7 MG Zone 1 Reservoir Project Mitigated Negative Declaration – Irvine, CA: Senior Archaeologist for preparation of an MND for construction of an additional reservoir to allow for storage reliability and operational flexibility in the Zone 1 domestic water system. The project site is located in the City of Irvine within Planning Area 9A (Woodbury), which is an area that is currently experiencing a high volume of new residential construction. The project site was included in the City's Northern Sphere Environmental Impact Report; however, development of a second reservoir was not specifically addressed.

Carlsbad Veterans Park, Master Planning and Environmental Permitting Phase – Carlsbad, CA: Senior Archaeologist for providing professional services for new 91.5-acre park. The developable area of the site was only 48 acres due to the presence of native vegetation preserves. The program for the project included active and passive recreation amenities, an open space interpretive area, public art, trails, utilities, parking, restrooms, and maintenance facilities. Psomas provided civil engineering, environmental, and surveying services for the Project Master Planning Phase and environmental permitting to result in final design concepts and required permits and authorizations for improvements. More specifically, civil engineering master planning support services included development of project constraints, concept grading and utilities plans,

CEQA level hydrology and stormwater management reports, traffic impact analysis, and hillside management plans.

Pacoima Reservoir Restoration Project Environmental Impact Report – Los Angeles, CA: Senior Archaeologist for preparation of an EIR for removal of approximately 3 million cubic yards of sediment from the reservoir to preserve the reliability of the operations and safety of the dam. Implementation of the proposed PRSR Project includes construction/rehabilitation and operation of an access road upstream of the Reservoir; dewatering the Reservoir; excavating and removing the sediment; assembling, operating, and partially disassembling the conveyor belt; staging and transporting the sediment to Lopez Spreading Grounds; and finally trucking the sediment for placement at Sunshine Canyon Landfill or Sun Valley Pits.



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EDUCATION

1993/BA/Geography and Environmental Studies/University of California, Santa Barbara

PROFESIONAL EXPERIENCE

With Psomas for 7 years; with other firms for 23 years

INTERESTS

Mentoring junior staff
Improving quantitative tools including CalEEMod.

PROFESSIONAL AFFILIATIONS

Association of Environmental Professionals

CERTIFICATIONS

Dust Control Supervisor/South Coast Air Quality Management District/SC2102-010331-10351

Tin Cheung – Psomas

Air Quality, Greenhouse Gas, and Noise Manager

Summary

Air Quality, Greenhouse Gas, and Noise Manager with 30 years of experience conducting air quality, climate change, noise, and vibration studies for CEQA and NEPA compliance. Experience includes preparing air pollutant emissions inventories, dispersion modeling, climate change, and health risk assessments (HRAs) using a variety of computer data models. Proficient in conducting noise and vibration studies for stationary and mobile sources. Has employed monitoring equipment for the measurement of noise, vibration, and particulate matter. Project experience includes analyses of land uses, including largescale infrastructure, residential, commercial, industrial, educational, energy, and recreational uses. Extensive knowledge of the CEQA/NEPA regulatory process and impact assessment methods established by US EPA, the California Air Resources Board (CARB), and local air quality management districts. Performed third-party reviews for technical adequacy and CEQA compliance in support of legal efforts and government quality assurance/quality control.

Project Experience

Eastern Municipal Water District, Wellhead Treatment Facility Constraints Analysis and IS/MND (Well 56) – Perris, CA: Air Quality and Noise Manager for an Initial Study and Mitigated Negative Declaration and related technical analyses to evaluate the impacts of the construction of a wellhead treatment facility for the purpose of removal of perfluorooctonoic acid (PFOA) and perfluorooctane sulfonate (PFOS). A constraints analysis was prepared to evaluate several potential locations for the proposed wellhead treatment facilities. The site options were reduced to five feasible alternatives and Psomas prepared the CEQA documentation to fully evaluate each alternative.

Eastern Municipal Water District, Murrieta Road Transmission Pipeline Project IS/MND – Menifee, CA: Air Quality and Noise Manager for the IS/MND to construct and operate a 36- to 42-inch-diameter water transmission line from the Perris II Desalter Complex (Desalter) in the City of Menifee approximately 1.33 miles south, mostly in the Murrieta Road right-of-way, to La Piedra Road, where the proposed pipeline will connect to an existing 36-inch-diameter water main in La Piedra Road about 250 feet east of its intersection with Murrieta Road.

Irvine Ranch Water District, Rattlesnake Reservoir Pump Station IS/MND – Irvine, CA: Air Quality and Noise Manager for the IS/MND for replacement of the existing Rattlesnake Reservoir Pump Station No. 2 with a new Zone A to Rattlesnake Reservoir Pump Station at the Rattlesnake Reservoir Complex. The proposed project includes demolition and replacement of the existing RRPS2, as well as demolition of other appurtenant equipment, extension of existing sewer piping, and construction of related equipment and facilities.

Tin Cheung
(Continued)

City of Anaheim, Groundwater Treatment Plants Phase B and Groundwater Supply Wells IS/MND and CEQA-Plus Documentation – Anaheim, CA: Air Quality and Noise Manager for the preparation of an IS/MND and supplemental CEQA-Plus Documentation for the installation of ion-exchange groundwater treatment systems at the five locations in the City of Anaheim. The ion-exchange systems are intended to remove perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) from groundwater. Two new groundwater supply wells would be installed at one location and additional wells would be rehabilitated due to age. Psomas prepared a Mitigated Negative Declaration for this project and completed additional technical studies to comply with CEQA-Plus guidelines pursuant to the Clean Water State Revolving Fund requirements.

City of Santa Ana, Well Number 29 Rehabilitation Initial Study/Mitigated Negative Declaration – Santa Ana, CA: Air Quality and Noise Manager for the IS/MND to rehabilitate the City's existing Well 29; relocate an existing tennis court; and construct a building, pertinent related site improvements, and water pumping equipment.

Santa Margarita Water District, Coto de Caza Emergency Storage Basin Initial Study/Mitigated Negative Declaration – Coto de Caza, CA: Air Quality and Noise Manager for the IS/MND for construction of an emergency storage basin to contain potential sanitary sewer overflows associated with the existing Coto de Caza Lift Station. The project involves construction of a concrete-lined structure to accommodate up to 85,000 gallons of sewer overflow. Psomas prepared a mitigated negative declaration for this project and has completed technical analyses, including air quality and greenhouse gas emissions, noise, cultural resources, and a biological site survey.

Maywood Mutual Water Company No. 3, Water Quality Improvement Initial Study/Mitigated Negative Declaration – Maywood, Bell, and Vernon, CA: Air Quality and Noise Manager for the preparation of an IS/MND for this project. The IS/MND will evaluate the improvements of various facilities within the MMWC3 water systems service area. Per the District's Capital Improvement Projects, the proposed project actions include rehabilitation of an approximate 450,000-gallon welded steel tank (Prospect Tank) and associated tank appurtenances; replacement of approximately 4,600 feet of pipe segment; valve replacements, and fire hydrant repair and replacements. The project also requires preparation of supplemental documentation pursuant to the Federal Cross-Cutter Regulations pursuant to SWRCB requirements.

Irvine Ranch Water District, 3.7 MG Zone 1 Reservoir Project Mitigated Negative Declaration – Irvine, CA: Air Quality and Noise Manager for preparation of an MND for construction of an additional reservoir to allow for storage reliability and operational flexibility in the Zone 1 domestic water system. The project site is located in the City of Irvine within Planning Area 9A (Woodbury), which is an area that is currently experiencing a high volume of new residential construction. The project site was included in the City's Northern Sphere Environmental Impact Report; however, development of a second reservoir was not specifically addressed.

Irvine Ranch Water District, Santiago Creek Dam Outlet Tower and Spillway Improvements – Orange, CA: Air Quality and Noise Manager for preparing key technical analyses to help inform IRWD of the environmental document that will be required to comply with CEQA to

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(Continued)

abandon the existing Santiago Creek Dam outlet tower and construct a new inclined outlet structure, as well as provide input into the design process. Documents included a biological constraints report with a jurisdictional delineation; cultural resources report including archaeological and paleontological surveys; an historic analysis of the existing dam and spillway; and a full Initial Study to support a future CEQA document, including preparation of an air quality and GHG study, a noise analysis.

West Valley Feeder No. 1 Stage 3 Project IS/MND – Los Angeles, CA: Air Quality and Noise Manager for preparation of an IS/MND for this project, which is located on approximately 0.46 acre within the north/northwestern portion of Chatsworth Park South where the San Fernando Valley floor borders the adjacent Simi Hills/Santa Susana Mountains in the community of Chatsworth, in the City of Los Angeles, and the County of Los Angeles. The purpose of the proposed project is to continue pipeline improvements implemented by Stages 1 and 2 of the WVF1 Valve Modification Project. The project would include 1) replacing valves, 2) adding valve structures, and 3) improving access for maintenance and repairs to WVF1. The work is proposed to be prioritized and divided into three stages over multiple shutdown seasons to minimize the duration of pipeline outages.

CONTACT INFORMATION

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626.351.2000

EDUCATION

2008/BS/Biology, Chemistry (Minor)/California State University, Long Beach

PROFESSIONAL EXPERIENCE

With Psomas for 13 years; with other firms for 2 years

PUBLICATIONS AND PRESENTATIONS

Esteban F-J., M.D. Gall, T. Dolan, C. O'Rourke, S. Thomas, and J.R. Lynch. 2010 (May). Mechanistic basis of vigilance: visual systems and scanning strategies in two ground foraging birds. Animal Behavior. Cambridge, MA: Elsevier.

EXTRACURRICULAR AND VOLUNTEER EXPERIENCE

Institute for Bird Populations/MAPS Program

Tambopata Macaw Project

PROFESSIONAL AFFILIATIONS

The Wildlife Society, Western Section
The Wildlife Society, Southern California Chapter
California Native Plant Society (CNPS)

INTERESTS

Botany
Ornithology

Sarah Thomas – Psomas

Biologist

Summary

Biologist with 15 years of field experience as a Research Assistant, Field Technician and Biologist. Specializes in birds and has studied bird identification throughout the western United States, bird behavior, bird biology and conservation, and is proficient with nest identification in the Los Angeles and San Bernardino Counties. Performs wildlife, and preconstruction surveys to document and report existing conditions, and potential biological restraints to management. Experience working with non-profit organizations in habitat restoration of California grasslands, salt marsh and California coastal sage scrub.

Project Experience

Arroyo Seco Drainage Improvement Projects, Biological Survey Coordination and Documentation – Pasadena, CA: Biologist for a series of projects associated with the Arroyo Seco drainage improvements in Pasadena. In the Upper Arroyo Seco, projects included focused surveys for the California red-legged frog, a habitat assessment for the California gnatcatcher, nesting bird surveys, and a review of a CDFW Streambed Alteration Agreement issued for a bridge replacement project. Lower Arroyo Seco projects have consisted of nesting bird surveys, nesting raptor surveys, streambed maintenance monitoring, and individual plant identification for preservation within a restoration area. Conducted least bell's vireo surveys and co-wrote the Biological Technical Report for this project.

On-Call Biological Services Contract for Soft-Bottom Channels – Los Angeles County, CA: Biologist for monitoring of annual clearing activities in soft-bottom flood control channel reaches maintained by the Los Angeles County Department of Public Works (LACDPW) Flood Maintenance Division. Tasks include performing general plant surveys; mapping of the vegetation communities; pre- and post-clearing documentation of biological resources within these channel reaches; and monitoring during annual clearing activities to facilitate compliance with permits issued by the USACE, the CDFW, and the RWQCB. On-call tasks under this contract have included focused special status plant surveys, vegetation mapping, nesting bird surveys, migratory bird surveys, and focused surveys for least Bell's vireo.

Santa Anita Dam Riser Modification and Sediment Removal Project Oak Woodland Habitat Mitigation Program – Arcadia, CA: Biologist for this project that involved mitigating for impacts as a result of the removal of approximately 325,000 cubic yards of sediment from the Santa Anita Dam Reservoir and placement of this sediment to one of three Sediment Placement Sites (SPSs, i.e., the Lower, Middle, and Upper SPSs). It also involved the construction of a riser on the dam's lowest outlet to ensure compliance with State seismic safety requirements. The mitigation site is located at the Lower SPS and includes 5.5 acres of oak woodland habitat creation and 2.5 acres of sage scrub creation. The Oak Woodland

Sarah Thomas (Continued)

CERTIFICATIONS

Independent Researcher for Psomas' CDFW Entity Scientific Collecting Scientific Collecting Permit/SC-012642
Scientific Collecting Permit/SC-012642
Permit/SC-190370007/ California Department of Fish and Wildlife Scientific Collecting Permit/permission to capture and release terrestrial invertebrates, amphibians, reptiles, and small mammals, including western spadefoot, northern legless lizard, San Diegan legless lizard and salvage terrestrial invertebrates, reptiles, amphibians, small mammals, and non-migratory birds/California Department of Fish and Wildlife/SC-200070007
Scientific Collecting Permit/SC-012642/ California Department of Fish and Wildlife
Plant Voucher Collecting Permit/2081(a)-13-108-V/California Department of Fish and Wildlife

Habitat Revegetation/Mitigation Program (OWHMP) was developed in coordination with the client and resource agency staff and in compliance with agency requirements for the establishment of oak woodland habitat. The project also includes monitoring initial installation, as well as maintenance activities and site performance during the required ten-year maintenance and monitoring program. Monitoring activities consist of regular qualitative and quantitative site examinations and the development of site-status documentation. Helped to supervise a restoration specialist contractor for a variety of site preparation, site installation, and long-term maintenance activities. Conducts nesting bird surveys prior to maintenance activities.

Debris Basin Services – Los Angeles County, CA: Biologist for a variety of environmental, cultural resources, and biological resources services for debris basins and soft-bottom channels maintained by the LADPW within the Los Angeles, San Gabriel, and Santa Clara River Watersheds. Biologist for these habitat assessments that determined the potential for special status plant and wildlife species to occur at each debris basin for compilation of biological information into CEQA documentation that was used to obtain a Long-Term Streambed Alteration Agreement permit from the CDFW for the LACDPW annual maintenance activities at 162 debris basins from August 18, 2011, to December 31, 2029.