PURE WATER PROJECT
LAS VIRGENES-TRIUNFO

Bringing Our Water Full Circle

Public Review Draft

Programmatic Environmental Impact Report

Prepared by

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Las Virgenes-Triunfo Joint Powers Authority

August 22, 2022

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Executive Summary

The Las Virgenes-Triunfo Joint Powers Authority (JPA) is proposing the Pure Water Project – Las Virgenes-Triunfo (Pure Water Project or project), which addresses new stringent water quality standards for discharge to Malibu Creek through a new Advanced Water Purification Facility (AWPF). The AWPF would treat recycled water for indirect potable reuse through reservoir augmentation.

The Pure Water Project is a series of interrelated projects that collectively function to meet the JPA's objectives to:

1) Comply with more stringent regulatory requirements for discharge to Malibu Creek
2) Balance seasonal variation of recycled water demand
3) Create a valuable, drought-resistant resource to supplement the region's water supplies, supported by California's reservoir water augmentation regulations[1]

Chapter 1, Introduction, elaborates on the need for the project and provides additional background information.

Pursuant to the California Environmental Quality Act (CEQA), the JPA has prepared this Program Environmental Impact Report (EIR) to analyze the potential environmental impacts of constructing and operating the Pure Water Project.

Project Description

The project consists of treating effluent from the Tapia Water Reclamation Facility (WRF) at an AWPF, discharging the purified water to Las Virgenes Reservoir, and sending the filtered reject stream ("concentrate") for ocean disposal using the Calleguas Salinity Management Pipeline. This Program EIR evaluates all Pure Water Project features, including the AWPF, pipelines, a source water augmentation project, and other ancillary facilities. Chapter 2, Project Description, provides additional detail on the individual project components, including expected construction methods and timing.

The Program EIR evaluates two AWPF alternatives:

- Under Alternative 1 Agoura Road AWPF, Tapia WRF effluent would be conveyed by the recycled water system to a new AWPF located along Agoura Road in Agoura Hills.
- Under Alternative 2 Reservoir AWPF, Tapia WRF effluent would be conveyed by the recycled water system to a new AWPF located next to Las Virgenes Reservoir in Westlake Village. The Reservoir AWPF would require construction of a new access road between Triunfo Canyon Road and Las Virgenes Reservoir.

The JPA will select a preferred alternative following public and agency review of this Program EIR.

Under both Alternative 1 and Alternative 2, a new discharge pipeline would be installed in Las Virgenes Reservoir. The new pipeline would discharge purified water into the reservoir, where it would mix with the existing drinking water supply and, following a 6-month detention time in the reservoir, be pumped into the Westlake Filtration Plant, treated, and discharged into the drinking water system. The Pure Water Project also includes a source water augmentation program, which would potentially include pumping from an existing well at Los Robles Greens golf course in Thousand Oaks.

[1] California Water Code Section 13562

The Pure Water Project requires a series of interrelated pipelines; and for most, several alignment options are under consideration and are analyzed in this Program EIR:

- A source water pipeline connecting the existing recycled water pipeline system to the AWPF
- A purified water pipeline connecting the AWPF to Las Virgenes Reservoir
- A pipeline disposing the concentrate from the AWPF into the Calleguas Salinity Management Pipeline
- A sewer pipeline disposing residuals and domestic waste streams from the facility
- Potentially, a source water augmentation pipeline from the Los Robles well

Overall project construction is expected to start in late 2025, with all project features fully operational before 2030 in time to meet the compliance schedule for Tapia WRF discharges into Malibu Creek (Chapter 1, Introduction, discusses this objective).

Impact and Mitigation Measure Summary

Chapters 3 through 17 provide evaluations of the potential environmental impacts, which are summarized in Table ES-1. Several types of impacts have the potential to occur during Pure Water Project construction and operation, and most of these potential impacts can be mitigated to less than significant either by following standard regulatory requirements or by following the detailed mitigation measures prescribed in this Program EIR where needed.

There are two impacts that cannot be mitigated to less than significant: loss of special-status plants and native plant habitat, and recreation access and opportunities. Mitigation measures include implementing a Special-status Plant Mitigation Plan and a Trail Closure and Restoration Plan.

Areas of Controversy and Issues to be Resolved

CEQA requires that the Program EIR identify areas of controversy and issues to be resolved; for this project, this includes:

- Selection of either the Agoura Road or Las Virgenes Reservoir site as the preferred alternative
- The community's and agency acceptance of the loss of oak trees and impacts to special-status plants as a consequence of building the Pure Water Project
- The community's acceptance of impacts during construction activities and project operations at either AWPF site
- The community's acceptance of traffic pattern disruptions, temporary construction noise, and changes to (or loss of) recreational access during pipeline construction

Table ES-1. Impact and Mitigation Measure Summary

Impact	Mitigation Measure	Level of Significance	
Chapter 3. Aesthetics			
Impact 3-1: Scenic Vistas	None required	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant impact Less than significant impact No impact
Impact 3-2: Visual Character and Quality	None required	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant impact Less than significant impact Less than significant impact
Impact 3-3: Light or Glare	None required	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Chapter 4. Air Quality			
Impact 4-1: Short-term Criteria Air Pollutant Emissions	None required	All Project Features	Less than significant impact Less than significant impact Less than significant impact
Impact 4-2: Long-term Criteria Air Pollutant Emissions	None required	Agoura Road AWPF Reservoir AWPF	Less than significant impact Less than significant impact Less than significant impact
Impact 4-3: Pollutant Concentrations	None required	All Project Features	Less than significant impact Less than significant impact Less than significant impact
Impact 4-4: Odors	None required	Agoura Road AWPF Reservoir AWPF	Less than significant impact Less than significant impact Less than significant impact

Table ES-1. Impact and Mitigation Measure Summary

Impact	Mitigation Measure	Level of Significance	
Chapter 5. Biological Resources			
Impact 5-1: Special-status Species	Measure 5-1: Prepare and implement a mitigation plan for special-status plants and plant communities Measure 5-2: Prepare preconstruction surveys for special-status wildlife species	Agoura Road AWPF Reservoir AWPF Pipelines Malibu Creek	Significant and Unavoidable Significant and Unavoidable Significant and Unavoidable Less than significant impact
Impact 5-2: Riparian Habitat	None required	Agoura Road AWPF Reservoir AWPF Pipelines Malibu Creek	Less than significant impact Less than significant impact Less than significant impact Less than significant impact
Impact 5-3: Wetlands	Measure 5-3: Avoid and minimize impacts to jurisdictional waters, including wetlands	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 5-4: Wildlife Corridors	None required	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant impact Less than significant impact Less than significant impact
Impact 5-5: Oak Trees	Measure 5-2: Prepare and implement a mitigation plan for oak trees and oak tree natural communities	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Chapter 6. Cultural Resources			
Impact 6-1: Archaeological Resources	Measure 6-1a: Perform archaeological survey prior to construction in high and medium archaeological sensitivity zones. Measure 6-1b: Halt construction if archaeological resources are discovered	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 6.2: Historic Structures or Buildings	None required	Agoura Road AWPF Reservoir AWPF Pipelines	No impact No impact No impact

Table ES-1. Impact and Mitigation Measure Summary

Impact	Mitigation Measure	Level of Significance	
Impact 6.3: Paleontological Resources	Measure 6-3a: Prepare a Paleontological Resources Monitoring and Mitigation Plan Measure 6-3b: Halt construction if paleontological resources are discovered. Measure 6-3c: Prepare a Paleontological Resources Worker Environmental Awareness Program	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Chapter 7. Energy			
Impact 7-1: Wasteful, Inefficient, or Unnecessary Energy Consumption	None required	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant impact Less than significant impact Less than significant impact
Impact 7-2: Policy Consistency	None required	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant impact Less than significant impact Less than significant impact
Chapter 8. Geology and Soils			
Impact 8.1: Seismic Risk	Measure 8-1: Review regulation requirements, perform site-specific geotechnical and engineering studies, and implement recommendations	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 8.2: Substantial Erosion or Loss of Topsoil	Measure 8-2: Comply with regulations and policies for erosion control	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 8.3: Unstable Geologic Unit or Soil	Measure 8-1: Review regulation requirements, perform site-specific geotechnical and engineering studies, and implement recommendations Measure 8-2: Comply with regulations and policies for erosion control	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 8.4: Expansive Soils	Measure 8-1: Review regulation requirements, perform site-specific geotechnical and engineering studies, and implement recommendations	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 8.5: Soils and Wastewater	None required	Agoura Road AWPF Reservoir AWPF Pipelines	No impact No impact No impact

Table ES-1. Impact and Mitigation Measure Summary

Impact	Mitigation Measure	Level of Significance	
Impact 8.6: Unique Geologic Features	None required	Agoura Road AWPF Reservoir AWPF Pipelines	No impact No impact No impact
Chapter 9. Greenhouse Gas Emissions			
Impact 4-1: Greenhouse Gas Emissions	None required	All Project Features	Less than significant impact
Impact 4-2: Policy Consistency	None required	All Project Features	Less than significant impact
Chapter 10. Hazardous and Hazardous Materials			
Impact 10-1: Transport, Use, or Disposal of Hazardous Materials	None required	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant impact Less than significant impact Less than significant impact
Impact 10-2: Exposure to Hazardous Materials	Measure 10-1: Perform a Phase I investigation as needed prior to construction; and remediate, control, or dispose of contaminated materials as appropriate	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 10-3: Hazardous Emissions within 0.25 mile of Schools	Measure 10-1: Perform a Phase I investigation as needed prior to construction; and remediate, control, or dispose of contaminated materials as appropriate	Agoura Road AWPF Reservoir AWPF Pipelines	No impact No impact Less than significant with mitigation
Impact 10-4: Hazardous Sites	Measure 10-1: Perform a Phase I investigation as needed prior to construction; and remediate, control, or dispose of contaminated materials as appropriate Measure 10-2: Los Robles Well Monitoring Program	Agoura Road AWPF Reservoir AWPF Water Augmentation Pipelines	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Chapter 11. Hydrology and Water Quality			
Impact 11-1a: Water Quality Standards and Waste Discharge Requirements (during Construction)	Measure 8-2: Comply with regulations and policies for erosion control	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 11-1b: Water Quality Standards and Waste Discharge Requirements (during Operation)	None required	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant impact Less than significant impact Less than significant impact

Table ES-1. Impact and Mitigation Measure Summary

Impact	Mitigation Measure	Level of Significance	
Impact 11-2: Drainage and Flood Risk	None required	Agoura Road AWPF Reservoir AWPF Pipelines Malibu Creek	Less than significant impact Less than significant impact No impact Less than significant impact
Impact 11-3: Groundwater	None required	Agoura Road AWPF Reservoir AWPF Water Augmentation Pipelines	No impact No impact Less than significant impact No impact
Chapter 12. Land Use and Planning			
Impact 12.1: Physically Divide an Established Community	None required	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant impact Less than significant impact No impact
Impact 12.2: Conflict with Land Use Plans, Policies, or Regulations	None required	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant impact Less than significant impact No impact
Chapter 13. Noise			
Impact 13-1: Construction Noise and Vibration	Measure 13-1. Noise Control Plan	Agoura Road AWPF Reservoir AWPF Pipelines Pump Station	Less than significant impact Less than significant with mitigation Less than significant with mitigation Less than significant impact
Impact 13.2: Noise and Vibration from Operation	None required	Agoura Road AWPF Reservoir AWPF Pipelines Pump Station	Less than significant impact Less than significant impact Less than significant impact Less than significant impact
Chapter 14. Recreation			
Impact 14-1: Recreation Access and Opportunities	Measure 14-1: Prepare Trail Closure and Restoration Plan	Agoura Road AWPF Reservoir AWPF Pipelines Malibu Creek	Less than significant impact Significant and Unavoidable Significant and Unavoidable Less than significant impact

Table ES-1. Impact and Mitigation Measure Summary

Impact	Mitigation Measure	Level of Significance	
Chapter 15. Transportation and Traffic			
Impact 15-1: Consistency with Programs, Plans, Ordinances, and Policies	Measure 15-1: Transportation Management Plan	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Impact 15.2: Vehicle Miles Traveled	None required	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant impact Less than significant impact Less than significant impact
Impact 15.3: Design Hazards	None required	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant impact Less than significant impact Less than significant impact
Impact 15.4: Emergency Access	Measure 15-1: Transportation Management Plan	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Chapter 16. Tribal Cultural Resources			
Impact 16-1: Changes to a Tribal Cultural Resource	Mitigation Measure 6-1b, Halt construction if archaeological resources are discovered	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant with mitigation Less than significant with mitigation Less than significant with mitigation
Chapter 17. Wildfire			
Impact 17-1: Emergency Response or Emergency Evacuation Plan	None required	Agoura Road AWPF Reservoir AWPF Pipelines	No impact No impact Less than significant impact
Impact 17-2: Wildfire Risks	None required	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant impact Less than significant impact Less than significant impact
Impact 17-3: Associated Infrastructure	None required	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant impact Less than significant impact Less than significant impact
Impact 17-4: Runoff, Slope Instability, or Drainage Changes	None required	Agoura Road AWPF Reservoir AWPF Pipelines	Less than significant impact Less than significant impact Less than significant impact

Contents

Appendixes

Tables

Figures

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Acronyms and Abbreviations

°F	degree(s) Fahrenheit
$\mu g/m^3$	microgram(s) per cubic meter
$\mu N/m^2$	micronewton(s) per square meters
μPa	micropascal(s)
AADT	average annual daily traffic
AB	Assembly Bill
AF	acre-foot (feet)
AFY	acre-foot (feet) per year
Alquist-Priolo Act	Alquist-Priolo Earthquake Fault Zoning Act
AQMP	Air Quality Management Plan
ASCE	American Society of Civil Engineers
ASTM	ASTM International
AWPF	Advanced Water Purification Facility
bgs	below ground surface
BLM	Bureau of Land Management
BMP	best management practice
BP	Before Present
c.	circa
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAL FIRE	California Department of Forestry and Fire Protection
Cal/OSHA	California Department of Industrial Relations, Division of Occupational Safety and Health
CalEEMod	California Emission Estimator Model
CalEPA	California Environmental Protection Agency
Calleguas MWD	Calleguas Municipal Water District
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CASQA	California Stormwater Quality Association
CBC	California Building Code
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CEQA Guidelines	California Code of Regulations Title 14, Division 6, Chapter 3

CERS	California Environmental Reporting System
CESA	California Endangered Species Act
CFC	California Fire Code
CFR	Code of Federal Regulations
cfs	cubic foot (feet) per second
CGP	General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities
CGS	California Geological Survey
CH_4	methane
CHRIS	California Historical Resources Information System
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
COS	Conservation and Open Space Element
COSCA	Conejo Open Space Conservation Agency
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Rank
CUP	Conditional Use Permit
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
dB	decibel(s)
dBA	A-weighted decibel(s)
DDW	State Water Resources Control Board – Division of Drinking Water
DO	dissolved oxygen
DPS	distinct population segment
DTSC	California Department of Toxic Substance Control
EIR	Environmental Impact Report
EO	Executive Order
EO 13990	Executive Order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis
EPA	U.S. Environmental Protection Agency
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
fps	foot (feet) per second
FR	Federal Register

ft^2	square foot (feet)
FTA	Federal Transit Administration
FTA manual	Transit Noise and Vibration Assessment Manual
GHG	greenhouse gas
gpm	gallon(s) per minute
GPS	global positioning system
GWP	global warming potential
H:V	horizontal to vertical
H_2S	hydrogen sulfide
HAP	hazardous air pollutant
HAZ	Hazards and Safety Element
HFHSZ	High Fire Hazard Severity Zone
hp	horsepower
IPCC	Intergovernmental Panel on Climate Change
JPA	Las Virgenes-Triunfo Joint Powers Authority
kVA	kilovolt(s)-ampere
kWh	kilowatt-hour(s)
kWh/AF	kilowatt-hour(s) per acre-foot
LA Metro	Los Angeles County Metropolitan Transportation Authority
LACDRPG	Los Angeles County Department of Regional Planning
LACM	Natural History Museum of Los Angeles County
Las Virgenes-Malibu COG	Las Virgenes-Malibu Council of Governments
Las Virgenes MWD	Las Virgenes Municipal Water District
lb/d	pound(s) per day
Ldn	day-night noise level
LEED	Leadership in Energy and Environmental Design
Leq	equivalent noise level
Lmax	maximum sound level
Ln	percentile noise level
LOS	level of service
Los Angeles DOT	City of Los Angeles Department of Transportation
Los Angeles FCD	Los Angeles County Flood Control District
LRA	Local Responsibility Area
LST	localized significance threshold
MBTA	Migratory Bird Treaty Act
Metropolitan	Metropolitan Water District of Southern California
mg/L	milligram(s) per liter

MGD	million gallons per day
MMT	million metric ton(s)
mph	mile(s) per hour
MRCA	Mountains Recreation and Conservation Authority
MS4	Municipal Separate Storm Sewer System
MT	metric ton(s)
MW	megawatt(s)
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NASA	National Aeronautics and Space Administration
NEHA	National Earthquake Hazards Act
NEHRP	National Earthquake Hazards Reduction Program
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
No.	number
NO_2	nitrogen dioxide
NOP	Notice of Preparation
NOx	nitrous oxide
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
O&M	operations and maintenance
O_3	ozone
OPR	Governor's Office of Planning and Research
OSHA	Occupational Safety and Health Administration
Pb	lead
PCE	tetrachloroethylene
PM_{10}	particulate matter with aerodynamic diameter equal to or greater than 10 micrometers
$PM_{2.5}$	particulate matter with aerodynamic diameter equal to or greater than 2.5 micrometers
ppb	part(s) per billion
ppm	part(s) per million
ppmv	part(s) per million by volume
PPV	peak particle velocity
ppt	part(s) per trillion
PRC	Public Resources Code
PRMMP	Paleontological Resources Monitoring and Mitigation Plan

project	Pure Water Project – Las Virgenes-Triunfo
Pure Water Project	Pure Water Project – Las Virgenes-Triunfo
Rarefind 5	*California Natural Diversity Database Rarefind 5* application
Regional Board	Regional Water Quality Control Board
Regional MS4 Permit	National Pollutant Discharge Elimination System Permit for Municipal Separate Storm Sewer System Discharges Within the Coastal Watersheds of Los Angeles and Ventura Counties
RO	reverse osmosis
ROG	reactive organic gases
ROW	right-of-way
SB	Senate Bill
SCCIC	South Central Coastal Information Center
SDS	Safety Data Sheet
SDC	Seismic Design Category
SEA	significant ecological area
SF_6	sulfur hexafluoride
SIP	State Implementation Plan
SLCP	short-lived climate pollutant
SLF	Sacred Lands File
SMARA	State Mining and Reclamation Act
SMP	Calleguas Salinity Management Pipeline
SO_2	sulfur dioxide
SoCal Edison	Southern California Edison
South Coast AQMD	South Coast Air Quality Management District
SO_x	sulfur oxide
SR-118	State Route 118
SR-23	State Route 23
SRA	State Responsibility Area
State Board	California Water Quality Control Board
State Water Board	State Water Resources Control Board
SVP	Society of Vertebrate Paleontology
SWP	California State Water Project
SWPPP	Stormwater Pollution Prevention Plan
TAC	toxic air contaminant
TCE	trichloroethylene
TDM	Transportation Demand Management
TMDL	total maximum daily load
TMP	Transportation Management Plan

Triufo WSD	Triufo Water & Sanitation District
TOT	Thousand Oaks Transit
U.S.	United States
U.S. 101	U.S. Highway 101
UCLA	University of California, Los Angeles
UCMP	University of California Museum of Paleontology
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
Ventura County APCD	Ventura County Air Pollution Control District
Ventura County Watershed District	Ventura County Watershed Protection District
VHFHSZ	Very High Fire Hazard Severity Zone
VMT	vehicle-mile(s) traveled
VOC	volatile organic compound
vpd	vehicle(s) per day
WDR	Waste Discharge Requirement
WEAT	Worker Environmental Awareness Training
WRF	Water Reclamation Facility
WWTP	wastewater treatment plant

1. Introduction

The Las Virgenes-Triunfo Joint Powers Authority (JPA) is proposing the Pure Water Project – Las Virgenes-Triunfo (Pure Water Project or project), which addresses new stringent water quality standards for discharge to Malibu Creek through a new Advanced Water Purification Facility (AWPF). The AWPF will treat recycled water for indirect potable reuse through reservoir augmentation. The Pure Water Project is a series of interrelated projects – described in Chapter 2, Project Description – that collectively function to meet the JPA's objectives (as described in Section 1.2).

Pursuant to the California Environmental Quality Act (CEQA), the JPA has prepared this Program Environmental Impact Report (EIR) to analyze the potential environmental impacts of constructing and operating the Pure Water Project.

1.1 Background

The project background describes the need for the Pure Water Project, focusing on two areas: (1) Tapia Water Reclamation Facility (WRF) operations, especially in relation to Malibu Creek discharges, and (2) overall Las Virgenes Municipal Water District (Las Virgenes MWD) water supply system and operations.

1.1.1 Las Virgenes-Triunfo Joint Powers Authority

The JPA is a partnership between Las Virgenes MWD and Triunfo Water & Sanitation District (Triunfo WSD), established in 1964 to cooperatively treat wastewater for these two neighboring water districts within the Malibu Creek watershed. The JPA collects, conveys, and treats wastewater from residents in western Los Angeles and eastern Ventura counties, including in the cities of Agoura Hills, Calabasas, Hidden Hills, Thousand Oaks, and Westlake Village (Figure 1-1). Las Virgenes MWD serves as the administering agent for the JPA facilities.

1.1.2 Tapia Water Reclamation Facility Operations

The JPA owns and operates the Tapia WRF, located in the Santa Monica Mountains along Malibu Canyon Road. The Tapia WRF has a permitted capacity of 12 million gallons per day (MGD) for average daily wastewater flow from primarily domestic sources. The current average dry weather flow is approximately 7.5 MGD.

The facility treats wastewater to *California Code of Regulations* (CCR), Title 22 standards[1] for recycled water, for use primarily for nonresidential landscape irrigation, such as roadway medians, school yards, and golf courses within Calabasas, Agoura Hills, and Westlake Village. Excess recycled water is either discharged to Malibu Creek, used in nearby sprayfields, or sent to the Los Angeles River. The Tapia WRF has an authorized discharge point at an open-channel storm drain along U.S. 101 near the Parkway Calabasas interchange. This storm drain is part of a system that discharges to Calabasas Creek and subsequently to the Los Angeles River. All of the recycled water produced at the Tapia WRF is used for irrigation during summer months; however, surplus recycled water is discharged to Malibu Creek in winter months.

The recycled water distribution system includes three open reservoirs, three storage tanks, four pump stations, and 62 miles of pipelines, serving 661 individual connections. In 2020, the JPA provided 5,892 acre-feet (AF) of recycled water within its service area (Las Virgenes MWD 2021). Some recycled water is also provided outside of the service area, to the Calleguas Municipal Water District (Calleguas MWD).

[1] CCR Title 22, Social Security, Division 4, Environmental Health

Demand for recycled water varies seasonally, with summertime demand peaks that are significantly higher than typical spring and fall demands. For this reason, the recycled water system is supplemented from the drinking water system and from groundwater wells that discharge into the sewer system for treatment at Tapia WRF (Las Virgenes MWD 2021).

The Tapia WRF operates pursuant to a federal National Pollutant Discharge Elimination System (NPDES) permit and state Waste Discharge Requirements (WDRs). Collectively, the Los Angeles Regional Water Quality Control Board (Regional Board) adopted the WDRs and NPDES Permit CA0056014 and Order R4-2017-0124 on June 1, 2017. The NPDES waste discharge permit for Tapia WRF prohibits discharge to Malibu Creek from April 15 to November 15, except under an operational emergency or qualifying storm event, for protection of habitats in Malibu Creek and Lagoon. The NPDES permit also requires discharge from the Tapia WRF to Malibu Creek to maintain a minimum stream flow of 2.5 cubic feet per second (cfs) to help support steelhead habitat.

Regional Board Resolution Number (No.) R16-009 (May 16, 2017) amended the Water Quality Control Plan for the Los Angeles Region (*Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* [Regional Board 2020]) to incorporate more stringent seasonal nitrogen and phosphorus total maximum daily loads (TMDLs) for discharge to Malibu Creek. This amendment addressed benthic community impairments to accord with U.S. Environmental Protection Agency (EPA)-established *Malibu Creek and Lagoon Sedimentation and Nutrients TMDL to Address Benthic Community Impairments* (EPA 2013).

1.1.3 Las Virgenes Municipal Water District Water System

The Las Virgenes MWD serves a 74,640-acre area encompassing the cities of Agoura Hills, Westlake Village, Calabasas, and Hidden Hills, as well as unincorporated areas of Los Angeles County (Figure 1-1). The drinking water distribution system is complex, especially because of the mountainous terrain, including 25 storage tanks, 24 pump stations, and nearly 400 miles of pipelines (Las Virgenes MWD 2021).

Almost all drinking water is imported from the California State Water Project (SWP), provided to the Las Virgenes MWD by the Metropolitan Water District of Southern California (Metropolitan). Several other local sources support the SWP supply, but most drinking water is from the SWP (about 96% on average). In 2020, Las Virgenes MWD provided a total of 20,817 AF of imported water within its service area (Las Virgenes MWD 2021).

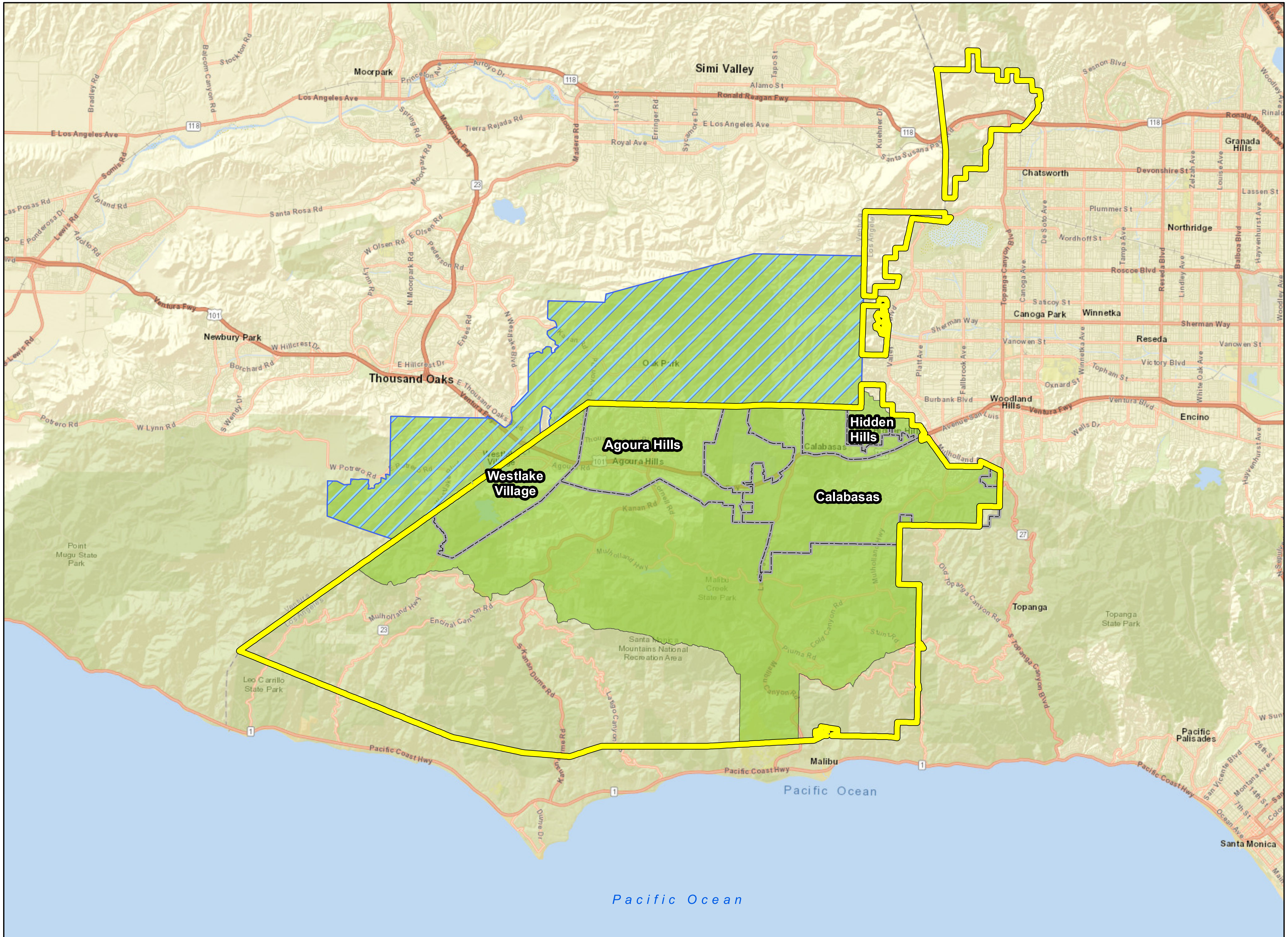
SWP supply is based on rainfall and snowpack conditions in Northern California, and demands are usually met in wet years. However, dry conditions have impacts on drinking water deliveries; for example, Las Virgenes MWD was required to reduce consumption by 36% in 2016. In the long-term, Las Virgenes MWD assumes more uncertainty in SWP deliveries, potentially worsened by climate change (Las Virgenes MWD 2021).

Climate Change

The Las Virgenes MWD has been impacted by climate change in several ways:

- Reduction in Sierra Nevada snowpack and availability of imported supply
- Increase in intensity and frequency of extreme weather events
- Increase in frequency and duration of extreme heat, including associated increased water demands to fight wildfires

(Las Virgenes MWD 2021)



Legend

- LVMWD Potable Water Service
- LVMWD Sewer Service
- Trifuno Water and Sanitation District
- City Limits

Sources:
ESRI World Street Map; LVMWD, 2022

0 1 2 4
Miles
1 inch = 2 miles

Figure 1-1

Las Virgenes Municinpal Water District Service Area

Pure Water Project Las Virgenes - Triunfo

Jacobs

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Metropolitan considers the system to be reliable because they secure their imported water supplies and build local supplies. In 1990, local supplies accounted for 41% of total supply within the Metropolitan service area. As a result of ongoing and planned future efforts, Metropolitan is planning for local supplies to account for 64% of total supplies by 2035, including sources such as water recycling, groundwater recovery, and stormwater capture (Metropolitan 2021). To support this goal, Metropolitan provides funding support to help build local supplies through a variety of incentive programs available to its member agencies.

1.2 Pure Water Project Objectives

The JPA's objectives for the Pure Water Project are to:

- Comply with more stringent regulatory requirements for discharge to Malibu Creek
- Balance seasonal variation of recycled water demand
- Create a valuable, drought-resistant resource to supplement the region's water supplies, supported by California's reservoir water augmentation regulations

1.3 Intended Uses of the Environmental Impact Report

The Program EIR will be used by decision-makers with authority over the Pure Water Project so that the environment is considered prior to taking action.

1.3.1 Lead Agency

The JPA is the Lead Agency for the Pure Water Project and will be responsible for project implementation, including:

- Hiring a contractor to design and build the project
- Acquiring real estate and easements for project facilities
- Applying for permits

The JPA Board of Directors will consider the Program EIR for certification in advance of taking action to build the Pure Water Project. Consistent with CEQA requirements, the JPA will use the Program EIR to identify the potential environmental impacts of constructing and operating the Pure Water Project and describe alternatives to the project and mitigation measures that avoid potentially significant impacts or reduce them to a less than significant level. In addition to these official actions, distribution and review of the Program EIR will inform the public about the Pure Water Project.

1.3.2 Responsible Agencies

Several other agencies will have responsibility for carrying out approvals for the Pure Water Project or for individual activities within the project. These agencies are known as CEQA Responsible Agencies. Two agencies with important regulatory roles in permitting the Pure Water Project are:

1) State Water Resources Control Board (State Water Board), Division of Drinking Water (DDW) and Division of Water Rights – DDW is responsible for the regulation of public drinking water systems and will review the Pure Water Project to confirm consistency with reservoir water augmentation standards for continued use of Las Virgenes Reservoir water for potable use. In addition, the Division of Water Rights considers a Wastewater Change Petition that will be submitted for a proposed change in Tapia WRF's treated effluent point of discharge.
2) Regional Board – Responsible for protecting water quality and will review the Pure Water Project for discharge of AWPF purified water into Las Virgenes Reservoir, consistent with reservoir augmentation standards.

Other CEQA Responsible Agencies are expected to include:

- Santa Monica Mountains Conservancy (a State of California agency) and the Mountains and Recreation Conservation Authority for overland access to Las Virgenes Reservoir
- California Department of Fish and Wildlife (CDFW) for construction activities affecting streams and other natural areas
- California Department of Transportation (Caltrans) for construction activities across state highways
- Local governments (for example, the City of Agoura Hills, City of Thousand Oaks, and Westlake Village) for construction along city streets

1.4 Environmental Review Process and Organization

The Program EIR is the primary environmental compliance document for Pure Water Project implementation. Additional, focused environmental review may be required for specific project features. Pursuant to CEQA, a public agency should prepare a Program EIR:

- When it proposes a program or series of actions that are linked geographically
- When the actions are logical parts of a chain of contemplated events, rules, regulations, or plans that govern the conduct of a continuing program
- When individual activities carried out under the same authorizing statutory or regulatory authority have generally similar environmental effects that could be mitigated in similar ways

Program EIRs generally analyze broad environmental effects of a program, acknowledging that site-specific environmental review may be required for portions of the program.

The Program EIR is focused on potentially significant environmental impacts from Pure Water Project construction and operation. To solicit input on the scope of the Program EIR, a Notice of Preparation (NOP) was issued on September 9, 2021, and a Scoping Meeting was held on September 23, 2021. The NOP was broadly distributed to state agencies using the California State Clearinghouse, and to potentially affected local agencies, organizations, and interested parties via letters and email. In addition, the availability of the NOP and the Scoping Meeting was advertised in both print and digital media.

Agencies and the public were invited to provide comments on the scope of the Program EIR through the end of the scoping period (October 11, 2021). Three public comments were provided by the participants during the Scoping Meeting, and 94 individual written comments were received from 11 letters and emails sent in response to the NOP. All comments received were evaluated and were helpful in determining the scope of the Program EIR.

Based on the scoping process and preliminary technical review of potential impacts, the Program EIR was developed to focus on the environmental resources of concern.

Scoping

Information about the Pure Water Project scoping process is available online: Project Updates | Pure Water Project Las Virgenes-Triunfo (ourpureh2o.com)

The Program EIR is organized into the following sections:

- **Executive Summary:** Summarizes the Program EIR by providing an overview of the Pure Water Project, the environmental impacts that could result from project construction and operation, mitigation measures that could reduce or eliminate those impacts, and alternatives considered.
- **Chapter 1 Introduction:** Provides background information on the Pure Water Project, and describes the intended use and organization of the Program EIR.
- **Chapter 2 Program Description:** Describes the individual project features of the Pure Water Project and how they will be constructed and operated.

- **Chapter 3 Aesthetics:** Discusses potential visual impacts on the surrounding environment, including from new buildings and structures.
- **Chapter 4 Air Quality:** Discusses the potential for the Pure Water Project to emit air quality pollutants of concern and how the project will maintain consistency with federal, state, and local air quality plans.
- **Chapter 5 Biological Resources:** Discusses biological resources potentially present in the project area, applicable state and federal regulations, results of surveys, and potential impacts on biological resources.
- **Chapter 6 Cultural Resources:** Discusses potential impacts to archaeological, historical, and paleontological resources.
- **Chapter 7 Energy:** Discusses Pure Water Project energy demands in the context of state and local requirements for energy conservation.
- **Chapter 8 Geology and Soils:** Describes the geology and soils in the project area and related impacts.
- **Chapter 9 Greenhouse Gases:** Discusses Pure Water Project consistency with state and local plans and policies related to greenhouse gases (GHGs).
- **Chapter 10 Hazards and Hazardous Materials:** Discusses known hazardous materials in the area, potential disruptions from construction activity, and hazardous materials that will be used in AWPF operations.
- **Chapter 11 Hydrology and Water Quality:** Discusses regulations and standards for water quality and hydrology in the project area and potential impacts on those resources.
- **Chapter 12 Land Use and Planning:** Discusses the potential issues related to zoning and local general plan consistency.
- **Chapter 13 Noise:** Describes local codes and policies related to noise and potential noise impacts from Pure Water Project construction and operation.
- **Chapter 14 Recreation:** Discusses the locations of and potential impacts on parks and recreation resources.
- **Chapter 15 Transportation and Traffic:** Discusses potential impacts on roadways, traffic, and alternative transportation in the project area.
- **Chapter 16 Tribal Cultural Resources:** Describes ongoing consultation with Native American Tribes and potential measures to help protect Tribal cultural resources.
- **Chapter 17 Wildfire:** Describes Pure Water Project construction and operation in the context of wildfire risks.
- **Chapter 18 Other Required CEQA Considerations:** Discusses potential cumulative and growth-inducing impacts of the Pure Water Project.
- **Chapter 19 Alternatives:** Presents a reasonable range of alternatives to the Pure Water Project and an explanation of how those alternatives were considered, and compares the relative impacts of each alternative to the Pure Water Project.
- **Chapter 20 Report Preparation:** Lists the contributors to the Program EIR.
- **Chapter 21 References:** Lists the reference sources used to develop the Program EIR.
- **Appendices:** Includes documents relevant to preparation of the Program EIR.

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2. Project Description

The JPA proposes to implement the Pure Water Project to meet the objectives described in Chapter 1. The project consists of treating the Tapia WRF effluent at an AWPF, discharging the purified water to Las Virgenes Reservoir, and sending the filtered reject stream ("concentrate") for ocean disposal. This Program EIR evaluates all Pure Water Project features, including the AWPF, pipelines, a source water augmentation project, and other ancillary facilities. Chapters 3 through 17 describe the project construction and operational impacts.

Two alternatives for the AWPF are evaluated: Alternative 1, with the AWPF site located along Agoura Road; and Alternative 2, with the AWPF site located at Las Virgenes Reservoir. Several pipeline alignment options are still under consideration – all options are described in this chapter and evaluated in this Program EIR. Section 2.1 describes the individual project components, and Section 2.2 describes the typical construction methods and expected timing.

Table 2-1 summarizes the project features by alternative.

Table 2-1. Project Features

Project Feature	Alternative 1 Agoura Road AWPF	Alternative 2 Reservoir AWPF
Tapia WRF and Malibu Creek Discharge	Minor upgrades at Tapia WRF. Malibu Creek discharges eliminated, except under an operational emergency or qualifying storm event.	Same as Alternative 1.
AWPF	Located along Agoura Road in Agoura Hills.	Located at Las Virgenes Reservoir in Westlake Village.
AWPF Access Road	Not needed.	New access road between Triunfo Canyon Road and Las Virgenes Reservoir.
Las Virgenes Reservoir and Westlake Filtration Plant	Install discharge pipeline and hypolimnetic oxygenation system.	Same as Alternative 1.
Source Water Augmentation	Refurbish well at Los Robles Greens golf course and installing additional pipelines.	Same as Alternative 1.
Pipelines	Install source water, purified water, concentrate disposal, and sewer pipelines totaling approximately 20 miles.	Install source water, purified water, concentrate disposal, and sewer pipelines totaling approximately 23 miles.
Other Ancillary Features	Upgrade the recycled water pump station (west).	Same as Alternative 1.

2.1 Project Components

This section describes the individual project components.

2.1.1 Tapia Water Reclamation Facility and Malibu Creek Discharges

The Tapia WRF is an existing WRF located on Malibu Canyon Road in the Santa Monica Mountains (Figure 2-1). The facility treats wastewater from nearby areas; plant capacity is 12 MGD for average daily flow, with current operations of approximately 7.5 MGD. Discharges from the Tapia WRF are as follows (Las Virgenes MWD 2022):

- As much as possible, treated effluent is reused for landscape irrigation and similar uses. There is less demand during the wet season, when there is less demand for recycled water.
- Treated effluent not used for recycled water is discharged to Malibu Creek; or when discharge to Malibu Creek is prohibited, recycled water is discharged to nearby sprayfields or the Los Angeles River via Arroyo Calabasas.

Legend

Tapia WRF

Basemap Sources:
ESRI World Imagery;
ESRI World Street Map

NAD83 UTM Zone 11

June 23, 2022

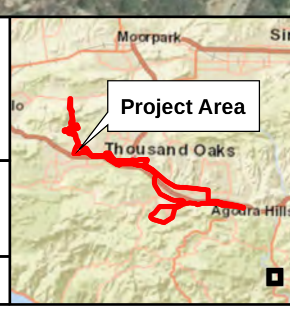


Figure 2-1
Tapia Water Reclamation Facility

Jacobs

Pure Water Project
Las Virgenes –Triunfo

0 200 400 600 800

Feet

The Pure Water Project does not include substantial changes at the Tapia WRF, and its capacity is not expected to increase. To operate the project efficiently, some minor upgrades to existing facilities would be required within the existing plant footprint, such as changes to optimize disinfection practices. The primary change is operational – all treated effluent would be sent to the recycled water system and the new AWPF.[1]

2.1.2 Alternative 1 Agoura Road Advanced Water Purification Facility

Under Alternative 1 Agoura Road AWPF, Tapia WRF effluent is conveyed by the recycled water system to the new purification facility located along Agoura Road in Agoura Hills (Figure 2-2). The facility would have a capacity of 7.5 MGD.

2.1.2.1 Treatment Process

Tapia WRF effluent is highly treated and sufficient for recycled water uses, such as landscape irrigation. The AWPF would further treat recycled water from the Tapia WRF to a higher standard that allows discharge into a surface water reservoir that can be used as a drinking water source. The primary steps in advanced water purification are:

- Microfiltration or ultrafiltration
- Reverse osmosis (RO)
- Ultraviolet disinfection advanced oxidation process

Surface Water Augmentation

California Water Code Section 13562 authorized the State Water Board to adopt uniform water recycling criteria for indirect potable reuse through surface water augmentation. Criteria were developed and reviewed through the mid-2010s, including peer review by an expert panel.

The State Water Board adopted the new surface water augmentation regulations on March 6, 2018. The regulatory process, including peer review, is documented online: SBDDW-16-02 Surface Water Augmentation (SWA) Regulations | California State Water Resources Control Board.

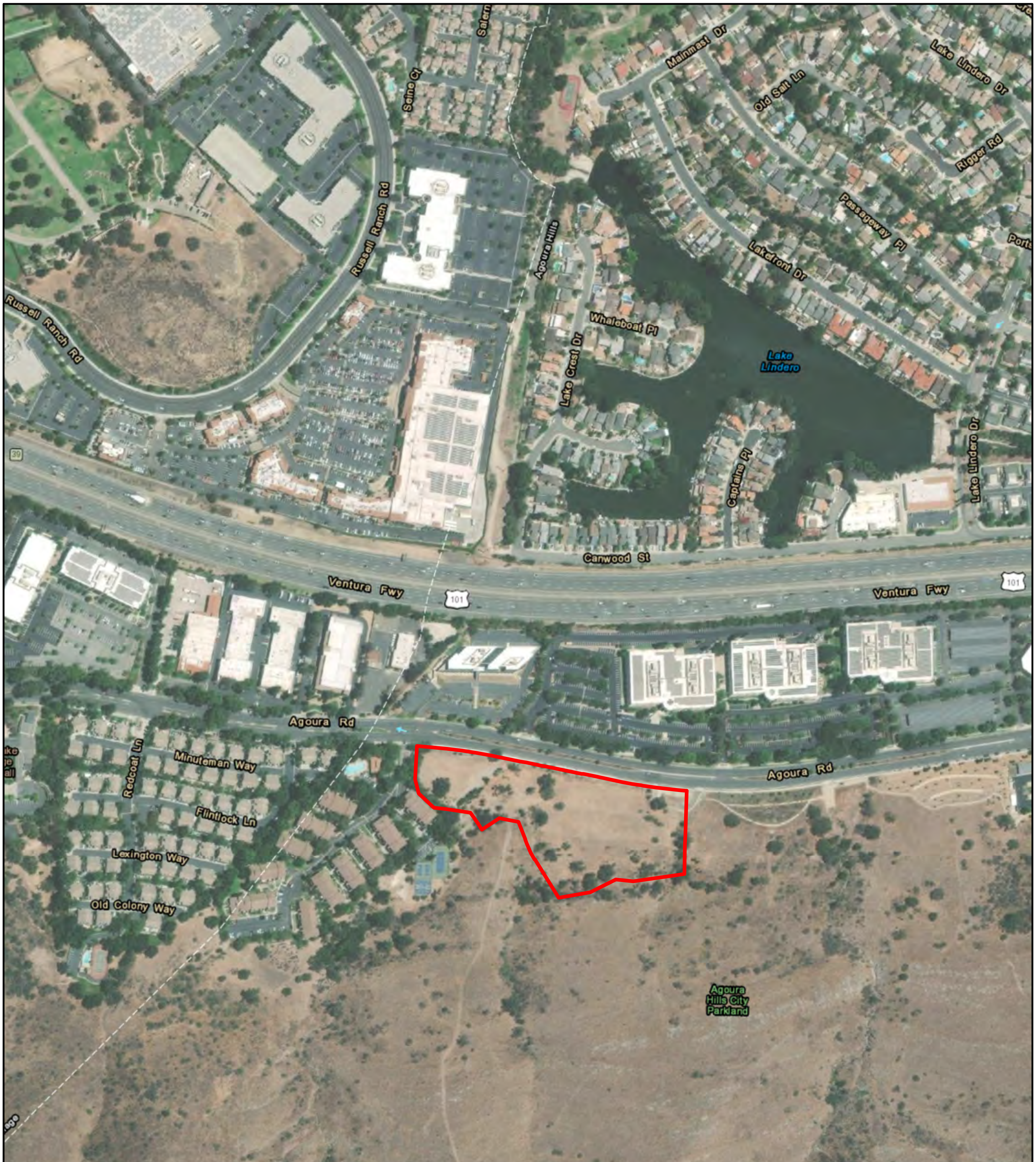
The Las Virgenes MWD operates this proposed system at its Pure Water Demonstration Facility, located adjacent to the District's headquarters in Calabasas. The AWPF would use the same processes at scale.

In addition to the primary water purification steps, the AWPF would include:

- Pumps to operate the filtration systems
- Chemical facilities (such as storage, pumps, and pipes)
- Large pumps to help convey purified water to Las Virgenes Reservoir and effluent (concentrate) to the ocean
- Electrical facilities, including emergency generators
- Extensive piping to convey water from one process to the next

The AWPF would include an area for onsite staff use, including maintenance and laboratory facilities. Figure 2-3 shows the proposed site layout.

[1] Although all Tapia WRF discharges are needed for the Pure Water Project and the existing recycled water system, there may be occasional discharges to Malibu Creek and the Los Angeles River under an operational emergency or qualifying storm event.



Legend

Agoura Road AWPF Site

Basemap Sources:
ESRI World Imagery;
ESRI World Street Map

NAD83 UTM Zone 11

June 23, 2022

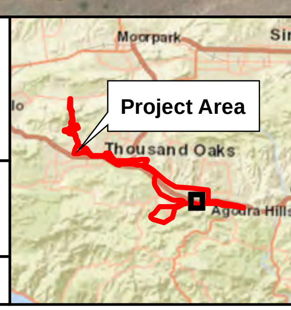
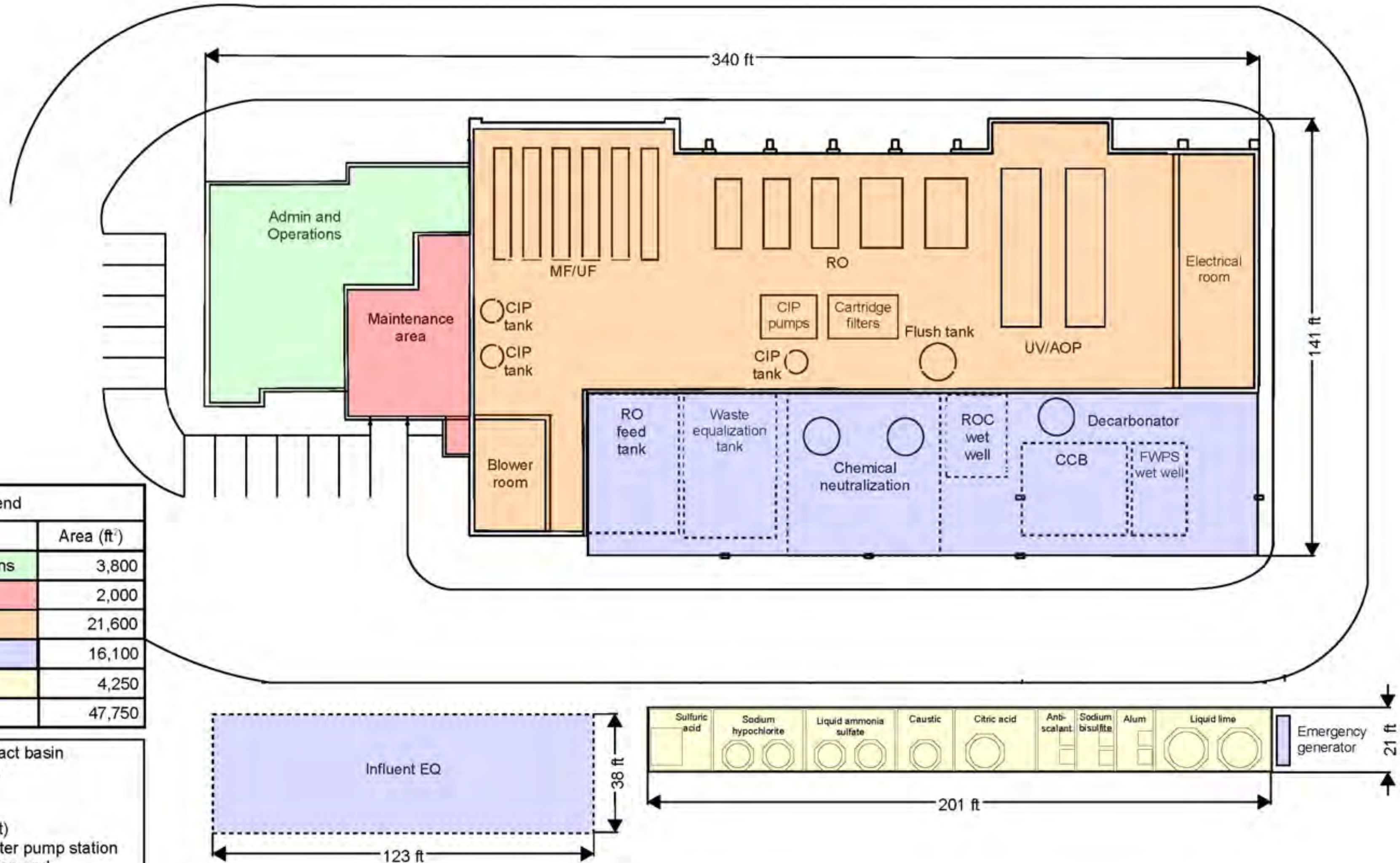


Figure 2-2
Agoura Road Advanced Water Purification Facility Site

Jacobs

Pure Water Project
Las Virgenes –Triunfo

0 200 400 600 800
Feet



Legend	
Function	Area (ft²)
Admin and Operations	3,800
Maintenance area	2,000
Process - Indoor	21,600
Process - Outdoor	16,100
Chemical - Outdoor	4,250
Total	47,750

CCB = chlorine contact basin
CIP = clean-in-place
EQ = equalization
ft = foot (feet)
ft² = square foot (feet)
FWPS = finished water pump station
MF/UF = microfiltration and ultrafiltration
RO = reverse osmosis
ROC = reverse osmosis concentrate
UV/AOP = ultraviolet advanced oxidation process

Figure 2-3 Site Layout
Pure Water Project Las Virgenes-Triunfo

Jacobs

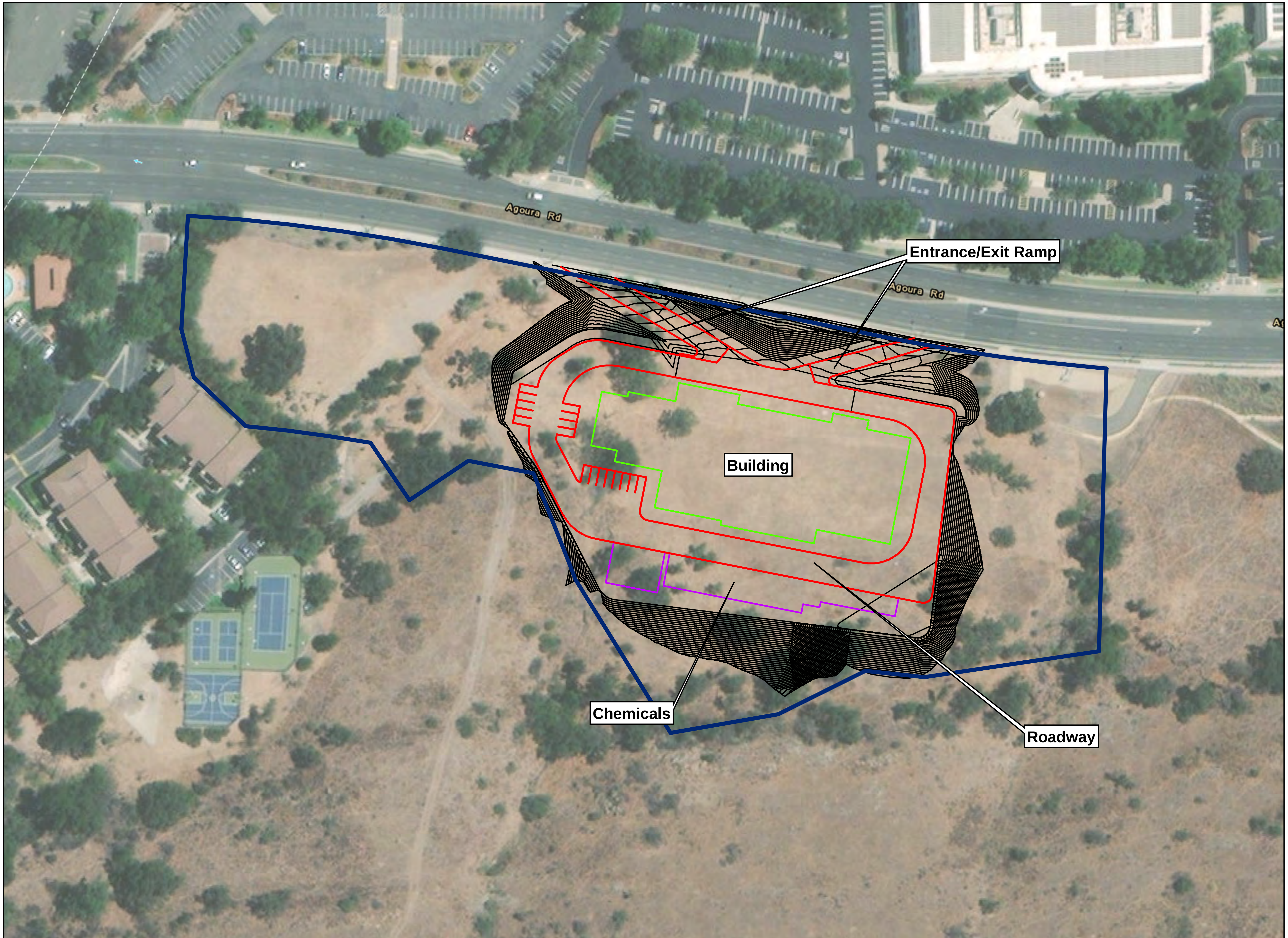
2.1.2.2 Site Plan and Architectural Design

Alternative 1 Agoura Hills AWPF, would occupy a vacant parcel (Assessor's Parcel No. 2061-1-25) owned by the Las Virgenes MWD along Agoura Road in Agoura Hills. A conceptual site plan has been developed to optimize how the required process facilities fit onto the undeveloped property (Figure 2-4).

The AWPF would occupy 2.8 acres of the 7.1-acre site, with a facility footprint of 47,750 square feet (ft^2). In addition to the process facilities described, the site would contain access driveways from Agoura Road; paved areas for internal circulation, including materials deliveries; and approximately 16 parking spaces. The site has been designed to comply with local and regional stormwater management regulations, including an infiltration trench to capture and treat site runoff.

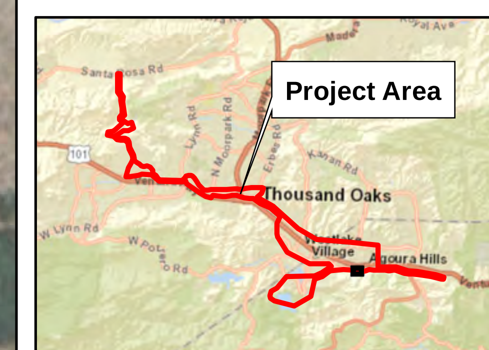
The AWPF would occupy the main, eastern portion of the site in the largest open area to minimize tree removal. The smaller, western portion of the site would be used during construction for materials and equipment storage, contractor parking, and construction administration, with a temporary road connection for construction access across the site. Following construction, the western portion of the site would be restored to a natural condition and as a restoration area for impacts caused by site development.

Conceptual designs have been prepared to show the AWPF architectural features. Architectural design is based on general styles common in Southern California and consistent with nearby commercial and multi-family residential development and would follow City of Agoura Hills standards, including the *Agoura Hills Architectural Design Standards & Guidelines* (City of Agoura Hills 2015) and the *Ladyface Mountain Specific Plan* (City of Agoura Hills 1991). Figure 2-5 shows the proposed design concept from two street perspectives. The conceptual designs reflect guiding principles and may be updated and refined as the project advances through the design and construction contractor selection steps.



Legend

- Agoura Road AWPF Site
- Roadway
- Building
- Chemicals
- Grading Countours



Sources:
ESRI World Topo Map; ESRI World Street Map

0 50 100 200
Feet
1 inch = 100 feet

Figure 2-4

Site Plan

Pure Water Project Las Virgenes - Triunfo

Jacobs

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Figure 2-5. Agoura Road Advanced Water Purification Facility Architectural Concepts

2.1.2.3 Operations

The facility would operate when excess Tapia WRF recycled water supply or supplemental supplies are available. At startup, the facility is likely to operate about 6 months per year, from late fall through early spring, producing up to 2,100 acre-feet per year (AFY). As supplemental supplies are developed and become available, the facility may operate year-round, potentially producing up to 5,000 AFY. Some year-to-year variation is expected, depending on factors such as rainfall amounts and recycled water demand.

When the Pure Water Project is operational, it would operate 24 hours per day, with a total staff of about 10 (2 or 3 operators per shift). Administration and operations and maintenance (O&M) facilities (approximately 5,800 ft^2) would be provided for site workers.

In addition to the new facility, the JPA would continue to operate the existing recycled water system similar to current operations. Landscape irrigation system demands would continue to be met by the Tapia WRF effluent source and potable supplement.

2.1.3 Alternative 2 Reservoir Advanced Water Purification Facility

Under Alternative 2 Reservoir AWPF, Tapia WRF effluent discharged into the recycled water system would be sent to a new treatment facility located next to Las Virgenes Reservoir in Westlake Village (Figure 2-6). Like Alternative 1 Agoura Road AWPF, the facility would have a capacity of 7.5 MGD. All treatment process, site layout, and operations information is the same as described for Alternative 1 Agoura Road AWPF (Figure 2-3). Like Alternative 1, conceptual designs have been prepared (Figure 2-7). If the Alternative 2 Reservoir AWPF is selected as the preferred alternative, the conceptual designs would be updated and refined as the project advances through the design and construction contractor selection steps.

Because the Alternative 2 Reservoir AWPF site is not adjacent to an existing road, a new access road would need to be built. This new, paved access road would connect to the eastern end of Triunfo Canyon Road. The road would be approximately 3,200 feet long and would be sized to accommodate construction vehicles and materials delivery trucks during facility operation.

Figure 2-6 shows the conceptual design for the new access road. Additional details about new access road are expected to be developed over time if Alternative 2 Reservoir AWPF is selected as the preferred alternative. The JPA would collaborate with the property owner and recreation interests to explore how the new access road can coexist with recreation uses within Triunfo Canyon Park, such as the Pentachaeta Trail.

2.1.4 Las Virgenes Reservoir and Westlake Filtration Plant

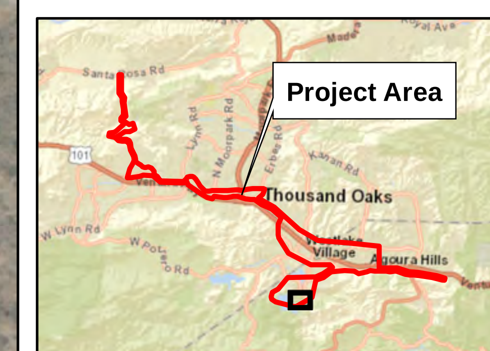
Under both Alternative 1 Agoura Road AWPF and Alternative 2 Reservoir AWPF, a new discharge pipeline would be installed in Las Virgenes Reservoir. The new pipeline would discharge purified water into the reservoir, where it would mix with the existing drinking water supply and, following a 6-month detention time in the reservoir, be pumped into the Westlake Filtration Plant, treated, and discharged into the drinking water system.

Las Virgenes Reservoir is currently filled with potable water purchased from Metropolitan – the sole source of drinking water within the Las Virgenes MWD service area. The Westlake Filtration Plant treats and disinfects the reservoir supply prior to discharge into the drinking water system, to supplement when Metropolitan is offline.

The project includes a hypolimnetic oxygenation system, with a linear diffuser placed at the bottom of the reservoir to improve withdrawal to the lowest depth. The hypolimnetic oxygen system would include a liquid oxygen tank installed on a new concrete pad at the Westlake Filtration Plant site. The Pure Water Project would not require any upgrades to the Westlake Filtration Plant treatment and disinfection system, and no other plant upgrades would be required.

Legend

- Purified Water Pipeline
- Access Road
- Building
- Chemicals
- Grading Contours



Sources:
ESRI World Topo Map; ESRI World Street Map

0 125 250 500
Feet
1 inch = 250 feet

Figure 2-6

Reservoir Advanced Water Purification Facility Site Plan

Pure Water Project Las Virgenes-Triunfo

Jacobs

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Figure 2-7. Reservoir Advanced Water Purification Facility Architectural Concepts

2.1.5 Source Water Augmentation

Full operation of the AWPF would require an additional source water supply to supplement the Tapia WRF recycled water supply. A potential source is an existing groundwater well located at the Los Robles Greens golf course. At this time, the well is not in use for golf course irrigation because of poor quality. The Pure Water Project would retrofit the well by installing new piping and valves, a flow meter, and a blow-off system; and a perimeter fence would be placed around the well.

The Los Robles well would be operated within the safe yield of the underlying groundwater basin. Based on recent pump tests, the well is expected to produce between 400 and 700 AFY of water, with continuous pumping of between 250 and 435 gallons per minute (gpm).

2.1.6 Pipelines

The Pure Water Project would require a series of interrelated pipelines:

- A source water pipeline connecting the existing recycled water pipeline system to the AWPF
- A purified water pipeline connecting the AWPF to Las Virgenes Reservoir
- A pipeline disposing the reject stream (concentrate) from the AWPF RO systems
- A sewer pipeline disposing of waste streams from the facility
- Potentially, source water augmentation pipeline from the Los Robles Well

For most of these pipelines, several alignment options are under consideration and are analyzed in this EIR. The following discussion is for Alternative 1 Agoura Road AWPF. Section 2.1.6.5 discusses how the pipelines would be different under Alternative 2 Reservoir AWPF.

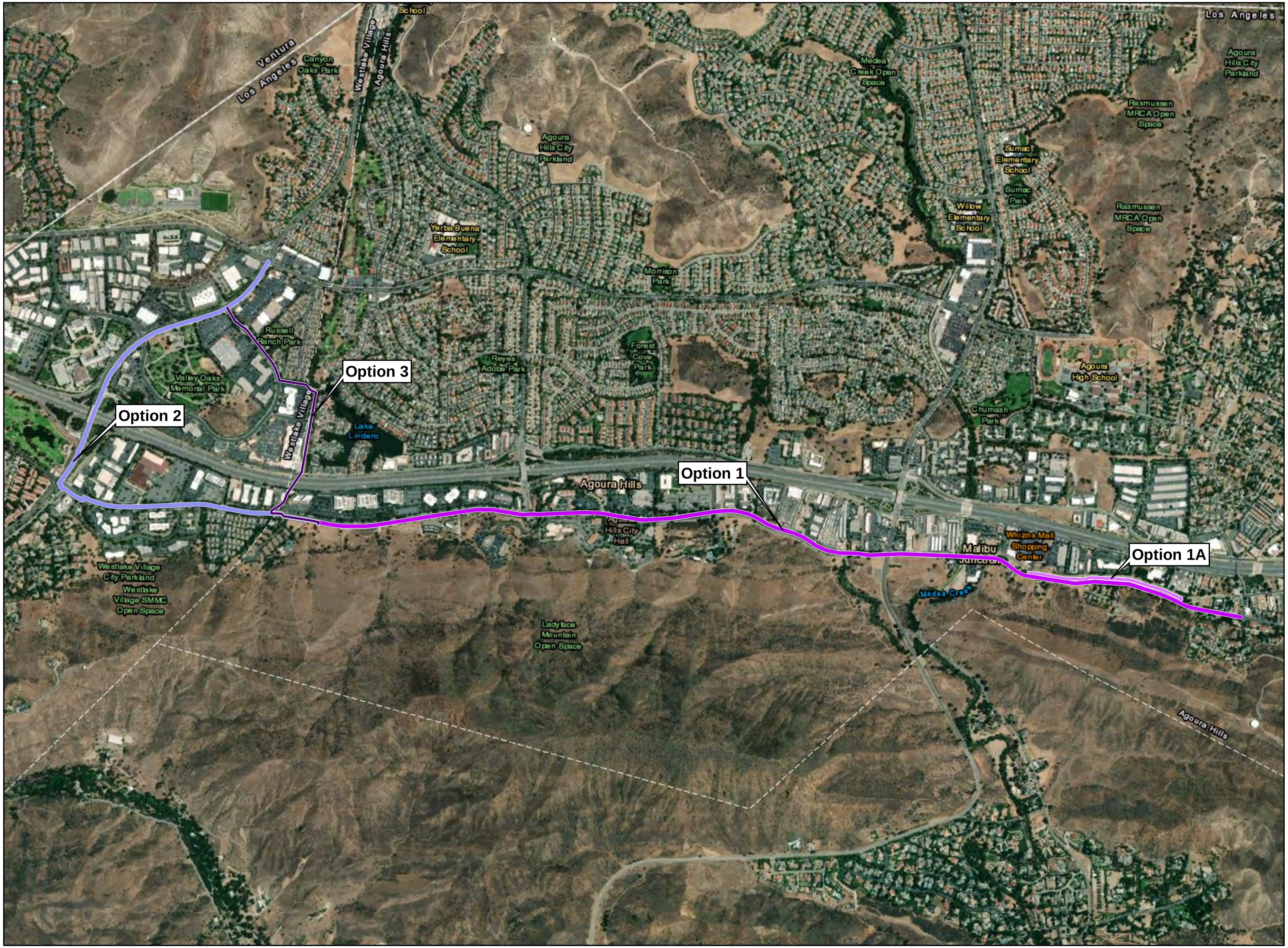
2.1.6.1 Source Water Pipeline

A source water pipeline (up to 24 inches in diameter) would connect the existing recycled water distribution pipelines to the new AWPF. Two points of connection are being evaluated: Agoura Road at Lewis Road, and Lindero Canyon Road at Thousand Oaks Boulevard. These two optional connection points have route options as well. Figure 2-8 shows the following various source water pipeline options under consideration:

- Source Water Pipeline Alignment Option 1, Agoura Road and Lewis Road to Agoura Road AWPF: The alignment follows Agoura Road all the way to the AWPF, a total distance of 15,210 feet. This option has one suboption:
  - Option 1A, Flood Control Channel Alignment Option: Because of expected difficult site conditions, a 2,641-foot segment of this pipeline would be constructed along the side of a flood control channel parallel to Agoura Road.
- Source Water Pipeline Alignment Option 2, Lindero Canyon Road and Thousand Oaks Boulevard to AWPF: The alignment would follow Lindero Canyon Road and Agoura Road, a total distance of 9,590 feet.
- Source Water Pipeline Alignment Option 3, Lindero Canyon Road and Thousand Oaks Boulevard to AWPF: This alignment would follow Russell Ranch Road, through an office complex parking lot, along a flood control channel, under U.S. 101, and through a small commercial development to connect to Agoura Road and the AWPF site (total distance of 6,070 feet).

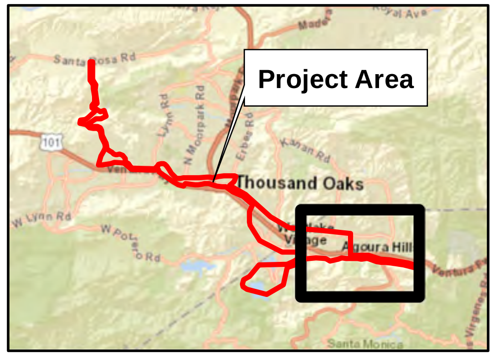
2.1.6.2 Purified Water Pipeline

A 20-inch-diameter purified water pipeline would connect the new AWPF to Las Virgenes Reservoir. Figure 2-9 shows the various purified water pipeline options under consideration. The primary alignment is along Agoura Road, Lindero Canyon Road, and Triunfo Canyon Road, and then within Triunfo Creek Park within an easement generally following the Westlake Vista Trail (total distance of 16,190 feet). Because of the potential for purified water from the AWPF to not meet quality specifications, a bypass valve would be installed along Triunfo Canyon Road to direct flows, if needed, to the storm drain and to Potrero Creek.



Legend

- Source Water Alignment, Option 1
- Source Water Alignment, Option 1A
- Source Water Alignment, Option 2
- Source Water Alignment, Option 3



Sources:
ESRI World Imagery; ESRI World Street Map

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Feet
1 inch = 1,500 feet

Figure 2-8

Source Water Pipeline

Pure Water Project Las Virgenes – Triunfo

Jacobs

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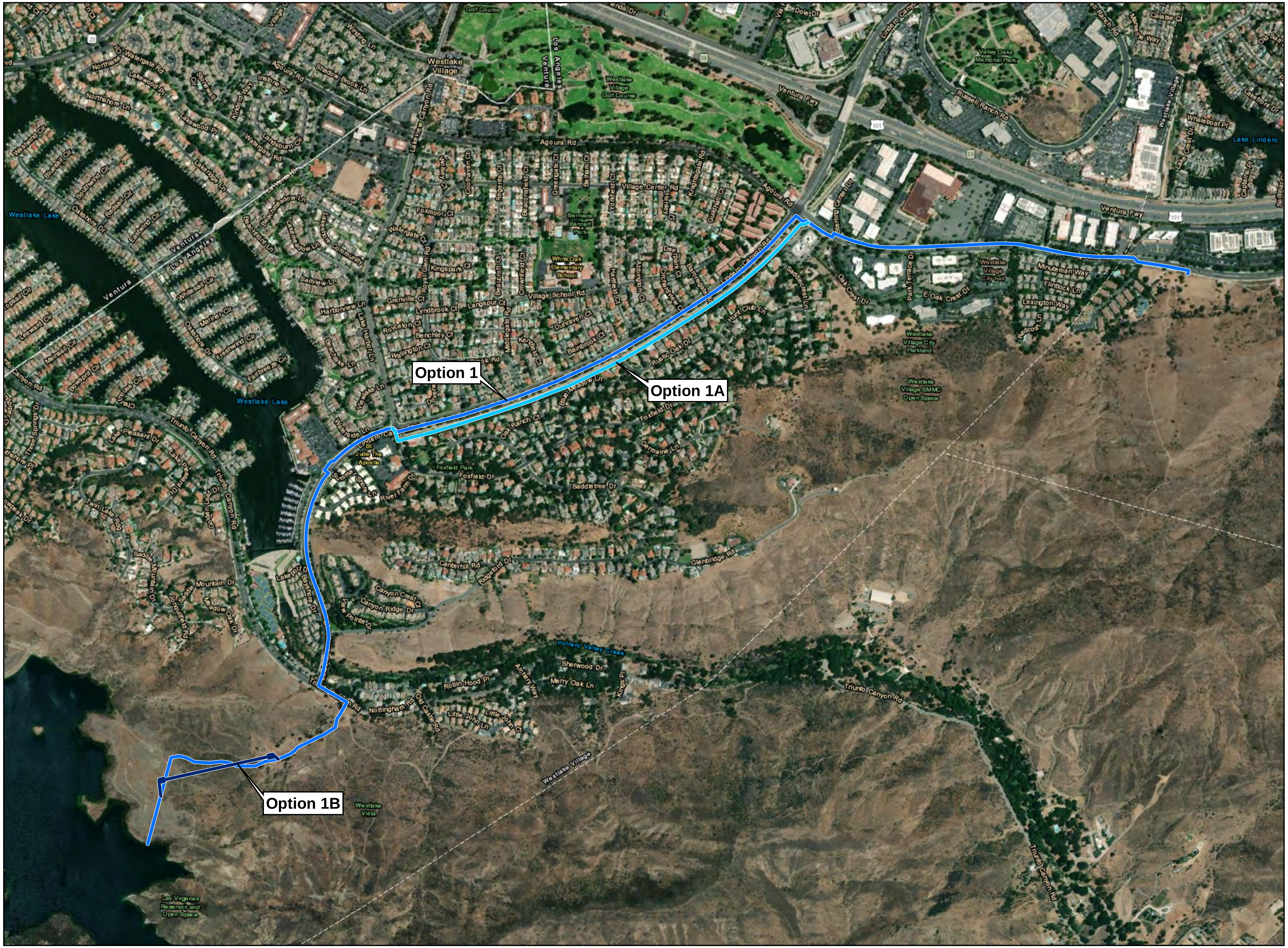
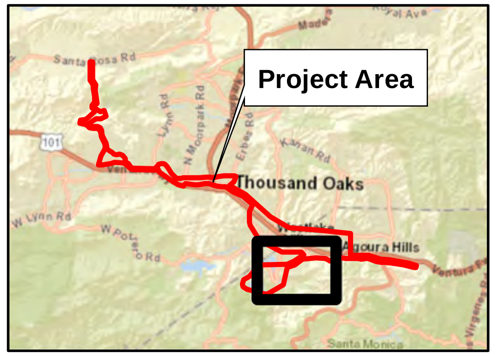


Legend

- Purified Water Alignment, Option 1
- Purified Water Alignment, Option 1A
- Purified Water Alignment, Option 1B



Sources:
ESRI World Imagery; ESRI World Street Map

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1 inch = 1,000 feet

Figure 2-9

Purified Water Pipeline

Pure Water Project Las Virgenes –Triunfo

Jacobs

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This route is referred to as Purified Water Pipeline Alignment Option 1. Along this alignment, two options are being considered:

1) Option 1A, Flood Control Channel Alignment Option: Along Lindero Canyon Road between Agoura Road and Foxfield Drive, the alignment would be constructed along the side of the flood control channel parallel to Lindero Canyon Road, rather than along the road itself.
2) Option 1B, Trenchless Option in Triunfo Creek Park. A 1,250-foot portion of the alignment within Triunfo Creek Park could be built with trenchless methods, such as horizontal direction drilling.

Like the access road described for the Reservoir AWPF, the JPA intends to collaborate with the Mountains and Recreation Conservation Authority and recreation interests to explore how pipeline construction and restoration of the pipeline construction zone can minimize environmental impacts and support continued use of the Westlake Vista Trail, while allowing limited access to inspect and maintain the reservoir discharge pipeline.

2.1.6.3 Concentrate Disposal Pipeline

The longest pipeline project is the concentrate disposal pipeline, which would be a 10-inch-diameter pipeline connecting the AWPF to the Calleguas Salinity Management Pipeline (SMP) – an ocean discharge pipeline being constructed and operated by the Calleguas MWD. Depending on the alignment option, the concentrate disposal pipeline would range from 13.2 to 14.1 miles in length, most of which is within Thousand Oaks (Figure 2-10).

The primary alignment follows Agoura Road and Hampshire Road to Thousand Oaks Boulevard, along Thousand Oaks Boulevard to just past Moorpark Road, then along Hillcrest Road, Ventu Park Road, and Rancho Conejo Boulevard to the City of Thousand Oaks Municipal Service Center. From this location, the pipeline would follow an existing Conejo Canyons Open Space recreation trail and fire road, cross Arroyo Conejo, and then follow the Hill Canyon Fire Road to the SMP on Santa Rosa Road in unincorporated Ventura County.

This route is referred to as Concentrate Pipeline Alignment Option 1. Several alignment options are being considered, including alignment options that may lessen some community impacts within Thousand Oaks:

> **Conejo Canyons Bridge Project**
>
> The City of Thousand Oaks and the Conejo Recreation and Park District are proposing to construct a new bridge across Arroyo Conejo, with associated access roads, to improve access for City staff and to improve recreation access. Information about the project can be found here: Conejo Canyon Bridge | Thousand Oaks, CA (toaks.org).
>
> The Pure Water Project concentrate disposal pipeline would be attached to the new bridge.

- Option 1A, Thousand Oaks Boulevard Option: Between Lindero Canyon Road and Hampshire Road, follow Thousand Oaks Boulevard instead of Agoura Road and Hampshire Road.
- Option 1B, Lakeview Canyon Road Option: Connect to Thousand Oaks Boulevard along Lakeview Canyon Road rather than continuing along Agoura Road and Hampshire Road.
- Option 1C, Hillcrest Drive Option: Between Hampshire Road and Moorpark Road, follow Hillcrest Drive, Conejo School Road, and Willow Lane instead of following Thousand Oaks Boulevard.
- Option 1D, The Oaks Option: Between Moorpark Road and Lyon Road, construct the pipeline along Thousand Oaks Boulevard and behind The Oaks shopping center.

2.1.6.4 Sewer Pipeline

The Agoura Road AWPF would require a sewer pipeline for onsite wastewater (process waste, toilets and sinks, lab facilities, and floor drains) and process waste. The sewer pipeline would connect with an existing sewer pipeline on Agoura Road.

2.1.6.5 Alternative 2 Reservoir Advanced Water Purification Facility

For Alternative 2 Reservoir AWPF, the general pipeline corridors would be the same as Alternative 1 Agoura Road AWPF. However, the specific pipeline alignments would be somewhat different:

- The source water pipeline would be longer under this alternative. It would connect one of the two recycled water system connection points to the Reservoir AWPF, following the Lindero Canyon Road and Triunfo Creek Park alignment described for the Alternative 1 purified water pipeline.
- The Alternative 2 Reservoir AWPF would only require a short, purified water pipeline (Figure 2-6) to discharge into Las Virgenes Reservoir.
- The concentrate disposal pipeline would be longer under this alternative. It follows the same route options through Thousand Oaks, but also would run through Triunfo Creek Park and along Lindero Canyon Road, as described for the Alternative 1 purified water pipeline.
- The sewer pipeline would follow the source water and concentrate disposal pipelines to connect to an existing sewer pipeline on Triunfo Canyon Road.

Under Alternative 2 Reservoir AWPF, the source water pipeline would require a pump station to meet hydraulic requirements. The pump station would be an aboveground structure with a masonry block control building, surge tank, pumps, and ancillary facilities on a small footprint of approximately 40 feet wide by 90 feet long. The pump station would be located within Westlake Village at one of two optional sites along Lindero Canyon Road:

1) Within the Westlake Village Marketplace shopping center, near the corner of Lindero Canyon Road and Russell Ranch Road
2) Within the Westlake Golf Course between Agoura Road and U.S. 101

Pump station design would be consistent with other Las Virgenes MWD facilities in the area.

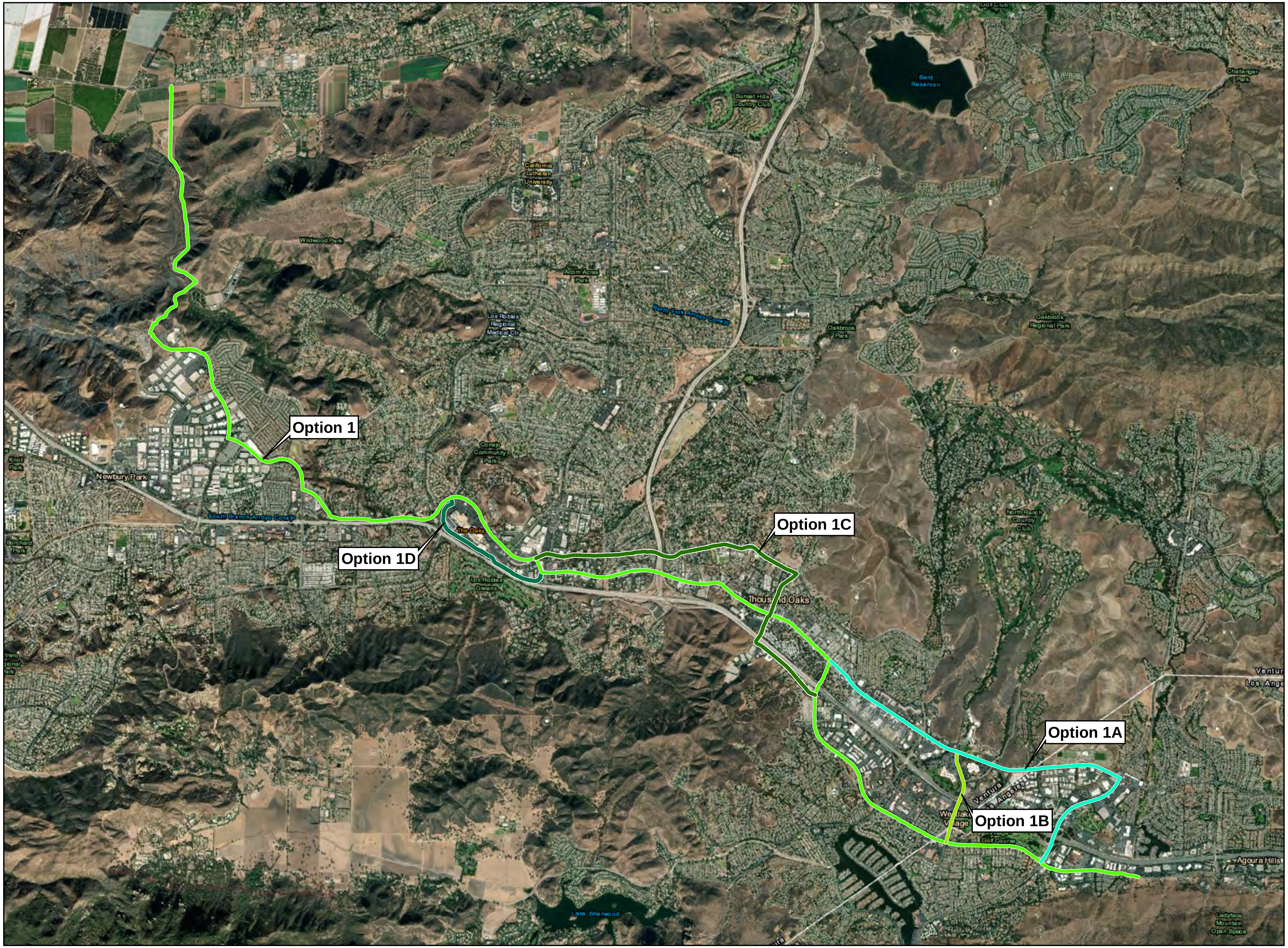
2.1.6.6 Source Water Augmentation Pipeline

If selected for source water augmentation, groundwater produced by the Los Robles well would be conveyed to the AWPF using new pipelines. At this time, two options are being considered:

1) A new pipeline would be installed within the Los Robles Greens golf course to South Moorpark Boulevard (approximately 2,650 feet) to connect with an existing sewer pipeline. The sewer pipeline would discharge to the Tapia WRF; therefore, indirectly to the AWPF.
2) As in option 1, a new pipeline would connect the well to South Moorpark Boulevard, with an additional, direct connection to either the Alternative 1 Agoura Road AWPF or Alternative 2 Reservoir AWPF. The pipeline alignment would follow the selected concentrate disposal pipeline alignment (Figure 2-10) and is expected to be installed within the same trench at the same time the concentrate pipeline is installed.

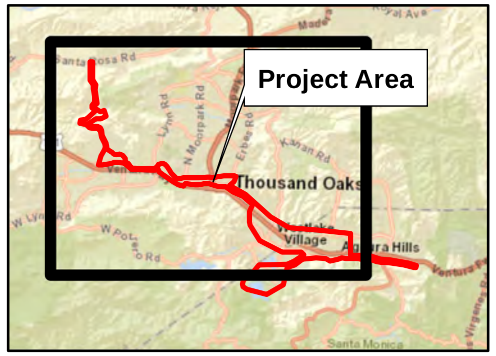
2.1.7 Other Ancillary Facilities

The project also includes upgrades to the existing recycled water pump station (west).



Legend

- Concentrate Alignment, Option 1
- Concentrate Alignment, Option 1A
- Concentrate Alignment, Option 1B
- Concentrate Alignment, Option 1C
- Concentrate Alignment, Option 1D



Sources:
ESRI World Imagery; ESRI World Street Map

0 2,000 4,000 8,000
Feet
1 inch = 4,000 feet

Figure 2-10

Concentrate Water Pipeline

Pure Water Project Las Virgenes – Triunfo

Jacobs

\\dc1vs01\GISProj\L\LasVirgenes-Triunfo\MapFiles\Reports\Fig2-10_Concentrate_Water_Pipeline_2022-06-20.mxd

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2.2 Project Construction

Overall project construction is expected to start in late 2025, with all project features fully operational before 2030 in time to meet the NPDES compliance schedule for Tapia WRF discharges into Malibu Creek. Expected construction processes for both the AWPF alternatives and the pipeline options are described in this section and shown on Figure 2-11. The specific timing of the surface water augmentation project (Los Robles well improvements and pipelines) and other ancillary facilities has not been determined.

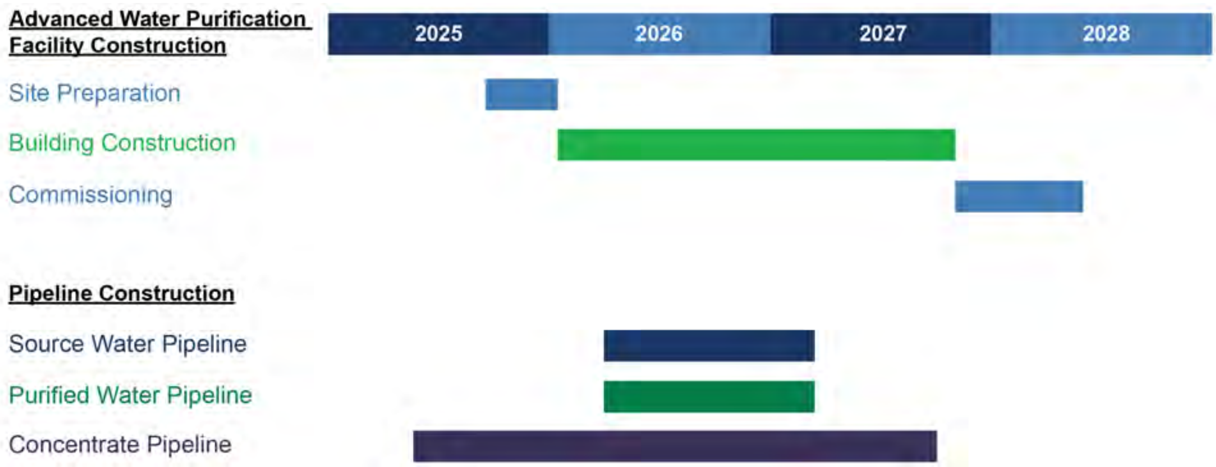

Figure 2-11. Expected Construction Processes

2.2.1 Advanced Water Purification Facility Construction

The two construction phases are site preparation and building construction. The Alternative 1 Agoura Road AWPF expected construction sequence is as follows:

1) Site Preparation (August 2025 through January 2026). Site preparation involves mass grading to create the 2.8-acre building pad. Major features of the site preparation work include:

   - Excavating the rear portion of the site and installing the retaining wall
   - Laying fill material on the front portion of the site to balance the earth work as much as possible
   - Creating the driveways and access points on Agoura Road
   - Grading other site features, such as the bioswale along Agoura Road

   The smaller, western portion of the site would be used for materials and equipment storage, contractor parking, and construction administration, with a temporary road connection for construction access across the site. Use of this onsite staging area along with the temporary road would minimize in-and-out movements onto Agoura Road. All site preparation work is expected to use standard construction methods; no specialized construction, such as pile driving, is expected.

2) Building Construction (January 2026 through November 2027). Following onsite grading activities to create the pad, the building itself would be constructed. When the building is ready, all water treatment process and ancillary equipment would be installed. This work is expected to occur mostly within the finished building, with materials and equipment deliveries using the new driveways on Agoura Road.

Construction of the Alternative 2 Reservoir AWPF site would follow a similar construction process. For Alternative 2, the initial phase of construction also would include construction of the access road from Triunfo Canyon Road. For this reason, construction of this alternative is expected to take longer than Alternative 1 Agoura Road AWPF.

Once equipment installation inside the new building is complete, the staging areas would be restored to pre-project conditions, including site stabilization, hydroseeding, and required landscape plantings. For Alternative 1, the staging area would be further restored to mitigate for onsite loss of oak trees and sensitive plants. For Alternative 2, little restoration is expected to be required given the large and generally unvegetated area along Las Virgenes Reservoir.

Following the completion of all construction activities, the AWPF would go through a commissioning period (expected to be November 2027 through May 2028) when all processes would be thoroughly tested to verify that the product water meets the State Water Board standards for indirect potable reuse through reservoir augmentation.

2.2.2 Pipeline Construction

Pipeline construction methods would be the same for both alternatives. Most pipeline construction would occur along city streets following standard methods for pipeline installation in a vertical trench. Within city streets, typical pipeline installation usually progresses at a rate of approximately 200 feet per day. For active construction zones, traffic control, including necessary vehicle, bicycle, and pedestrian detours, would be installed pursuant to industry standards and subject to review and approval of City of Agoura Hills, City of Westlake Village, City of Thousand Oaks, or Ventura County.

The pipeline alignments also include several major facility crossings not likely to be installed using open-cut construction. Primarily, these crossing are at U.S. 101 and State Route 23 (SR-23), but may also include other areas where open-trench construction is infeasible, such as crossings of major drainage features. In these areas, trenchless construction is most likely to be required. Trenchless construction options include horizontal directional drilling and bore-and-jack tunneling. For some U.S. 101 crossings, installing the pipeline within the existing overcrossing structure (in available utility conduits) is assumed.

Specialized construction also would be used in two areas that present special challenges: in Triunfo Creek Park and within the Rancho Conejo Open Space area. Both areas are undeveloped and difficult to access, and contain rocky ground that makes open-trench construction very difficult. Pipeline installation is expected to occur at a rate of approximately 50 feet per day in these areas. Within these areas, the following construction methods may be used:

- Rockwheel Trencher: A rockwheel is a specialized trench excavation tool that can be used where ground conditions are too rocky for standard excavators. Rockwheels grind the native material into smaller pieces that can be removed with a standard excavator or backhoe.
- Jackhammering: In areas where standard or specialized construction equipment, such as a rockwheel, are not sufficient to break up hard rock and create the necessary trench width, jackhammering may be needed.
- Blasting: If necessary, blasting would be used if other methods are infeasible. Highly localized blasting would be used, with small charges placed into drilled holes.

A portion of the purified water pipeline alignment within Triunfo Creek Park could be built with trenchless methods, such as horizontal directional drilling. This construction option would require small insertion and extraction pits at either end of the trenchless section.

Pipeline construction is expected to occur on the following schedule:

- Source Water to AWPF: April 2026 through April 2027
- Purified Water to Las Virgenes Reservoir: April 2026 through April 2027[2]
- Concentrate to SMP: May 2025 through October 2027

Prior to operation, all pipelines would be tested, with all test water discharged to local sewers or, potentially, to local surface waters subject to permit.

[2] This phase of pipeline construction would not be needed under Alternative 2, Reservoir AWPF.

3. Aesthetics

Aesthetic resources, or visual resources, are the natural and cultural features that can be seen and contribute to the public's enjoyment of the environment. Visual resource impacts or impacts on the aesthetics of the natural and cultural environment are generally defined in terms of a project's physical characteristics and potential visibility, and the extent that the project would change the visual character and quality of the environment where it is located. This chapter discusses the existing visual character of the Pure Water Project area and analyzes the potential for the two AWPF alternatives to affect the existing visual character and visual quality as seen from the surrounding area.

Concepts and terminology used in this analysis are summarized in Section 3.1. As defined primarily by the Federal Highway Administration (FHWA) (1988) and the Bureau of Land Management (BLM) (1984), these concepts are used throughout this chapter to describe existing conditions in representative views toward the AWPF sites and relevant portions of the project area. in concert with CEQA significance criteria, this chapter describes the potential effects on aesthetic resources.

3.1 Concepts and Terminology

Identifying visual resources and conditions involves three steps:

1) Objective identification of the visual features (visual resources) of the landscape
2) Assessment of the character and quality of those resources relative to overall regional visual character
3) Determination of the importance to people, or sensitivity, of views of visual resources in the landscape

The aesthetic value of an area is a measure of its visual character and quality, combined with the viewer response to the area (FHWA 1988). Scenic quality could best be described as the overall impression that an individual viewer retains after driving through, walking through, or flying over an area (BLM 1984). Viewer response is a combination of viewer exposure and viewer sensitivity. Viewer exposure is a function of the number of viewers, number of views seen, distance of the viewers, and viewing duration. Viewer sensitivity relates to the extent of the public's concern for a particular viewshed. These concepts and terms are described in detail in the following sections and are incorporated into this chapter's discussions of existing conditions and potential effects on aesthetic resources.

3.1.1 Visual Character

Natural and artificial landscape features contribute to the visual character of an area or view. Visual character is influenced by geologic, hydrologic, botanical, wildlife, recreational, and urban features. Urban features include those associated with landscape settlements and development, including roads, utilities, structures, earthworks, and the results of other human activities. The perception of visual character could vary significantly seasonally, even hourly, as weather, light, shadow, and elements that compose the viewshed change. The basic components used to describe visual character for most visual assessments are the elements of form, line, color, and texture of the landscape features (USFS 1995; FHWA 1988). The appearance of the landscape is described in terms of the dominance of each of these components.

3.1.2 Visual Quality

Visual quality is evaluated using the well-established approach to visual analysis adopted by FHWA, which employs the following concepts (FHWA 1988; Jones et al. 1975):

- Vividness is the visual power or memorability of landscape components as they combine in striking and distinctive visual patterns.
- Intactness is the visual integrity of the natural and human-built landscape and its freedom from encroaching elements; this factor can be present in well-kept urban and rural landscapes and in natural settings.
- Unity is the visual coherence and compositional harmony of the landscape considered as a whole; it frequently attests to the careful design of individual components in the landscape.

Visual quality is evaluated based on the relative degree of vividness, intactness, and unity, as modified by its visual sensitivity. High-quality views are highly vivid, relatively intact, and exhibit a high degree of visual unity. Low-quality views lack vividness, are not visually intact, and possess a low degree of visual unity.

3.1.3 Visual Exposure and Sensitivity

The measure of a view's quality must be tempered by the overall sensitivity of the viewer. Viewer sensitivity or concern is based on the following factors:

- Visibility of resources in the landscape
- Proximity of viewers to the visual resource
- Elevation of viewers relative to the visual resource
- Frequency and duration of views
- Number of viewers
- Type and expectations of individuals and viewer groups

The importance of a view is related, in part, to the position of the viewer to the resource; therefore, visibility and visual dominance of landscape elements depend on their placement within the viewshed. A viewshed is defined as all the surface area visible from a particular location (for example, an overlook) or sequence of locations (for example, a roadway or trail) (FHWA 1988).

To identify the importance of views of a resource, a viewshed must be broken into distance zones of foreground, middle-ground, and background. Generally, the closer a resource is to the viewer, the more dominant it is and the greater its importance to the viewer. Although distance zones in a viewshed may vary between different geographic regions or types of terrain, the standard foreground zone is 0.25 to 0.5 mile from the viewer, the middle-ground zone from the foreground zone to 3 to 5 miles from the viewer, and the background zone from the middle-ground to infinity (Jones et al. 1975).

Visual sensitivity depends on the number and type of viewers and the frequency and duration of views. Visual sensitivity is also modified by viewer activity, awareness, and visual expectations in relation to the number of viewers and viewing duration. For example, visual sensitivity is generally higher for views seen by people who are driving for pleasure; people engaging in recreational activities, such as hiking, biking or camping; and homeowners. Sensitivity tends to be lower for views seen by people driving to and from work or as part of their work (USFS 1995; FHWA 1988; SCS 1978). Commuters and nonrecreational travelers generally have fleeting views and tend to focus on commute traffic, not on surrounding scenery; therefore, they are generally considered to have low visual sensitivity.

Residential viewers typically have extended viewing periods and are concerned about changes in the views from their homes; therefore, they are generally considered to have high visual sensitivity. Viewers using recreation trails and areas, scenic highways, and scenic overlooks are also typically assumed to have high visual sensitivity.

Judgments of visual quality and viewer response must be made based in a regional frame of reference (SCS 1978). The same landform or visual resource appearing in different geographic areas could have a different degree of visual quality or sensitivity in each setting. For example, a small hill may be a significant visual element within a relatively flat landscape but have very little significance in mountainous terrain.

3.2 Existing Setting

The Pure Water Project area is in the northwestern portion of the greater Los Angeles region, within portions of the cities of Agoura Hills, Westlake Village, and Thousand Oaks, and within unincorporated Ventura County (Figure 1-1). Most of the project area is located within an urban setting; however, there are portions located within open space areas, specifically near Las Virgenes Reservoir and near Hill Canyon Road. Major transportation corridors in the project area include U.S. 101 and SR-23. No airports or railways are in the vicinity.

3.2.1 Regional Setting

Although the project area is mostly developed, there is a balance of commercial and residential uses, public parklands, and undeveloped private lands dispersed throughout the area. Portions of the project area:

- Provide open space
- Support wildlife habitat
- Offer recreational opportunities
- Have relatively expansive views in some locations

Visual character, quality, and sensitivity is discussed in the following subsections in the context of Pure Water Project features.

3.2.2 Existing Visual Character, Visual Quality, and Visual Sensitivity

Pure Water Project features that may affect the visual setting are the Agoura Road AWPF, Reservoir AWPF, and pipeline construction, including the pump station that would be constructed under Alternative 2 Reservoir AWPF. The existing visual character, quality, and sensitivity of each is described in this section. New development on parcels within the viewshed of roads or trails is an opportunity for design that protects the existing scenic qualities or improves on those qualities.

3.2.2.1 Views Toward the Agoura Road Advanced Water Purification Facility Site

Visibility of the Agoura Road AWPF site is primarily from foreground vantage points along Agoura Road, with some middle-ground views look down from along trails within Ladyface Mountain area. Views described here demonstrate the existing visual character and quality associated with the site and are representative of the range of viewer exposure and sensitivity. Most viewpoints are from less than 0.5 mile from the AWPF site and considered foreground views. At a maximum height of 35 feet, the conceptual layout (Figure 2-3), site plan (Figure 2-4), and architectural renderings (Figure 2-5) provide dimensions, character, perspective, and foreground views of the AWPF site from the eye of an observer. Additionally, there are vantage points along trails within the Ladyface Mountain area that provide middle-ground views of the AWPF site from above.

Visual sensitivity is moderate, as primarily extended views of the site would be from adjacent developed residential and commercial properties, passersby traveling along Agoura Road, and hikers traveling along nearby trails at higher elevations. The visual quality of this view is also moderate, which reflects the duration of exposure and visual sensitivity of commuters, patrons of local businesses, nearby residents, and recreational users. Visible features would include the AWPF structure, parking area, access road, lighting, and landscaping. While structures are visible, their presence would not obscure views of background scenery; and individual components comprise an overall view with a moderate degree of visual coherence and compositional harmony.

3.2.2.2 Views Toward the Reservoir Advanced Water Purification Facility Site

The Reservoir AWPF site would offer foreground and middle-ground views from several locations within Westlake Village and along recreational trails. A band of linear features (trails, exclusion fencing surrounding the reservoir, and transmission facilities), in addition to AWPF associated infrastructure, would be visible in the foreground if selected, as a new access road is required to develop the site (Figure 2-6). Located at low elevations compared to the surrounding environment, the moderate degree of visual integrity and sensitivity is concentrated primarily from residential properties above and recreational viewing from Triunfo Creek Park trails.

Visual sensitivity is moderate, as primarily extended views of the site would be middle-ground from developed residential properties and in the foreground and middle-ground for passersby traveling along recreational trails. The visual quality of this view is also moderate, which reflects the duration of exposure and visual sensitivity of recreational users and adjacent residents. Visible features would include the AWPF structure, parking area, access road, lighting, and landscaping. While structures may be visible, their presence would not obscure views; and individual components comprise an overall view with a moderate degree of visual coherence and compositional harmony.

3.2.2.3 Pipeline Corridors

Locations of proposed pipeline alignment options for the source water pipeline (Figure 2-8), purified water pipeline (Figure 2-9), and concentrate pipeline (Figure 2-10) would occur mostly along existing city streets in Agoura Hills, Westlake Village, Thousand Oaks, and in unincorporated Ventura County. Pipelines would be located subsurface or included alongside existing road crossing and bridge infrastructure. The pipelines include appurtenant facilities in some areas and, for Alternative 2 Reservoir AWPF, a pump station along the source water pipeline that would be visible primarily by adjacent landowners, commuters, and pedestrians along existing roadways.

For Alternative 2 Reservoir AWPF, the pump station would either be located at the intersection of Lindero Canyon Road and Russell Ranch Road in Westlake Village or along Lindero Canyon Road at the Westlake Golf Course. Within Westlake Village, the pump station would either be within a commercial development located approximately 850 feet from the nearest residence or at a golf course in a commercial area. Pump station visibility would be minimal and likely only visible in the foreground, complying with footprint restrictions and height of less than a single story. Other appurtenant facilities along pipeline corridors would be access ports with near-ground-surface relief and visible only at short distances; therefore, view sensitivity is low.

3.3 Regulatory Framework

This section lists laws, ordinances, and regulations regarding aesthetics and visual resources that are directly applicable to the Pure Water Project. These regulations are based on local guidelines; there are no applicable federal or state regulations regarding aesthetics or visual resources.

Applicable local regulations include relevant sections of the Agoura Hills and Westlake Village general plans (City of Agoura Hills 2010b; City of Westlake Village 2020). There are no aboveground project features within Thousand Oaks and in unincorporated Ventura County that would affect the visual setting; therefore, there are no applicable general plan goals and policies.

3.3.1 General Plans – Policies and Guidance

Policies and guidance related to aesthetics and visual resources found in sections of each general plan are discussed in this section.

3.3.1.1 City of Agoura Hills

Table 3-1 provides the aesthetics and visual goals and policies established by the *City of Agoura Hills General Plan* (City of Agoura Hills 2010b) that are applicable to the project.

Table 3-1. City of Agoura Hills Aesthetics and Visual Goals and Policies

Goal or Policy Name	Goal or Policy Language[a]
Goal LU-3: City of Open Spaces	*Open space lands that are preserved to maintain the visual quality of the City and provide recreational opportunities, protect the public from safety hazards, and conserve natural resources.*
Policy LU-3.1: Scenic and Natural Areas	*Provide for the preservation of significant scenic areas and corridors, significant plant and animal habitat and riparian areas, and physiographic features within the City.*
Policy LU-3.6: Development Respect for Environmental Setting	*Encourage development to be located and designed to respect Agoura Hills' natural environmental setting and preserve public views, including scenic hillside areas. Regulate building height and location to avoid obtrusive breaks in the natural skyline.*
Policy LU-3.7: Public Viewsheds	*Whenever possible, preserve vistas of the community from public use areas.*
Policy LU-3.8: Night Sky	*Preserve view of the night sky through control of outdoor lighting.*
Goal LU-16: Well-Designed and Attractive Business Parks	*Business park and light industrial districts that are designed as an attractive working environment and valuable place to do business.*
Policy LU-16.1: Site Planning	*Require that new and renovated business park development projects are designed to accommodate safe and convenient walking, biking, and transit, and exhibit a high-quality, attractive, and cohesive "campus environment," characterized by the following:* ▪ *Location of buildings around common plazas, courtyards, walkways, and open spaces, including amenities for the comfort of employees, such as outdoor seating areas.* ▪ *Incorporation of landscape that enhances a park-like setting along property edges, building frontages, and to break the visual continuity of surface parking lots.* ▪ *Common signage program for tenant identification and wayfinding.* ▪ *Readily observable site access, entrance drives, building entries, and pedestrian paths through parking lots to create a safe haven for pedestrians and minimize conflict between service vehicles, private automobiles, and pedestrians.*
Policy LU-18.5: Coordination with Non-City Public Service Providers	*Coordinate, partner with, and encourage school and utility districts and other government and independent agencies that may be exempt from City land use control and approval to plan and improve their properties and design buildings at a high level of visual and architectural quality that maintains the character of the neighborhood or district in which they are located.*
Goal LU-19: Maintenance of Open Spaces	*Open space lands that provide an attractive environmental setting for Agoura Hills and visual relief from development, protect the viability of natural resources and habitat, offer passive recreational opportunities for residents and visitors, and protect residents from the risks of natural hazards.*
Policy LU-21.3: Streetscape Improvements	*Improve the public streets and sidewalks that enhance the visual character and quality of the neighborhood commercial district, considering such elements as landscape; well-designed benches, trash receptacles, and other street furniture; decorative sidewalk and crosswalk paving; and pedestrian-oriented lighting; wayfinding signage.*
Policy LU-23.2: Site Development	*Require that buildings be located and designed to reflect the area's hillside topography and natural landscapes, with building footprints conforming to topographic contours, setbacks of upper stories to conform to slope, and orientation to preserve view corridors.*

Source: City of Agoura Hills 2010b

3.3.1.1.1 City of Westlake Village

Table 3-2 provides excerpts of the goal, objective, and policy language established by the *City of Westlake Village General Plan* (City of Westlake Village 2019a) relative to aesthetics and visual resources that are applicable to the project.

Table 3-2. City of Westlake Village Aesthetics and Visual Goals, Objectives, and Policies

Chapter, Goal, Objective, or Policy	Goal, Objective, or Policy Language
Chapter 1, Goal 1	*Preserve and maintain the natural character and visual amenities of hillsides as a scenic resource.*
Chapter 1, Goal 3, Objective 3.1	*Ensure that sufficient lands are designated to accommodate a balance of uses which (a) provide for the housing, commercial, employment, educational, recreational, cultural, social, and aesthetic needs of City residents, and (b) preserve the City's significant environmental resources.*
Chapter 1, Goal 6, Objective 6.1, Policy 6.1.5	*Require that structures and sites be designed to convey visual interest and character and be compatible with adjacent uses, including:* *a. differentiation of building facades by materials, color, architectural details (columns, recessed or projecting windows, articulated beams or spandrels, etc.), offset planar surfaces, and modulated building volumes;* *b. architectural treatment of all prominent building elevations;* *c. enclosure of storage areas with decorative screening or walls;* *d. location of site entries to minimize conflicts with adjacent uses and residential neighborhoods; and* *e. mitigation of noise, odor, lighting, and other impacts*
Chapter 1, Goal 8	*Preserve and protect the City's open space resources as important scenic, environmental, and recreational amenities for all City residents and visitors.*
Chapter 1, Goal 8, Objective 8.2	*Ensure that adequate open space is provided to protect significant visual and environmental resources.*
Chapter 1, Goal 8, Objective 8.2, Policy 8.2.2	*Require that significant ridgelines be preserved as a visual and open space resource in accordance with the Visual Resources and Scenic Highways Elements' policies.*
Chapter 1, Goal 11	*Preserve and maintain the natural character and visual amenities of hillsides as a scenic resource.*
Chapter 1, Goal 11, Objective 11.1	*Minimize development and development impacts on scenic hillsides and prominent ridgelines.*
Chapter 1, Goal 16, Objective 16.1, Policy 16.1.1	*Require that parcels developed for commercial and industrial uses incorporate buffers between abutting residential properties which adequately protect the residential use from the impacts of noise, light, visual intrusion, and vehicular traffic; including the use of horizontal and vertical setbacks, structural or landscape buffers, and other appropriate techniques.*
Chapter 1, Goal 16, Objective 16.1, Policy 16.1.2	*Require that the on-site lighting of commercial and industrial uses be unobtrusive and designed or located so that only the intended area is illuminated, off-site glare is minimized, and adequate safety is provided.*
Chapter 1, Goal 17	*Ensure that the City's built environment, including its architecture, landscape, public open spaces, and rights-of-way maintain a high quality of design which is compatible with the City's established suburban character and environmental setting.*
Chapter 1, Goal 17, Objective 17.1. Policy 17.1.1	*Limit the use of reflective glass, bright colors, expansive metal skins and other materials and designs which detract from the community's established character.*

Table 3-2. City of Westlake Village Aesthetics and Visual Goals, Objectives, and Policies

Chapter, Goal, Objective, or Policy	Goal, Objective, or Policy Language
Chapter 1, Goal 17, Objective 17.1. Policy 17.1.2	*Require that air conditioning and other mechanical equipment located on the rooftop of a structure be visually screened from public view and adjacent properties.*
Chapter 3, Goal 1	*Maintain and enhance the visual quality and character of the community's urban and natural environments.*
Chapter 3, Goal 1, Objective 3	*Provide for the preservation and maintenance of the visual quality of the Community's natural landforms and water bodies.*
Chapter 3, Goal 1, Objective 3, Policy 3.3	*Require new and relocated utilities to be located underground, when possible; all above ground utilities shall be located and screened to minimize their aesthetic impact.*
Chapter 3, Goal 1, Objective 3, Policy 3.5	*Protect the visual quality of the community's water bodies through the maintenance of building setbacks and landscape treatments, and effective control of erosion and urban runoff.*

Source: City of Westlake Village 2019a

3.3.2 Land Use, Zoning, Specific Plans, and Resource Management Overlays

In addition to general plans, the zoning designation may regulate specific characteristics, such as specific development standards with the intent to protect the character and stability of neighborhoods and reduce land use conflicts. Highlights of Agoura Hills and Westlake Village land use and zoning designations within the Pure Water Project area as applied to aesthetic needs are described in this section and are further discussed in Chapter 12, Land Use and Planning.

Project activities within Thousand Oaks and Ventura County are limited to underground pipelines. Although temporary construction impacts would occur (as discussed in Section 12.3), no specific plans or resource management overlays are applicable.

3.3.2.1 City of Agoura Hills and Ladyface Mountain Plan

The Agoura Road AWPF site is within Ladyface Mountain Overlay District. Permitted use information is summarized in Table 12-5, and Table 12-6 summarizes the development standards for the Agoura Road AWPF site, within the Business Park Sub Area of the *Ladyface Mountain Specific Plan* (City of Agoura Hills 1991).

3.3.2.2 City of Westlake Village and Resource Management Overlays

The Reservoir AWPF site has a land use designation of Open Space and a zoning designation of Open Space. Per Section 93.313.020 of the City of Westlake Village Municipal Code, water treatment plants, including filtration systems, gauging stations, pumping stations, and any use related to the obtainment, storage, and distribution of water, are a conditionally permitted use requiring visual preservation and maintenance. Refer to Table 12-7 for permitted use information and Table 12-8 for development standards related to the Reservoir AWPF site and potential pump station within City of Westlake Village.

Resource management overlay areas that apply to the area include Hillside Management, Cultural Reconnaissance Watershed, and Significant Habitat. These designations are intended to further the preservation and maintenance of the natural character and visual amenities while minimizing negative effects of development.

3.4 Assessment Methods and Thresholds of Significance

Based on existing conditions within the Pure Water Project area, potential impacts on aesthetic and visual resources were identified and compared to CEQA thresholds of significance. These criteria state that impacts on aesthetic resources may occur if the project would result in the following:

- A substantial adverse effect on a scenic vista
- Substantial damage to scenic resources, including trees, rock outcroppings, and historical buildings within a state scenic highway
- Substantial degradation to the existing visual character or quality of the site and its surroundings or conflict with applicable zoning and other regulations governing scenic quality
- Creation of a new source of substantial light or glare

There are no officially designated state scenic highways or county-designated scenic routes in the project area (Caltrans 2022a); therefore, this topic is not discussed further.

Potential impacts and corresponding mitigation measures developed to reduce any identified impacts are described in the following sections.

3.5 Environmental Impacts

This section describes the environmental impacts related to aesthetics as a result of the Pure Water Project.

3.5.1 Overview

The analysis of aesthetic impacts is primarily concerned with the introduction of permanent, potentially visible features into the existing environment. Table 3-3 summarizes the impacts identified.

Table 3-3. Summary of Aesthetics Impacts

Impact	Alternative 1 Agoura Road AWPF	Alternative 2 Reservoir AWPF	Pipelines
Impact 3-1: Scenic Vistas	Less than significant impact	Less than significant impact	No impact
Impact 3-2: Visual Character and Quality	Less than significant impact	Less than significant impact	Less than significant impact
Impact 3-3: Light or Glare	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation

3.5.2 Impact 3-1: Scenic Vistas

With mitigation, the effects of Pure Water Project infrastructure on scenic vistas would be less than significant or have no impact.

3.5.2.1 Alternative 1 Agoura Road Advanced Water Purification Facility

Alternative 1 Agoura Road AWPF would be developed within 2.8 acres of the 7.1-acre site, with the 48,000-ft^2 building as the most prominent feature. The site would also contain access driveways from Agoura Road, paved areas for internal circulation, and parking spaces for staff and visitors. To comply with local and regional stormwater management regulations, a detention basin and infiltration trench is proposed within the site to capture and treat site runoff. Figure 2-3 shows the proposed site layout, and Figure 2-4 shows the site plan.

Figure 2-5 shows the proposed design concept from two street perspectives. Conceptual designs have been prepared to illustrate architectural features that may be updated and refined as the project advances through the design and construction contractor selection steps. Architectural design was developed to be consistent with City of Agoura Hills standards, including the *Architectural Design Standards & Guidelines* (City of Agoura Hills 2015) and the *Ladyface Mountain Specific Plan* (City of Agoura Hills 1991).

The AWPF would be apparent in the foreground vistas from Agoura Road and middle-ground views from vantage points along recreational trails. Scenic vistas of Ladyface Mountain would remain visible with development of the AWPF; and viewpoint locations providing expansive, relatively long-distance (vista) views would be maintained. Therefore, impacts to scenic vistas would be less than significant.

3.5.2.2 Alternative 2 Reservoir Advanced Water Purification Facility

The Alternative 2 Reservoir AWPF site is currently a vacant, undeveloped property and not adjacent to an existing road. A new, approximately 3,200-foot-long paved access road would connect to the eastern end of Triunfo Canyon Road, and new power lines would be installed along the new road to provide electrical service to the new AWPF.

Surrounding land uses include the Las Virgenes Reservoir to the west and open space to the north, east, and south. The new access road would have foreground views from the new intersection at Triunfo Canyon Road. The AWPF site and portions of the new access road would have foreground and middle-ground views from vantage points within select West Lake Village neighborhoods and recreational areas within Triunfo Canyon Park. Due to the low-lying proximity to its surroundings, the AWPF site would not obstruct scenic vistas. Therefore, impacts would be less than significant.

3.5.2.3 Pipelines

Nearly all aboveground permanent structures that would be constructed as part of the Pure Water Project would be located at the AWPF site. The only permanent aboveground structures that would be expected to be constructed outside the AWPF site are minor appurtenances, such as access hatches and vents associated with conveyance pipelines and a pump station. Therefore, impacts to scenic vistas would be less than significant.

3.5.3 Impact 3-2: Visual Character and Quality

As discussed in Section 3.5.1, constructed elements of Pure Water Project infrastructure are similarly not expected to affect local visual character or quality, resulting in less than significant or no impact.

3.5.4 Impact 3-3: Light or Glare

Implementation of the Pure Water Project would have a potentially significant impact from lighting during both construction and operation. During evening construction, operational and safety requirements would likely require the installation of night lighting. This could result in increased ambient night light for short durations. Structures to be constructed as part of the Pure Water Project could create new sources of nighttime light in views from nearby residences or recreational areas, as well as from nearby roads. Although design and construction would comply with local requirements to protect safety, both AWPF alternatives sites and some portions of the pipeline corridors are in undeveloped areas, such that all project-related lighting would be new, with some potential that lighting could spill over to adjacent areas. This impact would be reduced to less than significant with implementation of Mitigation Measure 3-1.

As shown on Figures 2-5 and 2-7, the AWPF alternatives have been designed based on general styles common in Southern California, including colors that minimize visual intrusion and by blending with the landscape. Therefore, their surfaces do not create glare.

3.6 Mitigation Measures

Impacts 3-1 through 3-2 would be less than significant; therefore, no mitigation is needed. Impact 3-3 would be reduced to less than significant with implementation of Mitigation Measure 3-1.

Mitigation Measure 3-1. Design lighting to minimize impacts on adjacent areas.

Construction Lighting. Prior to site mobilization, the construction manager will confirm that construction lighting is used in a manner that minimizes potential night lighting impacts, as follows:

- All lighting will be of minimum necessary brightness consistent with worker safety.
- All fixed-position lighting will be shielded, hooded, and directed downward to minimize backscatter to the night sky and prevent light trespass (direct lighting extending outside the boundaries of the construction area).
- Where feasible and safe, lighting will be turned off when not in use, and motion detectors will be used.
- A lighting complaint resolution form will be maintained by construction management to record all lighting complaints received and to document resolutions.
- All construction-related lighting will be completely shielded or screened so it is not visible to adjacent residents with direct views of the construction site.

Project Operation Lighting. New permanent lighting will be designed and installed such that light bulbs are not visible from public viewing areas and illumination of the night sky is minimized. To meet these requirements, the JPA will:

- Design lighting so exterior light fixtures are hooded, with lights directed downward or toward the area to be illuminated and so that backscatter to the nighttime sky is minimized. Lighting will be designed such that the luminescence or light source is shielded to prevent light trespass outside the facility boundary.
- All lighting will be of minimum necessary brightness consistent with worker safety.
- Where feasible and safe, lighting will be turned off when not in use.
- A lighting complaint resolution form will be used by AWPF staff to record all lighting complaints received and document resolutions.

4. Air Quality

This chapter describes air quality conditions in the project area, the regulatory setting for maintenance and improvement of air quality conditions, and the potential air pollution impacts of the Pure Water Project.

4.1 Existing Setting

This section describes the existing air quality setting in the project area, including climate and topography, the area's attainment status for air quality standards, and locally sensitive receptors.

4.1.1 Climate and Topography

Air quality is affected by both the pollutant emission rates and locations, and by meteorological conditions that influence movement and dispersal of pollutants in the atmosphere. The proposed AWPF locations are in Agoura Hills (Alternative 1) and Westlake Village (Alternative 2). Pipelines would be constructed in Agoura Hills, Westlake Village, and Thousand Oaks, and in a small area of unincorporated Ventura County.

All these areas, as stated in the *City of Agoura Hills General Plan 2035 EIR* (City of Agoura Hills 2010a)*:*

> *"…[are] situated within a relatively narrow east/west-trending valley corridor between the rolling foothills of the Simi Hills to the north, and the steep slopes of the Las Virgenes region of the Santa Monica Mountains to the south. Six major ridgelines and five canyon features characterize the City of Agoura Hills. The highest feature within Agoura Hills is Ladyface Mountain, which towers over the southwestern portions of the City and has a peak elevation of 2,036 feet above mean sea level (amsl)."*

The range is of moderate height, with no particularly craggy or prominent peaks outside the Sandstone Peak and Boney Mountains area. While often rugged and wild, the range hosts a substantial amount of human activity and development. Houses, roads, businesses, and recreational centers are located throughout the Santa Monica Mountains.

The Santa Monica Mountains have dry summers with frequent coastal fog on the ocean (southern) side of the range, and rainy, cooler winters. In the summer, the climate is quite dry except for the coastal fog, which makes the range prone to wildfires, especially during dry Santa Ana wind events. Snow is unusual in the Santa Monica Mountains. The nearest climate monitoring station is located in Canoga Park, which is approximately 9 miles northeast of Agoura Hills (WRCC 2016a).

The annual average high temperature in Agoura Hills is 80.4 degrees Fahrenheit (°F), although temperatures can occasionally exceed 100°F (WRCC 2016b). The annual average low temperature in the city is 47.3°F. Typically, the hottest and coldest months in Agoura Hills are in August and December, respectively. Most annual rainfall in Agoura Hills occurs between November and April. Summer rainfall is minimal and generally limited to scattered thundershowers in coastal regions (WRCC 2016a).

4.1.2 Attainment Status

California is divided geographically into air basins to manage the state's air resources regionally (CARB 2022a). The project would occur in two air basins depending on the locations of the activities. The AWPF and approximately 7.7 miles of the pipeline alignments would be located in the portion of Los Angeles County within the South Coast Air Basin; and approximately 11.5 miles of pipeline alignments would be in Ventura County within the South Central Coast Air Basin.

The portion of Los Angeles County within the South Coast Air Basin has been designated by EPA as in nonattainment status for ozone (O_3), particulate matter with aerodynamic diameter equal to or greater than 2.5 micrometers ($PM_{2.5}$), and lead (Pb), meaning the area does not meet *National Ambient Air*

Quality Standards (NAAQS). The area is in maintenance status for particulate matter with aerodynamic diameter equal to or greater than 10 micrometers (PM_{10}), carbon monoxide (CO), and nitrogen dioxide (NO_2) (EPA 2022a), meaning it was previously in nonattainment but is currently meeting the national standards under a maintenance plan.

Under *California Ambient Air Quality Standards* (CAAQS) (CARB 2016), the area is designated as nonattainment for O_3, PM_{10}, $PM_{2.5}$; and as attainment for CO, NO_2, and Pb. Los Angeles County is also in attainment of the CAAQS for sulfates and hydrogen sulfide (H_2S).

Ventura County is designated as in nonattainment for O_3 under NAAQS, and in nonattainment for O_3 and PM_{10} under CAAQS. Ventura County is in attainment for all other pollutants. Table 4-1 summarizes the attainment status of each pollutant under the federal and state standards.

Table 4-1. State and National Attainment Status for Los Angeles County[a] and Ventura County

Pollutant	Los Angeles County (South Coast Air Basin)		Ventura County	
	CAAQS Status	NAAQS Status	CAAQS Status	NAAQS Status
CO	Attainment	Attainment (Maintenance)	Attainment	Attainment/Unclassifiable
NO_2	Attainment	Attainment (Maintenance)	Attainment	Attainment/Unclassifiable
O_3	Nonattainment	Nonattainment (Extreme)	Nonattainment	Nonattainment (Serious)
Pb	Attainment	Nonattainment	Attainment	Attainment/Unclassifiable
PM_{10}	Nonattainment	Attainment (Maintenance)	Nonattainment	Attainment/Unclassifiable
$PM_{2.5}$	Nonattainment	Nonattainment (Serious for 2006 and 2012 NAAQS, Moderate for 1997 NAAQS)	Attainment	Attainment/Unclassifiable
SO_2	Attainment	Unclassifiable/Attainment	Attainment	Attainment/Unclassifiable

Source: CARB 2019a; EPA 2022a

[a] Portion of Los Angeles County within the South Coast Air Basin.

SO_2 = sulfur dioxide

4.1.3 Sensitive Receptors

A sensitive receptor is a person in the population who is particularly susceptible to health effects due to exposure to an air contaminant. Certain population groups, such as children, the elderly, and acutely and chronically ill persons (especially those with cardiorespiratory diseases), are considered more sensitive to the potential effects of air pollution than others. Some examples of sensitive receptors include (South Coast AQMD 2019):

- Athletic facilities
- Childcare centers
- Convalescent centers
- Long-term health care facilities
- Playgrounds
- Rehabilitation centers
- Residences
- Retirement homes
- Schools

The project's AWPF and pipeline alignments are within portions of the cities of Agoura Hills, Westlake Village, Thousand Oaks, and unincorporated Ventura County. The areas have mixed residential and commercial land uses, with open spaces south of the Agoura Road and near the Reservoir AWPF location.

The proposed Agoura Road AWPF alternative would be located to the south of Agoura Road in Agoura Hills, with residential areas located to the west, commercial land uses to the north across Agoura Road, and open space to the east and south of the site. The nearest school is the Lindero Canyon Middle School approximately 0.9 mile to the east.

The Reservoir AWPF alternative would be located next to the Las Virgenes Reservoir in Westlake Village. The Reservoir AWPF is surrounded by the reservoir and open spaces. The nearest sensitive receptors are residences approximately 1,000 feet northwest of the site. Lindero Canyon Middle School is approximately 3 miles from the Reservoir AWPF.

4.2 Regulatory Framework

This section describes the project's regulatory air quality framework.

4.2.1 Federal Regulations

This section describes the federal air quality regulations relevant to the project.

4.2.1.1 Federal Clean Air Act and NAAQS

Federal air quality policies are regulated through the federal Clean Air Act (CAA). EPA adopted the CAA in 1970 and its amendments in 1977 and 1990. Pursuant to the CAA, EPA has established nationwide air quality standards to protect public health and welfare with an adequate margin of safety. These federal standards, known as the NAAQS, represent the maximum allowable atmospheric concentrations and were developed for the criteria pollutants:

- CO
- NO_2
- O_3
- Pb
- PM_{10} and $PM_{2.5}$
- SO_2

The NAAQS represent safe levels of each pollutant to avoid specific adverse effects to human health and the environment. Table 4-2 provides a summary of the NAAQS.

EPA classifies areas as being in attainment or nonattainment with the NAAQS for each criteria pollutant. A region that constantly meets the NAAQS for a pollutant is designated as being in attainment for that pollutant. A region that does not meet the NAAQS for a pollutant is designated as being in nonattainment for that pollutant. An area that was previously designated as a nonattainment area but has met the standard and has been reclassified by EPA as attainment with a maintenance plan is designated as a maintenance area.

For nonattainment areas, the states are required to formulate and submit a State Implementation Plan (SIP) to EPA to detail how the state would attain and maintain the NAAQS within the required time frame. The SIP serves as a tool to help avoid and minimize emissions of nonattainment criteria pollutants and their precursor pollutants and achieve compliance with the NAAQS. In 1990, the CAA was amended to strengthen the regulation of both stationary and mobile emission sources.

Table 4-2. Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	CAAQS[b]	NAAQS[a]	
			Primary[c]	Secondary[d]
CO	8 hours 1 hour	9.0 ppmv 20 ppmv	9 ppmv 35 ppmv	– –
H_2S	1 hour	0.03 ppmv	–	–
NO_2	Annual arithmetic mean 1 hour	0.03 ppmv 0.18 ppmv	0.053 ppmv 0.100 ppmv	0.053 ppmv –
O_3	8 hours 1 hour	0.070 ppmv 0.09 ppmv	0.070 ppmv –	0.070 ppmv –
Pb[e]	Calendar quarter Rolling 3-month average 30-day average	– – 1.5 µg/m^3	1.5 µg/m^3 (certain areas) 0.15 µg/m^3 –	1.5 µg/m^3 – –
$PM_{2.5}$	Annual arithmetic mean 24 hours	12 µg/m^3 –	12 µg/m^3 35 µg/m^3	15 µg/m^3 35 µg/m^3
PM_{10}	Annual arithmetic mean 24 hours	20 µg/m^3 50 µg/m^3	– 150 µg/m^3	– 150 µg/m^3
SO_2	24 hours 3 hours 1 hour	0.04 ppmv – 0.25 ppmv	– – 0.075 ppmv[f]	– 0.5 ppmv –
Sulfates	24 hours	25 µg/m^3	–	–
Vinyl chloride[e]	24 hours	0.01 ppmv	–	–
Visibility-reducing particles	8 hours	–[g]	–	–

Source: CARB 2016

[a] NAAQS other than for O_3 and particulate matter, based on annual averages or annual arithmetic means are not to be exceeded more than once a year, as follows:

- For O_3, the 8-hour standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard.
- For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration exceeding 150 µg/m^3 is equal to or less than 1.
- For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, is equal to or less than the standard.

[b] CAAQS for O_3, CO (except Lake Tahoe), SO_2 (1 hour and 24 hours), NO_2, and suspended particulate matter (PM_{10}, $PM_{2.5}$, and visibility-reducing particles) are not to be exceeded. All others are not to be equaled or exceeded.

[c] NAAQS Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

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

[e] CARB has identified Pb and vinyl chloride as TACs with no threshold level of exposure for adverse health effects determined. CARB made this determination following the implementation of control measures at levels less than the ambient concentrations specified for these pollutants.

[f] Final Rule signed June 2, 2010. To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

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

- = not applicable

µg/m^3 = microgram(s) per cubic meter

CARB = California Air Resources Board

ppb = part(s) per billion

ppmv = part(s) per million by volume

TAC = toxic air contaminant

4.2.1.2 Hazardous Air Pollutants

Controlling toxic air emissions became a national priority with the passage of the 1990 CAA Amendments, whereby Congress mandated that the EPA regulate 188 air toxics, also known as hazardous air pollutants (HAPs).

Prior to the 1990 CAA Amendments, EPA created a program to establish national emission standards for HAPs (EPA 2021a). National emission standards were established for the following pollutants:

- Asbestos
- Benzene
- Beryllium
- Coke oven emissions
- Inorganic arsenic
- Mercury
- Radionuclides
- Radon 222
- Vinyl chloride

In 1994, EPA began issuing the new standards, while national emission standards set before 1991 remain applicable (EPA 1994). In addition, in February 2007, EPA finalized the rule *Control of Hazardous Air Pollutants from Mobile Sources*, to reduce HAPs from mobile sources (EPA 2007).

4.2.2 State Regulations

This section describes the state air quality regulations relevant to the project.

4.2.2.1 California State Ambient Air Quality Standards

CARB oversees California air quality policies. CAAQS were first established in 1969 pursuant to the Mulford-Carrell Act. These standards are generally more stringent than the NAAQS and include four additional pollutants: sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particulates. Table 4-1 list the CAAQS relevant to this project.

The California CAA, which was approved in 1988, requires each local air district, where ambient concentrations violate the CAAQS, to prepare an air quality management plan (AQMP) to achieve compliance with the CAAQS as a part of the SIP. CARB has ultimate responsibility for the SIP for nonattainment pollutants but relies on each local air district to adopt mandatory statewide programs and provide additional strategies for sources under their jurisdiction. The SIPs are a compilation of new and previously submitted plans, programs (for example, monitoring, modeling, permitting), district rules, state regulations, and federal controls.

4.2.2.2 Toxic Air Contaminants

California regulates TACs through its Air Toxics Program, which is mandated in Chapter 3.5 of the Health and Safety Code – Toxic Air Contaminants, and Part 6 – Air Toxics Hot Spots Information and Assessment (California Health and Safety Code, Sections 39660 et seq. and 44300 et seq., respectively). The California Environmental Protection Agency (CalEPA), Office of Environmental Health Hazard Assessment, completed a comprehensive health assessment of diesel exhaust in 1998. The assessment formed the basis for a CARB decision to formally identify particulate matter in diesel exhaust as a TAC that may pose a threat to human health (CARB 1998).

CARB has adopted a series of airborne toxic control measures for mobile and stationary sources that are intended to reduce overall diesel exhaust emissions in California. CARB also adopted two airborne toxic control measures for controlling naturally occurring asbestos: (1) the Asbestos Airborne Toxic Control Measure for Surfacing Applications and (2) the Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations. CARB and local air districts have the authority to enforce the federal National Emission Standards for HAPs regulations for asbestos (CARB 2022b).

4.2.3 Local Regulations

This section describes local air quality regulations relevant to the project.

4.2.3.1 South Coast Air Quality Management District

The project area in Los Angeles County is in the South Coast Air Basin under the jurisdiction of the South Coast Air Quality Management District (South Coast AQMD). South Coast AQMD is the local agency responsible for ensuring that federal and state ambient air quality standards are attained and maintained in the basin. South Coast AQMD has developed air quality plans for O_3, PM_{10}, and $PM_{2.5}$ to establish strategies to attain the air quality standards. The latest approved regional air quality plan, the 2016 AQMP, was adopted by South Coast AQMD in March 2017. The 2016 AQMP identifies strategies and control measures needed to achieve attainment of the 8-hour ozone standard and federal annual and 24-hour standard for $PM_{2.5}$ in the South Coast Air Basin (South Coast AQMD 2017).

The South Coast AQMD is the regional agency responsible for rulemaking, permitting, and enforcement activities affecting stationary sources in the South Coast Air Basin. Specific rules and regulations adopted by the South Coast AQMD limit the emissions that can be generated by various activities and identify specific pollution reduction measures that must be implemented in association with various activities. These rules regulate not only emissions of the criteria air pollutants, but also air toxic emissions and acutely hazardous nonradioactive materials emissions. Any sources of stationary emissions constructed as part of a project would be subject to South Coast AQMD rules and regulations. Applicable rules include:

- Rule 401: Visible Emissions
- Rule 402: Nuisance
- Rule 403: Fugitive Dust

4.2.3.2 Ventura County Air Quality Control District

Project areas of concentrate pipeline alignments in Ventura County are under Ventura County Air Pollution Control District (Ventura County APCD) jurisdiction. The Ventura County APCD is the agency principally responsible for comprehensive air pollution control in the county, and it develops rules and regulations to reduce emissions, protect public health and agriculture, and achieve and maintain state and federal air quality standards. The 2016 AQMP was adopted in 2017 (Ventura County APCD 2017) and presents Ventura County's strategy to attain the 2008 federal 8-hour ozone standard by 2020, as required by the federal 1990 CAA Amendments and applicable EPA regulations.

Ventura County APCD establishes regulations for stationary sources, inspects emissions sources, and enforces such measures through educational programs or fines, when necessary. Applicable rules include:

- Rule 51: Nuisance
- Rule 55: Fugitive Dust Control
- Rule 62: Hazardous Materials and Airborne Toxics

4.3 Assessment Methods and Thresholds of Significance

The significance thresholds used to evaluate the project impacts associated with air quality are outlined in Appendix G of CCR Title 14, Division 6, Chapter 3 (CEQA Guidelines). According to these guidelines, a significant impact related to air quality would occur if a project would:

- Conflict with or obstruct implementation of the applicable air quality plan
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or state ambient air quality standard

- Expose sensitive receptors to substantial pollutant concentrations
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people

4.3.1.1 South Coast Air Quality Management District CEQA Air Quality Significance Thresholds

The air quality impacts in Los Angeles County were evaluated following the South Coast AQMD's *CEQA Air Quality Analysis Guidance Handbook* (1993), and South Coast AQMD air quality significance thresholds were used to determine whether the project would have significant impacts on air quality.

The South Coast AQMD's air quality significance thresholds set quantitative emissions significance thresholds; if a project results in air quality impacts less than these thresholds, it would not have a significant impact on ambient air quality under project level and cumulative conditions (South Coast AQMD 2019). Project emissions from construction and operation were estimated and compared to the significance thresholds, as shown in Table 4-3. If the estimated daily project emissions would be less than the significance thresholds, impacts would be considered less than significant. If the daily emissions would be greater than the significance thresholds, impacts would be considered significant. While South Coast AQMD also has thresholds for Pb emissions, the project is not expected to have meaningful Pb emissions; therefore, Pb emissions are not further discussed.

Table 4-3. South Coast AQMD Air Quality CEQA Significance Thresholds

Air Pollutant	Construction Threshold (lb/d)	Operation Threshold (lb/d)
NO_X	100	55
VOC or ROG	75	55
PM_{10}	150	150
$PM_{2.5}$	55	55
SO_x	150	150
CO	550	550

Source: South Coast AQMD 2019

Notes:

ROG and VOC are interchangeable in this report.

lb/d = pound(s) per day

NOx = nitrous oxide

ROG = reactive organic gases

SOx = sulfur oxide

VOC = volatile organic compound

4.3.1.2 South Coast AQMD Localized Significance Thresholds

The localized significance thresholds (LSTs) methodology was developed by South Coast AQMD to assist CEQA lead agencies in analyzing localized air quality impacts from proposed projects (South Coast AQMD 2008a). It is a screening methodology that allows users to determine whether a project would cause or contribute to an exceedance of the NAAQS or CAAQS for each source receptor area instead of conducting a dispersion modeling analysis. The LST is set up as a series of lookup tables for emissions of NOx, CO, PM_{10}, and $PM_{2.5}$.

The use of South Coast AQMD's LSTs is voluntary, and it is used for this study as reference levels to evaluate the localized impacts on nearby receptors. The project is located within source receptor area 6, in West San Fernando Valley. The most stringent LSTs at a receptor distance of 27 yards from the 2-acre site, representing the AWPF and pipeline construction area, were used for this study to be conservative

(Table 4-4). If proposed construction and operational emissions would be less than LST levels, the project would not cause significant localized impacts on nearby receptors.

Table 4-4. Localized Significance Thresholds for West San Fernando Valley (Source Receptor Area 6)

Activity	Site Size (acres)	Receptor Distance (yards)	CO (lb/d)	NOx (lb/d)	PM_{10} (lb/d)	$PM_{2.5}$ (lb/d)
Construction	2	27	644	147	6	4
Operation	2	27	644	147	2	1

Source: South Coast AQMD 2008a

4.3.1.3 Ventura County APCD CEQA Air Quality Significance Thresholds

The *Ventura County Air Quality Assessment Guidelines* (Ventura County APCD 2003) indicate that a proposed project's criteria pollutant emissions would be considered to have adverse significant impact if the project would generate daily operational emissions exceeding 25 pounds of ROG or NOx for areas outside of the Ojai Planning Area in Ventura County, where the project is located. In addition, Ventura County APCD requires a project to determine consistency with the AQMP. However, projects with operation emissions less than 2 lb/d of ROG and 2 lb/d of NOx emissions are considered to have a less than significant cumulative adverse air quality impact and are exempt from the consistency assessment.

Emission thresholds in the *Ventura County Air Quality Assessment Guidelines* are not intended to be applied to construction emissions because these emissions are temporary. In addition, the guidelines are not applicable to equipment or operations required to have Ventura County permits (Authority to Construct or Permit to Operate). The emissions from equipment or operations requiring Ventura County permits are not counted toward the air quality significance thresholds (Ventura County APCD 2003).

Ventura County APCD has not established quantitative emission thresholds for fugitive dust from construction activities, but considers a project to have significant impacts if it would (California Health and Safety Code, Division 26, Section 41700):

- Generate fugitive dust emissions in such quantities as to cause injury, detriment, nuisance, or annoyance to a considerable number of persons or to the public
- Endanger the comfort, repose, health, or safety of any such person or the public
- Cause or have a natural tendency to cause injury or damage to business or property

4.4 Environmental Impacts

This section describes air quality environmental impacts that could result from the project.

4.4.1 Overview

Air quality impacts associated with project construction were analyzed according to the anticipated construction activities. As summarized in Table 4-5, the project would cause temporary, less than significant air quality impacts from construction emissions. Operation emissions from either the Alternative 1 Agoura Road AWPF or Alternative 2 Reservoir AWPF are anticipated to be negligible from the treatment process. The only emission source during project operation would be the limited number of vehicle trips to the AWPF and the diesel-powered emergency generator. The project would not expose sensitive receptors to substantial pollution concentrations, and would not affect a substantial number of people with objectionable odor. The project is not expected to conflict with the regional air quality plans or cause new violations to the NAAQS and CAAQS. Detailed impact discussions are presented in the following subsections.

Table 4-5. Summary of Air Quality Impacts

Impact	AWPF and Pipelines (South Coast AQMD)	Pipeline (Ventura County APCD)
Impact 4-1: Short-term Criteria Air Pollutant Emissions	Less than significant impact	Less than significant impact
Impact 4-2: Long-term Criteria Air Pollutant Emissions	Less than significant impact	Less than significant impact
Impact 4-3: Pollutant Concentrations	Less than significant impact	Less than significant impact
Impact 4-4: Odors	Less than significant impact	Less than significant impact

4.4.2 Impact 4-1: Short-term Criteria Air Pollutant Emissions

The project involves construction of either Alternative 1 Agoura Road AWPF or Alternative 2 Reservoir AWPF and associated pipelines that have the potential to generate temporary air pollutants, including exhaust emissions from construction equipment and vehicles, as well as fugitive dust emissions from earthmoving activities or vehicles traveling on both paved and unpaved roads.

Construction emissions of NO_x, ROGs, CO, SO_2, PM_{10}, $PM_{2.5}$ were estimated using California Emission Estimator Model (CalEEMod) (CAPCOA 2021). Construction emissions included those from the following sources:

- Exhaust emissions of ROG, NOx, CO, SO_2, PM_{10}, and $PM_{2.5}$ from off-road construction equipment
- Exhaust emissions ROG, NOx, CO, SO_2, PM_{10}, and $PM_{2.5}$, from onroad vehicle trips, including worker commute, vendor trips, and haul truck trips
- Fugitive dust emissions of PM_{10} and $PM_{2.5}$ from onsite earthmoving activities and offsite vehicle travel

AWPF construction emission calculations were based on the projected construction schedule and durations, and anticipated equipment and vehicle usage. Alternative 1 Agoura Road AWPF and Alternative 2 Reservoir AWPF construction schedule and equipment activities would be similar, thus the emissions were estimated using one set of construction information and assumptions. Pipeline construction methods and alignment length would be similar for Alternatives 1 and 2. Pipeline emissions were estimated based on construction activities of one crew working on a 1,000-foot-long pipeline segment.

Construction emissions were estimated separately for pipeline construction activities in Los Angeles and Ventura counties. CalEEMod default values were used when project-specific information was not available. Appendix A provides information on the construction calculations and CalEEMod modeling outputs.

4.4.2.1 Construction Emissions in Los Angeles County

Both AWPF alternatives and approximately 7.7 miles of pipelines would be constructed within Los Angeles County under the jurisdiction of South Coast AQMD. To be conservative, it was assumed multiple components of the project may be under construction simultaneously, including the construction of the AWPF, with up to three crews working on different pipeline segments in any given day. Table 4-6 summarizes the estimated maximum daily construction emissions in Los Angeles County.

Table 4-6. Estimated Maximum Daily Construction Emissions in Los Angeles County

Site	ROG (lb/d)	NOx (lb/d)	CO (lb/d)	SO_2 (lb/d)	PM_{10} (lb/d)	$PM_{2.5}$ (lb/d)
AWPF 2025	1.31	12.69	12.94	0.04	1.25	0.59
AWPF 2026	2.61	20.89	25.10	0.08	3.59	1.44
AWPF 2027	1.43	10.53	11.92	0.04	2.10	0.81
Pipelines (3 crews)	5.03	58.11	55.20	0.25	8.16	2.95
Total Emissions in South Coast AQMD	7.64	79.00	80.30	0.33	11.75	4.39
South Coast AQMD CEQA Thresholds	75	100	550	150	150	55

As shown in Table 4-6, project construction emissions in Los Angeles County would be less than the South Coast AQMD CEQA thresholds. In addition, the project would comply with fugitive dust control requirements as specified in South Coast AQMD Rule 403 and implement best management practices (BMPs) to minimize construction emissions. Fugitive dust emission control measures would include:

- General: Implement applicable requirements in Tables 1 through 3 of South Coast AQMD Rule 403 to minimize fugitive dust emissions.
- Backfilling:
  - Stabilize backfill material and soil.
  - Empty loader buckets slowly so that no dust plumes are generated.
  - Minimize the drop height from loader buckets.
- Bulk Materials Handling and Stockpiles: Stabilize stockpile materials, and maintain storage piles to avoid steep sides or faces.
- Disturbed Soil: Stabilize disturbed soil throughout the construction site.
- Earthmoving Activities: Pre-apply and re-apply water to disturbed areas as necessary.
- Off-road Traffic and Parking Areas: Stabilize all off-road traffic and parking areas, and direct construction traffic over established routes. Use barriers so that vehicles only drive on established parking areas and routes.
- Staging Areas:
  - Stabilize staging areas during use, and stabilize staging area soils at project completion.
  - Limit the size of staging areas.
  - Limit vehicle speeds to 15 miles per hour (mph).
  - Limit the number and size of staging area entrances and exits.
- Track-out Control: Remove dust and dirt that is disturbed during construction and settles on nearby public roadways (track-out) at the conclusion of each workday.
- Trenching:
  - Stabilize surface soils where trencher or excavator and support equipment would operate, and stabilize soils at the completion of trenching activities.
  - For deep trenching activities, pre-trench to 18 inches, soak soils via the pre-trench, and resume trenching.
  - Wash mud and soils from equipment at the conclusion of trenching activities to prevent soil from crusting and drying on equipment.
- Truck Loading and Material Transport:
  - Use tarps or suitable enclosures on haul trucks.
  - Pre-water material prior to loading.
  - Provide 6 inches of freeboard.

4.4.2.2 Construction Emissions in Ventura County

Because the AWPF would be located in Los Angeles County, construction emissions in Ventura County would only be from constructing portions of the concentrate water pipeline. There would be one crew working on pipeline construction in Ventura County at any given time. Table 4-7 summarizes the maximum daily construction emissions in Ventura County within Ventura County APCD jurisdiction.

Table 4-7. Estimated Maximum Daily Construction Emissions in Ventura County

Site	ROG (lb/d)	NOx (lb/d)	CO (lb/d)	SO_2 (lb/d)	PM_{10} (lb/d)	$PM_{2.5}$ (lb/d)
Pipelines (1 crew)	1.68	19.12	18.52	0.08	2.73	0.98

There are no applicable CEQA thresholds for construction emissions from Ventura County APCD. The construction emissions in Ventura County are temporary, and the project would implement the applicable mitigation measures as required in Rule 55 and *Ventura County APCD Guidelines* (Ventura County APCD 2003), including:

- Fugitive Dust Mitigation Measures, such as:
  - Watering and using chemical dust control agents for soil stabilization
  - Implementing track-out prevention and removal
  - Implementing vehicle speed control
- ROG and NOx Construction Mitigation Measures, such as:
  - Minimizing equipment idling time
  - Maintaining equipment engines in good condition and in proper tune per manufacturers' specifications
  - Lengthening the construction period during smog season (May through October) to minimize the number of vehicles and equipment operating at the same time
  - Using alternatively fueled construction equipment, such as compressed natural gas, liquefied natural gas, or electric, if feasible

In summary, construction of the project would take approximately 2.5 years, and construction emissions would be temporary. The project would be constructed in compliance with the applicable South Coast AQMD and Ventura County APCD regulations and policies, and BMPs would be implemented to reduce emissions from construction. The project construction emissions would cause temporary and less than significant air quality impacts for Alternatives 1 and 2.

4.4.3 Impact 4-2: Long-term Criteria Air Pollutant Emissions

Operation of either Alternative 1 Agoura Road AWPF or Alternative 2 Reservoir AWPF would cause air emissions from the vehicles trips made by workers commuting and material delivery, as well as from testing and operation of the emergency engine. Emissions from water purifying processes and from pipeline maintenance are expected to be negligible.

Emissions from either AWPF alternative would be the same, and both alternatives would be located in Los Angeles County. Maximum daily emissions during AWPF operation were estimated based on the number of worker commute trips, delivery truck trips, and routine maintenance and testing of the emergency generators at the AWPF. Vehicle emissions factors were obtained from CARB's model EMFAC2017 (2021a). Emissions from emergency engine routine testing and maintenance were assumed to be tested for 1 hour, estimated using emission factors from CalEEMod and a 100% load. Table 4-8 summarizes AWPF operation emissions.

Table 4-8. Estimated Maximum Daily Operation Emissions in Los Angeles County

Activity	ROG (lb/d)	NOx (lb/d)	CO (lb/d)	SO_2 (lb/d)	PM_{10} (lb/d)	$PM_{2.5}$ (lb/d)
Emergency Generator Testing and Maintenance	0.13	2.85	2.53	0.00	0.09	0.09
Worker Commute and Delivery Trucks	0.01	0.54	0.34	0.00	0.05	0.02
Total Operation	0.14	3.39	2.87	0.01	0.14	0.11
South Coast AQMD CEQA Thresholds	55	55	550	150	150	55

As shown in Table 4-8, operation emissions would not exceed the South Coast AQMD CEQA thresholds of significance. Therefore, project operation would not result in a cumulatively considerable contribution to a significant impact. The air impact from the project's operational emissions would be less than significant.

Operation emissions in Ventura County would be negligible from the infrequent pipeline maintenance or repair, therefore, would have a less than significant impact.

4.4.4 Impact 4-3: Pollutant Concentrations

With mitigation, Impact 4-3 would be less than significant.

4.4.4.1 Emissions and Exposure in Los Angeles County

The project's construction sites are located in populated areas and near sensitive receptors, such as residential areas near both Alternative 1 Agoura Road AWPF and Alternative 2 Reservoir AWPF, and along some of the pipeline alignments. For emissions from project construction and operation in Los Angeles County, South Coast AQMD's LST methodology was used to further evaluate localized ambient air quality impacts to nearby receptors due to criteria pollutants. Equipment and vehicle exhaust emissions and fugitive dust emissions from the project's construction sites were compared to the LST thresholds appropriate to the source receptor area, site acreage, and distance to the nearest receptor per the South Coast AQMD policy (South Coast AQMD 2008a).

Onsite construction emissions were evaluated for two sites: one for the AWPF and the other for a pipeline segment. The total area of daily disturbance was conservatively set at 2 acres, although actual construction may occur over a larger area. This is a conservative assumption because emissions spread over 2 acres would be more concentrated and would produce the worst-case scenario as compared to emissions spread over a larger area. The closest sensitive residential and offsite worker receptors were set at 27 yards, which is the shortest distance to sensitive receptors in the South Coast AQMD LSTs that has the most stringent thresholds.

Onsite operation emissions from the AWPF would be from the routine testing and maintenance of the emergency generators, which would only occur once or twice a month and typically last less than an hour. Exposure of diesel emissions to the sensitive receptors in the area would be minimal because the emissions from the emergency testing would not occur every day.

Table 4-9 summarizes the onsite construction emissions and the comparisons to LSTs. The table shows that construction emissions from the AWPF and pipelines would not exceed South Coast AQMD LSTs. Because the LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard at the nearest receptors, the project construction emissions would not expose nearby sensitive receptors to substantial concentrations of criteria pollutants. The impacts are expected to be less than significant.

Table 4-9. Onsite Construction Emissions in Los Angeles County

Site	ROG (lb/d)	NOx (lb/d)	CO (lb/d)	SO_2 (lb/d)	PM_{10} (lb/d)	$PM_{2.5}$ (lb/d)
AWPF Construction 2025	1.19	10.33	11.47	0.03	0.41	0.35
AWPF Construction 2026	2.15	16.76	20.26	0.04	0.65	0.62
AWPF Construction 2027	1.15	8.83	8.96	0.02	0.35	0.33
Pipelines Construction (1 crew)	1.48	11.16	15.55	0.04	0.97	0.46
South Coast AQMD LSTs for West San Fernando Valley (Source Receptor Area 6)	-	147	644	-	6	4

Exhaust emissions from construction equipment would also contain TACs, such as diesel particulate matter, that have potential cancer and noncancer chronic health effects. Although some of the project's construction activities may be near residential areas, construction activities would be short term and limited to a relatively small area where only a few pieces of construction equipment would be operating at a time.

Exposures from the construction activity TAC emissions would be short term in nature, and long-term exposure to diesel particulate matter from construction would not occur. In addition, project construction is required to implement BMPs and follow the emission control measures described in the South Coast AQMD and Ventura County APCD CEQA guidelines, including minimizing idling times and maintaining equipment in good condition. These measures would help minimize exposure of nearby sensitive receptors to construction-related pollutants.

4.4.4.2 Emissions and Exposure in Ventura County

Maximum daily onsite emissions from a pipeline construction site in Ventura County would be similar to those in Los Angeles County. Because of the similar emission levels and settings of sensitive receptors near the project sites in Ventura and Los Angeles counties, potential impacts to sensitive receptors in Ventura County would be similar to those in Los Angeles County. Therefore, the emissions from the pipeline construction in Ventura County APCD areas are not expected to expose nearby sensitive receptors to substantial concentrations of criteria pollutants. The impacts are expected to be less than significant.

4.4.5 Impact 4-4: Odors

Types of land uses that typically pose potential odor problems include:

- Agriculture
- Chemical plants
- Composting facilities
- Dairies
- Food processing and rendering facilities
- Landfills
- Waste transfer stations
- Wastewater treatment plants

In addition, the occurrence and severity of odor impacts depend on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and the presence of sensitive receptors.

During project construction, the diesel-fueled engines that power both on- and off-road vehicles and heavy construction equipment could result in project-related odor. However, such emissions would be localized to the immediate area under construction and would be short in duration. The project would comply with the BMPs to minimize construction emissions and impacts. As feasible, construction equipment and truck traffic would be located or routed away from local neighborhoods or sensitive receptor areas. Emissions associated with construction activities would be dispersed over the construction site, would be short term and transient, and would not create objectionable odors affecting a substantial number of people. Alternative 1 Agoura Road AWPF or Alternative 2 Reservoir AWPF would not cause odorous emissions from water purifying processes. Therefore, odor impacts would be less than significant during project operation.

4.5 Mitigation Measures

Impacts 4-1 through 4-4 would be less than significant; therefore, no mitigation is needed. Mitigation measures are not required because the project would have less than significant impacts during construction and operation. During construction, the project will comply with applicable regulatory standards, including the fugitive dust control and tailpipe emissions BMPs listed in South Coast AQMD Rule 403, Ventura County Rule 55, and the *Ventura County APCD Guidelines*. No additional mitigation measures are required.

5. Biological Resources

This chapter describes biological resources present or potentially present within the project area; discusses federal, state, and local regulations that may affect biological resources; and identifies potential impacts and proposes mitigation measures to reduce significant impacts, where possible, to a less than significant level.

5.1 Existing Setting

The Pure Water Project is located in southeastern Ventura County and northwestern Los Angeles County, including the cities of Agoura Hills, Westlake Village, and Thousand Oaks. The project is primarily located south of the Simi Valley Hills and north of the Santa Monica Mountains, within the Malibu Creek watershed. The project area includes open space, undeveloped areas, and densely populated and developed suburban areas.

5.1.1 Project Area

This section considers those plant and animal species that require special consideration and protection pursuant to the Federal Endangered Species Act (FESA), the California Endangered Species Act (CESA), or CEQA. Special-status species either have:

- Unique biological significance
- Limited distribution
- Restricted habitat requirements
- Particular susceptibility to human disturbance
- A combination of these factors

Figure 5-1 shows the locations of special-status plant and wildlife species listed in the *California Natural Diversity Database* (CNDDB) *Rarefind 5* application (Rarefind 5) (CDFW 2022b) within 5 miles of Pure Water Project features. Special-status species with the potential to occur within the project area are described in this section, followed by discussions of focused surveys for special-status species and communities at the Alternative 1 Agoura Road AWPF site, the Alternative 2 Reservoir AWPF site, and along the Conejo Canyon Open Space Trail. In addition, Section 5.1.5 describes the physical habitat characteristics and biological and water quality conditions in Malibu Creek.

5.1.1.1 Special-status Plants and Plant Communities

Special-status plant species are those plants listed, proposed for listing, or candidates for listing as Threatened or Endangered by the U.S. Fish and Wildlife Service (USFWS) under FESA; species listed as Endangered, Threatened, or Rare by CDFW under CESA; and plants on the California Native Plant Society (CNPS) *Rare Plant Inventory* (2022) with a California Rare Plant Rank (CRPR) of:

- 1B: Plants considered rare, threatened, or endangered in California and elsewhere
- 2B: Plants considered rare, threatened, or endangered in California, but common elsewhere
- 4: A watch list for plants that are of limited distribution in California

The potential for special-status plants to occur within the project area was determined through a search of the following sources:

- USFWS *IPaC Information for Planning and Consultation* database (USFWS 2022)
- *Rare Plant Inventory* (CNPS 2022)
- Calflora online database (Calflora 2022)
- Rarefind 5 (CDFW 2022b) for sensitive plants

Most special-status plants species identified during the database queries that are known to occur in the region are not expected to occur within the project footprint due to lack of suitable habitat. The following species were determined to have at least some potential to occur at undeveloped sites within the project area:

- Agoura Hills dudleya (*Dudleya cymosa* ssp. *agourensis*) - CRPR 1B.2; Federally Threatened
- Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmanie)* - CRPR 1B.1
- Braunton's milk-vetch (*Astragulus brauntonii*) - CRPR 1B.1; Federally Endangered
- California orcutt grass (*Orcuttia californica*) - CRPR 1B.1; State Endangered; Federally Endangered
- Lyon's pentachaeta (*Pentachaeta lyonii*) - CRPR 1B.1; State Endangered; Federally Endangered
- Ojai navarretia (*Navarretia ojaiensis*) - CRPR 1B.1
- Plummer's mariposa lily (*Calochortus plummerae*) - CRPR 4.2
- Santa Catalina mariposa lily (*Calochortus catalinae*) - CRPR 4.2
- Southern tarplant (*Centromadia parryi* ssp. *australis*) - CRPR 1B.1
- Slender mariposa lily (*Calochortus clavatus* var. *gracilis*) - CRPR 1B.2
- Southern California black walnut (*Juglans californica*) - CRPR 4.2

Botanical surveys were performed in undeveloped project areas to determine the potential presence of special-status plants. Botanical surveys were completed in accordance with CDFW protocols (CDFW 2018). Surveys were performed at the Alternative 1 Agoura Road AWPF site, the Alternative 2 Reservoir AWPF site, and along the Conejo Canyon Open Space Trail on the following dates:

- Early-season survey April 12–15, 2022
- Mid-season survey on May 21 – June 1, 2022
- Late-season survey on July 6–7, 2022

Survey results are reported in this section for the individual project areas.

In addition, vegetation types were characterized and mapped concurrent with the botanical surveys in the undeveloped project areas to determine the presence and extent of sensitive natural communities. Survey results are reported in the following subsections for the individual project areas.

5.1.1.2 Special-status Wildlife

Special-status wildlife species are those animals:

- Listed, proposed for listing, or candidates for listing as Threatened or Endangered by USFWS under FESA and by CDFW under CESA
- Considered by the CDFW as Species of Special Concern
- Listed as Fully Protected under the California Fish and Game Code
- Listed on the CDFW Watch List

The potential for special-status wildlife to occur within the project area was determined through a search of Rarefind 5 (CDFW 2022b) for sensitive wildlife within the project area.

Most special-status wildlife species known to occur in the region are not expected to occur within the project footprint due to lack of suitable habitat. The following species were determined to have some potential to occur within the project area:

- Coastal California gnatcatcher (*Polioptila californica californica*) - Federally Endangered and CDFW Species of Special Concern
- Coastal whiptail (*Aspidoscelis tigris stejnegeri*) - CDFW Species of Special Concern
- Southern California legless lizard (*Anniella stebbinsi*) - CDFW Species of Special Concern
- Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*) - CDFW Watch List
- Western pond turtle (*Emys marmorata*) - CDFW Species of Special Concern

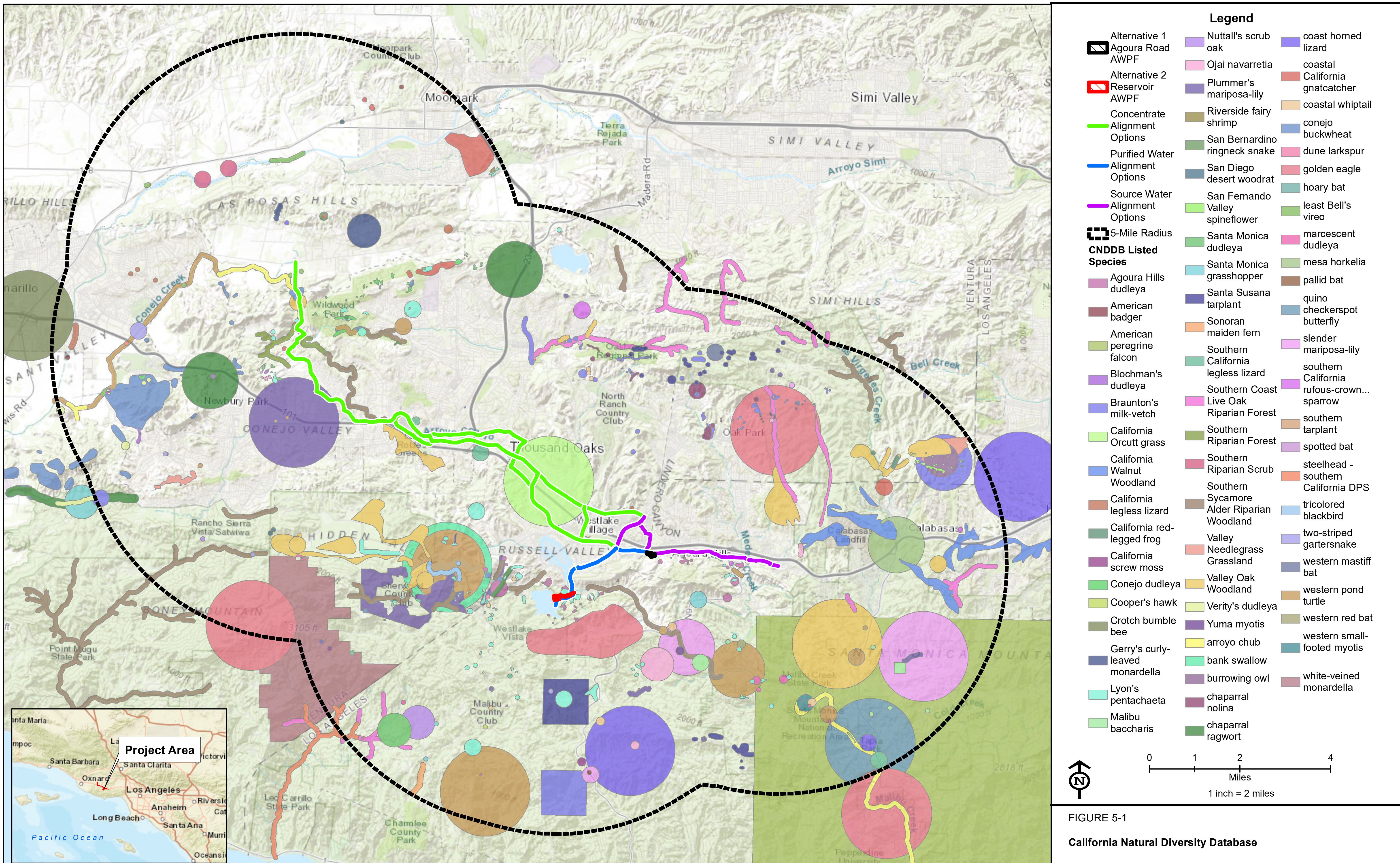

FIGURE 5-1

California Natural Diversity Database

Pure Water Project Las Virgenes – Triunfo

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5.1.2 Alternative 1 Agoura Road Advanced Water Purification Facility

The Alternative 1 Agoura Road AWPF site is located on an undeveloped 7.1-acre parcel on the southern side of the street within Agoura Hills, just east of the Westlake Village city limits. The site is within the western portion of the *Ladyface Mountain Specific Plan* area (City of Agoura Hills 1991). The site is vacant, undeveloped land with oak trees, native vegetation, non-native vegetation, and waters of the United States. An undeveloped parcel is located adjacent to the east of the site, with the Conrad N. Hilton Foundation headquarters to the east of that property. An office building with an associated surface parking lot is located north of the site across from Agoura Road. The Lexington Apartments are adjacent to the site's western boundary. To the south is undeveloped open space in the foothills of Ladyface Mountain. In November 2018, the site was partially burned by the Woolsey Fire (NPS 2022).

General biological surveys were conducted on January 13 and 14, 2022 to assess the habitat suitability for special-status species occurrence on the site. In addition, results of prior surveys were reviewed to help further determine the potential for presence of special-status species.

Ojai navarretia is a CRPR 1B.1 special-status plant species that was potentially observed at the site in 2010 and 2013 (Envicom Corporation 2014). Three small populations of an undetermined species of the *Navarretia* genus were observed within the western portion of the site in November 2010 by Impact Sciences. Additionally, six dead *Navarretia* plants were found at the site in June 2013 by Envicom Corporation. This species of Navarretia could not be positively identified in 2010 or 2013 as the special-status species; however, it was presumed likely to be the Ojai navarretia.

Botanical surveys were performed in spring and summer 2022 to identify whether special-status plant species were present and to map vegetation communities. These surveys confirmed the presence of Ojai navarretia at the site, with 19 subpopulations consisting of over 680 individual plants.

The only other special-status species observed near the site was Agoura Hills dudleya (also known as canyon liveforever), with 6 small subpopulations consisting of 19 individual plants. Agoura Hills dudleya were observed on rocky outcrops outside of the site boundary and well outside of the proposed AWPF footprint.

On May 31, 2022, vegetation community mapping was conducted for the site. The Alternative 1 Agoura Road AWPF site contains 11 natural vegetation alliances and associations, 4 seminatural vegetation alliances and associations, and 3 land cover types (Rincon 2022). Sensitive and riparian communities observed at the Agoura Road AWPF site included:

- Arroyo willow – Mulefat thickets association (0.1 acre)
- California rose briar patches association (0.02 acre)
- Clustered tarweed – Annual grass fields association (0.03 acre)
- Mulefat thickets association (0.04 acre)
- Needle grass – Melic grass grassland association (0.02 acre)
- Poison oak – Sticky monkeyflower scrub association (0.01 acre)
- Valley oak – Coast live oak woodland association (1.97 acres)

These seven sensitive natural communities, including riparian habitats, total 2.19 acres within the 7.1-acre site, with the largest vegetation type consisting of the valley oak – coast live oak woodland association. The remainder of the site contains vegetation communities that are not sensitive.

Tree surveys were performed in 2022 to evaluate the presence and size of native trees at the site. During the surveys on January 13 and 14, 2022, the following native trees were identified:

- Coast live oak
- Fremont cottonwood (*Populus fremontii*)
- Valley oak
- Western sycamore (*Platanus racemosa*)
- Willow (*Salix* sp.)

The following trees and shurbs were observed on the site:

- 57 coast live oak individuals or clusters
- 1 Fremont cottonwood
- 54 valley oak individuals or clusters
- 3 Western sycamore trees
- 3 willow shrubs

A wetland delineation was performed at the site on April 15, 2022, which identified one wetland area (0.177 acre) at the northwestern corner of the site, south of Agoura Road. The wetland appears to have been created by site drainage pooling against Agoura Road, which was recently upgraded. Other waters of the United States were also identified and delineated. Two of these Other waters are adjacent to the wetland and consist of approximately 455 linear feet of intermittent stream. An additional 95 linear feet of intermittent stream serves as an extension of the stream identified along the western edge of the site. There is an approximately 0.08-acre detention basin at the northeastern corner of the site, drained by an approximately 250-foot-long channel, that is also considered Other waters of the United States.

During the general biological surveys conducted on January 13 and 14, 2022, wildlife observed were recorded, and photographs were taken of the general site condition (Appendix B). There is a trail through the western portion of the site and three natural drainages. During the site visit, the drainages had flowing water, and a pool had formed below the Agoura Road earthen berm. Some of the oak trees onsite showed evidence of fire damage.

Most of the wildlife observed onsite were birds, including:

- Acorn woodpecker (*Melanerpes formicivorus*)
- American crow (*Corvus brachyrhynchos*)
- Anna's hummingbird (*Calypte anna*)
- Cassin's kingbird (*Tyrannus vociferans*)
- European starling (*Sturnus vulgaris*)
- Great blue heron (*Ardea herodias*)
- Mallard (*Anas platyrhynchos*)
- Mourning dove (*Zenaida macroura*)
- Nuttall's woodpecker (*Dryobates nuttallii*)
- Red-tailed hawk (*Buteo jamaicensis*)
- Spotted towhee (*Pipilo maculatus*)

Other wildlife observed included:

- California ground squirrel (*Otospermophilus beecheyi*)
- Domestic dog (*Canis familiaris*)
- Mule deer (*Odocoileus hemionus*)
- Pacific tree frog (*Pseudacris regilla*)
- Raccoon (*Procyon lotor*)

No special-status wildlife were observed during the general wildlife surveys.

5.1.3 Alternative 2 Reservoir Advanced Water Purification Facility

The Alternative 2 Reservoir AWPF site is located on an undeveloped site adjacent to Las Virgenes Reservoir on its eastern shore. The area is currently flat due to prior grading to create the impoundment in the early 1970s. However, the site is not currently accessible by vehicle, and would require creating a new access road from Triunfo Canyon Road, within Triunfo Creek Park roughly along the alignment of the Westlake Vista Trail within lands owned by the Mountains and Recreation and Conservation Authority. Overall, this area includes the AWPF site, the access road alignment, and the pipeline corridor along Westlake Vista Trail.

Several special-status plant species have potential to occur in this area. The adjacent chaparral and scrub vegetation bordering and surrounding the Westlake Vista Trail could potentially provide suitable habitat for:

- Braunton's milk-vetch
- Chaparral ragwort (*Senecio aphanactis*)
- Lyon's pentachaeta

The rocky outcrops along the trail leading up to the reservoir are suitable habitat for Blochman's dudleya and Agoura Hills dudleya. Additionally, seasonally flooded aquatic resource complexes were observed at the flattened portion of the AWPF site, where vernal pool associates, such as the southern tarplant and California orcutt grass, could occur; however, deep vernal pools with clay soils, required for California orcutt grass, were not observed.

The 2022 botanical surveys confirmed the presence of Lyon's pentachaeta along the Westlake Vista Trail, with 5 subpopulations consisting of over 800 individual plants. Other special-status species observed were:

- Agoura Hills dudleya (6 subpopulations, at least 23 plants)
- Catalina mariposa lily (6 subpopulations, 19 plants)
- Slender mariposa lily (3 subpopulations, six plants)

On May 31 and June 2, 2022, vegetation community mapping was conducted within this area. The area contains 11 natural vegetation alliances and associations and 2 seminatural vegetation alliances consisting of 5 associations. Two land cover types were mapped within the site (Rincon 2022). Sensitive communities, including riparian, that were observed included:

- California bulrush marshes association (0.05 acre)
- Clustered tarweed – Annual grass fields association (3.82 acres)
- Longstem buckwheat fields association (0.18 acre)
- Mulefat thickets association (0.02 acre)
- Valley oak – Coast live oak woodland association (0.77 acre)

Sensitive and riparian natural communities total 4.84 acres within the 26.33-acre area, with clustered tarweed – annual grass fields association the most extensive vegetation type. The remainder of the site contains natural or seminatural vegetation communities that are not sensitive land cover types.

Tree surveys were performed in 2022 to evaluate the presence of native trees. On January 13 and 14, 2022, the following trees were found in the area:

- Coast live oak - 20 coast live oaks (individual trees or clusters)
- Valley oak - 10 valley oaks

A wetland delineation was performed in the area on April 15, 2022, which identified and delineated intermittent channels, drainages, and ephemeral streams as Other waters of the United States. Most of these delineated features are less than 6 feet wide and, collectively, they account for over 1,900 feet of Other waters of the United States. No wetland areas were identified; however, seasonally flooded aquatic resource complexes were observed at the flattened portion of the AWPF site, including vernal pool associates, such as the southern tarplant. During the survey, conditions were very dry at the AWPF site, which may have limited vegetation development.

During the general biological surveys conducted on January 14, 2022, wildlife observed were recorded, and photographs were taken of the general site condition (Appendix B). The AWPF site is a plateau adjacent to the Las Virgenes Reservoir, containing shallow channels that flow east, convening downslope to the south of Westlake Vista Trail. The natural drainage continues east, crossing the Westlake Vista Trail, toward the intersection of Triunfo Canyon Road and Lindero Canyon Road. During the site visit, the channels and low spots at the AWPF site were holding water and had significant algae growth. In addition, the natural drainage had flowing water and evidence of recent high flow.

The Westlake Vista Trail leads to the site from Triunfo Canyon Road. The trail is moderately sloped leading to the site and transitions to a gradual slope closer to Triunfo Canyon Road. Some of the oak trees and shrubs onsite showed evidence of fire damage. Most of the wildlife observed onsite were birds, including:

- Acorn woodpecker
- American crow
- California quail (*Callipepla californica*)
- California towhee (*Melozone crissalis*)
- Gull (*Larus* sp.)
- Red-tailed hawk
- Turkey vulture (*Cathartes aura*)
- Western scrub-jay (*Aphelocoma californica*)

Other wildlife or their signs observed included:

- Domestic dog
- Mule deer (tracks and scat)
- Seed shrimp *(Ostracod species)*

5.1.4 Pipelines

Two portions of the pipeline alignment occur within undeveloped, natural areas:

1) Under Alternative 1 Agoura Road AWPF, a portion of the purified water pipeline would be installed within Triunfo Creek Park between Triunfo Canyon Road and Las Virgenes Reservoir, a distance of approximately 3,150 feet. Under Alternative 2 Reservoir AWPF, this alignment would be used for the source water, concentrate, and sewer pipelines and other utilities.
2) A portion of the concentrate pipeline would be installed along the Conejo Canyon Open Space Trail between Rancho Conejo Boulevard and Arroyo Conejo, a distance of approximately 2,750 feet.

Section 5.1.3 describes the biological features of the pipelines within Triunfo Creek Park. The remainder of this section discusses the pipeline along the Conejo Canyon Open Space Trail.

The botanical surveys performed in spring and summer 2022 evaluated the potential occurrence of special-status plant species and mapped vegetation communities. No special-status plants occur on the Conejo Canyon Open Space Trail. Approximately 23 subpopulations (over 80 individual plants) of Agoura Hills dudleya and 14 Southern California black walnut trees were observed near the trail. Other special-status species observed on the site were Catalina mariposa lily (one subpopulation, with seven plants).

On June 3, 2022, vegetation community mapping was conducted within this area. This site contains 10 natural vegetation alliances consisting of 11 associations and 2 seminatural vegetation alliances and associations. Five land cover types were mapped within the site (Rincon 2022). Sensitive and riparian communities observed along the Conejo Canyon Open Space Trail included:

- Arroyo willow – Mulefat thickets association (0.14 acre)
- Ashy buckwheat scrub association (0.72 acre)
- California walnut – Toyon groves association (0.19 acre)
- Longstem buckwheat fields association (0.14 acre)
- Mulefat thickets association (0.1 acre)

Sensitive and riparian natural communities total 1.29 acres along the 7.63-acre Conejo Canyon Open Space Trail area, primarily the ashy buckwheat scrub association. The remainder of the area contains vegetation communities that are not sensitive.

No oak trees are present along the Conejo Canyon Open Space Trail. A linear wetland feature (approximately 140 feet long) was observed along the side of the trail.

5.1.5 Malibu Creek

As described in Chapter 11 (Hydrology), the Pure Water Project is located within the Malibu Creek watershed, which encompasses approximately 110 square miles in Los Angeles and Ventura counties. The Malibu Creek watershed is one of the largest discrete watersheds draining into Santa Monica Bay, second only to the Ballona Creek Watershed (RCDSMM 2021). The watershed extends from the Santa Monica Mountains and adjacent Simi Hills to Santa Monica Bay at Malibu State Beach.

Although portions of the watershed are modified by residential development, reservoirs, and agricultural operations, a large portion of the land remains in public ownership as part of the Santa Monica Mountains National Recreation Area, which includes Malibu Creek State Park. Open land is the predominant land cover in the Malibu Creek watershed. Other land uses include urbanized areas, particularly in the upper portion of the watershed and a small amount of agricultural land (Malibu Creek Watershed Management Group 2015).

A variety of streambed modifications have occurred throughout the watershed, particularly in the upper, urbanized areas. However, most of the streambed downstream of Cold Creek remains unchannelized (that is, is not armored with stone or concrete on bank or bed); at times, the stream's natural meander is constricted by roads and other development. The Malibu Creek watershed contains two major dams on Malibu Creek: the Rindge Dam and the Malibu Lake Dam. Rindge Dam is located approximately 2 stream miles upstream of Malibu Lagoon and blocks access to over 90% of the spawning and rearing habitat for steelhead (*anadromous Oncorhynchus mykiss*) within Malibu Creek. Malibu Lake Dam is approximately 10 stream miles upstream of the lagoon and forms the private Malibu Lake (USACE and CDPR 2017).

The Tapia WRF is located at approximately river mile 4.5 upstream from the mouth of Malibu Creek at Malibu Lagoon. Between the Tapia WRF and Malibu Lagoon lies Rindge Dam. Rindge Dam, built in 1926, is the largest disruption to stream flow and aquatic and terrestrial habitat connectivity on Malibu Creek between Malibu Dam and the Pacific Ocean. The current reservoir area behind Rindge Dam is completely filled with sediment. The area is highly disturbed, with sparse riparian vegetation. Malibu Lagoon occupies around 30 acres behind the beach at the mouth of Malibu Creek. Malibu Lagoon has been the focus of remediation efforts that have restored much of the naturally functioning wetland (The Bay Foundation 2019).

Tapia WRF discharges are currently regulated by an NPDES permit issued by the Regional Board. As reported in Chapter 11, the Tapia WRF contributes only a small percentage of the flow during storm events but makes up a considerable portion of the flow during dry periods. Malibu Creek also receives flow from Las Virgenes Creek and Cold Creek. Stokes Creek and Liberty Canyon Creek are tributaries to Las Virgenes Creek, while Dark Canyon Creek is tributary to Cold Creek.

Aquatic Bioassay and Consulting Laboratories, Inc. has conducted Bioassessment Monitoring for the Las Virgenes MWD since 2006. There are currently eight stations in the Malibu Creek watershed: six in Malibu Creek, one in in Las Virgenes Creek, and one in Malibu Lagoon. Two stations (R-3 and R-4) are located between Rindge Dam and the lagoon; Stations R-2 and R-13 are located in Malibu Creek downstream of the Tapia WRF discharge, and stations R-1 and R-9 are located upstream of the Tapia WRF discharge. Results of these surveys, specifically the Bioassessment Monitoring Reports for 2018 through 2020 (Aquatic Bioassay and Consulting Laboratories 2019, 2020, 2021) form the basis of the description of the existing setting for aquatic resources in Malibu Creek.

As part of the long-term management plan for the Malibu Lagoon Restoration and Enhancement Project, monitoring was conducted in the lagoon from 2013 to 2016. Results of these efforts, specifically the *Final Comprehensive Monitoring Report* (The Bay Foundation 2019), form the basis of the description of the existing setting for aquatic resources in Malibu Lagoon.

5.1.5.1 Physical Habitat Characteristics

Summer flows in Malibu Creek are generally low. During these dry periods, the wetted channel is typically around 16 feet in width, ranging from around 3 to 33 feet, and average depths range from around 2 to 14 inches, with the lowest average depths in the most downstream reaches upstream of the lagoon. Average velocities are generally less than 0.5 foot per second (fps).

Aquatic habitats are represented by combinations of predominately riffles, glides, and pools. Upstream of the Tapia WRF discharge, the pool and glide habitats predominate, generally comprising more than 75% of the aquatic habitat. Below the Tapia WRF discharge, glide habitat is the dominant aquatic habitat (greater than 50%), followed by riffle habitat. Pool habitat proportions decrease in a downstream direction from around 25% immediately downstream of the Tapia WRF discharge to less than 5% just upstream of Malibu Lagoon.

The most vegetative canopy cover is found in the upper reaches around the Tapia WRF discharge (approximately 75%) and decreases in a downstream direction to less than 50% just upstream of the lagoon. The bank is less stable (more potential to erode) just upstream of the Tapia WRF discharge, with most (greater than 70%) of the streambank rated as vulnerable. The lower reaches between Rindge Dam and the lagoon are rated as being more stable than the upper reaches.

Substrate size class is an indicator of available habitat for benthic invertebrates. Mixtures of gravel, sands, and fines are prevalent throughout Malibu Creek. Although the proportion changes from year to year within reaches, gravel substrates tend to dominate, and there is more gravel in the upper reaches around the Tapia WRF and in the lowest reaches just upstream of the lagoon. The middle reaches tend to have more boulder substrates. Sand and fine substrates comprise a substantial proportion of the creek bed, particularly in the middle reaches downstream of the Tapia WRF discharge point.

Physical and Habitat scores in Malibu Creek ranged from marginal to optimal in 2020 but were typically marginal or suboptimal in prior years. The reach immediately upstream of the Tapia WRF discharge remains marginal, and the reach upstream is often dry during the summer. Downstream of the Tapia WRF discharge, the Physical and Habitat scores tend to be suboptimal, improving to optimal in the reaches just upstream of the lagoon in 2020.

Restoration efforts in Malibu Lagoon, completed in 2013, reconfigured the three channels into a single, wider, main channel with three tributary channels or branches. The profile of the reconfigured lagoon was significantly lowered, and the main channel was oriented to face more directly into the tide. Four islands were created to enhance bird habitat and bird nesting opportunities, and to focus prevailing winds to increase wind-driven circulation during closed conditions. A primary restoration target was to increase tidal energy to suspend and scour fine sediments to limit sedimentation during open lagoon conditions. Monitoring of physical conditions in the lagoon indicate that restoration is meeting success criteria, and the restored lagoon is experiencing improved circulation.

Sediment grain sizes fluctuate based on the open or closed condition of the lagoon. Because there have been no large-scale shifts in channel cross sections in the lagoon following restoration, it appears that sediment grain sizes fluctuate regularly in response to variations in the hydrologic and sediment input regimes.

Postrestoration sampling of canopy cover along transects reaching from the shoreline across the channels to the islands in Malibu Lagoon indicate that restoration success criteria are being met. All transects have shown a general trend toward increasing native vegetation cover and decreasing areas of bare ground. The average absolute native plant cover across all transects was between 78 and 80% in 2019; non-native plant cover was less than 1%. Vegetation cover is expected to continue to develop and become more complex over time as plants mature and continue to spread.

5.1.5.2 Water Quality Measures

Water quality measures in Malibu Creek are within ranges typical of many Southern California streams. Summer water temperatures in Malibu Creek tend to exceed 69°F, reaching nearly 81°F during bioassessment monitoring. The pH of the water in Malibu Creek is generally slightly alkaline, with a pH between 7.5 and 8.5. Dissolved oxygen (DO) content is generally greater than 5 milligrams per liter (mg/L) during the summer and is greatest in the reaches downstream of Rindge Dam. Salinity in Malibu Creek is elevated over typical freshwater streams (less than 0.5 parts per thousand [ppt]) at around 1 ppt. Malibu Lagoon is subject to tidal flushing and has more salinity than the upstream reaches in Malibu Creek.

During open-berm conditions, the lagoon is subject to tidal influence. Water temperatures in Malibu Lagoon follow expected patterns, with the warmest temperatures (up to 79°F) occurring during the spring and summer closed-berm conditions and the coolest (down to 55°F) during winter open-berm conditions. There is little stratification by depth.

Salinity during open-berm conditions generally stratifies, with a brackish layer of lower-salinity water (5 to 15 ppt) on the surface, with more saline, oceanic water (20 to 35 ppt) occurring near the bottom. During closed-berm conditions, little to no salinity stratification occurs; and values ranged from 5.2 to 5.4 ppt in 2017 and 17.4 to 17.9 ppt in 2016, indicating good mixing.

DO levels were consistently high and exhibited little stratification, especially during closed-berm conditions. DO levels never fell to less than 4 mg/L at any station during postrestoration monitoring.

5.1.5.3 Biological Conditions

This section describes the biological conditions of Malibu Creek.

Fish

Numerous fish species, both native and non-native, have been documented in previous surveys within Malibu Creek and Lagoon (Swift et al. 1993; Dagit and Abramson 2007; The Bay Foundation 2019). Native freshwater species found in these areas include:

- Arroyo chub (*Gila orcutti*)
- California killifish (*Fundulus parvipinnis*)
- Pacific lamprey (*Entosphenus tridentata*)
- Prickly sculpin (*Cottus asper*)
- Southern California steelhead distinct population segment (DPS) (*Onchorhynchus mykiss*)

Non-native freshwater species in Malibu Creek include:

- Black bullhead (*Ameiurus melas*)
- Bluegill (*Lepomis macrochirus*)
- Channel catfish (*Ictalurus punctatus*)
- Common carp (*Cyprinus carpio*)
- Fathead minnow (*Pimephalas promelas*)
- Green sunfish (*Lepomis cyanellus*)
- Largemouth bass (*Micropterus salmoides*)
- Mosquitofish (*Gambusia affinis*)

The Malibu Lagoon serves as an important primary and nursery habitat for several fish species. Native estuarine species include:

- Long-jawed mudsucker (*Gillichthys mirabilis*)
- Northern anchovy (*Engraulis mordax*)
- Staghorn sculpin (*Leptocottus armatus*)
- Striped mullet (*Mugil cephalus*)

- Tidewater goby (*Eucyclogobius newberryi*)
- Topsmelt (*Atherinops affinis*)

Non-native fishes found in the lagoon include (The Bay Foundation 2019):

- Common carp
- Mississippi silversides (*Menidia berylina*)
- Mosquitofish

Special-status Species

Southern California steelhead were listed as an endangered evolutionarily significant unit on August 18, 1997 (62 Federal Register [FR] 43937) and relisted as an endangered DPS on January 5, 2006 (71 FR 833). Critical habitat was designated on September 2, 2005 (70 FR 52487).

Malibu Creek from its mouth up to Rindge Dam is designated critical habitat for the Southern California steelhead DPS. Malibu Creek has been identified as a "high value" recovery planning area in the *Southern California Steelhead Recovery Plan* (NMFS 2012). Currently, the 3-mile stretch of Malibu Creek downstream of Rindge Dam is suitable steelhead habitat. Good quality habitat is located downstream of the dam (Abramson 1998; Dagit and Abramson 2007; Dagit and Krug 2011). Few steelhead were observed through 2004 in Malibu Lagoon, but they are known to occur upstream within Malibu Creek (Dagit et al. 2005). Adults would use the lagoon as a migratory corridor to upstream spawning areas after the lagoon breaches in the winter. Juvenile steelhead would also use the lagoon as a downstream migratory corridor to enter the ocean during a breach.

Tidewater goby was federally listed as endangered on March 7, 1994 (59 FR 5496). The USFWS designated revised critical habitat for tidewater goby on February 6, 2013 (78 FR 8746) that includes Malibu Lagoon. The tidewater goby historically existed in Malibu Lagoon but died out in the 1950s. A tidewater goby population was successfully reintroduced in 1991. Population surveys conducted by the Resource Conservation District of the Santa Monica Mountains and University of California, Los Angeles (UCLA) show that the goby population has remained stable since their reintroduction. Tidewater goby are known to occur in the Malibu Lagoon, and the lagoon is considered a source population (USACE 2013).

The arroyo chub is a California Species of Special Concern. This species was native to the Los Angeles, San Gabriel, San Luis Rey, Santa Ana, and Santa Margarita Rivers and Malibu and San Juan Creeks. The species is now absent from much of its native range and is abundant only in the west fork of the San Gabriel River. This species is known to occur in Malibu Creek (O'Brien and Barabe 2022).

Pacific lamprey is a California Species of Special Concern. Under this designation, the status was identified by (Moyle et al. 2015) as "moderate concern" because the species still occupies much of its native range but in much smaller numbers. Evidence suggests that large declines may have occurred in the last 50 years. The USFWS has also designated Pacific lamprey as a Species of Concern. In Malibu Creek, Pacific lampreys are limited to the lower 2.5 miles downstream of the Rindge Dam. Small numbers of lamprey were documented in 1981, 1982, 1987, 1991, and 1993 (Swift and Howard 2009). Subsequent sampling efforts for Pacific lampreys in Malibu Creek have resulted in negative results, including electroshocking efforts in August of 2005 (Goodman et al. 2008) in Malibu Creek and near the lagoon interface. This species appears to be rare, difficult to detect, and only sporadically present in Malibu Creek.

5.2 Regulatory Framework

This section describes the regulatory framework relevant to biological resources in the Pure Water Project area.

5.2.1 Federal Regulations

This section describes the federal regulations relevant to biological resources in the Pure Water Project area.

5.2.1.1 Endangered Species Act

Provisions of the FESA, as amended (16 United States Code [USC] 1531), protect federally listed threatened and endangered species and their habitats from unlawful take. "Take" under FESA includes activities that "…harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or…attempt to engage in any such conduct." USFWS regulations define "harm" to include some types of "…significant habitat modification or degradation." In the case of Babbitt, Secretary of Interior, et al., Petitioners v. Sweet Home Chapter of Communities for a Great Oregon, et al. (No. 94-859), the U.S. Supreme Court ruled on June 29, 1995, that "harm" may include habitat modification "...where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering."

For projects with a federal nexus, FESA Section 7 requires that federal agencies, in consultation with the USFWS or National Marine Fisheries Service (NMFS), use their authority to further the purpose of FESA and to reduce the likelihood that their actions would jeopardize the continued existence of listed species or result in destruction or adverse modification of critical habitat. Section 7 applies to the management of federal lands and other federal actions, such as federal approval of private activities through the issuance of federal permits, licenses, funding, or other actions that may affect listed species. Section 7 directs all federal agencies to use their existing authority to conserve threatened and endangered species and, in consultation with the USFWS, reduce the likelihood that their actions would jeopardize listed species or destroy or adversely modify critical habitat. Critical habitat is defined as specific areas that are essential to the conservation of federally listed species.

FESA Section 10(a)(1)(B) allows nonfederal entities to obtain permits for incidental taking of Threatened or Endangered species through consultation with USFWS or NMFS. In general, NMFS is responsible for protection of federally listed marine species and anadromous fish; other listed species are under USFWS jurisdiction. FESA Section 10 provides a means for nonfederal entities (that is, states, local agencies, and private parties) that are not permitted or funded by a federal agency to receive authorization to disturb, displace, or kill (that is, take) threatened and endangered species. It allows USFWS or NMFS to issue an incidental take permit authorizing take resulting from otherwise legal activities, if the take would not jeopardize the continued existence of the species.

Section 10 requires the applicant to prepare a Habitat Conservation Plan addressing project impacts and proposing mitigation measures to compensate for those impacts. The Habitat Conservation Plan is subject to USFWS or NMFS review and must be approved by the reviewing agencies before the proposed project could be initiated. Because issuance of the incidental take permit is a federal action, USFWS and NMFS must also comply with the requirements of FESA Section 7 and the National Environmental Policy Act (NEPA).

5.2.1.2 Clean Water Act, Section 404

The objective of the Clean Water Act (CWA), as amended, is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Discharge of fill material into waters of the United States, including wetlands, is regulated by the U.S. Army Corps of Engineers (USACE) under CWA Section 404 (33 USC 1251–1376). USACE regulations implementing Section 404 define waters of the Unites States to include intrastate waters, including lakes, rivers, streams, wetlands, and natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce.

Wetlands are defined for regulatory purposes as:

> *"…areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions"*
>
> 33 *Code of Federal Regulations* [CFR] 328.3; 40 CFR 230.3

The jurisdictional boundaries for Other waters of the United States are based on the presence of an ordinary high water mark, as defined in 33 CFR 328.3(e). The placement of structures in navigable waters of the United States is also regulated by USACE under Section 10 of the federal Rivers and Harbors Act (33 USC 401 et seq.). Projects are permitted under either individual or general (for example, nationwide) permits. The specific applicability of the permit type is determined by USACE case by case.

In 1987, USACE published a manual that standardized the manner in which wetlands were to be delineated nationwide (USACE 1987). To determine whether areas that appear to be wetlands are subject to USACE jurisdiction (that is, jurisdictional wetlands), a wetlands delineation must be performed. Under normal circumstances, positive indicators from three parameters must be present to classify a feature as a jurisdictional wetland:

1) Wetland hydrology
2) Hydrophytic vegetation
3) Hydric soils

More recently, USACE developed a series of Regional Supplements for identifying wetlands and distinguishing them from aquatic habitats and other nonwetlands. The supplements present wetland indicators, delineation guidance, and other information specific to regional areas. For any wetland delineations submitted after June 5, 2007, USACE requires that the site be surveyed in accordance with the 1987 manual and the appropriate Regional Supplement (USACE 2008).

In addition to verifying wetlands for potential jurisdiction, USACE is responsible for issuing permits for projects that propose filling of wetlands. Any permanent loss of a jurisdictional wetland as a result of project construction activities is considered a significant impact. The applicable Regional Supplement for California is the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008).

5.2.1.3 Clean Water Act, Section 401

CWA Section 401 requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the United States obtain a certification that the discharge would comply with the applicable effluent limitations and water quality standards. The appropriate Regional Board regulates Section 401 requirements (as described in Section 5.2.2.3).

5.2.1.4 Migratory Bird Treaty Act

Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) (16 USC 703–711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). Most birds found in the project area are protected under the MBTA.

5.2.2 State Regulations

This section describes the state regulations relevant to biological resources in the Pure Water Project area.

5.2.2.1 California Endangered Species Act

Under CESA, CDFW has responsibility for maintaining a list of endangered and threatened species (California Fish and Game Code Section 2070). CDFW maintains a list of Candidate Species that are under review for addition to the list of endangered or threatened species. CDFW also maintains lists of Species of Special Concern, which serve as species watch lists. Pursuant to the requirements of CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the project site and determine whether the proposed project would have a potentially significant impact on such species. In addition, CDFW encourages informal consultation on any proposed project that may affect a Candidate Species; however, this consultation is not required.

Project-related impacts on species on the CESA endangered or threatened list would be considered significant. State-listed species are Fully Protected under the mandates of CESA. Take of protected species, incidental to otherwise lawful management activities, may be authorized under California Fish and Game Code Section 206.591. Authorization from CDFW would be in the form of an Incidental Take Permit.

5.2.2.2 Porter-Cologne Water Quality Control Act

Water quality in California is governed by the Porter-Cologne Water Quality Control Act. This law assigns overall responsibility for water rights and water quality protection to the State Water Board and directs the nine Regional Boards to develop and enforce water quality standards within their boundaries.

5.2.2.3 California Regional Water Quality Control Boards

This section describes the Regional Board regulations relevant to biological resources in the Pure Water Project area.

Section 401 Water Quality Certification

CWA Section 401 (33 USC 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the United States obtain a certification that the discharge would comply with the applicable effluent limitations and water quality standards. In California, the Regional Boards regulate Section 401 requirements.

The Los Angeles Regional Board is responsible for enforcing water quality criteria and protecting water resources within the project area. The Regional Board is responsible for controlling discharges to surface waters of the state by issuing WDRs or commonly by issuing conditional waivers to WDRs. The Regional Board requires that a project proponent obtain a Section 401 water quality certification for Section 404 permits granted by USACE. A request for water quality certification (including WDRs) by the Regional Board and a Notice of Intent application for a General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (CGP) are submitted after completion of the CEQA environmental document and submittal of the wetland delineation to USACE.

Waters of the State

Under California law, “waters of the state” means “…any surface water or groundwater, including saline waters, within the boundaries of the state.” Therefore, water quality laws apply to surface water and groundwater. Discharges to wetlands and Other waters of the State are subject to state regulation, including isolated wetlands. In general, the Regional Boards regulate discharges to isolated waters in much the same way they do for federal-jurisdictional waters, using the Porter-Cologne Water Quality Control Act rather than CWA authority.

5.2.2.4 California Department of Fish and Wildlife Streambed Alteration Agreement (Sections 1600–1607 of the California Fish and Game Code)

State and local public agencies are subject to Section 1602 of the California Fish and Game Code, which governs construction activities that would substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by CDFW. Under Section 1602, a discretionary Streambed Alteration Agreement must be issued by CDFW prior to construction activities on lands under CDFW jurisdiction. As a general rule, this requirement applies to work within the 100-year floodplain of a stream or river containing fish or wildlife resources.

5.2.2.5 Native Plant Protection Act

The Native Plant Protection Act (California Fish and Game Code Sections 1900–1913) prohibits take, possession, or sale within the state of any plants with a CDFW designation of rare, threatened, or endangered. An exception in the act allows landowners, under specified circumstances, to take listed plant species, provided the owners first notify CDFW and give that agency at least 10 days to retrieve (and presumably replant) the plants before they are destroyed. Fish and Game Code Section 1913 exempts "…the removal of endangered or rare native plants from a canal, lateral ditch, building site, or road, or other right of way." Impacts of a project on these species are not considered significant unless the species are known to have a high potential to occur within the area of disturbance associated with construction of the proposed project.

5.2.2.6 Birds of Prey

Under Section 3503.5 of the California Fish and Game Code, it is unlawful to take, possess, or destroy any birds in the orders of Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant to it.

5.2.3 Local Regulations

Policies and guidance related to biological resources found in sections of each general plan and oak tree ordinances are discussed in this section.

5.2.3.1 City of Agoura Hills

This section describes the City of Agoura Hills regulations relevant to biological resources in the Pure Water Project area.

General Plan

Table 5-1 provides the Biological Resources goals and policies established by the *City of Agoura Hills General Plan* (City of Agoura Hills 2010b) that are applicable to the project. These goals and policies address the preservation and maintenance of Agoura Hills' environmental resources, not only to benefit current residents, but also to protect the sustainability of these resources for future generations.

Table 5-1. City of Agoura Hills Biological Resources Goals and Policies

Goal or Policy Name	Goal or Policy Language[a]
Goal NR-1: Open Space System	*Preservation of open space to sustain natural ecosystems and visual resources that contribute to the quality of life and character of Agoura Hills.*
NR-1.1: Open Space Preservation	*Continue efforts to acquire and preserve open space lands for purposes of recreation, habitat protection and enhancement, resource conservation, flood hazard management, public safety, aesthetic visual resource, and overall community benefit.*
NR-1.2: New Development	*Require new development to create a transition area between open space resources and development to minimize the impacts affecting these resources.*
NR-1.3: Slope Preservation	*Require that uses involving grading or other alteration of land maintain the natural topographic character and ensure that downstream properties and watercourses are not adversely affected by siltation or runoff.*
NR-1.4: Wildlife Habitat	*Prioritize preservation of open space in its natural form to support sensitive, endangered, threatened, or otherwise protected species as part of a contiguous system that allows the movement of wildlife from one habitat area to another.*
NR-1.5: Funding	*Pursue and apply for grant funding from existing and anticipated county, state, federal, private, and other funding sources to support the purchase of open space and the restoration of open space resources.*
Goal NR-4: Natural Areas	*Protection and enhancement of open space resources, other natural areas, and significant wildlife and vegetation in the City as an integral component of a sustainable environment.*
NR-4.1: Resource Protection	*Preserve Agoura Hills' two significant ecological areas (SEAs) from incompatible development through City policies and coordination with Los Angeles County and other relevant agencies to protect habitats of sensitive plants and animals.*
NR-4.2: Conserve Natural Resources	*Ensure that the development and environmental review process is sensitive to the preservation and protection of sensitive wildlife and plant species, wildlife corridors, significant ecological areas (SEAs), and other sensitive habitat communities.*
NR-4.4: Cluster Development	*Encourage clustered development in sensitive areas to preserve and reduce the impact to natural lands.*
NR-4.5: Open Space Preservation	*Place a high priority on acquiring and preserving open space lands for purposes of recreation, habitat preservation and enhancement, resource conservation, flood hazard management, public safety purposes, and overall community benefits.*
NR-4.6: Connected Open Space System	*Ensure that new development does not create barriers or impede the connection of the City's open space systems.*
NR-4.7: Green Infrastructure	*Maintain a multi-functional "green infrastructure," consisting of natural areas, open spaces, urban forest, and parklands, that serves as a defining physical character of Agoura Hills, provides visitors and residents with access to open spaces and recreation, and is designed for environmental sustainability.*
NR-4.8: Open Space and Activity Centers	*Link open space to activity centers, parks, other open space, and scenic routes to help define urban form and beautify the City.*
NR-4.9: Landscaping	*Encourage landscaping that minimizes the need for herbicides and pesticides and that provides food, water, shelter, and nesting sites for birds, butterflies, beneficial insects, and other creatures that both help maintain the landscape and restore the larger ecosystem. Landscape design can re-create habitat lost to urban development and attract resident and migratory wildlife.*
NR-4.10: Tree Preservation	*Continue to sustain the City's oak trees, which are an integral part of the character of the City, and continue to plant and maintain these trees in a manner that will allow them to mature and thrive.*
NR-4.11: Creeks and Natural Resources	*Support the restoration of creeks and other natural resources. Activities include creek cleanup, erosion and urban runoff control, and weeding of non-native plants.*

Table 5-1. City of Agoura Hills Biological Resources Goals and Policies

Goal or Policy Name	Goal or Policy Language[a]
NR-4.12: Wildlife Corridors	*Protect and maintain wildlife corridors, particularly the Liberty Canyon wildlife corridor, and adjacent areas as appropriate, to help the continued survival of wildlife.*
Goal NR-6 Water Quality	*Protection of the water quality of local watersheds and groundwater resources.*
NR-6.1: Riparian Habitat	*Protect and enhance the natural qualities of riparian habitat.*
NR-6.4: Protect Open Space Areas and Water Resources	*Conserve undeveloped open space areas and drainage courses and channels for the purpose of protecting water resources in the City's watershed. For construction and post-development runoff, control sources of pollutants and improve and maintain urban runoff water quality through stormwater protection measures consistent with the City's National Pollution Discharge Elimination System (NPDES) Permit.*
NR-6.8: New Development	*The City shall require new development to protect the quality of waterbodies and natural drainage systems through site design, stormwater treatment, and best management practices (BMPs) consistent with the City's NPDES Permit.*

Source: City of Agoura Hills 2010b

Oak Tree Ordinance

Oak trees are protected under a special section of the Agoura Hills Municipal Code, specifically Article XI (Zoning), Part 2: Special Regulations, Division 7: Oak tree Preservation Guidelines. The purpose of these sections is to protect and preserve oak trees in recognition of their historical, aesthetic, and environmental value to the citizens of Agoura Hills, present and future, and to provide regulatory measures designed to accomplish this purpose. Table 5-2 summarizes the policies applicable to the project.

Table 5-2. City of Agoura Hills Oak Tree Preservation Policies

Policy Name	Goal or Policy Language[a]
Section 9657.1. Oak tree preservation	*No person, partnership, firm, corporation, government agency, or other legal entity shall cut, prune, remove, relocate, endanger or damage any tree protected by this section [appendix] on any public or private land located within the incorporated areas of the City of Agoura Hills except in accordance with the conditions of a valid oak tree permit issued by the department of planning and community development or the planning commission pursuant to the provisions of sections 9657 through 9657.5 of the city zoning ordinance.*
9657.2. Oak tree policy	*It is the policy of the City of Agoura Hills to require the preservation of all healthy oak trees unless compelling reasons justify the removal of such trees. This policy shall apply to the removal, pruning, cutting and/or the encroachment into the protected zone of oak trees. The department of planning and community development shall have the primary and overall responsibility to administer, evaluate and monitor this policy.*

Source: Agoura Hills Municipal Code, Article XI (Zoning), Part 2: Special Regulations, Division 7: Oak tree Preservation Guidelines

5.2.3.2 City of Westlake Village

This section describes the City of Westlake Village regulations relevant to biological resources in the Pure Water Project area.

General Plan

Table 5-3 provides the biological resources goals and policies established by the *City of Westlake Village General Plan* that are applicable to the project (City of Westlake Village 2019a). The plan contains a Natural Resources chapter that includes goals, objectives, and policies for Biological Resources and Watershed Areas in Westlake Village.

Table 5-3. City of Westlake Village Biological Resources Goals and Policies

Goal or Policy Name	Goal or Policy Language[a]
Biological Resources Goal	*It shall be the goal of the City of Westlake Village to preserve and enhance the City's biological resources by assuring that development occurs in a manner which reflects the characteristics, sensitivities and constraints of these resources.*
Objective 2: Minimize the impacts of new development on sensitive biological resources	
Policy 2.1	*Require development to blend indigenous/native plants into new development landscaping which abut natural vegetation.*
Policy 2.2	*Require the clustering of development to ensure open space connectiveness and facilitate wildlife movement, where appropriate.*
Policy 2.3	*Pursue the voluntary dedication open space or conservation easements to protect sensitive species and their habitats.*
Policy 2.4	*Minimize the overall reduction of oak trees throughout the community, where appropriate, based on the biological resource survey.*
Policy 2.5	*Prohibit development in riparian habitats to the greatest extent feasible.*
Policy 2.6	*Review proposed projects in the "Sensitive Biological Communities" to evaluate their conformance with the following standards: a. The development plan shall retain watercourses, riparian habitat and wetlands in their natural condition to the maximum extent feasible. b. Development shall incorporate habitat linkages (wildlife corridors) to adjacent open spaces where appropriate. c. Roads and utilities shall be located and designed such that conflicts with biological resources, habitat areas, linkages or corridors are minimized.*
Watershed Area Goal	*It shall be the goal of the City of Westlake Village to protect the quality of water contained in Las Virgenes Reservoir and Westlake Lake.*
Objective 1: Protect and enhance the water quality of Westlake Lake by effectively managing erosion and urban runoff within its extended watershed area.	
Policy 1.2:	*Limit the impacts of development on Triunfo Canyon Creek and other riparian habitat areas through interagency coordination and development review.*
Objective 2: Protect the drinking water quality of the Las Virgenes Reservoir through the preservation and effective management of its tributary watershed area.	
Policy 2.1:	*Regulate development of properties adjacent to the Las Virgenes Reservoir to assure that all new urban uses are located outside of the Reservoir watershed area.*

Source: City of Westlake Village 2019a

Oak Tree Ordinance

Oak trees are protected under a special section of the Westlake Village Municipal Code, specifically Article 9 (Zoning Regulations), Chapter 9.21: Oak Tree Preservation Standards. The purpose of that chapter is to protect and preserve oak trees in recognition of their historical, aesthetic, and environmental value to the citizens of Agoura Hills, present and future, and to provide regulatory measures designed to accomplish this purpose. Table 5-4 summarizes the policies applicable to the project.

Table 5-4. City of Westlake Village Oak Tree Preservation Policies

Policy Name	Goal or Policy Language[a]
9.21.010. Purpose	*The City Council finds that oak trees are a significant historical, aesthetic, and ecological resource in the City of Westlake Village and that the preservation and propagation of this unique, irreplaceable plant heritage is in the best interests of the residents of the City. Regulation of such trees so as to prevent indiscriminate removal and inappropriate maintenance will preserve the distinctive ecological character of the City and will allow for development in a manner consistent with the health and welfare of the community.*
9.21.020. Permit Required	*Except as otherwise provided in Section 9.21.030, no person shall destroy, remove, relocate, or otherwise inflict damage on any tree of the oak genus which is twelve and one-half (12.5) inches or more in circumference (four (4) inches in diameter) as measured four and one-half (4.5) feet above mean natural grade, or, in the case of an oak with more than one trunk, whose combined circumference of any two (2) trunks is at least eighteen (18) inches (six (6) inches in diameter) as measured four and one-half (4.5) feet above mean natural grade, on any lot or parcel of land within the City, unless an oak tree permit is first obtained in accordance with the provisions of this Chapter 9.21. As used in this Chapter, the word "damage" shall include any act causing injury to the root system or other parts of a tree including but not limited to cutting, nailing, burning, application of toxic substances, operation of equipment or machinery, or by paving, changing the natural grade, trenching, excavating, or building within the dripline or ten (10) feet of trunk, whichever is greater.*

Source: Westlake Village Municipal Code, Article 9 (Zoning Regulations), Chapter 9.21: Oak Tree Preservation Standards

5.2.3.3 City of Thousand Oaks

This section describes the City of Thousand Oaks regulations relevant to biological resources in the Pure Water Project area.

General Plan

The *Thousand Oaks General Plan* (City of Thousand Oaks 2022b) provides a long-range comprehensive guide for the physical development of the City's Planning Area. The *Thousand Oaks General Plan* comprises a statement of goals and policies related to the community's development, and various elements that provide more detailed policies and standards in certain topic areas. The Conservation Element contains the goals and policies relevant to the Pure Water Project concentrate pipeline sections located within Thousand Oaks.

Table 5-5 provides the Biological Resources goals and policies established by the *Thousand Oaks General Plan* that are applicable to the project (City of Thousand Oaks 2013a).

Table 5-5. City of Thousand Oaks Biological Resources Goals and Policies

Goal or Policy Name	Goal or Policy Language[a]
Conservation Element	*It shall be the goal of the City of Westlake Village to preserve and enhance the City's biological resources by assuring that development occurs in a manner which reflects the characteristics, sensitivities and constraints of these resources.*
B. Landform Features	
Policy CO-3	*The steeper the slope, the greater the proportion of the land that should remain in an undisturbed, undeveloped state, as provided by the City's Hillside Planned Development (HPD) Ordinance.*
Policy CO-4	*The most suitable forms of development for steeply sloping terrain are passive recreation areas, open space and very low density residential which can be developed in natural pockets of land less than 25% slope.*
Policy CO-5	*Hillside development criteria should promote high standards and encourage site design, grading and architecture appropriate to hillside terrain.*
Policy CO-6	*There should be no grading in slopes over 25% natural grade and the vertical height of manufactured slopes should be no higher than 25 feet.*
D. Streams and Creeks	
Policy CO-10	*Streams and creeks should be protected as open space and maintained in as natural a state as possible, and appropriate measures taken to manage urban runoff, in order to protect the City's and other downstream communities' water quality, wildlife diversity, native vegetation, and aesthetic value. This will contribute to the regional effort to improve the quality of Calleguas Creek, Malibu Creek and Mugu Lagoon.*
Policy CO-11	*Degraded sections of streams and creeks should be restored or enhanced as opportunities arise and financial resources become available.*
Policy CO-12	*Major barrancas should be protected in a natural state. Appropriate land uses for these natural features include recreation trails and open space.*
Policy CO-13	*Use of concrete for flood control improvements in natural drainage courses should occur only when no reasonable alternatives can be found that would maintain natural hydrological and ecological functions.*
H. Native Plant and Wildlife Resources	
Policy CO-21	*The City shall encourage the proper management, conservation and protection of native plant communities throughout the City's Planning Area, including developed areas and undeveloped open space lands.*
Policy CO-22	*Critical wildlife habitat resources such as movement corridors, surface water impoundments, streams and springs should be given special consideration for protection, restoration or enhancement, in order to maintain biodiversity, biological productivity and ecological integrity of natural open space areas.*
Policy CO-23	*Critical wildlife habitat resources such as movement corridors, surface water impoundments, streams and springs should be given special consideration for protection, restoration or enhancement, in order to maintain biodiversity, biological productivity and ecological integrity of natural open space areas.*
Policy CO-24	*In order to reduce the potential for devastating wildfires and the resulting damage they cause to both natural ecosystems and urban environments, appropriate, science-based fuel management programs should be conducted on a selective basis, and include the periodic monitoring of any potentially adverse effects on animal habitats and air quality.*
Policy CO-25	*The City should foster a holistic approach to conservation of wildlife resources including consideration of biological crusts and pollinator species in recognition of the many important functions they perform in a healthy ecosystem.*

Table 5-5. City of Thousand Oaks Biological Resources Goals and Policies

Goal or Policy Name	Goal or Policy Language[a]
I. Wildlife Movement Corridors	
Policy CO-26	*Isolation and fragmentation of natural open space areas should be prevented wherever possible.*
Policy CO-27	*Since natural stream drainages often serve as important movement corridors for wildlife, they should be preserved wherever it is feasible to do so.*
Policy CO-28	*Urban land uses adjoining natural open space areas should be designed in a manner that is sensitive to the needs of wildlife and avoids or minimizes any potentially adverse impacts to movement corridors.*
K. Wetland and Riparian Areas	
Policy CO-30	*Preserve wetlands and associated wetland buffers as open space and maintain these areas in a natural state to protect the community's water quality, biodiversity and aesthetic value.*
Policy CO-31	*Encourage the restoration and enhancement of degraded wetland and riparian habitats in order to conserve and protect native plant and animal species, increase biological diversity and productivity, and maintain permanent access for wildlife to surrounding open space.*
L. Rare, Threatened or Endangered Species	
Policy CO-32	*The City shall encourage and promote the conservation and protection of all rare, threatened, endangered or sensitive species listed by State and Federal agencies (United States Fish and Wildlife Service and California Department of Fish and Wildlife), the California Native Plant Society (CNPS), the County of Ventura and the City of Thousand Oaks.*

Source: City of Thousand Oaks 2013a

Oak Tree Ordinance

Oak trees are protected under a special section of both the *Thousand Oaks General Plan* and the Thousand Oaks Municipal Code, specifically Article 9 (Zoning Regulations), Article 42: Oak Tree Preservation and Protection. Table 5-6 provides the Biological Resources goals and policies established by the *Thousand Oaks General Plan* that are applicable to the project (City of Thousand Oaks 2013a).

Table 5-6. City of Thousand Oaks Oak Tree Preservation Policies

Policy Name	Goal or Policy Language[a]
General Plan Section J, Oak and Landmark Trees	
Policy CO-29	*Continue to protect oak and landmark trees and their habitat in recognition of their historic, aesthetic and environmental value to the citizens of Thousand Oaks, in particular Valley Oak habitat.*
Oak Tree Ordinance	
Section 9-4.4201. Purpose	*The City lies in the Conejo Valley, the beauty of which is greatly enhanced by the presence of large numbers of majestic oak trees. At one time, the area was almost completely covered by an oak forest, however, development of the City has resulted in the removal of a great number of these trees. Further uncontrolled and indiscriminate destruction of oak trees would detrimentally affect the safety and welfare of the citizens of Thousand Oaks. The preservation program outlined in this chapter contributes to the welfare and aesthetics of the community and retains the great historical and environmental value of these trees. This chapter sets forth the policy of the City to require the preservation of all healthy oak trees, unless otherwise exempt from this chapter or reasonable and conforming use of the property justifies the removal, cutting, pruning and/or encroachment into the protected zone of an oak tree.*
Section 9-4.4203. Oak Tree Preservation	*Any person who owns, controls, has custody or possession of any real property within the City that is improved or has been approved for development, or which is part of or associated with the City approved development of another piece of property, such as any parcel to be maintained as permanent open space or for recreational purposes, shall maintain all oak tree(s) located thereon in a state of good health pursuant to this chapter and the Oak Tree Preservation and Protection Guidelines adopted by City Council resolution. Failure to do so will constitute a violation of this chapter.*
Section 9-4.4204. Permit Required	*(a) Permit required. No person shall cut, remove, encroach into the protected zone, or relocate any oak tree on any public or private property within the City, unless a valid oak tree permit has been issued by the City pursuant to the provisions of this chapter and the oak tree preservation and protection guidelines.(b) Scope of permit approval. An oak tree permit may authorize the removal, cutting, or encroachment within the protected zone of one (1) or more oak trees subject to the conditions set forth in said permit. An oak tree permit may also authorize future maintenance of oak trees within the permit area, such as pruning, within parameters established in an oak tree maintenance program approval in conjunction with the oak tree permit. Activities included within an approved oak tree maintenance program may be undertaken in compliance with said program without the filing and approval of a separate tree permit application. Provided, however, an oak tree not covered by the initial oak tree permit may not be encroached upon without approval of a subsequent oak tree permit or modification to the original permit.*

Source: City of Thousand Oaks 2013a

5.2.3.4 Ventura County

The *Ventura County 2040 General Plan* (Ventura County 2020) is a long-range plan that guides decision making; establishes rules and standards for development and county improvements; and helps to inform residents, developers, and decision-makers in Ventura County. The general plan is made up of a collection of elements, or topic categories. The Conservation and Open Space Element contains the goals and policies relevant to the small section of the Pure Water Project concentrate pipeline located within unincorporated Ventura County. This element provides guidance and programs for the following:

- Conservation, management, development, and use of natural and cultural resources
- Long-term preservation and conservation of open space lands, including the preservation of natural resources and scenic resources, and the provision of land for outdoor recreation
- Energy resources and planning for climate change impacts

Table 5-7 provides the Biological Resources goals and policies established by the *Ventura County 2040 General Plan* that are applicable to the project (Ventura County 2020).

Table 5-7. Ventura County Biological Resources Goals and Policies

Goal or Policy Name	Goal or Policy Language[a]
Goal COS-1: Biological Resources	*To identify, preserve, protect, and restore sensitive biological resources, including federal and state-designated endangered, threatened, rare, or candidate species and their supporting habitats; wetland and riparian habitats; coastal habitats; habitat connectivity and wildlife corridors; and habitats and species identified as "locally important" by the County.*
Policy COS-1.1: Protection of Sensitive Biological Resources	*The County shall ensure that discretionary* development *that could potentially impact sensitive biological resources be evaluated by a qualified biologist to assess impacts and, if necessary, develop mitigation measures that fully account for the impacted resource. When feasible, mitigation measures should adhere to the following priority: avoid impacts, minimize impacts, and compensate for impacts. If the impacts cannot be reduced to a less than significant level, findings of overriding considerations must be made by the decision-making body.*
Policy COS-1.4: Consideration of Impacts to Wildlife Movement	*Consideration of Impacts to Wildlife Movement. When considering proposed discretionary development, County decision-makers shall consider the development's potential project-specific and cumulative impacts on the movement of wildlife at a range of spatial scales including local scales (e.g., hundreds of feet) and regional scales (e.g., tens of miles).*
Policy COS-1.5: Development Within Habitat Connectivity and Wildlife Corridors	*Development within the Habitat Connectivity and Wildlife Corridors overlay zone and Critical Wildlife Passage Areas overlay zone shall be subject to the applicable provisions and standards of these overlay zones as set forth in the Non-Coastal Zoning Ordinance.*
Policy COS-1.7: Balancing Resource Preservation and Flood Protection	*The County shall require that discretionary development and County-initiated projects balance the preservation of streams, wetlands, and riparian habitats with the need to adequately protect public safety and property from flooding hazards by incorporating natural or nature-based flood control infrastructure, (e.g., wetland restoration, soil conservation, vegetated levees), when feasible.*
Policy COS-1.9: Agency Consultation Regarding Biological Resources	*The County shall consult with the California Department of Fish and Wildlife, the Regional Water Quality Control Board, the U.S. Fish and Wildlife Service, National Audubon Society, California Native Plant Society, National Park Service for development in the Santa Monica Mountains or Oak Park Area, and other resource management agencies, as applicable during the review of discretionary development applications to ensure that impacts to biological resources, including rare, threatened, or endangered species, are avoided or minimized.*
Policy COS-1.10: Evaluation of Potential Impacts of Discretionary Development on Wetlands	*The County shall require discretionary development that is proposed to be located within 300 feet of a wetland to be evaluated by a County-approved biologist for potential impacts on the wetland and its associated habitats pursuant to the applicable provisions of the County's Initial Study Assessment Guidelines.*
Policy COS-1.11: Discretionary Development Sited Near Wetlands	*The County shall require discretionary development to be sited 100 feet from wetland habitats, except as provided below. The 100-foot setback may be increased or decreased based upon an evaluation and recommendation by a qualified biologist and approval by the decision-making body based on factors that include, but may not be limited to, soil type, slope stability, drainage patterns, the potential for discharges that may impair water quality, presence or absence of endangered, threatened or rare plants or animals, direct and indirect effects to wildlife movement, and compatibility of the proposed development with use of the wetland habitat area by wildlife. Discretionary development that would have a significant impact on a wetland habitat shall be prohibited unless mitigation measures are approved that would reduce the impact to a less than significant level. Notwithstanding the foregoing, discretionary development that would have a significant impact on a wetland habitat on land within a designated Existing community may be approved in conjunction with the adoption of a statement of overriding considerations by the decision-making body.*

Source: Ventura County 2020

5.3 Assessment Methods and Thresholds of Significance

This impact analysis focuses on potential effects on biological resources associated with implementation of the Pure Water Project. The analysis used available information regarding the biological resource characteristics of the project area and applicable regulations and guidelines. Pursuant to the CEQA Guidelines, impacts on biological resources may occur if the program or project would result in the following:

- 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 CDFW or USFWS
- A substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the CDFW or USFWS
- A substantial adverse effect on state or federally protected wetland (including marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means
- Substantial interference with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impedance of the use of native wildlife nursery sites
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance
- Conflict with the provisions of an adopted Habitat Conservation Plan; Natural Community Conservation Plan; or other approved local, regional, or state Habitat Conservation Plan

The project area is not within the approved plan area of a Habitat Conservation Plan; Natural Community Conservation Plan; or other approved local, regional, or state Habitat Conservation Plan; therefore, impacts associated with habitat conservation plans are not discussed further.

5.4 Environmental Impacts

Table 5-8 summarizes potential biological resource impacts, which are described after the table.

Table 5-8. Summary of Biological Resources Impacts

Impact	Alternative 1 Agoura Road AWPF	Alternative 2 Reservoir AWPF	Pipelines	Malibu Creek
Impact 5-1: Special-status Species	Plants: Significant and Unavoidable Wildlife: Less than Significant with Mitigation	Plants: Significant and Unavoidable Wildlife: Less than Significant with Mitigation	Plants: Significant and Unavoidable Wildlife: Less than Significant with Mitigation	Less than significant
Impact 5-2: Riparian Habitat	Less than significant	Less than significant	Less than significant	Less than significant
Impact 5-3: Wetlands	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation	-
Impact 5-4: Wildlife Corridors	Less than significant	Less than significant	Less than significant	-
Impact 5-5: Oak Trees	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation	-

5.4.1 Impact 5-1: Special-status Species

This section describes potential impacts to special-status species that may occur at the Alternative 1 Agoura Road AWPF site or the Alternative 2 Reservoir AWPF site, or along pipeline corridors. The discussion separately addresses both special-status plants (along with plant communities) and special-status wildlife. Additionally, this section discusses the potential impact to special-status species in Malibu Creek.

5.4.1.1 Alternative 1 Agoura Road Advanced Water Purification Facility

The only special-status plant species observed at the Agoura Road AWPF site was the Ojai navarretia. Agoura Hills dudleya were observed on rocky outcrops outside of the site boundary and outside of the proposed development footprint. No other special-status species are expected to occur at this project site.

Project grading and development would result in the loss of 11 subpopulations, containing approximately 500 individual Ojai navarretia plants that may serve as a seed bank for this species. In addition, the site contains 0.11 acre of sensitive natural communities (excluding oak trees, which are discussed under Impact 5-5). The Pure Water Project will implement *Mitigation Measure 5-1, prepare and implement a mitigation plan for special-status plants and plant communities*, but project impacts would remain significant and unavoidable.

Although no special-status wildlife species have been found at the site, potentially occurring special-status wildlife includes:

- Coastal California gnatcatcher
- Coastal whiptail
- Southern California legless lizard
- Western pond turtle
- Other migratory birds

Habitat loss from the development of the proposed project is not anticipated to significantly impact special-status wildlife species due to the relatively low acreage, proximity to existing development, and the amount of remaining suitable habitat in the surrounding area. Potential impacts to special-status wildlife, including migratory birds, could occur during construction activities. With the implementation of *Mitigation Measure 5-2, preconstruction surveys for special-status wildlife that potentially occur within construction areas*, the impact would be less than significant.

5.4.1.2 Alternative 2 Reservoir Advanced Water Purification Facility

There are no special-status plants within the footprint and grading area for the Reservoir AWPF, but the AWPF site is mostly within a sensitive natural community (clustered tarweed – annual grass fields association). There are an undetermined number of special-status plant subpopulations and native plant communities along the access road that would be removed during grading and road construction. The Pure Water Project will implement *Mitigation Measure 5-1, prepare and implement a mitigation plan for special-status plants and plant communities*. However, until the number and species of the special-status plants to be removed are determined, project impacts to these special-status plants and plant communities are potentially significant and unavoidable.

Although no special-status wildlife species have been found at the site, potentially occurring special-status wildlife includes:

- Coastal California gnatcatcher
- Coastal whiptail
- Southern California legless lizard
- Western pond turtle
- Other migratory birds

Habitat loss from the development of the proposed project is not anticipated to significantly impact special-status wildlife species due to the relatively low acreage, proximity to existing development, and the amount of remaining suitable habitat in the surrounding area. Potential impacts to special-status wildlife, including migratory birds, could occur during construction activities. With the implementation of *Mitigation Measure 5-2, preconstruction surveys for special-status wildlife that potentially occur within construction areas*, the impact would be less than significant.

5.4.1.3 Pipelines

The botanical surveys performed in spring and summer 2022 evaluated the potential occurrence of special-status plant species and mapped vegetation communities. Lyon's pentachaeta, Catalina mariposa lily, and slender mariposa lily are known to occur along the pipeline corridor within Triunfo Creek Park and may be affected by pipeline construction. Similarly, Agoura Hills dudleya and Southern California black walnut occur along the Conejo Canyon Open Space Trail. In this area, special-status plants and plant communities may be affected by project construction, but all disturbance associated with pipeline installation is expected to stay within the trail footprint.

Overall, pipeline installation may result in the loss of special-status species plant species and natural communities and would remove an unknown number of individuals. The Pure Water Project will implement *Mitigation Measure 5-1, prepare and implement a mitigation plan for special-status plants and plant communities*. However, until the number and species of the special-status plants and plant communities to be removed are determined, project impacts would be potentially significant and unavoidable.

Although no special-status wildlife species have been found in the pipeline areas, potentially occurring special-status wildlife includes:

- Coastal California gnatcatcher
- Coastal whiptail
- Southern California legless lizard
- Western pond turtle
- Other migratory birds

Habitat loss from pipeline construction is not anticipated to significantly impact special-status wildlife species due to the relatively low acreage, proximity to existing development, and the amount of remaining suitable habitat in the surrounding area. Potential impacts to special-status wildlife, including migratory birds, could occur during construction activities. With the implementation of *Mitigation Measure 5-2, preconstruction surveys for special-status wildlife that potentially occur within construction areas*, the impact would be less than significant.

5.4.1.4 Malibu Creek

No project-related construction would occur in Malibu Creek. Project effects would be limited to changes in Malibu Creek streamflows associated with elimination of Tapia WRF discharges, except under an operational emergency or qualifying storm event. No significant changes to flows in Malibu Creek downstream of the Tapia WRF are anticipated from April 15 to November 15 because discharges are currently prohibited during this time period under the existing NPDES permit.

With implementation of the project, discharges from Tapia WRF would change from November 15 to April 15, and there would be a reduction in the occasional peak flows that occur during this time period (Figure 11-5 in Chapter 11, Hydrology and Water Quality). However, these reductions would not substantially affect the magnitude or timing of flows that facilitate adult steelhead immigration, spawning, incubation, and juvenile outmigration in Malibu Creek.

In addition, the JPA is currently building a summer flow augmentation project, consisting of a new pipeline to convey water into Malibu Creek from a nearby Metropolitan potable water pipeline after additional treatment at the existing Tapia WRF overflow structure (JPA 2019). This new pipeline would help maintain minimum instream flows in Malibu Creek during the summer and would support maintaining the instream flow requirements once the Pure Water Project is in operation.

Aquatic habitat conditions, including the proportion of riffles, glides, and pool habitats, would continue to vary annually and with flows, but would remain within the range experienced prior to project implementation. Bank stability and vegetative cover in the various reaches of Malibu Creek are not anticipated to change relative to existing conditions. Because the changes in hydrology would not substantially affect peak flows and sediment transport, substrate size classes in the reaches would continue to vary as sediments move through the system and downstream to the lagoon, but are anticipated to remain within the range experienced prior to project implementation. The existing suboptimal physical habitat conditions are expected to continue in Malibu Creek. Therefore, the project would have less than significant impacts on Southern California steelhead and its critical habitat.

Similarly, the changes in hydrology would not affect sediment transport or flows entering Malibu Lagoon. As noted in the sediment transport analysis for the Malibu Creek Ecosystem Restoration Study (USACE and CDPR 2017), little sediment transport would occur for flows less than 200 cfs. Flows greater 200 cfs, when sediment transport would occur, are not common in Malibu Creek, occurring on average a few times a year (Figure 11-5 in Chapter 11, Hydrology and Water Quality).

With implementation of the project, discharges from Tapia WRF would be eliminated, except under an operational emergency or qualifying storm event, resulting in fewer days when sediment transport would occur in the reaches of Malibu Creek upstream of Rindge Dam. Currently, most silt and clay carried along Malibu Creek pass over the top of Rindge Dam, while the decrease in slope caused by the dam allows some sand and larger sizes to deposit (USACE and CDPR 2017). Rindge Dam serves as a sediment sink, collecting sediments transported from upstream during peak flow events and moderating sediment inputs and transport into the downstream reaches and Malibu Lagoon. Therefore, the project would have a less than significant impact on conditions in the lagoon for tidewater goby and its critical habitat.

5.4.2 Impact 5-2: Riparian Habitat

No riparian habitat is expected to be affected by construction of either of the AWPF alternative sites or for any of the pipeline sections. Riparian habitat does not exist within the pipeline sections in the Las Virgenes Reservoir and Triunfo Creek Park area or along the Conejo Canyon Open Space Trail. The Arroyo Conejo crossing would occur within the new bridge structure, which is expected to be completed prior to pipeline construction. Other pipeline crossings are in box culverts without riparian habitat present. Therefore, impacts would be less than significant.

No project-related construction would occur in Malibu Creek. Project effects would be limited to changes in streamflows in Malibu Creek associated with the elimination of Tapia WRF discharges, except under an operational emergency or qualified storm event. Because discharges are currently prohibited by the existing NPDES permit from April 15 to November 15, Malibu Creek streamflows downstream of the Tapia WRF would remain similar to existing conditions (that is, near the 2.5-cfs minimum flow for steelhead) during this time period.

With implementation of the project, discharges from Tapia WRF would be eliminated from November 15 to April 15, and there would be a reduction in the occasional peak flows that occur during this time period. However, these reductions would not substantially affect the quantity or composition of riparian vegetation along Malibu Creek. Therefore, the project would have less than significant impacts on riparian vegetation adjacent to Malibu Creek.

5.4.3 Impact 5-3: Wetlands

This section describes potential impacts to wetlands that may occur at the Alternative 1 Agoura Road AWPF site or the Alternative 2 Reservoir AWPF site, and along the pipeline corridors. Based on recent surveys, four wetland features are known to occur within the development footprint of Pure Water Project facilities, as follows:

1) A 0.177-acre wetland at the Alternative 1 Agoura Road AWPF site, located along the southern side of Agoura Road and within the AWPF construction footprint
   - This wetland area also contains 0.04 acres of mulefat thicket, a sensitive natural community
2) Along the margins of Las Virgenes Reservoir, where the purified water pipeline enters the reservoir at an area containing California bullrush marsh
3) Seasonally flooded aquatic resource complexes at the Alternative 2 Reservoir AWPF site
4) A 140-foot linear wetland along the edge of the Conejo Canyon Open Space Trail on the concentrate pipeline alignment

In addition to these wetland areas, Other waters of the United States were identified in several areas, including on the Alternative 1 Agoura Road AWPF site, along the access road to the Alternative 2 Reservoir AWPF site, and along the Westlake Vista Trail pipeline corridor. These features are likely to be considered jurisdictional features subject to regulatory review if they cannot be avoided by project construction.

Overall, Pure Water Project feature impacts to these wetlands and Other waters of the United States areas are potentially significant. The impact would be reduced to a less than significant level with the implementation of *Mitigation Measure 5-3, avoid and minimize impacts to jurisdictional waters, including wetlands*.

5.4.4 Impact 5-4: Wildlife Corridors

Wildlife movement corridors maintain habitat connectivity across natural community boundaries. Corridors may support daily movement:

- From one foraging habitat to another
- To watering holes
- To denning or roosting sites
- Seasonal movements, including large-scale migrations

Wildlife corridors may be represented by linear habitats, such as:

- Aquatic streams or rivers
- Riparian woodlands along stream courses
- Continuous or interconnected patches of natural habitat surrounded by other types of habitat, such as woodland habitat on hillsides surrounded by lowland grasslands
- Natural habitat surrounded by developed land, such as chaparral surrounded by urban or agricultural land

Movement corridors may also be represented by ridgelines, valleys, or other less-tangible features where wildlife congregate during daily or seasonal movements.

The South Coast Wildlands Missing Linkage Project defined the Santa Monica - Sierra Madre Connection, a north–south linkage from Santa Monica Mountains along the coast to the Santa Susana Mountains and the Sierra Madre Ranges of Los Padres National Forest (South Coast Wildlands 2008). It is one of the few coastal to inland connections remaining in the South Coast Ecoregion. The border of this linkage is north, west, and east of the project area and is an important connection for the Santa Monica Mountains Significant Ecological Area (SEA), as designated through the Los Angeles County Department of Regional Planning (LACDRP) website (LACDRP 2022). U.S. 101 is the most substantial impediment to movement in the project area.

Animals are able to move through the Santa Monica Mountains SEA in many areas, although wildlife movement is obstructed by development. Due to the size and topographic complexity of the Santa Monica Mountains, many linkages are likely to occur within the SEA at various bottlenecks. These linkages allow movement between large open space areas within the SEA as well as between areas outside the SEA, such as the Simi Hills and the western extent of the Santa Monica Mountains in Ventura County. The genetic flow through these areas is crucial in maintaining the diversity and viability of certain species within the Santa Monica Mountains. Due to the lack of alternative routes and encroachment of development, open space linkages between Kanan Road and Calabasas Parkway along U.S. 101, east of the project area, are of particular importance for continued wildlife movement (LACDRP 2022).

The Wallis Annenberg Wildlife Crossing is under construction approximately 1 mile southeast of the project area, near Liberty Canyon Road in Agoura Hills. The vegetated overcrossing is scheduled to be completed in October 2023 and will be the largest of its kind in the world (Anaya-Morga 2021). The purpose of this crossing is to provide a safe and sustainable passage for wildlife across U.S. 101, which reduces wildlife death and allows for the movement of animals and the exchange of genetic material.

The existing Liberty Canyon Road bridge is regularly used by deer, coyotes (*Canis latrans*), and raccoons, but also provides connectivity for species such as mountain lion (*Felis concolor californicus*) and badger (*Taxidea taxus neglecta*) (South Coast Wildlands 2008). Although movement through the project area could contribute or be a part of this corridor, it is unlikely the Pure Water Project would have an effect, given the existing barriers and proximity to existing development. In addition, the project would not produce new bottlenecks to wildlife movement in the area, with linear features only having short-term effects during construction. Therefore, the impact would be less than significant.

5.4.5 Impact 5-5: Oak Trees

This section describes potential impacts to oak trees that may occur at the Alternative 1 Agoura Road AWPF site or the Alternative 2 Reservoir AWPF site, and along the pipeline corridors. In addition to oak trees themselves, this section also addresses the potential loss of the valley oak – coast live oak woodland natural community. With mitigations, Impact 5-5 would be less than significant.

5.4.5.1 Alternative 1 Agoura Road Advanced Water Purification Facility

The Alternative 1 Agoura Road AWPF would have oak tree impacts within the site development footprint. Although the AWPF has been sited to fit within a mostly open area, the required AWPF area would affect oak trees and oak tree natural communities both on the building footprint and along the margins of the building pad, including areas of required grading. In total, approximately 36 oak trees are expected to be removed, consisting mostly of valley oaks. Trees to be removed are mostly smaller to mid-sized trees, but six trees (including one large, multi-trunked tree) over 24 inches in diameter would be removed.

The removal of oak trees or substantial encroachments within or near the driplines is a potentially significant impact. Mitigation *Measure 5-4, Prepare and implement a mitigation plan for oak trees and oak tree natural communities* requires the preparation of oak tree mitigation plans, which would reduce impacts to a less than significant level by avoiding trees where feasible and replacing those that are removed.

5.4.5.2 Alternative 2 Reservoir Advanced Water Purification Facility

There are no oak trees within the footprint and grading area for the Reservoir AWPF itself. There are an undetermined number of oak trees and oak tree natural community areas along the access road that would need to be removed during grading and road construction. Removal of these trees and natural community areas may occur as part of preconstruction site preparation or during construction, which would be a potentially significant impact. *Mitigation Measure 5-4, prepare and implement a mitigation plan for oak trees and oak tree natural communities* requires the preparation of oak tree mitigation plans, which would reduce impacts to a less than significant level by avoiding trees where feasible and replacing those that are removed.

5.4.5.3 Pipelines

Oak trees and oak tree natural communities are known to occur along Pure Water Project pipeline alignments, as follows:

- Along the purified water pipeline to Las Virgenes Reservoir, mostly near the Pentachaeta Trail trailhead in Triunfo Creek Park
- Within Los Robles Greens golf course along the proposed alignment of the source water augmentation pipeline

Oak tree impacts are expected to occur because of pipeline construction. Within Triunfo Creek Park, sufficient space appears to be available to construct the purified water pipeline without removing any trees. However, some construction activity encroachment within or near the driplines of approximately eight oak trees is likely to occur. Within Los Robles Greens golf course, source water augmentation pipeline construction may require the removal of 3 oak trees, with encroachment of construction activity within or near the driplines of 16 additional oak trees (City of Thousand Oaks 2021b).

For these pipeline projects, the removal of oak trees or substantial encroachments within or near the driplines is a potentially significant impact. *Mitigation Measure 5-4, prepare and implement a mitigation plan for oak trees and oak tree natural communities* requires the preparation of oak tree mitigation plans, which would reduce impacts to a less than significant level by avoiding trees where feasible and replacing those that are removed.

5.5 Mitigation Measures

Based on the analysis, mitigation is required for:

- Special-status plants
- Special-status wildlife
- Wetlands
- Sensitive natural communities
- Oak trees

The Pure Water Project will implement the following mitigation measures for biological resources.

Mitigation Measure 5-1: Prepare and implement a mitigation plan for special-status plants and plant communities

Special-status plants are likely to be encountered during construction in most natural areas, based on surveys conducted in 2022. Given the Pure Water Project construction timeline and potential for changed conditions, disturbance areas (depending on the selected alternative) should continue to be monitored for special-status plant subpopulations and sensitive natural communities. Prior to initiation of any construction activities that would affect special-status plants, a program will be developed that describes:

- Appropriate avoidance and minimization measures
- Plant salvage and seed collection procedures
- Offsite propagation
- Identification of mitigation areas
- Site preparation and planting of mitigation areas
- Success criteria
- Monitoring and reporting processes

The program will be developed and implemented in coordination with relevant state and federal agencies with responsibilities for special-status plant species protection. Specifically, the program will include the following:

- Preconstruction surveys of the disturbance areas will be performed by a qualified botanist during the appropriate season for detection. Surveys will follow standard survey protocols for rare plants, primarily the *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants* (USFWS 2000) and *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW 2018).
  - If suitable relocation areas occur on or near the affected sites, surveys will also include these potential relocation areas to provide background data for determining transplant success.
- Special-status plants and plant communities that can be avoided will include protection measures to minimize the potential for accidental disturbance. Temporary construction fencing will be installed around protected zones adjacent to the disturbance areas. Fencing will be maintained during construction, and construction crews will be informed about the need to avoid these areas.
- A relocation plan will be developed and implemented to address special-status plants that cannot be avoided. The plan will address and describe methods for:
  - Topsoil salvage to preserve the seed bank
  - Seed collection, storage, nursery propagation, and planting
  - Salvage and planting of other plant propagules
  - Location of relocation areas on- and offsite
  - A land protection plan for relocation areas
  - Methods for monitoring and reporting, including success criteria and adaptive management measures and contingency plans for achieving success; monitoring will occur for a minimum of 5 years
- If relocation is not possible or if there is a lack of success during the monitoring period, then purchase of mitigation credits or suitable offsite properties (including conservation easements) may be used to fulfill these obligations.

Mitigation Measure 5-2: Perform preconstruction surveys and construction monitoring for special-status wildlife species

Prior to the start of construction within potentially suitable habitat, perform the following surveys for special-status wildlife species:

- Coastal California Gnatcatcher: Protocol presence or absence surveys for coastal California gnatcatcher will be performed by a biologist with a USFWS Section 10(a)(1)(A) permit. If coastal California gnatcatcher are present, the Pure Water Project and its contractors will avoid impacting occupied habitat. In addition, no construction activities will occur within 500 feet of an active nest. If these avoidance techniques are not feasible, USFWS and CDFW will be contacted regarding alternative avoidance measures for the species.
- Special-status Reptiles: A preconstruction clearance survey will be performed by a qualified biologist 24 hours prior to the start of construction activities. If a western pond turtle, Southern California legless lizard, or coastal whiptail is observed in or near an active work area, project activities within 50 feet will be stopped immediately, and a qualified biologist will be consulted to evaluate the situation. The biologist may reduce the avoidance buffer at their discretion if avoidance of the reptile is possible. Work will not start again until the animal leaves the site on its own or a biologist is able to move the animal out of the area with CDFW approval.
- Nesting Birds: Preconstruction nesting bird surveys will be performed by a qualified biologist within 500 feet of the construction area no more than 14 days prior to construction when work activities in that area begin (or resume after 2 or more weeks of inactivity) between February 1 and August 31.

Should an active nest be observed, a qualified biologist will determine proper buffers for construction as needed. The qualified biologist will notify CDFW of buffers established around any active nests of protected species. Buffers will be maintained until young have fledged (left the nest on their own), as determined by a qualified biologist, or the nest is no longer active.

The biologist will monitor active nests daily when construction is occurring and assess the effect on the nesting birds. If the biologist determines that particular activities pose a high risk of disturbing an active nest, the biologist may increase the buffer and recommend additional, feasible measures to minimize the risk of nest disturbance. If work cannot proceed without disturbing the nesting birds, or signs of disturbance are observed by a monitor, work may be stopped or redirected to other areas until the nesting and fledging is completed or the nest has otherwise become inactive.

Mitigation Measure 5-3: Avoid and minimize impacts to jurisdictional waters, including wetlands

The Pure Water Project may affect some watercourses identified in undeveloped areas, with an unavoidable wetland impact along Agoura Road (Alternative 1 Agoura Road AWPF only) and at the Las Virgenes Reservoir site (Alternative 2 Reservoir AWPF only). For all impacts to jurisdictional waters, including wetlands, that cannot be avoided, permits must be obtained from the appropriate state and federal agencies. For these impacts, the Pure Water Project will evaluate all construction footprints in undeveloped areas to avoid and minimize impacts to jurisdictional waters. Avoidance and minimization measures may include:

- Maintain a construction buffer from the jurisdictional limits by installing construction fencing to prevent encroachment. If possible, the fencing will be installed at least 10 feet from the jurisdictional limits.
- Locate construction staging, including equipment and materials storage, away from the jurisdictional limits, preferably at least 50 feet away.
- Implement erosion control measures as prescribed by a Stormwater Pollution Prevention Plan (SWPPP) or Erosion Control Plan. Chapter 8, Geology and Soils (including Mitigation Measure 8-2) and Chapter 11, Hydrology and Water Quality, provide further discussion.

For impacts to wetlands that cannot be avoided, compensatory mitigation will be provided. The JPA will provide compensatory mitigation by purchasing credits at an approved mitigation bank within the region or by paying in-lieu fees. Credits or in-lieu fees will be provided at a 1 to 1 ratio.

Mitigation Measure 5-4: Prepare and implement a mitigation plan for oak trees and oak tree natural communities.

The Pure Water Project is expected to result in impacts to oak trees and oak tree natural communities, including potential tree removal, in several areas based on a tree survey conducted in 2022. In preparation for construction, a program will be developed that describes:

- Appropriate avoidance and minimization measures
- Identification of oak tree mitigation areas
- Success criteria
- Monitoring and reporting processes

The program will be developed and implemented in coordination with affected local agencies with responsibility for oak tree protection. Specifically, the program will include the following:

- Additional surveys by a qualified arborist of all oak trees and oak tree communities to be affected by construction-related disturbance, including both tree removal and encroachment within 5 feet of the driplines of oak trees that will be preserved. In addition to the physical characteristics already recorded, the surveys will include a horticultural evaluation, including physical evidence of disease, identification of pests, and an evaluation of the trees' vigor.
- Oak trees that can be avoided will include protection measures to minimize the potential for accidental disturbance. Temporary construction fencing will be installed around the protected zones

of all oak trees to be preserved adjacent to the disturbance areas. Fencing will be maintained during construction, and construction crews informed about the need to avoid these areas.

- All trees identified for removal will be inspected for contagious tree diseases, such as thousand canker fungus (*Geosmithia morbida*), polyphagous shot-hole borer (*Euwallacea* spp.), and goldspotted oak borer (*Agrilus auroguttatus*). To avoid the spread of infectious tree diseases, diseased trees will not be transported from the site without first being treated using best available management practices relevant to each tree disease observed.
- The project will include an oak tree planting plan that includes information on the location of mitigation plantings. Preference is for onsite mitigation within or adjacent to the disturbed areas, including as part of site landscaping plans. In addition to oak tree planting, the planting plan will include provisions to maintain the restoration areas in a manner suitable as a natural community. The planting plan will include:
  - Standards for new plantings, such as hole size and depth, soil amendments, irrigation, and protection (for example, tree fences or cages)
  - A requirement that four trees will be planted for every oak tree removed that is wider than 4 inches in diameter
  - Methods for monitoring and reporting, including success criteria and adaptive management measures and contingency plans for achieving success; monitoring will occur for a minimum of 5 years
- If mitigation cannot be achieved through oak tree planting or if there is a lack of success during the monitoring period, then payment of in lieu fees to a local agency or conservation organization or purchase of suitable offsite properties (including conservation easements) may be used to fulfill these obligations.

6. Cultural and Paleontological Resources

This chapter assesses potential effects on cultural and paleontological resources. Cultural resources are defined as prehistoric and historic-era buildings, sites, districts, structures, or objects, typically 45 years or older. Paleontological resources are defined as fossilized remains of vertebrate and invertebrate organisms, fossil tracks and trackways, and plant fossils. Paleontological resources are older than recorded human history or older than middle Holocene epoch (that is, older than about 5,000 radiocarbon years) (SVP 2010).

This chapter describes the prehistoric and historic setting of the project area, and discusses known cultural and paleontological resources, as well as the cultural and paleontological sensitivity.

In addition, this chapter also identifies applicable state and local regulations; identifies potential impacts from of the Pure Water Project; and proposes mitigation measures, where available, to reduce potentially significant impacts on cultural and paleontological resources.

6.1 Existing Setting

Unless otherwise noted, the existing setting description in this section is primarily adapted from the *Calleguas Municipal Water District Las Virgenes Municipal Water District Interconnection Project Final Environmental Impact Report* (Padre Associates, Inc. 2019), which evaluated new water facilities to interconnect the Las Virgenes MWD and Calleguas MWD water systems.

6.1.1 Physiography

The project area lies within the southernmost part of the west-central portion of the Transverse Ranges geologic province of Southern California within the cities of Thousand Oaks, Agoura Hills, and Westlake Village in both Ventura and Los Angeles counties. This province is characterized by east–west trending folds, faults, and mountain ranges.

Project features are situated in an area of distinctive geomorphic features comprising mountains, artificial lakes, and rolling hills. Within the project area is the Conejo Valley, which is approximately 9 miles long and 7 miles wide and situated at an elevation of 800 to 900 feet above sea level.

Geologic conditions within the project area consist of a thin sedimentary soil cover over bedrock. Miocene age Conejo Volcanic rocks are found throughout the project area. These rocks are hard and generally stable. Softer marine sediments of the Topanga, Modelo, and Monterey formations (also of the Miocene age) are found within the eastern and southern parts of the project area; and the Sespe, Llajas, Santa Susana, and Chatsworth formations, which are of Oligocene to Cretaceous age, are found to the north and northeast of the project area. The Pleistocene Saugus Formation is found within the northern project area. Alluvial sediments, Holocene to Pleistocene in age, are found within canyons and the Conejo Valley bottom.

6.1.2 Prehistory

This section describes the prehistory of the project area.

6.1.2.1 Early Period (c. 8000–3350 BP)

Reliable evidence of Holocene (more than 10,000 years ago) settlement in the region begins circa (c.) 8,000 Before Present (BP). The earliest sites were located on terraces and mesas; however, settlement gradually shifted to the coast (Wlodarski 1988). Site assemblages dating to this period often contained substantial amounts of milling stones and manos, crude choppers, and core tools (W&S 1997). Prehistoric peoples used these tools to harvest terrestrial and sea mammals, shellfish, and fish. Mortars and pestles appear toward the end of the period, suggesting a shift to a greater reliance on acorns (Ventura County 2019).

6.1.2.2 Middle Period (c. 3350–800 BP)

Archaeological material dating to the Middle Period represents a significant evolution in hunter-gatherer technology. The presence of chipped stone tools increases and diversifies, projectile points became more common, and fishhooks and plank canoes (*tomol*) appear (Wlodarski 1988; W&S 1997). Burials dating to this period provide evidence of wealth and social stratification, indicating a transition to ranked society (Ventura County 2019). Excavation data from the Santa Monica Mountains demonstrate expansion to the inland region, allowing trade and ceremonial exchange patterns to develop (Ventura County 2005, 2019).

6.1.2.3 Late Period (c. 800–150 BP)

The cultural complexity initiated during the Middle Period intensified in the Late Period. Regionally, this period is also referred to as the Chumash Era, as Chumash social and religious development peaked during this time. Villages became the main population centers, with satellite camps established for the seasonal harvest of plants, seeds, game, and material resources (Wlodarski 1988). The Chumash became expert craftspeople of baskets, stone vessels, shell beads, *tomol*, and fishing technology (Ventura County 2005). It is also likely that communication and trade with non-Chumash tribes and villages accelerated during this period (Ventura County 2019).

6.1.3 Ethnohistoric Setting

The project area is located primarily within the ethnohistoric territory of the Chumash and the Gabrieliño.

The Chumash largely inhabited the Coast Ranges between San Simeon and Malibu (Kroeber 1925). The Chumash have been divided into several geographic groups, each associated with a distinct language dialect (Hoover 1986). The Chumash living in Ventura County formed the *Ventureño* dialect group of the Chumash language family (Golla 2007). This group was named for their association with the Spanish Mission San Buenaventura, founded in 1782. The Chumash political organization comprised a named village and the surrounding resource areas governed by a chief, known as the *Wot* (Sampson 2022). Some higher status chiefs controlled large chiefdoms containing several villages.

It is likely the project area was included in the chiefdom *Lulapin,* whose limits extended from Malibu to just beyond modern Santa Barbara. The village *Muwu*, at modern Point Mugu, was the main headquarters for this chiefdom (Whitley and Clewlow 1979; Whitley and Beaudry 1991). Other villages included *Shimiyi* (the name Simi is derived from), *Hu'wam* located at the base of Escorpión Peak, and *Ta'apu* located in the Simi valley (Whitley and Clewlow 1979).

According to ethnohistoric studies, inhabitants from different villages bonded through trade, joint ceremonies, and intermarriage (Sampson 2022). The chiefly offices were normally inherited through the male line with a primogeniture rule (that is, the custom of the firstborn inheriting the office) (Hoover 1986). Chiefs had several bureaucratic assistants to help in political affairs and serve as messengers, orators, and ceremonial assistants. Several status positions were associated with specialized knowledge and rituals, such as weather prophet, ritual poisoner, and herbalist (Bean 1974).

The Chumash were a non-agrarian culture and relied on hunting and gathering for their sustenance. Archaeological evidence indicates that the Chumash exploited marine food resources from the earliest occupation of the coast at least 9,000 years ago (Greenwood 1978). Much of their subsistence was derived from pelagic fish, particularly during the late summer and early fall (Hoover 1986). Shellfish were also exploited, including mussel and abalone from rocky shores and cockle and clams from sandy beaches. Acorns were a food staple; they were ground into flour using stone mortars and pestles and then leached to remove tannic acid. In addition, a wide variety of seeds was used, including *chia* from various species of sage.

The Chumash harvested several plants for their roots, tubers, or greens (Hoover 1986). In this area, as elsewhere in California, basketry served many of the functions that pottery did in other places. The Chumash used baskets for cooking, serving, storage, and transporting burdens. Some basket makers wove baskets so tightly that they could hold water, while others waterproofed their baskets by lining them with pitch or asphaltum (Chartkoff and Chartkoff 1984).

The coastal Chumash practiced a regular seasonal round of population dispersal and aggregation in response to the location and seasonal availability of different food resources. In this way, large coastal villages would have been fully populated only in the late summer when pelagic fishing was at its peak. Through winter, the Chumash depended largely on stored food resources. During the spring and summer, the population dispersed through inland valleys to harvest wild plant resources (Landberg 1965).

The Chumash lived in large, hemispherical houses constructed by planting willows or other poles in a circle and bending and tying them together at the top. These structures were then covered with tule mats or thatch. These structures housed 40 to 50 individuals, or 3- to 4-member family groups. Dance houses and sweathouses are also reported for the Chumash (Kroeber 1925).

Archaeological evidence supports observations that twin or split villages existed on opposite sides of streams or other natural features, possibly reflecting the moiety system of native California (Greenwood 1978). Spanish colonization and the establishment of Mission San Buenaventura ended Chumash culture in Ventura County. Chartkoff and Chartkoff (1984) note that Spanish settlement barred many Native Americans from traditionally important resources, including clamshell beads, abalone shells, Catalina steatite, shellfish, and asphaltum. The introduction of European customs and diseases transformed the hunter-gatherers into agricultural laborers and decimated the native population.

According to Sapphos Environmental (2014), at the time of European contact, the Native American group occupying most of Los Angeles and Orange counties was known as the Gabrieliño. Ancestors of the Gabrieliño arrived in the Los Angeles basin in approximately 2500 BP, eventually settling in the area between Topanga Canyon and Aliso Creek, including the watersheds of the Los Angeles, San Gabriel, and Satna Ana rivers, as well as nearby islands. More study is needed about the Gabrieliño political and social organization; but Gabrieliño communities appear to have been self-contained, made up of related family units, and led by a hereditary chiefdom. Evidence suggests the existence of, at minimum, three hierarchically distinct social classes within the Gabrieliño community, comprising an elite class of chiefs and their families, a hereditary middle class based on economic status, and a lower class of less economically established families.

The Gabrieliño used a hunter-gatherer strategy built around larger, primary settlements and smaller, seasonal resource procurement camps. Game species for the Gabrieliño included rabbit, squirrel, deer, snake, rat, and insects. Their hunting technology included the bow and arrow, snares, and traps.

Coastal and aquatic resources were also an important part of the Gabrieliño diet. Shell-gathering camps were established; and aquatic resources included whales, fish, seals, and sea otters. Most fishing took place from the shore, but there was some deep-water fishing using boats.

A wide variety of plant resources were included in the Gabrieliño diet, including:

- Seeds of the Islay plant
- Seeds and shoots of the chia plant
- Roots, bulbs, and sunflower seeds
- Acorns, most importantly

Trade existed between groups of Gabrieliño communities and with outside groups. On Santa Catalina Island, the Gabrieliño inhabitants established a trade industry involving soapstone. The material was exchanged with inland groups, such as the Serrano, for food and luxury resources.

6.1.4 Historic Context

This section describes the project's historic context.

6.1.4.1 European Exploration (1542–1769)

Juan Cabrillo, while exploring the California coast, became the first European to travel through the region when he anchored near Point Mugu in October 1542. Over 200 years later, Gaspar de Portolá led the first Spanish land expedition in January 1770, traveling through what is now the Conejo Valley and camping near a Chumash village near present-day Westlake Village (probably *Hipuc*). Juan Crespi, a priest accompanying the expedition, named the campsite El Triumfo del Dulcisimo Nombre de Jesus, the English translation of which is: "The Triumph of the Sweetest Name of Jesus" (Bolton 1926; Browning 1992; Priestley 1937).

Several accounts of this expedition exist, including those of Juan Crespi (Bolton 1926), Miguel Costansó (Browning 1992), and Pedro Fages (Priestley 1937). Costansó's diary contains observations regarding the native inhabitants' houses, settlement patterns, dress, and customs, as well as their attitudes toward the expedition (Browning 1992). Fages noted the general Chumash population was distributed in small, numerous villages (Priestley 1937).

6.1.4.2 Spanish Period (1769–1821)

In 1776, Juan Bautista de Anza traveled through Ventura County as leader of the San Francisco colonists, stopping near the outlet of the Santa Clara River. This route, known today as the Juan Bautista De Anza National Historic Trail, runs from near Nogales, Arizona to San Francisco, California, and crosses through Ventura County (CATE 2022). Junípero Serra founded Mission San Buenaventura in 1782. Newly baptized Chumash provided almost all the labor to construct and maintain the mission, which included the 7-mile-long aqueduct system that carried water from the Ventura River (Triem 1985).

6.1.4.3 Mexican Period (1821–1850)

In 1821, Mexico declared independence from Spain; a year later, California became a Mexican Territory. After the secularization of the missions in 1834, former Spanish land grants were gradually transferred to private ownership. Within the project area, the alignment of present-day Lindero Canyon Road formed the approximate boundary between two adjacent land grants: Rancho El Conejo to the west and Rancho Simi to the east. Rancho El Conejo spanned 48,572 acres, and Rancho Simi included 113,009 acres (State Lands Commission n.d.).

6.1.4.4 United States Period (1850–Present)

The Treaty of Hidalgo formally transferred California to the United States (U.S.) in 1848, and statehood was achieved in 1850. At the time, the area that would become Ventura County was originally the southern portion of Santa Barbara County (Murphy 1979). Within the project area, the Philadelphia and California Petroleum Company purchased most of Rancho Simi in 1858. During the 1860s, Americans settled in the area and raised livestock and crops (State Lands Commission n.d.).

Portions of Rancho El Conejo were purchased by Howard Mills from Minnesota, renaming it Triunfo Ranch. Mills, who owned most of present-day Westlake Village and Hidden Valley, went bankrupt in 1891 and sold Triunfo Ranch to Andrew D. Russell. In 1874, approximately 2,259 acres of what would later be called the Newbury Tract was purchased by Egbert Starr Newbury, a Michigan native (Bidwell 1989). Newbury later gained prominence as Conejo Valley's first postmaster and newspaper reporter. When the Conejo Valley School District was established in March 1877, there were 126 residents living in Conejo Valley (Begun 2006).

Thousand Oaks

The Janss family acquired 10,000 acres of farmland in the area in the early 20th century, with the goal of creating a new community. By 1927, Louis Goebel established the “Lion farm” with exotic animals that later became known as Jungleland. During the 20th century, chicken farms, orchards, and dairy farms were located throughout the valley (City of Thousand Oaks 2022a).

On September 29, 1964, the community incorporated and chose the name City of Thousand Oaks. As the area added suburban tracts, approximately 20,000 people lived in the area by the 1980s (City of Thousand Oaks 2022a).

Agoura Hills

By 1906, Pierra Agoure had acquired almost 17,000 acres of land in present-day Agoura Hills. As agricultural viability improved with increased water pumping technology, orchards and farms were established. In the 1920s, land near Agoura Hills was subdivided and sold to individuals, ostensibly to be used as poultry farms; however, many of these farms proved to be unsustainable. Paramount Studios purchased a ranch in the area for filming, naming the area Picture City. In 1963, the community secured reliable water sources by importing water from the Colorado River. Through the 1960s and 1970s, the community continued to expand; and the number of local businesses, schools, and housing increased (City of Agoura Hills 2010b).

Westlake Village

A large section of land was purchased for a cattle ranch by the Russell brothers in 1881. In 1925, it was sold to William Randolph Hearst; and in 1943, to Fred Albertson, who used part of the land for filming motion pictures and television shows. In 1963, the ranch was purchased by the American-Hawaiian Steamship Company, and a master plan for a new city was commissioned. Westlake Village was then developed as a planned community. The city bisected the Los Angeles and Ventura county lines. The Los Angeles County section was incorporated into Westlake Village in 1981, while the Ventura County section became part of Thousand Oaks partially in 1968 and the remaining portion in 1972 (City of Westlake Village 2022).

6.1.5 Paleontological Setting

The local geology of a project area determines its paleontological potential. The paleontological potential of a geologic unit is inferred from the abundance of fossil specimens or previously recorded fossil sites in exposures of that unit, or of similar units in similar geological settings. The underlying assumption of this assessment method is that a geologic unit is mostly likely to yield fossil remains in a quantity and of a quality similar to those previously recorded from the unit elsewhere in the region (SVP 2010). Figure 6-1 shows the project’s geologic units.

The paleontological potential of a geologic unit reflects (1) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant vertebrate, invertebrate, plant, or trace fossils; and (2) the importance of recovered evidence for proper stratigraphic interpretation, age determination of a geologic unit, paleoenvironmental and paleoclimatic reconstructions, or to understanding evolutionary processes. An individual fossil specimen is considered scientifically important if it is (SVP 2010):

- *Identifiable*
- *Complete*
- *Well preserved*
- *Age diagnostic*
- *Useful in paleoenvironmental reconstruction*
- *A member of a rare species*
- *Askeletal element different from, or a specimen more complete than, those now available for the species*

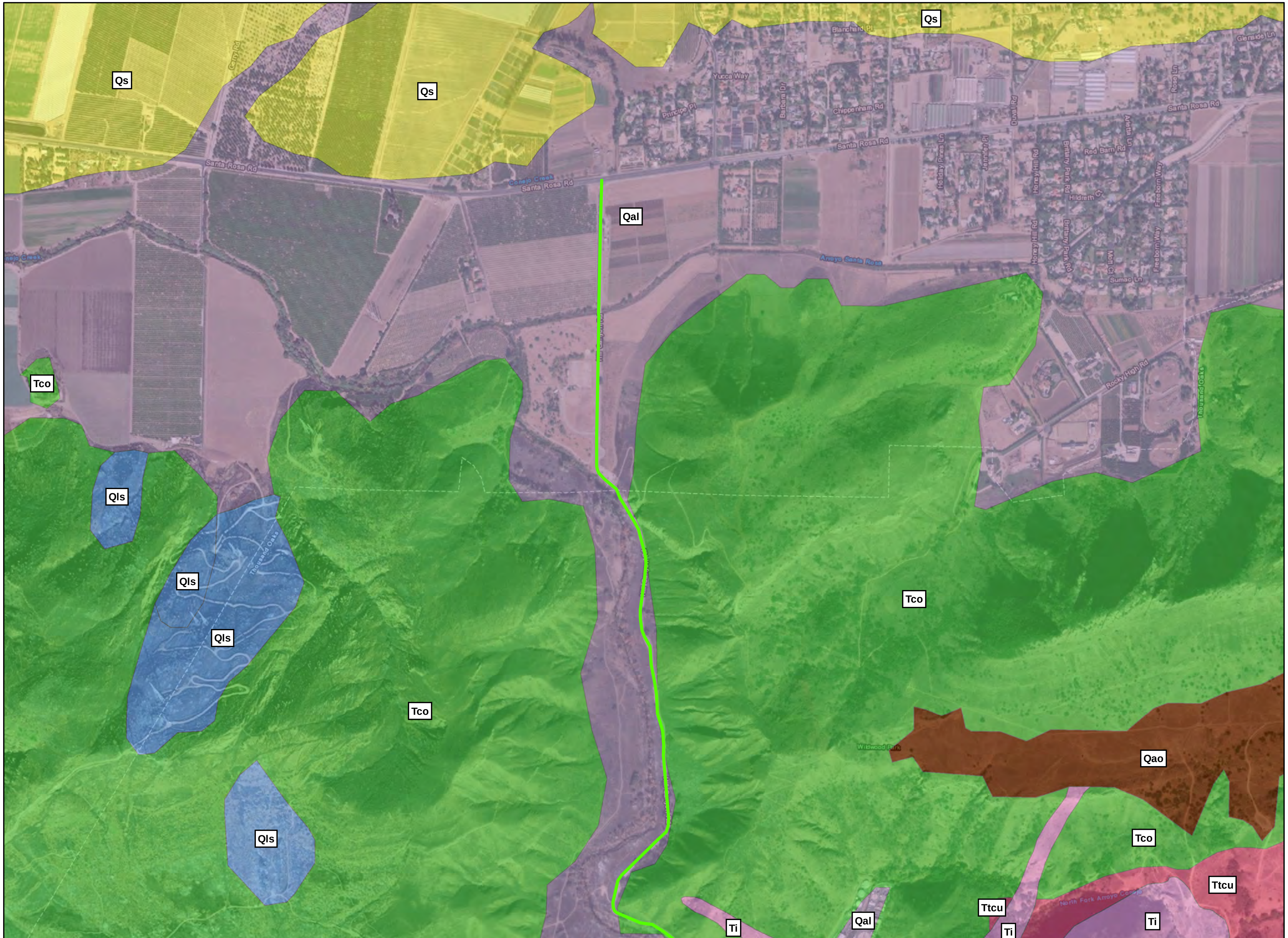
Determining the paleontological potential of a geologic unit helps to determine which units may require mitigation to reduce potential impacts to paleontological resources during project development. In the *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources*, the Society of Vertebrate Paleontology (SVP) (2010) established the following four categories of paleontological potential of geologic units:

1) ***High Potential*** *- Geologic units from which vertebrate or scientifically important invertebrate, plant, or trace fossils have been recovered are considered to have a High Potential for containing additional scientifically important paleontological resources. Geologic units that contain potentially datable organic remains older than late Holocene, including deposits associated with animal nests or middens, and geologic units which may contain new vertebrate deposits, traces, or trackways, are also classified as having High Potential.*

2) ***Low Potential*** *- Geologic units with Low Potential are known to produce significant fossils only on rare occasions, and/or only preserve fossils in rare circumstances such that the presence of fossils is the exception not the rule, e. g. basalt flows or Recent colluvium.*

3) ***No Potential*** *- Geologic units with No Potential are those that formed at high temperatures and/or pressures, deep within the earth, such as plutonic igneous rocks, and high-grade metamorphic rocks. Since the environment in which these rocks are formed is not conducive to the preservation of biological remains, they do not contain fossils.*

4) ***Undetermined Potential*** *- Geologic units for which little information is available concerning their geologic context (e.g., depositional environment, age) and/or contained paleontological resources are considered to have undetermined potential. The paucity of data is usually due to a lack of study in that unit or because of high variability in the unit's lithology. Typically, further study is necessary to determine whether these units have High, Low, or No Potential to contain scientifically significant paleontological resources. In cases where no subsurface data are available, paleontological potential can sometimes be determined by strategically located excavations into subsurface stratigraphy.*

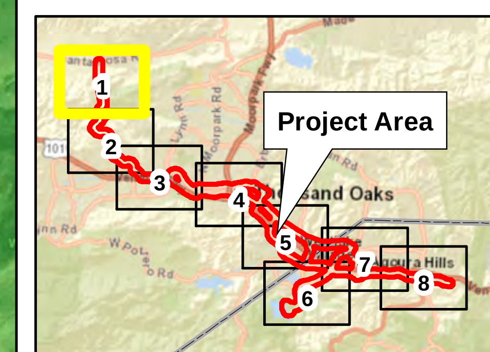


Legend

- Concentrate Alignment Options

Newbury Park 7.5' quadrangle

- Qal: Alluvium (Holocene)
- Qls: Landslide deposits (Holocene and Pleistocene)
- Qao: Older alluvium (Holocene and Pleistocene)
- Qs: Saugus Formation (Pleistocene)
- Ti: Intrusive Rocks (middle and upper Miocene)
- Tco: Conejo Volcanics (of Topanga Group) (middle Miocene)
- Ttcu: Topanga Canyon Formation (of Topanga Group) (middle Miocene)



Sources:

R. F. Yerkes and R. H. Campbell. 1997. Preliminary Geologic Map of the Newbury Park 7.5-minute Quadrangle, Southern California. US Geological Survey Open File Report 97-428.

R. F. Yerkes and R. H. Campbell. 1997. Preliminary Geologic Map of the Newbury Park 7.5-minute Quadrangle, Southern California: A Digital Database US Geological Survey Open FIle Report 97-459.

ESRI World Topo Map; ESRI World Street Map; USGS, 1997

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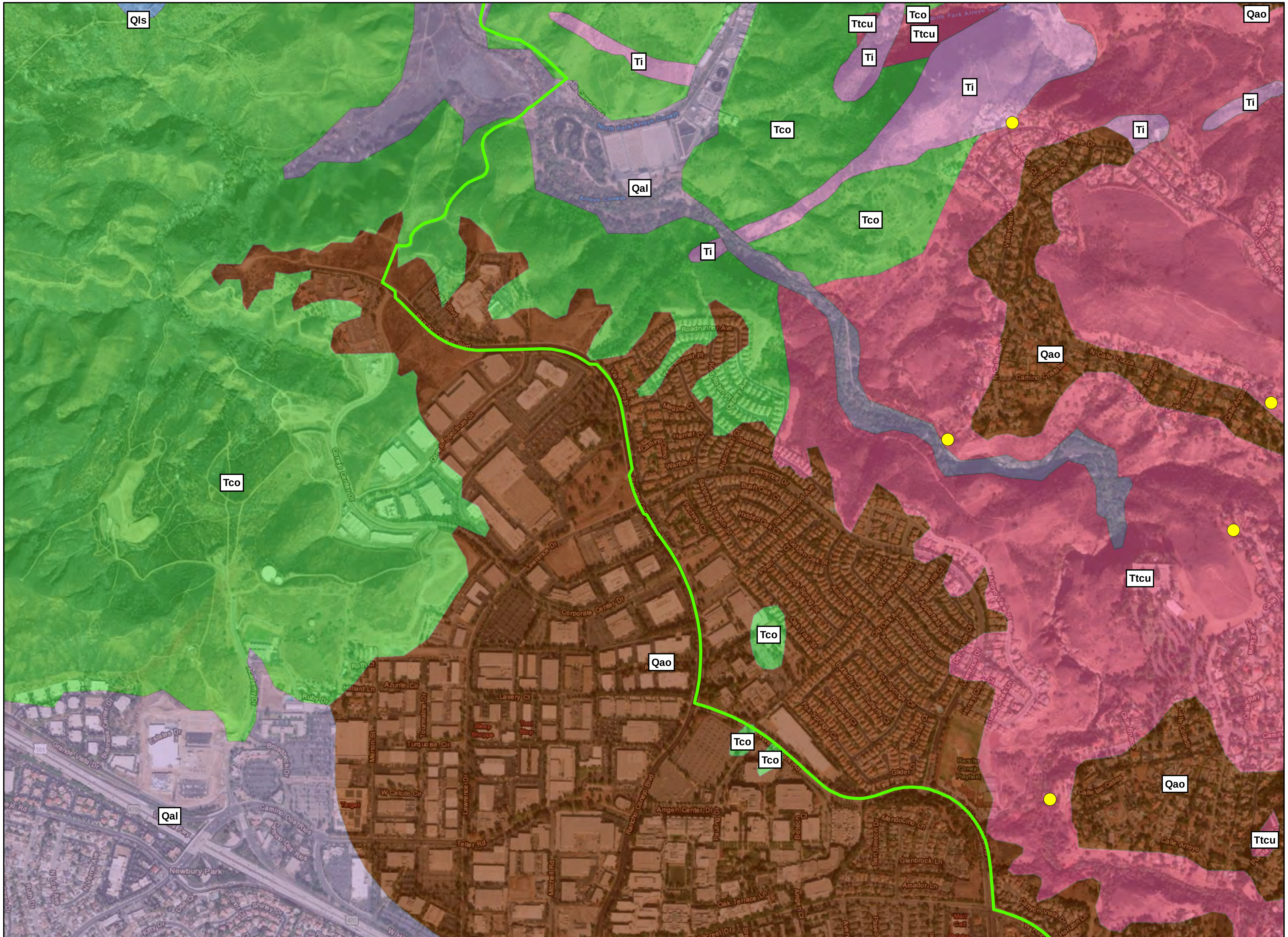
FIGURE 6-1

Geology

Pure Water Project Las Virgenes – Triunfo

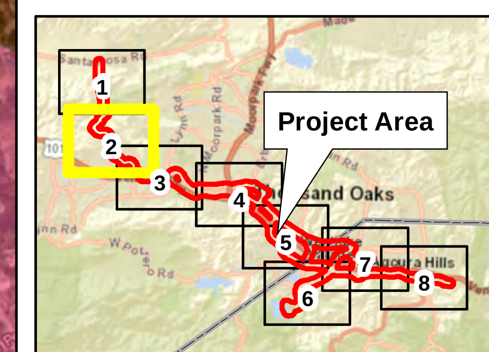


Legend

- Concentrate Alignment Options

Newbury Park 7.5' quadrangle

- Qal: Alluvium (Holocene)
- Qls: Landslide deposits (Holocene and Pleistocene)
- Qao: Older alluvium (Holocene and Pleistocene)
- Ti: Intrusive Rocks (middle and upper Miocene)
- Tco: Conejo Volcanics (of Topanga Group) (middle Miocene)
- Ttcu: Topanga Canyon Formation (of Topanga Group) (middle Miocene)
- Fossil Locality



Sources:

R. F. Yerkes and R. H. Campbell. 1997. Preliminary Geologic Map of the Newbury Park 7.5-minute Quadrangle, Southern California. US Geological Survey Open File Report 97-428.

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ESRI World Topo Map; ESRI World Street Map; USGS, 1997

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FIGURE 6-1

Geology

Pure Water Project Las Virgenes – Triunfo

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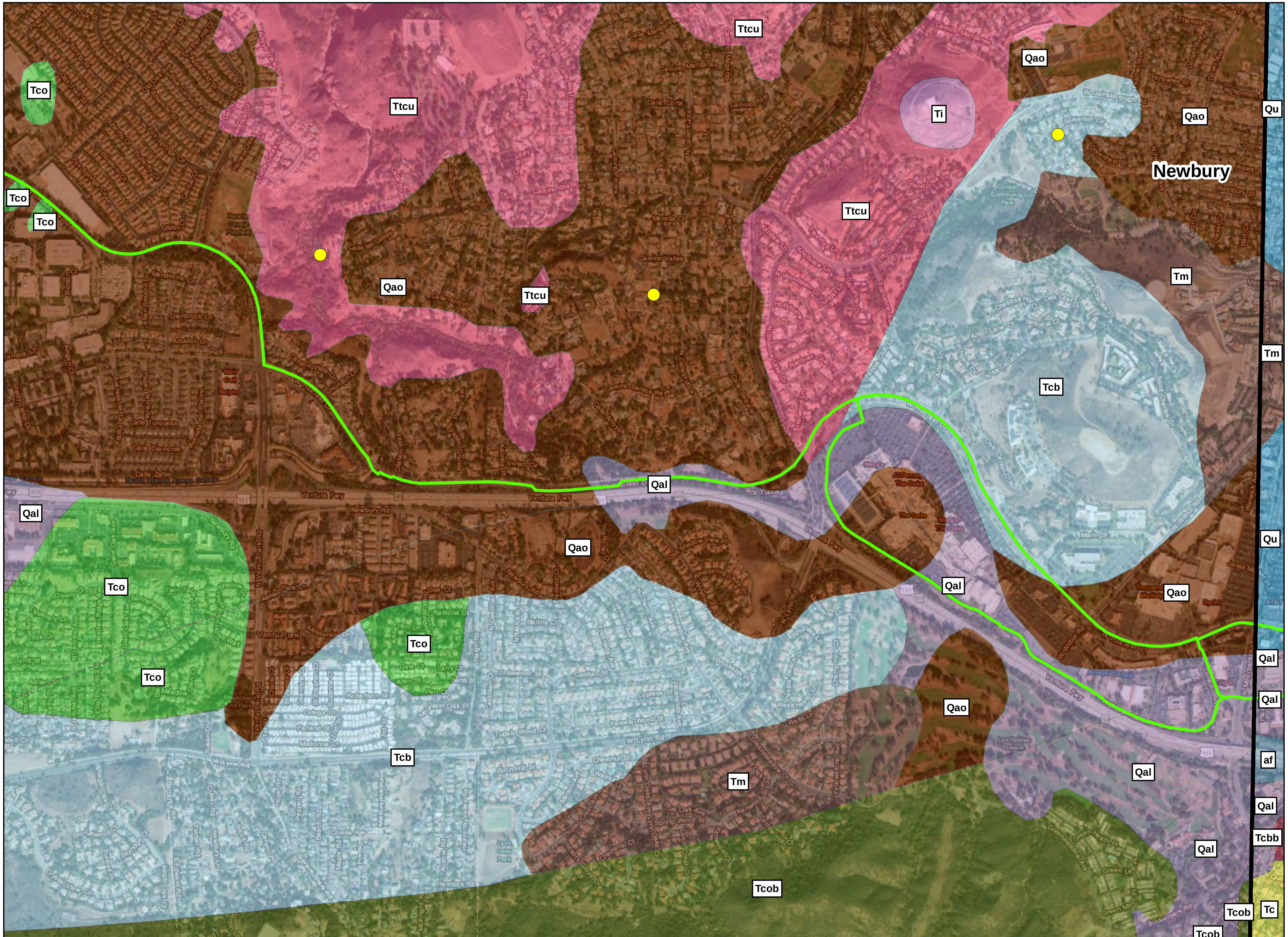


Legend

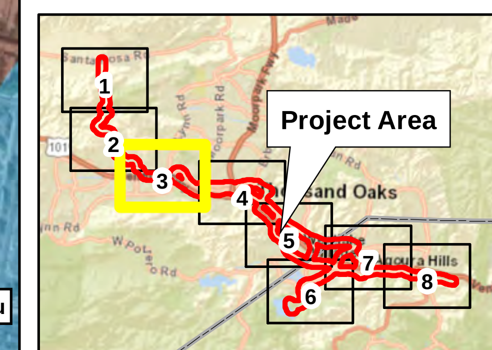
- Concentrate Alignment Options

Newbury Park 7.5' quadrangle

- Qal: Alluvium (Holocene)
- Qao: Older alluvium (Holocene and Pleistocene)
- Tm: Modelo Formation (middle and upper Miocene)
- Tcb: Calabasas Formation (of Topanga Group) (middle Miocene)
- Ti: Intrusive Rocks (middle and upper Miocene)
- Tco: Conejo Volcanics (of Topanga Group) (middle Miocene)
- Tcob: Coniejo Volcanics (chiefly basaltic) (of Topanga Group) (middle Miocene)
- Ttcu: Topanga Canyon Formation (of Topanga Group) (middle Miocene)

Thousand Oaks 7.5' quadrangle

- af: artificial fill (Holocene)
- Qal: Alluvium (Holocene and late Pleistocene)
- Qu: Alluvium, undivided (Pleistocene)
- Tm: Monterey Formation (upper Miocene)
- Tc: Coniejo Volcanics (middle Miocene)
- Tcbb: Coniejo Volcanics (cheifly basaltic) (middle Miocene)
- Fossil Locality



Sources:

R. F. Yerkes and R. H. Campbell. 1997. Preliminary Geologic Map of the Newbury Park 7.5-minute Quadrangle, Southern California. US Geological Survey Open File Report 97-428.

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R. F. Yerkes and R. H. Campbell. 1995. Preliminary Geologic Map of the Thousand Oaks 7.5-minute Quadrangle, Southern California: A Digital Database US Geological Survey Open File Report 95-88.

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FIGURE 6-1

Geology

Pure Water Project Las Virgenes – Triunfo

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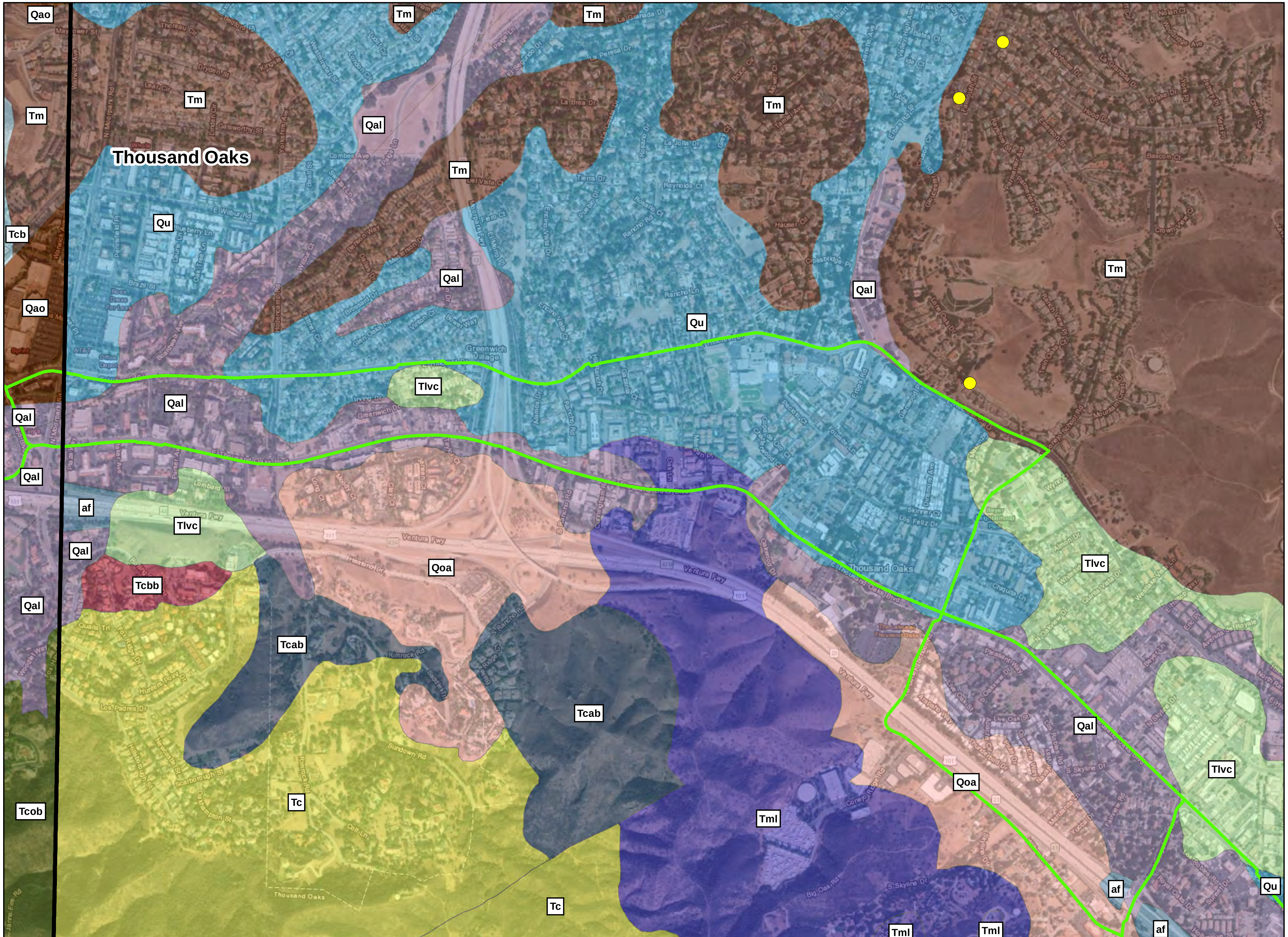


Legend

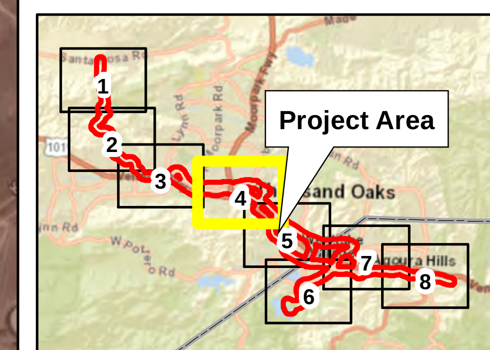
- Concentrate Alignment Options

Newbury Park 7.5' quadrangle

- Qal: Alluvium (Holocene)
- Qao: Older alluvium (Holocene and Pleistocene)
- Tm: Modelo Formation (middle and upper Miocene)
- Tcb: Calabasas Formation (of Topanga Group) (middle Miocene)
- Tcob: Conejo Volcanics (chiefly basaltic) (of Topanga Group) (middle Miocene)

Thousand Oaks 7.5' quadrangle

- af: artificial fill (Holocene)
- Qal: Alluvium (Holocene and late Pleistocene)
- Qu: Alluvium, undivided (Pleistocene)
- Qoa: Older alluvium (Pleistocene)
- Tm: Monterey Formation (upper Miocene)
- Tml: Monterey Formation (lower) (middle Miocene)
- Tlvc: Detritus derived from Conejo Volcanics (middle Miocene)
- Tc: Coniejo Volcanics (middle Miocene)
- Tcab: Coniejo Volcanics (andesitic to dacitic) (middle Miocene)
- Tcbb: Coniejo Volcanics (cheifly basaltic) (middle Miocene)
- Fossil Locality



Sources:

R. F. Yerkes and R. H. Campbell. 1997. Preliminary Geologic Map of the Newbury Park 7.5-minute Quadrangle, Southern California. US Geological Survey Open File Report 97-428.

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1 inch = 1,000 feet

FIGURE 6-1

Geology

Pure Water Project Las Virgenes – Triunfo

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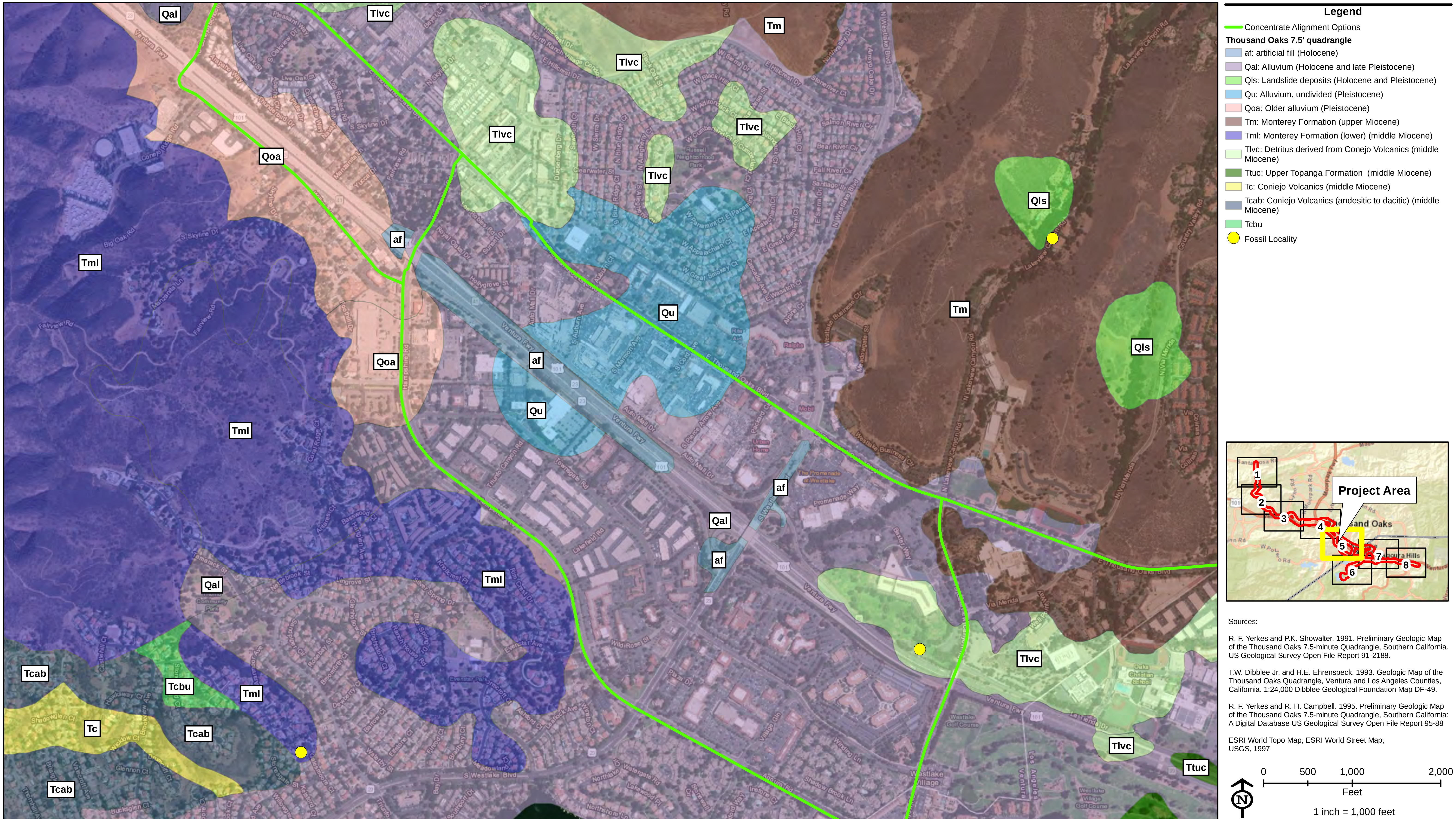

FIGURE 6-1

Geology

Pure Water Project Las Virgenes –Triunfo

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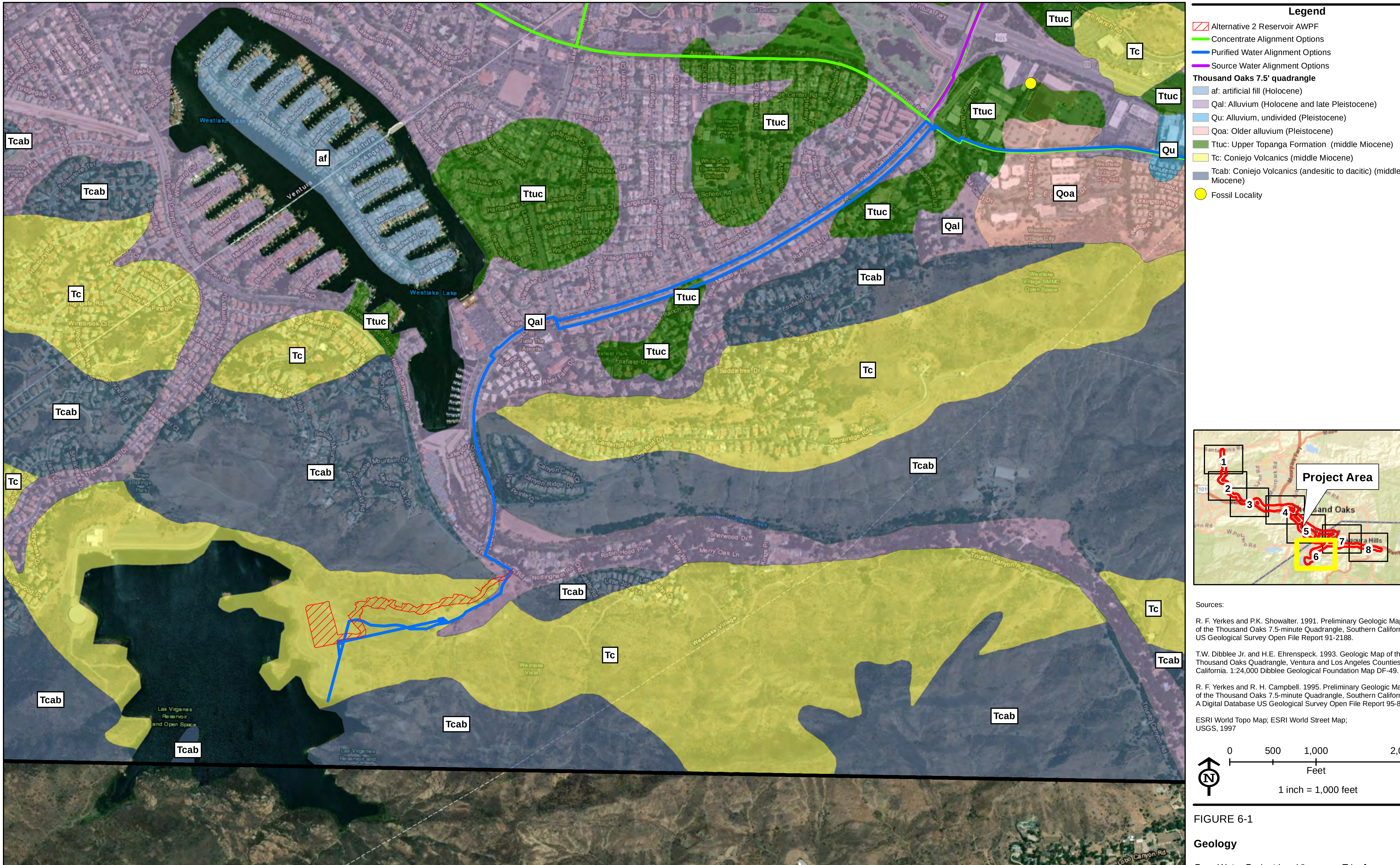

Sources:

R. F. Yerkes and P.K. Showalter. 1991. Preliminary Geologic Map of the Thousand Oaks 7.5-minute Quadrangle, Southern California. US Geological Survey Open File Report 91-2188.

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ESRI World Topo Map; ESRI World Street Map; USGS, 1997

FIGURE 6-1

Geology

Pure Water Project Las Virgenes –Triunfo

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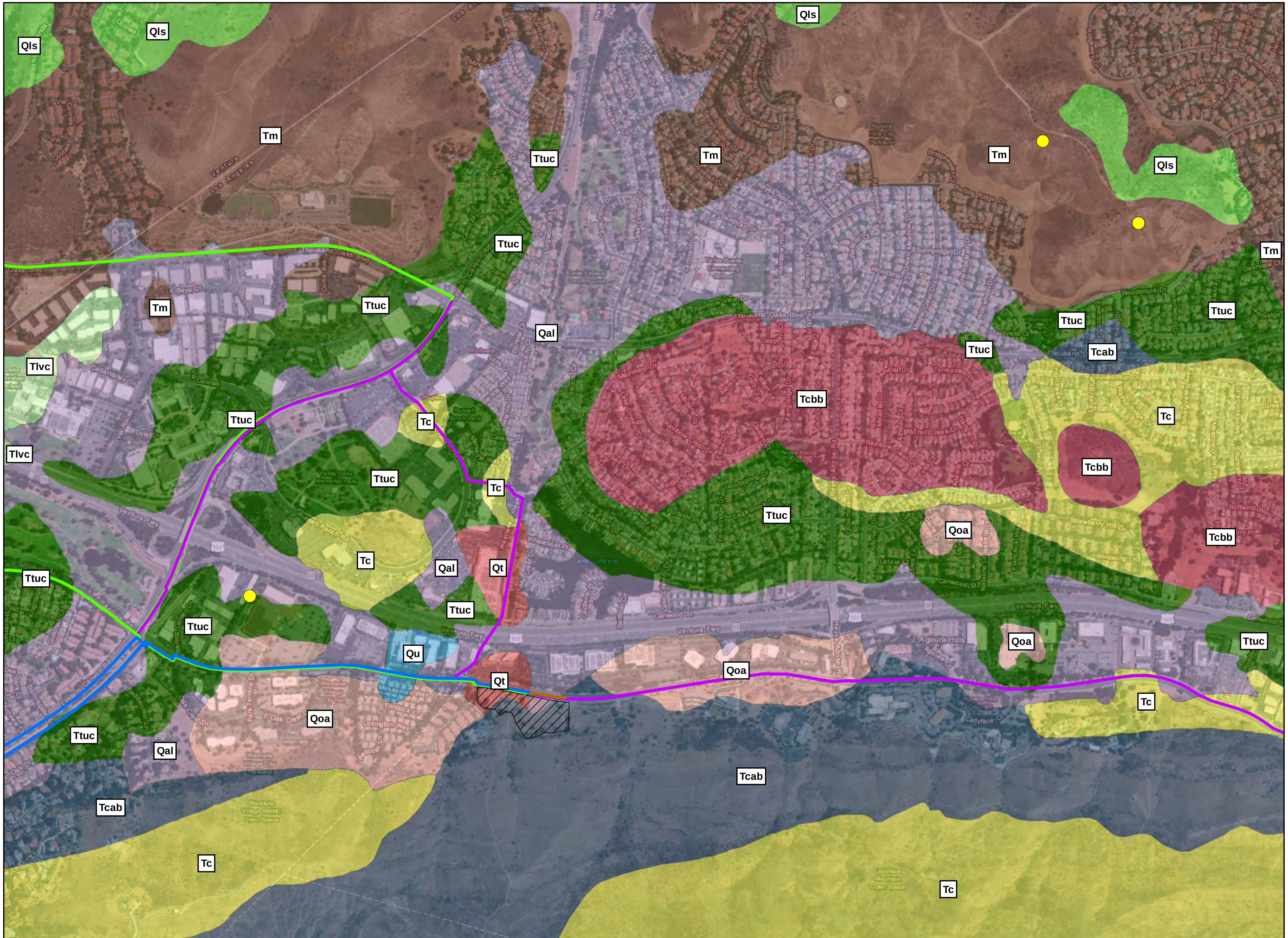
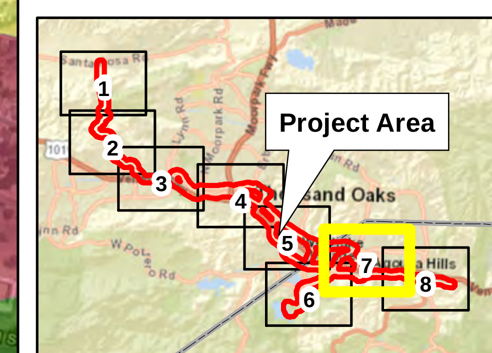


Legend

- Alternative 1 Agoura Road
- Concentrate Alignment Options
- Purified Water Alignment Options
- Source Water Alignment Options
- Waste Line Alignment

Thousand Oaks 7.5' quadrangle

- Qal: Alluvium (Holocene and late Pleistocene)
- Qls: Landslide deposits (Holocene and Pleistocene)
- Qu: Alluvium, undivided (Pleistocene)
- Qt: Terrace deposits (Pleistocene)
- Qoa: Older alluvium (Pleistocene)
- Tm: Monterey Formation (upper Miocene)
- Tlvc: Detritus derived from Conejo Volcanics (middle Miocene)
- Ttuc: Upper Topanga Formation (middle Miocene)
- Tc: Coniejo Volcanics (middle Miocene)
- Tcab: Coniejo Volcanics (andesitic to dacitic) (middle Miocene)
- Tcbb: Coniejo Volcanics (cheifly basaltic) (middle Miocene)
- Fossil Locality



Sources:

R. F. Yerkes and P.K. Showalter. 1991. Preliminary Geologic Map of the Thousand Oaks 7.5-minute Quadrangle, Southern California. US Geological Survey Open File Report 91-2188.

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FIGURE 6-1

Geology

Pure Water Project Las Virgenes – Triunfo

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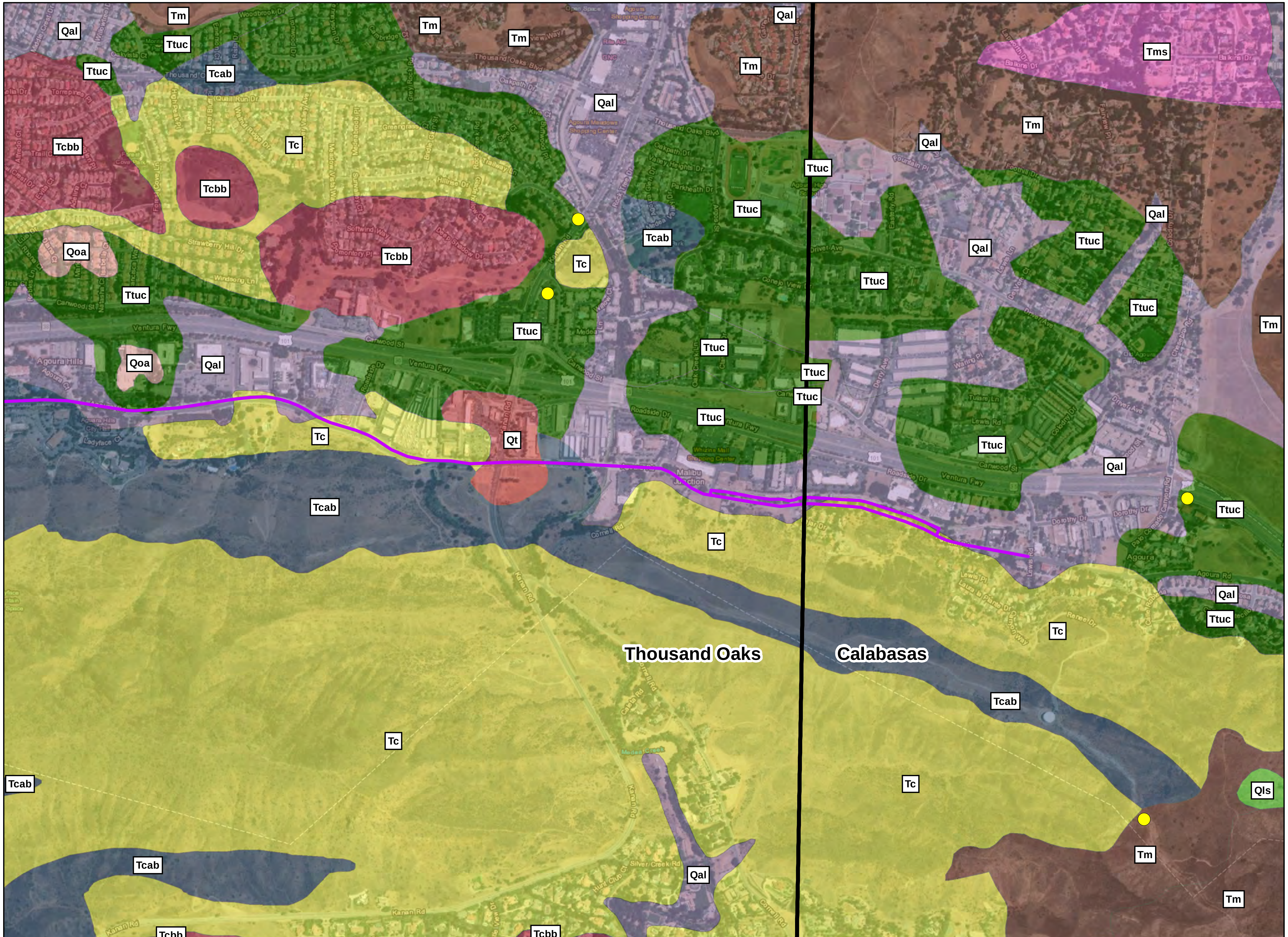


Legend

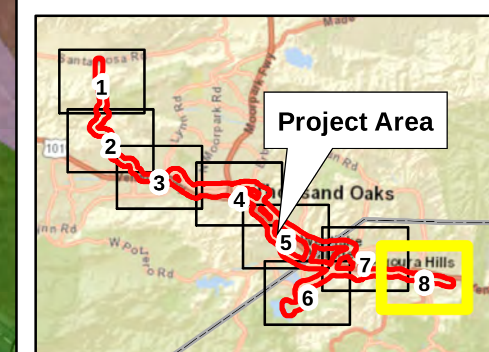
- Source Water Alignment Options

Thousand Oaks 7.5' quadrangle

- Qal: Alluvium (Holocene and late Pleistocene)
- Qt: Terrace deposits (Pleistocene)
- Qoa: Older alluvium (Pleistocene)
- Tm: Monterey Formation (upper Miocene)
- Ttuc: Upper Topanga Formation (middle Miocene)
- Tc: Coniejo Volcanics (middle Miocene)
- Tcab: Coniejo Volcanics (andesitic to dacitic) (middle Miocene)
- Tcbb: Coniejo Volcanics (cheifly basaltic) (middle Miocene)
- Fossil Locality

Calabasas 7.5' quadrangle

- Qal: Alluvium (Holocene and late Pleistocene)
- Qls: Landslide deposits (Holocene and Pleistocene)
- Tm: Modelo Formation (upper Miocene)
- Tms: Modelo Formation (sandstone unit) (upper Miocene)
- Ttuc: Upper Topanga Formation (middle Miocene)
- Tc: Coniejo Volcanics (middle Miocene)
- Tcab: Coniejo Volcanics (andesitic to dacitic) (middle Miocene)
- Fossil Locality



Sources:

R. F. Yerkes and P.K. Showalter. 1991. Preliminary Geologic Map of the Thousand Oaks 7.5-minute Quadrangle, Southern California. US Geological Survey Open File Report 91-2188.

T.W. Dibblee Jr. and H.E. Ehrenspeck. 1993. Geologic Map of the Thousand Oaks Quadrangle, Ventura and Los Angeles Counties, California. 1:24,000 Dibblee Geological Foundation Map DF-49.

R. F. Yerkes and R. H. Campbell. 1995. Preliminary Geologic Map of the Thousand Oaks 7.5-minute Quadrangle, Southern California: A Digital Database US Geological Survey Open File Report 95-88.

T.W.Dibblee Jr. 1992. Geologic Map of the Calabasas Quadrangle, 1:24,000 Dibblee Geological Foundation Map DF-37.
R. F. Yerkes and R.H. Campbell. 1995. Preliminary Geologic Map of the Calabasas 7.5' Quadrangle, Southern California: A Digital Database. US Geological Survey Digital Database Open File-Report 95-51.

R. F. Yerkes and P.K. Showalter. 1993. Preliminary Geologic Map of the Calabasas 7.5' Quadrangle, Southern California. US Geological Survey Open-File Report 93-205.

ESRI World Topo Map; ESRI World Street Map; USGS, 1997

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FIGURE 6-1

Geology

Pure Water Project Las Virgenes – Triunfo

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The geologic units within the project area have been mapped at a scale of 1:24,000 (Yerkes and Showalter 1991, 1993; Dibblee 1992; Dibblee and Ehrenspeck 1993; Yerkes and Campbell 1995a, 1995b, 1997a, 1997b). According to these published maps, these geologic units range from middle Miocene to Holocene in age and are volcanic, marine, and nonmarine in origin. Table 6-1 lists these units from youngest to oldest, and Figure 6-1 shows the units.

Table 6-1. Geologic Units

Geologic Unit	Geologic Map	Map Symbol	Age	Description
General Study Area				
Artificial Fill	Thousand Oaks	af	Holocene (Recent)	*Cut and fill areas with sediments and/or debris that have been removed from one location and transported to another location by human activity rather than by natural means. Typically found along existing railroad tracks, highways, streets, and bridges where it is used to provide suitable foundation or drainage, or to adjust for changes in topography*
Alluvium	Newbury Park	Qal	Holocene	*Unconsolidated clay, sand, and gravel in stream beds and valley fill; locally includes colluvium, slopewash, and talus*
	Thousand Oaks and Calabasas	Qal	Holocene and Late Pleistocene	*Gravel, sand, silt, and clay in stream beds and valley fill; unconsolidated in Thousand Oaks quadrangle; slightly to well consolidated and/or cemented in Calabasas quadrangle*
Alluvium - Undivided	Thousand Oaks	Qu	Pleistocene	*Slightly to well consolidated gravel, sand, silt, and clay; chiefly floodplain deposits*
Landslide Deposits	Newbury Park, Thousand Oaks, and Calabasas	Qls	Holocene and Pleistocene	*Deposits resulting from ground movements, such as rock falls, slope failures, etc.; parent materials include both surficial deposits and bedrock*
Terrace Deposits	Thousand Oaks	Qt	Pleistocene	*Gravel, sand, silt, and clay, slightly to well consolidated, chiefly on flanks of valleys or streams*
Older Alluvium	Newbury Park	Qao	Holocene and Pleistocene	*Poorly consolidated sand and gravel; dissected; includes floodplain deposits*
	Thousand Oaks	Qoa	Pleistocene	*Partially cemented and dissected gravel, sand, silt, and clay*
Saugus Formation	Newbury Park	Qs	Pleistocene	*Interfingering shallow marine, brackish water, and nonmarine deposits that grade upward into exclusively nonmarine sandstone and conglomerate*
Modelo Formation	Newbury Park and Calabasas	Tm	Middle and Upper Miocene	*Dominantly silty shale or soft earthy siltstone, locally siliceous or diatomaceous shale or siltstone, interbedded coarse- to fine-grained arkosic sandstone*
Modelo Formation (sandstone unit)	Calabasas	Tms	Upper Miocene	*Sandstone, massive, fine- to medium-grained, thick sequences in both lower and upper parts of formation*
Monterey Formation	Thousand Oaks	Tm	Upper Miocene	*White weathering, thin bedded, platy, locally brittle siliceous shale to soft, punky shale; devoid of sandstone*

Table 6-1. Geologic Units

Geologic Unit	Geologic Map	Map Symbol	Age	Description
Monterey Formation (lower)	Thousand Oaks	Tml	Middle Miocene	*Lower part, similar to Tm, but soft, fissile to punky, includes scattered thin hard calcareous layers and concretions*
Intrusive Rocks	Newbury Park	Ti	Middle and Upper Miocene	*Chiefly basalt or diabase; some dacite plugs*
Calabasas Formation	Newbury Park	Tcb	Middle Miocene	*Sandstone and siltstone, massive to poorly bedded, scattered calcareous concretions; local pebble conglomerates contain quartzites and clasts derived from underlying volcanic rocks*
Detritus Derived from Conejo Volcanics	Thousand Oaks	Tlvc	Middle Miocene	*Basal epiclastic (reworked) conglomerate and detritus derived from Conejo Volcanics; gray to rusty brown, massive to crudely bedded, contains poorly sorted, subrounded clasts as large as small boulders of mostly andesitic rocks in incoherent detrital matrix, partly intertongued with shale of Tml*
Upper Topanga Formation	Thousand Oaks and Calabasas	Ttuc	Middle Miocene	*Clay shale and siltstone, gray, thin-bedded, soft, crumbly, weakly resistant to erosion; locally contains calcareous concretions or lenses, includes few thin sandstone strata*
Conejo Volcanics (of Topanga Group) (also referred to as the Middle Topanga Formation or Topanga Volcanics)	Newbury Park	Tco	Middle Miocene	*Andesitic to basaltic flows, volcanic breccia and agglomerate*
	Thousand Oaks and Calabasas	Tc	Middle Miocene	*Submarine and subaerial volcanic extrusive rocks; extensive volcanic flows and volcaniclastic rocks; chiefly basaltic flows, volcanic breccia and agglomerate, minor andesitic and dacitic units. Limestone occurs as lenticular deposits on the surface of composite flows units, as matrix within breccia of pebble- to cobble-size volcanic clasts, within primary voids extending down from flow surfaces, as lenses between flows within composite flow units, and as neptunian dikes*
Conejo Volcanics (andesitic to dacitic) (of Topanga Group)	Thousand Oaks and Calabasas	Tcab	Middle Miocene	*Andesitic to dacitic flow breccia and agglomerate.*
Conejo Volcanics (chiefly basaltic) (of Topanga Group)	Newbury Park	Tcob	Middle Miocene	*Basaltic flows*
	Thousand Oaks	Tcbb	Middle Miocene	*Basaltic breccia, pillow breccia, aquagene tuff*
Topanga Canyon Formation (of Topanga Group)	Newbury Park	Ttcu	Middle Miocene	*Fine- to medium-grained sandstone, minor interbedded siltstone and shale*

Source: Yerkes and Showalter 1991, 1993; Dibblee 1992; Dibblee and Ehrenspeck 1993; Yerkes and Campbell 1995a, 1995b, 1997a, 1997b

6.1.6 Literature Review for Cultural Resources

A records search was received from the California Historical Resources Information System (CHRIS) (State of California 2022b) South Central Coastal Information Center (SCCIC) at California State University, Fullerton on February 18, 2022 (Record Search File 23394.9454). The records search included a review of previously recorded cultural resources, as well as previously conducted cultural resources investigations within the project area. The record search included an area extending up to approximately 3,500 feet from the project elements. This section summarizes findings from the record search.

6.1.6.1 Previously Conducted Investigations for Cultural Resources

Within the project area, 173 previously conducted cultural resources investigations have been conducted; of those, 77 investigations intersect the pipeline alignment options, 5 intersect the Alternative 1 Agoura Road AWPF site, and 4 intersect the Alternative 2 Reservoir AWPF site. The following approximate percentages of the project areas have been subject to relevant cultural resources studies:

- 70% of the pipeline alignment in studies completed between 1975 and 2016
- 80% of the Alternative 1 Agoura Road AWPF site in studies completed between 1966 and 2001
- 95% of the Alternative 2 Reservoir AWPF site in studies completed between 1982 to 1990

6.1.6.2 Previously Recorded Cultural Resources

Within the project area, 38 previously recorded cultural resources were identified; of these, 10 previously recorded cultural resources overlap with the pipeline alignment options, including 8 prehistoric resources, 1 historic-era resource, and 1 multicomponent resource (consisting of prehistoric and historic-era resources). One prehistoric resource (P-19-000042, a lithic scatter) was recorded within the Alternative 1 Agoura Road AWPF site, and one prehistoric resource (P-19-001791, a lithic scatter) was recorded within the Alternative 2 Reservoir AWPF site. The P-19-001791 resource also overlapped with the pipeline options. Of these resources, eight resources have not been evaluated for significance, two resources have been evaluated eligible for the California Register of Historical Resources (CRHR), and one resource was evaluated not eligible for the National Register of Historic Places (NRHP) and the CRHR.

An additional 27 resources were located within the project area (however, they do not intersect with any project elements), including 22 prehistoric resources, 4 historic-era resources, and 1 multicomponent site. Table 6-2 summarizes information about the resources within the pipeline options, and Alternative 1 Agoura Road AWPF and Alternative 2 Reservoir AWPF footprints.

Table 6-2. Previously Recorded Cultural Resources

Resource Identified	Resource Type	Description	Evaluation
Pipeline Options			
P-19-000186	Prehistoric	Burials and habitation debris	Not evaluated
P-19-000462	Prehistoric	Lithic scatter and habitation debris	Not evaluated
P-19-000463	Prehistoric	Lithic scatter	Not evaluated
P-19-000467	Prehistoric	Lithic scatter and habitation debris	Not evaluated
P-19-001069	Prehistoric	Lithic scatter	Recommended eligible for CRHR
P-19-001352	Prehistoric	Habitation debris	Recommended eligible for CRHR
P-19-001791	Prehistoric	Lithic scatter	Not evaluated
P-56-000261	Prehistoric	Lithic scatter, burials, and habitation debris	Not evaluated
P-56-000654/H	Prehistoric and Historic	Foundation, well and cisterns, walls and fences, lithic scatter, habitation debris, and amusement park remains (Jungle Land)	Not evaluated

Table 6-2. Previously Recorded Cultural Resources

Resource Identified	Resource Type	Description	Evaluation
P-56-153139	Historic	Single-family property and ancillary building	Not eligible for NRHP or CRHR
Alternative 1 Agoura Road AWPF Site			
P-19-000042	Prehistoric	Lithic scatter, quarry, and habitation debris	Not evaluated
Alternative 2 Reservoir AWPF Site			
P-19-001791	Prehistoric	Lithic scatter	Not evaluated

Source: CHRIS Record Search File 23394.9454, 2022

Sites P19-001069 and P-19-001352 were previously recommended for the CRHR when previously recorded on site forms in 2012 by Linda Akyuz. Site P-19-001069 was first recorded in 1980 by J. Brock as a lithic scatter (possible quarry). The site consisted of 20 flakes of materials, such as andesite, basalt, rhyolite, and quartzite. The site was revisited in 2012 by Linda Akyuz for the *Addendum to Cultural Resources and Paleontological Resources Assessment for the Agoura Road Widening Project (2011),* and no evidence of the resource was observed during an intensive pedestrian survey. Although no surface evidence of the site was recorded, there is still the possibility of encountering resources subsurface, and it was recommended eligible for listing in the CRHR.

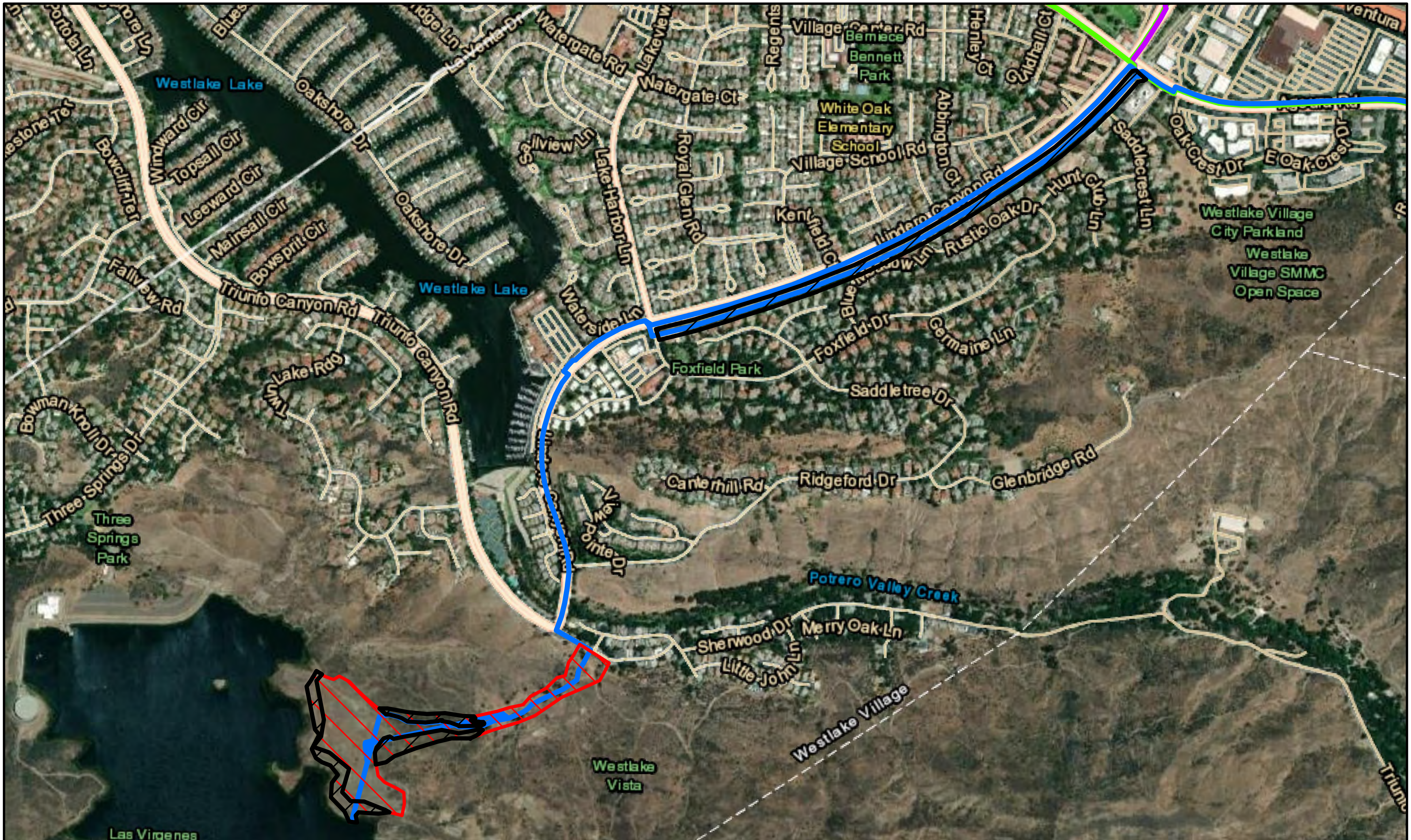
Site P-19-001352 was first recorded on site forms in 1987 by Richard L. Wessel for the City of Agoura Hills. The site was recorded as a midden deposit containing:

- Two milling slabs
- Numerous angular hammers, core tools, and large andesite flake tools
- Two manos
- Flakes and cores from a variety of materials (local andesite, chalcedony chert, quartzite, fused shale, and banded chert)

The site was revisited in 2011 by Robin Turner during the *Cultural Resources and Paleontological Resources Assessment for the Agoura Road Widening Project (2011)*, and in 2012 by Linda Akyuz for the *Addendum to Cultural Resources and Paleontological Resources Assessment for the Agoura Road Widening Project (2011).* No evidence of the resource was observed during intensive pedestrian surveys conducted. Although no surface evidence of the site was recorded, there is still the possibility of encountering resources in the subsurface, and it was recommended eligible for listing in the CRHR.

6.1.7 Archaeological Survey

In February 2022, an archaeological survey of the Alternative 1 Agoura Road AWPF site, Alternative 2 Reservoir AWPF site, and pipeline option locations was completed. Archaeologists surveyed for cultural resources by visually inspecting the ground surface and subsurface exposures, including rodent burrows; road disturbances; and exposed cut banks, rills, gullies, and washes. In areas along the pipeline options that were paved or heavily disturbed, archaeologists completed a reconnaissance or windshield survey, where accessible. Figures 6-2 and 6-3 show the portions of the survey area where intensive surveys occurred.



Type

- Concentrate Alignment Options
- Purified Water Alignment Options
- Source Water Alignment Options
- Survey Boundaries 2022
- Inaccessible Survey Area

Sources:
ESRI World Topo Map
ESRI World Street Map

Jacobs

July 19, 2022

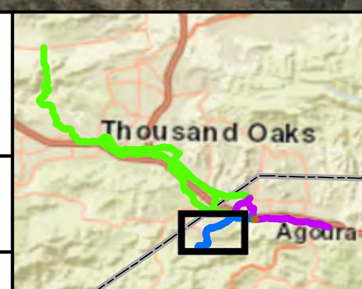
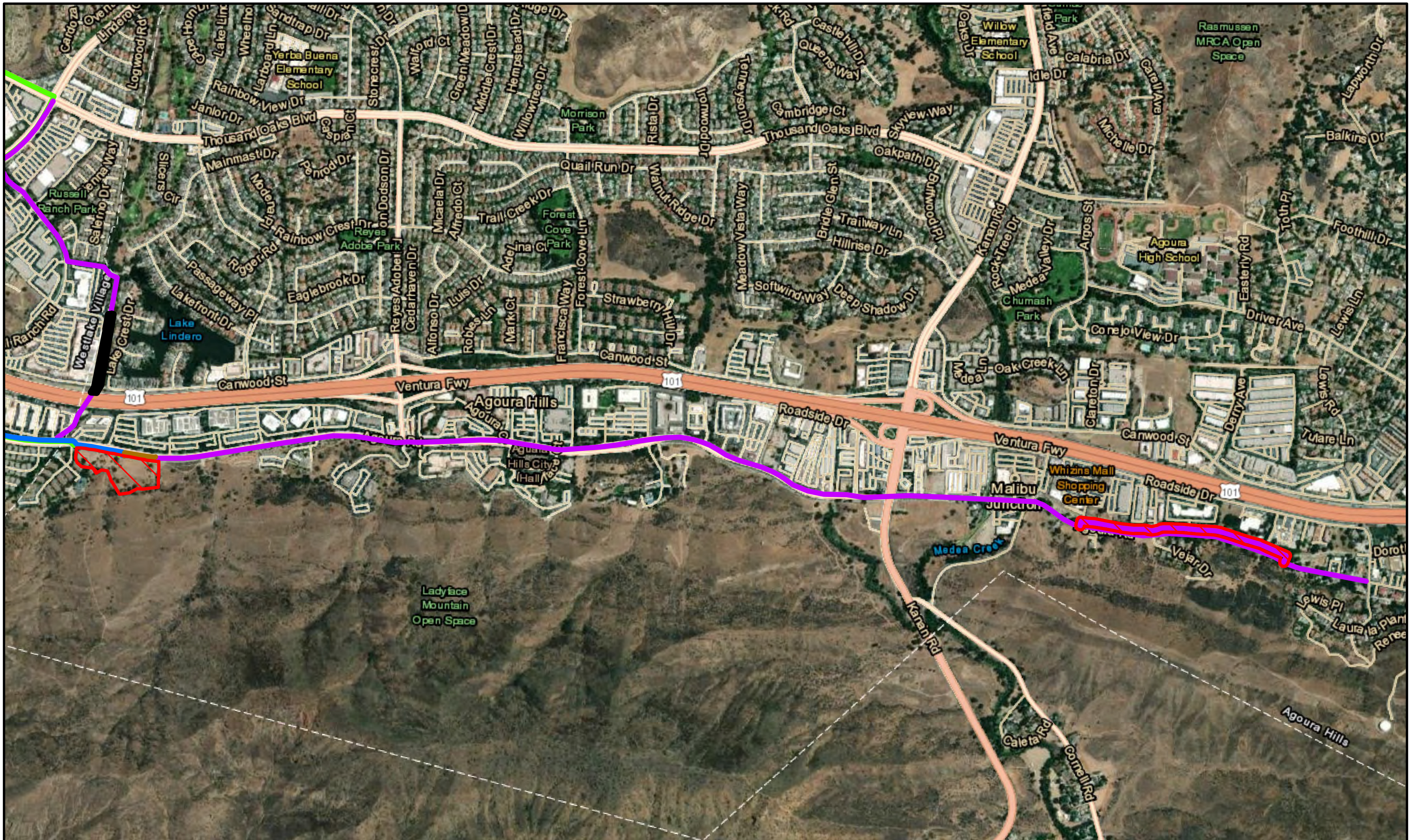


Figure 6-2
Cultural Survey Results

Pure Water Project
Las Virgenes –Triunfo

0 300 600 900 1,200
Feet



Type
- Concentrate Alignment Options
- Purified Water Alignment Options
- Source Water Alignment Options
- Waste Line Alignment
- Survey Boundaries 2022
- Inaccessible Survey Area

Sources:
ESRI World Topo Map
ESRI World Street Map

Jacobs

July 19, 2022

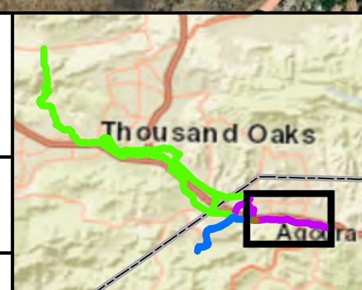


Figure 6-3
Cultural Survey Results

Las Virgenes-Triunfo
Pure Water Project

0 500 1,000 1,500 2,000
Feet

Archaeologists completed an intensive pedestrian survey employing transects spaced no more than 26 feet apart. Archaeologists surveyed for cultural resources by visually inspecting the ground surface and subsurface exposures, including rodent burrows; road disturbances; and exposed cut banks, rills, gullies, and washes. In areas along the pipeline alignment options that were paved or heavily disturbed, archaeologists completed a reconnaissance or windshield survey, where accessible. The survey was conducted using a global positioning system (GPS) Collector tablet, which contained shapefiles showing the project features. In addition, a Trimble R1 unit was used for submeter accuracy. Field notes and photographs documenting current conditions were taken during the survey. Photos 6-1 through 6-3 show representative photographs from the archaeological survey.

Photo 6-1. Alternative 1 Agoura Road Advanced Water Purification Facility Overview from Western End, View East

Photo 6-2. Westlake Vista Trail within Triunfo Canyon Park Overview from Northern Area, View South

Photo 6-3. Concentrate Pipeline Alignment Overview West of the Hill Canyon Water Treatment Plant, View North

Visibility within the general survey areas ranged from 10 to 100%. The Alternative 1 Agoura Road AWPF site had ground visibility between 10 to 60%. Lower visibility in certain areas was due to brush and seasonal grasses dominating the landscape. The 60% visibility area was limited to the graded landform located along the western margin of the survey area, which was also partially covered in seasonal grasses.

The Alternative 2 Reservoir AWPF site, including the pipeline alignment along Westlake Vista Trail, had ground visibility between 10 to 50%, with the best visibility in the flats directly east of the reservoir. This area was partially covered with seasonal grasses and brush, limiting visibility. Other portions of the site with the least visibility had heavy vegetation that consisted of seasonal grasses and brush.

One intensively surveyed section of the pipeline alignment options was located west of the Hill Canyon Water Treatment Plant, and consisted of an unpaved, graded, and maintained unnamed fire access road. This portion of the survey had 100% ground visibility.

None of the previously recorded cultural resources within the alternative AWPF sites and pipeline option locations were reidentified during the survey:

- Site P-19-000042, previously recorded within the Alternative 1 Agoura Road AWPF site, was not located during the survey. An apartment complex was constructed approximately 200 feet west of where the site was previously identified, and a dirt road was seen parallel to the western border of the site boundary, making it likely the site has been heavily disturbed since it was last recorded.
- Site P19-01791, located within the Alternative 2 Reservoir AWPF site and overlapping the pipeline alignment, was also not located. The site boundary overlaps the Westlake Vista Trail in Triunfo Canyon Park that is open for public use, making it likely the site has been heavily disturbed due to high usage of the trail.
- The remaining sites within the pipeline alignment options footprint were not relocated during the survey effort due to the previously recorded site locations being paved.

One newly discovered cultural resource was identified during the survey of the Alternative 1 Agoura Road AWPF site consisting of:

- A ceramic insulator
- Two crossbars
- Cement fragments
- Undiagnostic glass fragments located on a circular, flat-graded area approximately 130 feet in diameter

A U.S. Geological Survey (USGS) topographic map from 1903 shows a structure at this approximate location. No other cultural resources were identified during the survey.

6.1.8 Literature and Fossil Locality Review for Paleontological Resources

A paleontological resource assessment was conducted to assess the potential for paleontological resources to be uncovered during ground-disturbing activities. This assessment was prepared in accordance with SVP’s established standard procedures (SVP 2010) and included an examination of the following sources:

- Published geological maps of the project area
- Paleontological locality search using the University of California Museum of Paleontology (UCMP) online database (Berkeley 2022) and Natural History Museum of Los Angeles County (LACM)
- Published paleontological reports to determine whether the geologic units present typically yield paleontological resources

Pure Water Project features are not present in all of the geologic units described in this chapter; therefore, not all of these geologic units are included in the assessment. As geologic formations and units can be exposed over large geographic areas but contain similar lithologies and fossils, the UCMP online database literature review and fossil locality search included localities outside the immediate facility footprints.

Appendix C provides the fossil records from the UCMP database. Appendix D provides the paleontological locality report from LACM. Based on the information from the literature review and fossil locality search, the paleontological potential of each geologic unit within the project area was determined following SVP standard procedures (2010). Table 6-3 summarizes the paleontological potential of each unit.

Table 6-3. Paleontological Potential

Geologic Unit	Geologic Map	Map Symbol	Age	Paleontological Potential	Project Feature
Artificial Fill	Thousand Oaks	af	Holocene (Recent)	None	▪ Concentrate pipeline
Alluvium	Newbury Park	Qal	Holocene	Low to High (increases with depth)	▪ Concentrate pipeline
	Thousand Oaks and Calabasas	Qal	Holocene and Late Pleistocene	High	▪ Concentrate pipeline ▪ Source water pipeline ▪ Purified water pipeline ▪ Alternative 2 Reservoir AWPF ▪ Alternative 1 Agoura Road AWPF
Alluvium - Undivided	Thousand Oaks	Qu	Pleistocene	High	▪ Concentrate pipeline ▪ Purified water pipeline
Terrace Deposits	Thousand Oaks	Qt	Pleistocene	High	▪ Concentrate pipeline ▪ Source water pipeline ▪ Purified water pipeline ▪ Alternative 1 Agoura Road AWPF
Older Alluvium	Newbury Park	Qao	Holocene and Pleistocene	High	▪ Concentrate pipeline
	Thousand Oaks	Qoa	Pleistocene		▪ Concentrate pipeline ▪ Purified water pipeline ▪ Source water pipeline
Saugus Formation	Newbury Park	Qs	Pleistocene	High	▪ Potentially underlying Alluvium (Qal) throughout the project area ▪ Concentrate pipeline in the northern project area
Modelo Formation	Newbury Park and Calabasas	Tm	Middle and Upper Miocene	High	▪ Potentially underlying Alluvium (Qal) and Older Alluvium (Qoa) that underlie the concentrate

Table 6-3. Paleontological Potential

Geologic Unit	Geologic Map	Map Symbol	Age	Paleontological Potential	Project Feature
Modelo Formation (sandstone unit)	Calabasas	Tms	Upper Miocene	High	pipeline along the Ventura Freeway between North Lynn Road and North Moorpark Road in the Newbury Park quadrangle ▪ Potentially underlying deposits mapped as Alluvium (Qal) that underly the source water pipeline in the vicinity of the Ventura Freeway at the eastern terminus of the project area in the Calabasas quadrangle
Monterey Formation	Thousand Oaks	Tm	Upper Miocene	High	▪ Concentrate pipeline
Monterey Formation (lower)	Thousand Oaks	Tml	Middle Miocene	High	▪ Concentrate pipeline
Intrusive Rocks	Newbury Park	Ti	Middle and Upper Miocene	None	▪ Throughout the project area in the Newbury Park quadrangle
Calabasas Formation	Newbury Park	Tcb	Middle Miocene	Low	▪ Concentrate pipeline
Detritus Derived from Conejo Volcanics	Thousand Oaks	Tlvc	Middle Miocene	Low	▪ Concentrate pipeline
Upper Topanga Formation	Thousand Oaks and Calabasas	Ttuc	Middle Miocene	High	▪ Concentrate pipeline ▪ Purified water pipeline ▪ Source water pipeline
Conejo Volcanics (of Topanga Group)	Newbury Park	Tco	Middle Miocene	High	▪ Concentrate pipeline
	Thousand Oaks and Calabasas	Tc	Middle Miocene		▪ Purified water pipeline ▪ Source water pipeline ▪ Alternative 2 Reservoir AWPF
Conejo Volcanics (andesitic to dacitic) (of Topanga Group)	Thousand Oaks and Calabasas	Tcab	Middle Miocene	None	▪ Purified water pipeline ▪ Source water pipeline ▪ Alternative 2 Reservoir AWPF ▪ Alternative 1 Agoura Road AWPF
Topanga Canyon Formation (of Topanga Group)	Newbury Park	Ttcu	Middle Miocene	High	▪ Concentrate pipeline

Source: Yerkes and Showalter 1991, 1993; Dibblee 1992; Dibblee and Ehrenspeck 1993; Yerkes and Campbell 1995a, 1995b, 1997a, 1997b

6.1.8.1 Paleontological Resources and Paleontological Potential

This section summarizes the paleontological resources in order of age, youngest to oldest, and paleontological potential in the project area.

Artificial fill (af – Holocene): The depth of these sediments within the project area is unknown. However, by their very nature, fossils found in artificial fill have lost their native provenance; therefore, they have marginal scientific value. Artificial fill is generally considered to have no potential to produce significant paleontological resources based on SVP's standard procedures (2010).

Alluvium (Qal – Holocene to late Pleistocene); Alluvium Undivided (Qu – Pleistocene), Terrace Deposits (Qt – Pleistocene); Older Alluvium (Qao – Holocene to Pleistocene and Qoa – Pleistocene): Although Holocene (less than 11,700 years ago) deposits can contain remains of plants and animals, only those from the middle to early Holocene (4,200 to 11,700 years ago) are considered scientifically important (SVP 2010). Scientifically important fossils from middle to early Holocene deposits are not very common.

The UCMP has 10 records of invertebrate fossil localities from Holocene deposits in Ventura County and 43 records of fossil localities from Holocene deposits within Los Angeles County (10 microfossils, 4 invertebrates, 2 plants, and 27 microfossils or plants) (Appendix A). However, the UCMP database lists all of these as simply Holocene in age and does not differentiate between early, middle, or late; so it is impossible to distinguish which of these are scientifically important.

The LACM does not report any fossil localities from Holocene sediments. Holocene sediments often form a thin veneer over the top of older (for example, Pleistocene age) deposits at variable depth. These older deposits are known to produce scientifically important fossils from within Ventura and Los Angeles counties (Jefferson 1991a, 1991b; Miller 1971; Reynolds and Reynolds 1991).

The UCMP reports 69 invertebrate and 6 vertebrate fossil localities from Pleistocene deposits in Ventura County. In Los Angeles County, the UCMP reports the following fossil localities from Pleistocene deposits:

- 9 plant
- 1 invertebrate and microfossil
- 241 invertebrate
- 5 microfossil
- 5 invertebrate and vertebrate
- 15 vertebrate fossil localities

While the LACM reported no paleontological localities from within the project area, there were four vertebrate fossil localities within the area from the same or similar Pleistocene deposits within 3 miles or less of the project area:

- LACM VP 1680 produced mammoth and horse remains approximately 1 mile northwest of Newbury Park in the Conejo Valley.
- LACM VP 7660 produced mastodon remains from the Lakes at Thousand Oaks near the corner of East Thousand Oaks Boulevard and South Conejo School Road.
- LACM VP 3213 produced ground sloth and other vertebrate remains (not further specified) along South Westlake Boulevard south of the Ventura Freeway.
- LACM VP 1142 produced vertebrate remains (unspecified) south of Sherwood Lake.

Holocene Alluvium (Qal) has low paleontological potential from the surface to 5 feet below ground surface (bgs) and high paleontological potential at depths greater than 5 feet bgs. Pleistocene deposits are known to produce significant fossil vertebrates in Ventura and Los Angeles counties. For this reason, Pleistocene Alluvium (undivided) (Qu), Pleistocene Terrace deposits (Qt), and Pleistocene Older Alluvium (Qao/Qoa) have high paleontological potential. Similarly, because the precise contact between Holocene and Pleistocene deposits is unknown, deposits mapped as Holocene to late Pleistocene Alluvium (Qal) also have high paleontological potential.

Landslide Deposits (Qls – Holocene and Pleistocene): No landslide deposits are mapped within the project area.

Saugus Formation (Qs – Pleistocene): Although the Saugus Formation is not mapped as underlying the concentrate alignment option at the northern terminus of the project area, the Saugus Formation does underlie deposits mapped as Alluvium (Qal) that do underlie the concentrate alignment. Because Alluvium can form a thin veneer over the top of older deposits (such as the Saugus Formation), and the depth to the Saugus Formation beneath the Alluvium is unknown, the Saugus Formation is included in this assessment.

The lower marine sandstone beds of the Saugus Formation are known to have produced fossils of (Squires 1997; Hazzard 1940):

- *Aves* (birds)
- *Chondrichthyans* (cartilaginous fish, such as sharks and rays)
- *Echinoderms* (starfish, sand dollars)
- Marine *mollusks* (snails, squid, and octopus)
- *Mysticetes* (baleen-bearing whales)
- *Odontocetes* (toothed-whales)

The upper, terrestrial sandstone, and conglomerate beds have yielded the fossilized remains of Pleistocene megafauna, including tapir, horse, deer, and mastodon (Squires 1997; Hazzard 1940). The UCMP database reports 19 invertebrate and 1 microfossil locality from Ventura County. Six invertebrate localities are within 20 miles or less of the project area.

LACM reports two vertebrate fossil localities from the Saugus Formation. Locality LACM IP 16927, which is approximately 8 miles northwest of the northern terminus of the project area, produced perissodactyla remains and bivalves. LACM locality VP6236-6240, which is located approximately 15 miles northeast of the northern terminus of the project area, produced a diverse fossil assemblage, including:

- Albatross (*Diomedea*)
- Auk (*Mancalla*)
- Baleen whale (*Balaenidae*)
- Cormorant (*Phalacrocorax*)
- Eared seal (*Otariidae*)
- Rock bass (*Paralabax*)
- Rorquals (*Balaenopteridae*)
- Scoter (*Melanitta*)
- Sea snake (*Hydrophiisae*)
- Shearwater (*Puffinus*)
- Sturgeon (*Acipenser*)

The Saugus Formation has high paleontological potential.

Modelo Formation (Tm – middle and upper Miocene); Modelo Formation (sandstone unit) (Tms – upper Miocene): The Modelo Formation is not present within the project area; however, the Modelo Formation likely underlies deposits mapped as Alluvium (Qal) and Older Alluvium (Qao) within the project area along the Ventura Freeway between North Lynn Road and North Moorpark Road in the Newbury Park quadrangle, and underlying deposits mapped as Alluvium (Qal) in the vicinity of the Ventura Freeway at the eastern terminus of the project area in the Calabasas quadrangle. Because Alluvium and Older Alluvium can form a thin veneer over the top of older deposits (such as the Modelo Formation), and the depth to the Modelo Formation beneath the Alluvium and Older Alluvium is unknown, the Modelo Formation is included in this assessment.

The Modelo Formation is one of the most outstanding fossiliferous formations in the project area. It is best known for its fish fauna, which are remarkably preserved (David 1943; Squires 1997). The UCMP database reports 5 invertebrate and 1 microfossil locality from the Modelo Formation in Ventura County;

and 27 invertebrate, 11 vertebrate, 6 plant, and 46 microfossil localities from Los Angeles County, including:

- UCMP locality V3430 produced bird and bony fish remains approximately 4 miles east of the eastern terminus of the project area in the Calabasas quadrangle.
- UCMP locality V82048 produced bony fish remains approximately 10 miles east-northeast of the eastern terminus of the project area along Del Moreno Drive.

LACM reports three vertebrate fossil localities within 2 miles or less of the project area in Thousand Oaks, including:

- Locality LACM VP 7987 produced remains of shark (*Isurus*, *Carcharhinus*), ray-finned fish (*Clupeidae*), porgies (*Plectrites*), herring (*Xyne*), and bony fish (*Eclipes*, *Ganolytes*).
- Locality LACM VP 6034 produced mackerel and tuna family remains (*Scombridae*).
- Locality LACM VP 4965-4966 produced the remains of primitive baleen whales (*Cetotheriidae*).

Therefore, these sediments have the potential to contain in situ fossils and have a high paleontological potential.

Monterey Formation (Tm – upper Miocene); Monterey Formation (lower) (Tml – middle Miocene): The Monterey Formation has produced a wide variety of exquisitely preserved fossils of plants, invertebrates, and vertebrates, most which are of marine origin (Cooper and Eisentraut 2002):

- Bony fish
- Desmostylians
- Diverse assemblages of marine invertebrates
- Dolphins
- Marine and terrestrial plants
- Sea cows
- Sharks
- Whales

The UCMP database reports 49 microfossil, 4 invertebrate, and 2 vertebrate fossil localities from Ventura County; and 34 microfossil, 10 plant, and 5 vertebrate localities from Los Angeles County. LACM reports one vertebrate fossil locality from the Monterey Formation within 2.5 miles of the project area near Oak Park and Lindero Canyon that produced fish (*Eclipes*, *Clupeidae*) and plants (unspecified). Therefore, these sediments have the potential to contain in situ fossils and have a high paleontological potential.

Intrusive Rocks (Ti – middle and upper Miocene): Intrusive igneous rocks like these form under intense temperature and pressure and are not conducive to the preservation of fossils. Therefore, this unit has no paleontological potential.

Calabasas Formation (Tcb – middle Miocene): No fossil localities were reported from the UCMP or LACM databases. However, foraminifera, molluscan fauna, and fish scales have been reported from the Calabasas Formation in the vicinity of the central Santa Monica Mountains in Ventura County (Yerkes and Campbell 1979). The Calabasas Formation has low paleontological potential.

Detritus Derived from Conejo Volcanics (Tlvc – middle Miocene): No fossil localities were reported from the UCMP or LACM databases. There are few documented fossils from these deposits in the literature, but they are limited to common species of shallow marine mollusks (Dibblee and Ehrenspeck 1993). Detritus derived from Conejo volcanics has low paleontological potential.

Upper Topanga Formation (Ttuc – middle Miocene) and Topanga Canyon Formation (undivided) (of Topanga Group) (Ttcu – middle Miocene): Deposits from the Upper Topanga Formation in the

Calabasas area have yielded significant fossil remains, including (Christopher A. Joseph & Associates 2009; Campbell and Yerkes 1980):

- A primitive baleen whale (*Nannocetus*)
- Basking shark (*Cetorhinus*)
- Bonito shark (*Isurus*)
- Eagle ray (*Myliobatis*)
- Giant sea bass (*Stereolepis*)
- Grouper (*Lompoquia*)
- Herring (*Ganolytes cameo*)
- Sea cows (*Dugongidae*)
- Snaggletooth shark (*Hemipristis*)

The Topanga Canyon Formation (undivided) has produced numerous significant fossil remains, including diverse assemblages of (Lander 2011):

- Barnacles
- Bivalves
- Crabs
- Echinoids
- Gastropods
- Land plants
- Ray-finned fish
- Sea lions, and whales
- Sharks and rays
- Small reptiles
- Terrestrial mammals

The UCMP database reports 10 invertebrate and 1 microfossil locality from Ventura County; and 95 invertebrate, 1 plant, and 1 vertebrate fossil locality from Los Angeles County. LACM reports two fossil localities from the Topanga Formation that are 6 miles or less from the northern terminus of the project area, including:

- Locality LACM VP 6949 produced a diverse assemblage of invertebrates (bivalves, echinoids, bryozoans, and barnacles) and shark (*Isurus planus*) remains.

- Locality LACM VP 7265 produced toothed whale (*Odontoceti*), requiem shark (*Carcharhinus*, *Galeocerdo*), weasel shark (*Hemipristis*), eagle ray (Myliobatidae), and barracuda (*Sphyraenidae*) remains.

The Upper Topanga Formation and Topanga Canyon Formation have high paleontological potential.

Conejo Volcanics (of Topanga Group) (Tco/Tc – middle Miocene): Most volcanic rocks do not contain fossils; however, the Conejo volcanics are unique because they contain interbeds of sandstone, siltstone, and limestone. Within a small area of Malibu Canyon in the Santa Monica Mountains, more than 200 fossil localities occur in the Conejo volcanics (KellerLynn 2008). Fossils in the Conejo volcanics include (Stanton and Alderson 2013; Stadum and Weigand 1998):

- Barnacles
- Bivalves
- Brachiopods
- Echinoids
- Fish scales
- Foraminifera
- Gastropods
- Wood
- Worm tubes

These fossils are noteworthy because of the rarity of carbonate rocks in association with submarine volcanism, as well as the rarity of limestone in the Cenozoic record of the Pacific Coast (Tweet et al. 2012). The UCMP database reports one invertebrate fossil locality from the Conejo volcanics in Los Angeles County; none are reported from Ventura County. LACM reports invertebrate fossil remains (unspecified) from locality LACM IP 16927, which is located less than 0.5 mile from the project area on Renee Drive north of the water tank in Agoura Hills. Because of the scientific significance of the fossil specimens recovered from the Conejo volcanics, this unit is assigned a high paleontological potential.

Conejo Volcanics (andesitic to dacitic) (of Topanga Group) (Tcab – middle Miocene): Andesite and dacite are extrusive volcanic rocks that are not conducive to the preservation of fossils. Therefore, the andesitic to dacitic unit of the Conejo volcanics has no paleontological potential.

Conejo Volcanics (chiefly basaltic) (of Topanga Group) (Tcob and Tcbb – middle Miocene): This unit is not mapped within the project area.

6.2 Regulatory Framework

Cultural and paleontological resources are limited, nonrenewable resources of scientific, cultural, and educational value and are afforded protection under federal and state laws and regulations. Because federal lands and agencies are not involved in this project, federal regulations are not included in this section. This study satisfies project requirements in accordance with state and local regulations. This analysis also complies with professional guidelines and significance criteria for paleontological resources as specified by the SVP (1995, 2010).

6.2.1 State Regulations

This section describes state regulations related to cultural and paleontological resources relevant to the Pure Water Project.

6.2.1.1 California Register of Historical Resources

The CRHR is a guide to cultural resources that must be considered when a government agency undertakes a discretionary action subject to CEQA. CRHR helps government agencies identify and evaluate California's historic resources and indicates which properties are to be protected, to the extent prudent and feasible, from substantial adverse change (Public Resources Code [PRC] Section 5024.1(a)). Resources listed in or eligible for listing in CRHR are to be considered during the CEQA process.

A cultural resource is evaluated under four CRHR criteria to determine its historic significance. For a resource to have historic significance, it must be in accordance with the one or more of the following criteria (as defined in PRC Section15064.5(a)(3)):

1) *Is associated with events that have made a significant contribution to the broad pattern of California's history and cultural heritage*
2) *Is associated with the lives of persons important in our past*
3) *Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values*
4) *Has yielded, or may be likely to yield, information important in prehistory or history*

Any resource that meets these criteria and retains sufficient historic integrity is considered a historical resource under CEQA.

In addition to meeting one or more of these criteria, CRHR requires that sufficient time must have passed to allow a "…scholarly perspective on the events or individuals associated with the resource"; 50 years is used as a general estimate of the time needed to understand the historic importance of a resource

(14(11.5) CCR 4852(d)(2)). The Office of Historic Preservation recommends documenting, and considering during the planning process, any cultural resource that is 45 years or older.

CRHR also requires a resource to possess integrity, which is defined as "…the authenticity of a historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance." Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association. Resources that are significant, meet the age guidelines, and possess integrity would generally be considered eligible for listing in the CRHR.

6.2.1.2 California Public Resources Code Section 21083.2

PRC Section 21083.2 describes the CEQA requirements for evaluating whether a project may have a significant effect on archaeological or paleontological resources. CEQA defines a "unique archaeological resource" as an archaeological artifact, object, or site that clearly demonstrates that, without merely adding to the current body of knowledge, there is a high probability that it meets one or more of the following criteria:

- Contains information needed to answer important scientific research questions, and there is a demonstrable public interest in that information
- Has a special and particular quality, such as being the oldest of its type or the best available example of its type
- Is directly associated with a scientifically recognized important prehistoric or historic event or person

CEQA further defines a "historical resource" as a resource that meets any of the following criteria:

- Is listed in, or determined to be eligible for listing in, the CRHR
- Is listed in a local register of historical resources, as defined in PRC Section 5020.1(k)
- Is identified as significant (for example, rated 1 through 5) in a historical resource survey that meets the requirements of PRC Section 5024.1(g)
- Is determined to be a historical resource by a project's lead agency

Any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered a historical resource.

If the cultural resource in question is an archaeological site, CEQA requires that the lead agency first determine whether the site is a historical resource, as defined in 14(3) CCR 15064.5(a). If the archaeological site qualifies as a historical resource, potential adverse impacts must be considered in the same manner as for a documented historical resource. If the archaeological site does not qualify as a historical resource but does qualify as a unique archaeological site, then the archaeological site is treated in accordance with PRC Section 21083.2.

According to PRC Section 21083.2, if an impact on a historic or unique archaeological resource is significant, CEQA requires feasible measures to minimize the impact. Mitigation of significant impacts must lessen or eliminate the physical impact that a project would have on the resource. Generally, the use of drawings, photographs, or displays does not mitigate the physical impact on the environment caused by demolition or destruction of a historic resource. However, CEQA requires that all feasible mitigation be undertaken even if it does not mitigate impacts to less than significant.

CEQA Guidelines Section 15064.5(e) requires that excavation activities be stopped when human remains are uncovered and that the county coroner assess the remains. If the coroner determines that the remains are those of Native Americans, the Native American Heritage Commission must be contacted within 24 hours. The lead agency must consult with the appropriate Native Americans, if any, identified by the Native American Heritage Commission in a timely manner.

For paleontological resources, Appendix G, Section VII(f) of the CEQA Guidelines, states that lead agencies are directed to consider whether the project would "…directly or indirectly destroy a unique paleontological resource, or site, or unique geological feature…" when assessing the potential environmental impacts of a project. An impact to paleontological resources would be considered significant if a project could result in the direct or indirect destruction of a unique paleontological resource or site. A paleontological resource or site is deemed unique if it contains (SVP 2010):

- Identifiable vertebrate fossils, large or small
- Uncommon invertebrate, plant, or trace fossils
- Other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, or biochronologic information

6.2.1.3 California Public Resources Code Section 5097.5

Requirements for paleontological resource management are included in PRC Section 5097.5, which states the following:

> *No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.*

These statutes prohibit the removal, without permission, of any paleontological site or feature from lands under the jurisdiction of the state or any city, county, district, authority, or public corporation, or any agency thereof. As a result, local agencies are required to comply with PRC Section 5097.5 for their own activities, including construction and maintenance, as well as for permit actions (for example, encroachment permits) undertaken by others. PRC Section 5097.5 also establishes the removal of paleontological resources as a misdemeanor and requires reasonable mitigation of adverse impacts to paleontological resources from developments on public (state, county, city, and district) lands.

6.2.1.4 California Health and Safety Code

Section 7050.5(b) of the California Health and Safety Code specifies the protocol when human remains are discovered:

> *In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27492 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code.*

6.2.2 General Plans – Policies and Guidance

Policies and guidance related to cultural and paleontological resources found in sections of each general plan are discussed in this section.

6.2.2.1 City of Agoura Hills

Table 6-4 provides the cultural and paleontological goals and policies established by the *City of Agoura Hills General Plan* (City of Agoura Hills 2010b) and the Agoura Hills Code of Ordinances that are applicable to the project.

Table 6-4. City of Agoura Hills Cultural Goals and Policies

Goal or Policy Name	Goal or Policy Language[a]
General Plan	
Policy HR-1	Requires the maintenance and protection of significant historic and prehistoric resources.
Policy HR-3	Requires that significant archaeological or paleontological resources be preserved in situ when feasible. Mitigation is required in all other instances, including coordination of recognized Chumash representatives.
Agoura Hills Code of Ordinances	
Article IX, Chapter 4, Parts 8 and 9	Requires proposed projects be compatible with the natural and cultural resources of the area.
Article IX, Chapter 6	Applicant for a conditional use permit has the burden of proof for such compatibility. Paleontological resources are considered a natural resource.

Source: City of Agoura Hills 2010b, 2021

6.2.2.2 City of Westlake Village

Table 6-5 provides the cultural and paleontological goals and policies established by the *City of Westlake Village General Plan* (City of Westlake Village 2019a) that are applicable to the project.

Table 6-5. City of Westlake Village Cultural Goals and Policies

Goal or Policy Name	Goal or Policy Language[a]
Goal 12	Identifies a Cultural Reconnaissance Area Overlay as a Special Natural or Cultural area. The area is intended to preserve, where feasible, sites of archaeological and historic significance or the information they contain where site preservation is not possible. As part of any development proposal for property located within or adjacent to a designated Cultural Reconnaissance Area, an intensive, systematic surface reconnaissance program conducted by a qualified archaeologist is required to identify and evaluate the impact of the proposed development and to recommend measures to mitigate such impacts.

Source: City of Westlake Village 2019a

6.2.2.3 City of Thousand Oaks

Table 6-6 provides the cultural and paleontological goals and policies established by the City of Thousand Oaks Municipal Code that are applicable to the project.

Table 6-6. City of Thousand Oaks Cultural Goals and Policies

Goal or Policy Name	Goal or Policy Language[a]
Chapter 3, Section 7-3.09	Establishes permit limitations and conditions relating to archaeological, paleontological, and historic sites during ground-disturbing activities.
Chapter 9	Establishes the Thousand Oaks Cultural Heritage Board; defines landmarks and points of historic interest; and requires that any property owner intending to demolish, relocate, remove, or alter a landmark or point of historic interest obtain a Certificate of Appropriateness.
Chapter 14	Outlines steps required by developers to contact the City if archaeological resources are identified on a project during excavation.

6.2.2.4 Ventura County

Table 6-7 provides the cultural and paleontological goals and policies established by the *Ventura County 2040 General Plan* (Ventura County 2020) that are applicable to the project.

Table 6-7. Ventura County Cultural Goals and Policies

Goal or Policy Name	Goal or Policy Language[a]
Section 6.4	
COS-4.1	*The County shall maintain an inventory of tribal, cultural, historical, paleontological, and archaeological resources in Ventura County based on project studies and secondary resources,*
COS-4.2	*Enhance cooperation with cities, special districts, other appropriate organizations, and private landowners in acknowledging and preserving the County's paleontological and cultural resources. Engage in consultation with Native American tribes on discretionary projects.*
COS-4.3	*All structures and sites that are designated, or eligible for designation, as County Historical Landmarks to be preserved as a condition of discretionary development, in accordance with the Secretary of the Interior Standards, unless a structure is unsafe or deteriorated beyond repair.*
COS-4.4	*Discretionary development projects shall be assessed for potential tribal, cultural, historical, paleontological, and archaeological resources by a qualified professional and shall be designed to protect existing resources. Whenever possible, significant impacts shall be reduced to a less-than-significant level through the application of mitigation and/or extraction of maximum recoverable data. Priority shall be given to measures that avoid resources. Discretionary development will be designed or redesigned to avoid potential impacts to significant paleontological or cultural resources whenever possible. Unavoidable impacts, whenever possible, will be reduced to a less than significant level or will be mitigated by extracting as much recoverable data as possible. Determinations of impacts, significance, and mitigation will be made by qualified archaeological (in consultation with recognized local Native American groups), and historical or paleontological consultants, depending on the type of resource in question.*
COS-4.5 and COS-4.6	*In all feasible circumstances, discretionary development to adaptively reuse architecturally or historically significant buildings if the original use of the structure is no longer feasible and the new use is allowed by the underlying land use designation and zoning district shall be completed. Discretionary development shall also incorporate architectural designs and features that reflect the historical and cultural traditions characteristic to the area or community.*

Source: Ventura County 2020

6.3 Assessment Methods and Thresholds of Significance

Most of the project would be constructed in already disturbed areas. Therefore, data gathering was focused on (1) less-disturbed parcels where project features may be located and (2) areas with previously identified cultural resources. Per the CEQA Guidelines, impacts on cultural or paleontological resources may occur if the project would result in the following:

- *A substantial adverse change in the significance of an archaeological resource, as defined in Section15064.5 of the CEQA Guidelines, or disturbance of any human remains, including those interred outside of formal cemeteries*
- *A substantial adverse change in the significance of a historical resource, as defined in Section15064.5 of the CEQA Guidelines*
- *Direct or indirect destruction of a unique paleontological resource or site or unique geologic feature*

6.4 Environmental Impacts

This section describes potential environmental impacts from the Pure Water Project related to cultural and paleontological resources.

6.4.1 Overview

Table 6-8 summarizes the potential impacts of the project on cultural and paleontological resources.

Table 6-8. Summary of Cultural and Paleontological Resources Impacts

Impact	Alternative 1 Agoura Road AWPF	Alternative 2 Reservoir AWPF	Pipelines
Impact 6-1: Archaeological Resources	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 6.2: Historic Structures or Buildings	No impact	No impact	No impact
Impact 6.3: Paleontological Resources	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation

6.4.2 Impact 6-1: Archaeological Resources

With mitigation, Impact 6-1 would result in less than significant impacts.

6.4.2.1 Alternative 1 Agoura Road Advanced Water Purification Facility

Background research through the CHRIS identified one cultural resource within the Alternative 1 Agoura Road AWPF site. P-19-000042, a lithic scatter, intersects the southern portion of the site. This resource was not relocated during the field survey. The survey did identify one cultural resource in the western portion of the site, consisting of power-transmission-related debris. The resource is not eligible for listing in the CRHR or considered a historical resource for CEQA because it lacks historic integrity to reflect a significant event, person, or distinctive engineering achievements; and there are no adequate data about the resource.

Therefore, no impacts to historic-era or prehistoric archaeological resources are expected to occur within for Alternative 1 Agoura Road AWPF. However, prehistoric archaeological resources are known to occur in the project area, as the records search demonstrated. Undisturbed subsurface archaeological deposits may be present in the area in general, particularly in areas of high and medium archaeological sensitivity zones, in locations where cultural resources have been previously identified, and where construction may occur in previously undisturbed soils or outside of existing ground disturbance. Therefore, there is the potential that archaeological resources could be found in undisturbed soils during construction activities, such as grading and excavation.

As a result, the following mitigation measure is recommended to address the potential for discovery of cultural resources. Implementation of *Mitigation Measure 6-1a, perform archaeological surveys prior to construction in high and medium archaeological sensitivity zones*, would support identification, avoidance, and mitigation of cultural resources for projects in zones of greater archaeological sensitivity. In addition, *Mitigation Measure 6-1b, halt construction if archaeological resources are discovered* would provide for avoidance, recovery, or other mitigation of unknown subsurface cultural resources encountered during project construction activities .

In addition, the construction contractor is required to follow California Health and Safety Code Section 7050.5(b), which specifies protocols if human remains are discovered.

With implementation of Mitigation Measure 6-1a and Mitigation Measure 6-1b, impacts of Alternative 1 Agoura Road AWPF on archaeological resources would be less than significant.

6.4.2.2 Alternative 2 Reservoir Advanced Water Purification Facility

Background research through the CHRIS identified one cultural resource within the Alternative 2 Reservoir AWPF site. P-19-001791, a lithic scatter, intersects the central northern edge of the site. The resource was not relocated during the field survey. The survey did not identify newly discovered cultural resources at the site.

Therefore, no impacts to historic-era or prehistoric archaeological resources are expected to occur for Alternative 2 Reservoir AWPF. However, prehistoric archaeological resources are known to occur in the general vicinity of the site, as the records search demonstrated; and undisturbed subsurface archaeological deposits may be present in the area in general, particularly in areas of high and medium archaeological sensitivity zones. Therefore, there is the potential that archaeological resources could be found in undisturbed soils during construction activities, such as grading and excavation.

As a result, the following mitigation measure is recommended to address the potential for discovery of cultural resources. Implementation of *Mitigation Measure 6-1a, perform archaeological surveys prior to construction in high and medium archaeological sensitivity zones* would support identification, avoidance, and mitigation of cultural resources for projects in zones of greater archaeological sensitivity. In addition, *Mitigation Measure 6-1b, halt construction if archaeological resources are discovered* would provide for avoidance, recovery, or other mitigation of unknown subsurface cultural resources encountered during project construction activities.

In addition, the construction contractor is required to follow California Health and Safety Code Section 7050.5(b), which specifies protocols if human remains are discovered.

With implementation of Mitigation Measure 6-1a and Mitigation Measure 6-1b, impacts of Alternative 2 Reservoir AWPF on archaeological resources would be less than significant.

6.4.2.3 Pipelines

Background research through the CHRIS identified 10 cultural resources within the pipeline alignment options footprint, consisting of 8 prehistoric resources, 1 historic-era resource, and 1 multicomponent resource (consisting of prehistoric and historic-era resources). Two of these resources overlap with unpaved portions of the pipeline alignments that were intensively surveyed; however, none of the resources were reidentified during the survey. No surface evidence was found of sites P-19-001352 and P-19-001069 that had previously been recommended for CRHR eligibility. Sites P-19-000186 and P-56-000261 previously recorded as possibly having human remains were not relocated during the survey effort either due to the previously recorded site locations being paved and developed.

While no resources were identified, prehistoric archaeological resources are known to occur in the general vicinity of the pipeline options, as the records search demonstrated; and undisturbed subsurface archaeological deposits may be present in the area in general, particularly in areas of high and medium archaeological sensitivity zones. Therefore, there is the potential that archaeological resources could be found in undisturbed soils during construction activities, such as grading and excavation.

As a result, the following mitigation measure is recommended to address the potential for discovery of cultural resources. Implementation of *Mitigation Measure 6-1a, perform archaeological surveys prior to construction in high and medium archaeological sensitivity zones* would support identification, avoidance, and mitigation of cultural resources for projects in zones of greater archaeological sensitivity. In addition, *Mitigation Measure 6-1b, halt construction if archaeological resources are discovered* would provide for avoidance, recovery, or other mitigation of unknown subsurface cultural resources encountered during project construction activities.

In addition, the construction contractor is required to follow California Health and Safety Code Section 7050.5(b), which specifies protocols if human remains are discovered.

With implementation of Mitigation Measure 6-1a and Mitigation Measure 6-1b, impacts of the pipelines on archaeological resources would be less than significant.

6.4.3 Impact 6-2: Historic Structures or Buildings

The construction of Alternative 1 Agoura Road AWPF, Alternative 2 Reservoir AWPF, and the pipeline options would not require the removal, alternation, or relocation of any standing structures more than 45 years old that may be considered historical resources. Therefore, there would be no impact .

6.4.4 Impact 6-3: Paleontological Resources

With mitigation, Impact 6-3 would result in less than significant impacts.

6.4.4.1 Alternative 1 Agoura Road Advanced Water Purification Facility

Scientifically important fossil remains have been recovered from geologic units mapped as Alluvium (Qal) and Terrace deposits (Qt) that underlie the Alternative 1 Agoura Road AWPF site. Consequently, these units have high paleontological potential. Ground-disturbing activities in these units have the potential to encounter scientifically important paleontological resources. For project areas underlain by geologic units with high potential for producing scientifically important paleontological resources, mitigation of potential adverse impacts resulting from construction-related ground disturbance is recommended.

The following mitigations are recommended:

- *Mitigation Measure 6-3a, prepare a Paleontological Resources Monitoring and Mitigation Plan (PRMMP)* would include site-specific impact mitigation recommendations, and specific procedures to follow for construction monitoring and fossil discovery in areas underlain by geologic units with high paleontological potential.
- *Mitigation Measure 6-3b, halt construction if paleontological resources are discovered* would provide for avoidance, recovery, or other mitigation of paleontological resources encountered during project construction activities where a paleontological monitor is not present.
- *Mitigation Measure 6-3c, prepare a Paleontological Resources Worker Environmental Awareness Training (WEAT) Program* would train construction personnel regarding the recognition of possible buried paleontological resources, protection of paleontological resources during construction, and the procedures to be followed if paleontological resources are encountered. Personnel will be instructed that unauthorized collection or disturbance of fossils is unlawful.

With implementation of Mitigation Measure 6-3a, Mitigation Measure 6-3b, and Mitigation Measure 6-3c, impacts from Alternative 1 Agoura Road AWPF on paleontological resources would be less than significant.

6.4.4.2 Alternative 2 Reservoir Advanced Water Purification Facility

Scientifically important fossil remains have been recovered from geologic units mapped as Alluvium (Qal) and Conejo volcanics (Tc) that underlie the Alternative 2 Reservoir AWPF site. Consequently, these units have high paleontological potential. Ground-disturbing activities in these units have the potential to encounter scientifically important paleontological resources. For project areas underlain by geologic units with high potential for producing scientifically important paleontological resources, mitigation of potential adverse impacts resulting from construction-related ground disturbance is recommended.

The following mitigations are recommended:

- *Mitigation Measure 6-3a, Prepare a PRMMP* would include site-specific impact mitigation recommendations, and specific procedures to follow for construction monitoring and fossil discovery in areas underlain by geologic units with high paleontological potential.
- *Mitigation Measure 6-3b, Halt construction if paleontological resources are discovered* would provide for avoidance, recovery, or other mitigation of paleontological resources encountered during project construction activities where a paleontological monitor is not present.
- *Mitigation Measure 6-3c, Prepare a Paleontological Resources WEAT Program* would train construction personnel regarding the recognition of possible buried paleontological resources, protection of paleontological resources during construction, and the procedures to be followed if paleontological resources are encountered. Personnel will be instructed that unauthorized collection or disturbance of fossils is unlawful.

With implementation of Mitigation Measure 6-3a, Mitigation Measure 6-3b, and Mitigation Measure 6-3c, impacts from Alternative 2 Reservoir AWPF on paleontological resources would be less than significant.

6.4.4.3 Pipelines

Scientifically important fossil remains have been recovered from the following mapped geologic units that underlie all pipelines:

- Alluvium (Qal and Qu)
- Terrace deposits (Qt)
- Older Alluvium (Qoa and Qao)
- Monterey Formation (lower) (Tml)
- Monterey Formation (Tm)
- Conejo volcanics (Tco and Tc)
- Topanga Canyon Formation (Ttcu)
- Upper Topanga Formation (Ttuc)

Consequently, these units have high paleontological potential. Ground-disturbing activities in these units have the potential to encounter scientifically important paleontological resources. For project areas underlain by geologic units with high potential for producing scientifically important paleontological resources, mitigation of potential adverse impacts resulting from construction-related ground disturbance is recommended.

The following mitigations are recommended:

- *Mitigation Measure 6-3a, Prepare a PRMMP* would include site-specific impact mitigation recommendations, and specific procedures to follow for construction monitoring and fossil discovery in areas underlain by geologic units with high paleontological potential.

- *Mitigation Measure 6-3b, Halt construction if paleontological resources are discovered* would provide for avoidance, recovery, or other mitigation of paleontological resources encountered during project construction activities where a paleontological monitor is not present.
- *Mitigation Measure 6-3c, Prepare a Paleontological Resources WEAT Program* would train construction personnel regarding the recognition of possible buried paleontological resources, protection of paleontological resources during construction, and the procedures to be followed if paleontological resources are encountered. Personnel will be instructed that unauthorized collection or disturbance of fossils is unlawful.

With implementation of Mitigation Measure 6-3a, Mitigation Measure 6-3b, and Mitigation Measure 6-3c, impacts of the pipelines on paleontological resources would be less than significant.

6.5 Mitigation Measures

The Pure Water Project would have potentially significant impacts to archaeological and paleontological resources. Implementation of Mitigation Measures 6-1 through 6-3 would reduce these impacts to less than significant.

Mitigation Measure 6-1a, Perform archaeological survey prior to construction in high and medium archaeological sensitivity zones. Prior to construction, the JPA will determine whether the project is located within a high or medium archaeological sensitivity zone. If the project site is determined to be in a high or medium archaeological sensitivity zone, a qualified archaeologist will perform an archaeological investigation at the site if it has not been surveyed. Subsurface testing, including hand-augured borings and excavated test pits, may be recommended by the archaeologist. The archaeologist will analyze gathered data in relation to the detailed project construction plans. The findings of the investigation will be submitted for JPA review and approval. This report will include an evaluation of the "uniqueness" of all finds, anticipated project-related impacts, and recommendations for mitigating impacts.

Mitigation Measure 6-1b, Halt construction if archaeological resources are discovered. In the event archaeological resources are discovered, the construction contractor will be responsible for halting construction activities, notifying the JPA, and retaining a qualified archaeologist. The archaeologist will evaluate the uniqueness of the find, contact local Native American and historical organizations, and recommend a course of action. The construction contractor will receive training regarding the identification of cultural resources by a qualified archaeologist prior to the start of construction activities.

Mitigation Measure 6-3a, Prepare a PRMMP. Prior to construction, a PRMMP will be developed to reduce potential impacts to paleontological resources. The PRMMP will be prepared by a professional paleontologist and will meet SVP criteria (2010). The PRMMP will:

- Identify construction impact areas where significant paleontological resources may be encountered and the depths at which those resources are likely to be discovered
- Stipulate the location and frequency of monitoring and other appropriate procedures
- Describe the significance criteria to be used to determine which resources will be recovered for their data potential, as well as the coordination strategy to conduct adequate monitoring
- Describe methods of recovery
- Provide procedures for postexcavation preparation and analysis of specimens
- Document the final curation of specimens at an accredited facility
- Describe data analysis methods
- Describe reporting requirements

The PRMMP will specify that all paleontological work will be conducted by qualified professionals meeting the SVP criteria (2010) so that encountered resources will be quickly and professionally recovered while not impeding project construction. At the end of the monitoring effort, a Paleontological Monitoring Report will be prepared by the professional paleontologist to document the results of monitoring.

Mitigation Measure 6-3b, Halt construction if paleontological resources are discovered. Should any paleontological resources (for example, fossils) be encountered during construction activities when a paleontological monitor is not present, work will be halted immediately within 50 feet of the discovery. The project paleontologist will determine the significance of the discovery, evaluate the uniqueness of the find, and prepare a written report documenting the find and recommending further courses of action. Depending on the significance of the discovery, the actions may include avoidance, excavation, documentation, recovery, or other measures determined by the paleontologist. Because proper excavation and removal of paleontological resources do not lessen the scientific value of the resources, recovery is the recommended method of reducing impacts to scientifically important paleontological resources resulting from project-related excavations and would reduce impacts to less than significant.

Mitigation Measure 6-3c, Prepare a Paleontological Resources WEAT Program. Because ground disturbance is associated with some risk of encountering previously undiscovered paleontological resources, prior to the initiation of construction or ground-disturbing activities, a WEAT module for paleontological resources will be prepared by a qualified professional paleontologist, as defined by the SVP (2010). Construction personnel will be trained via the WEAT module regarding the following activities:

- Recognition of possible buried paleontological resources
- Protection of paleontological resources during construction
- Coordination between construction staff and paleontological staff
- Construction and paleontological staff roles and responsibilities in implementing the PRMMP
- Procedures to be followed if paleontological resources are encountered

Personnel will be instructed that unauthorized collection or disturbance of fossils is unlawful. Training materials and formats may include in-person training, prerecorded videos, posters, and informational brochures. Upon completion of WEAT training, the contractor would require workers to sign a form stating that they attended the training and understand and will comply with the information presented.

7. Energy

This chapter evaluates the potential for the Pure Water Project to efficiently use energy resources and comply with plans for energy efficiency and energy conservation.

7.1 Existing Setting

The Las Virgenes MWD and Triunfo WSD operate energy-intensive facilities to move and treat drinking water, recycled water, and wastewater throughout their service areas. The highest energy-using drinking water facilities reported by the Las Virgenes MWD are as follows (Las Virgenes MWD 2021):

- Seminole Pump Station – 690,814 kilowatt-hours (kWh)
- Warner Pump Station – 551,764 kWh
- Cornell Pump Station – 537,992 kWh
- Westlake Pump Station – 472,213 kWh
- Jed Smith Pump Station – 428,618 kWh
- Westlake Filtration Plant – 404,256 kWh

Total energy use by Las Virgenes MWD drinking water facilities in 2018 was 3,972,817 kWh (Las Virgenes MWD 2021). Based on total water deliveries in 2018 of 20,506 AF, the estimated energy intensity of the local delivery system is 194 kilowatt-hours per acre-foot (kWh/AF). Energy use by the recycled water system and by Triunfo WSD facilities, including the Tapia WRF, is not available.

At this time, all power required to operate Las Virgenes MWD and Triunfo WSD facilities is provided by the regional power agency Southern California Edison (SoCal Edison). A portion of these demands is offset by a solar power generating facility located at the Las Virgenes MWD headquarters, which is designed to generate peak power of approximately 5 megawatts (MW). The solar generating facility helps offset power use by the recycled water pump station located at the headquarters site.

7.2 Regulatory Framework

This section describes the laws and regulations affecting energy use, focusing on California requirements and local agency goals and policies. There are no federal regulations for energy use that are directly applicable to the Pure Water Project.

7.2.1 State Regulations

This section discusses state regulations directly applicable to energy use and efficiency. State regulations addressing climate change also include energy efficiency goals so are applicable as well. Climate change regulations are discussed in Chapter 9, Greenhouse Gas Emissions.

7.2.1.1 Building Energy Efficiency Standards

State of California standards for building energy efficiency are primarily in 24 CCR 6, commonly known as the Title 24 standards. The California Energy Commission updates these standards every 3 years – the current version is the *2022 Building Energy Efficiency Standards* (California Energy Commission 2022a). The Title 24 standards require an energy budget in terms of energy consumption per square foot of floor space, to be determined either by a prescriptive method of following known best practices or a performance method allowing for innovation in design as long as energy use is as efficient as the prescriptive method.

Title 24 standards are adaptable based on climate zone and building type:

- All Pure Water Project facilities would be in Climate Zone 9 (California Energy Commission 2022b).
- Preliminary design work by the JPA has determined that the AWPF and pump station facilities would be nonresidential buildings of the following occupancy types:
  - Industrial/Manufacturing Facility Building: Most AWPF and pump station building areas
  - Office Building: Office space areas for the plant operators

7.2.1.2 Green Building Standards

In addition to the 24 CCR 6 standards for building energy efficiency, the State of California also has established Green Building Standards pursuant to Title 24 CCR Part 11. The California Building Standards Commission updates these standards every 3 years – the current version is the *2022 California Green Building Standards* (California Building Standards Commission 2022). The Green Building Standards include mandatory and voluntary standards for:

- Energy efficiency
- Water efficiency and conservation
- Material conservation and resource recovery
- Environmental quality

For nonresidential development such as the Pure Water Project facilities, Green Building Standards mandatory measures include:

- Site design for stormwater pollution prevention (Chapter 11, Hydrology and Water Quality provides additional discussion)
- Provision for bicycle parking, preferred clean air vehicle and high-occupancy vehicle parking, and electric vehicle charging stations
- Light pollution reduction (Chapter 3, Aesthetics provides additional discussion)
- Use of shade trees in site landscaping
- Weather protection and moisture control
- Pollutant control in finish materials, such as adhesives, seals, and caulks; painting and coatings; and carpet systems
- Acoustical control in walls, ceilings, and windows

The Green Building Standards include many options for additional voluntary measures. Voluntary standards applicable to Pure Water Project facilities include:

- Site preservation to reduce the development footprint and optimize open space
- Low-impact development standards to control stormwater runoff (Chapter 11, Hydrology and Water Quality provides additional discussion)
- Exterior wall shading, including vegetative shade
- Light-colored hardscape features and cool roofs
- Onsite renewable energy generation, such as solar panels
- Use of locally or regionally sourced and bio-based building materials, reused materials, materials with a high recycled content, and materials with good longevity and recyclability

The Green Building Standards include voluntary tiers to further encourage building practices that improve public health, safety, and the general welfare by promoting the use of building concepts that minimize the building's impact on the environment and promote a more sustainable design (California Building Standards Commission 2019). The two voluntary tiers are:

- Tier 1: Comply with Savings by Design modeling procedures, specifically the *Savings By Design Healthcare Modeling Procedures* (EnergySoft 2009).
- Tier 2. Exceed the Savings by Design modeling procedures by a minimum of 15%.

7.2.2 Local Regulations

Pure Water Project operational facilities would be located within Agoura Hills and Westlake Village. Policies and guidance related to energy found in sections of each general plan are discussed in this section. Because no operational facilities (only pipelines) would be located within Thousand Oaks or in unincorporated Ventura County, no local regulations for energy use apply.

7.2.2.1 City of Agoura Hills

This section describes City of Agoura Hills regulations relevant to the project.

General Plan

Table 7-1 provides the energy goals and policies established by the *City of Agoura Hills General Plan* (City of Agoura Hills 2010b) that are applicable to the project.

Table 7-1. City of Agoura Hills Energy Goals and Policies

Goal or Policy Name	Goal or Policy Language
Goal U-5: Energy Provision and Conservation	*This goal is intended to ensure adequate, efficient, and environmentally sensitive energy service for all residents and businesses.*
Policy U-5.1: New Development Requirements	*New Development Requirements. Require that new development be approved contingent upon its ability to be served by adequate natural gas and electrical facilities and infrastructure.*
Policy U-5.3: Solar Access	*Ensure that sites, landscaping, and buildings are configured and designed to maximize and protect solar access.*
Policy U-5.7: Solar Panels in Projects	*Provide incentives for use of solar energy in new development.*
Goal NR-9: Energy Conservation	*This goal is intended to ensure affordable, reliable, and sustainable energy resources residents and businesses.*
Policy NR-9.1: Public Outreach	*Promote energy conservation measures and options to all residences, businesses, contractors, and consultants.*

Source: City of Agoura Hills 2010b

Climate Action and Adaptation Plan

Table 7-2 provides the energy goals and policies established by the *Climate Action and Adaptation Plan* (City of Agoura Hills 2022a) that are applicable to the project.

Table 7-2. City of Agoura Hills Additional Energy Goals

Goal Name	Goal Language
Climate Action and Adaptation Plan Goal 4: Increase Energy Efficiency in New Commercial Units	*Educate city staff and developers on future Title 24 updates and additional energy efficiency opportunities for new, nonresidential development* *Promote Tier 1 and Tier 2 Green Building ratings, such as the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) (2022) or Build it Green certification (builditgreen.org 2022)* *Develop City of Agoura Hills staff to be resources in implementing energy efficiency to exceed current 24 CCR 6 standards and to ensure that staff can implement Title 24 updates quickly and effectively*

Source: City of Agoura Hills 2022a

7.2.2.2 City of Westlake Village

Table 7-3 provides the energy goals and policies established by the *City of Westlake Village General Plan* (City of Westlake Village 2019a) that are applicable to the project.

Table 7-3. City of Westlake Village Energy Goals and Policies

Goal or Policy Name	Goal or Policy Language
Scare Resources Goal	*It shall be the goal of the City of Westlake Village to work to protect the limited number of resources available to the City of Westlake Village.*
Objective 1	*Protect the limited resources available to the city while promoting conservation and innovative planning.*

Source: City of Westlake Village 2019a

7.3 Assessment Methods and Thresholds of Significance

Potential energy impacts were evaluated according to the CEQA Guidelines (CCR, Section 15000, et seq.). Energy impacts may occur if the Pure Water Project would result in the following:

- A potentially significant environmental impact due to wasteful inefficient or unnecessary consumption of energy resources during project construction or operation
- A conflict with or obstruction of a state or local plan for renewable energy or energy efficiency

7.4 Environmental Impacts

Table 7-4 summarizes potential energy impacts.

Table 7-4. Summary of Energy Impacts

Impact	Alternative 1 Agoura Road AWPF	Alternative 1 Reservoir AWPF	Pipelines
Impact 7-1: Wasteful, inefficient, or unnecessary energy consumption	Less than significant	Less than significant	Less than significant
Impact 7-2: Policy consistency (renewable energy or energy efficiency)	Less than significant	Less than significant	Less than significant

7.4.1 Impact 7-1: Wasteful, Inefficient, or Unnecessary Energy Consumption

Pure Water Project construction work requires the consumption of energy resources, including fossil fuels. This consumption of energy is necessary to construct the project features, including the AWPF, pipelines, and related facilities. Although construction activities would consume energy, the construction contractors would manage fuel costs; therefore, fuel consumption would not be wasteful or inefficient.

Project operation would result in the consumption of energy resources, including the use of fossil fuels, for activities such as water purification and pumping. These operational activities are similar in nature to current operations; however, overall power use would increase. Primarily, the membrane filtration and RO units are expected to require an annual energy use of approximately 6–7 million kWh when the AWPF is operational. This energy use is necessary to operate the water purification process, and the JPA would manage energy costs; therefore, energy consumption would not be wasteful or inefficient.

The AWPF is being designed to be solar-ready, consistent with Green Building Standards. In addition, local water purification would offset the energy use needed for the California Department of Water Resources to export Northern California water and for Metropolitan to deliver drinking water to Las Virgenes Reservoir.

For these reasons, the impact would be less than significant.

7.4.2 Impact 7-2: Policy Consistency (Renewable Energy or Energy Efficiency)

Policies applicable to Pure Water Project energy use are the 24 CCR 6 Building Energy Efficiency Standards and the 24 CCR 11 Green Building Standards. In addition, compliance with these standards is locally encouraged by the *City of Agoura Hills General Plan* and *Climate Action and Adaptation Plan* and the *City of Westlake Village General Plan*. Pure Water Project facilities must be designed to meet the Building Energy Efficiency Standards; therefore, a Title 24-compliant energy budget would be prepared during final design.

Based on site development and architectural design to date, several of the Green Building Standards' mandatory measures are included, including stormwater pollution prevention and shade trees. Additional mandatory measures would be added during final design. In addition, the site plan has been developed to reduce the development footprint and optimize open space, which are both voluntary Green Building Standard measures. Additional voluntary measures may be added during final design.

For these reasons, the Pure Water Project would be consistent with state and local plans for renewable energy and energy efficiency, and the impact would be less than significant.

7.5 Mitigation Measures

Impacts 7-1 and 7-2 would be less than significant; therefore, no mitigation is needed.

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8. Geology and Soils

This chapter identifies and evaluates the potential impacts of the project on geology, seismicity, and soil resources and includes the following information:

- Local topography, geology, seismicity, and soil resources
- Applicable state, local, and regional plans and programs, objectives, and policies
- Potential impacts related to geology and soils
- Proposed mitigation measures to reduce potentially significant impacts

8.1 Existing Setting

This section describes the geology and topography, earthquake fault-ruptures and seismic hazards, and soils within areas that would potentially be affected by proposed alternatives considered for the Pure Water Project.

8.1.1 Geology and Topography

The project is located within the cities of Agoura Hills, Westlake Village, and Thousand Oaks, and in unincorporated Ventura County, California. Regionally, the Pure Water Project is located north of the Santa Monica Mountains. The project area is within the Southern California Transverse Ranges geomorphic province and is characterized by a system of east–west trending valleys, folds, faults, and mountain ranges. Elevations within the project area range between approximately 220 and 1,070 feet above mean sea level (Esri 2021).

The project area is generally underlain by rocks of the Cenozoic geologic era. Figure 8-1 shows the geologic units found along the proposed pipeline alignments and AWPF alternatives. Quaternary age surficial sediments primarily consist of alluvium (unconsolidated to weekly consolidated sand, clay, and gravel) and are found within valleys and low-lying areas. Sedimentary rocks of the Miocene-aged Modelo and Monterey Formations are present in the project area and generally consist of shale and siltstone.

Sedimentary and igneous rocks of the Topanga Formation are also present in the project area and include primarily clay shale and siltstone, and Conejo Volcanics (volcanic rocks) of the Topanga Group (Dibblee and Ehrenspeck 1990, 1992, 1993; Yerkes and Showalter 1991, 1993; Yerkes and Campbell 1995a, 1995b, 1997a, 1997b). Table 6-1 provides additional descriptions of geologic units found within the project area.

The Alternative 1 Agoura Road AWPF site terrain consists of gentle hills and gullies (generally inclined at 3H:1V to 5H:1V [where H:V is horizontal to vertical]), with elevations that range from approximately 955 feet above sea level at the northern portion of the site to 1,030 feet above sea level at the southern portion of the site. The hillside steepens significantly to the south, where slopes steeper than 2H:1V are present. The Agoura Road embankment fill slope descends to the northern end of the site. The fill slope appears to be inclined at 2H:1V and on the order of 5 to 15 feet tall.

The Alternative 2 Reservoir AWPF site area was formerly mountainous ridgetop and saddle-type terrain. However, the site area is currently relatively flat at an elevation of roughly 1,065 feet. The site is the former Borrow Area No. 3 of the Las Virgenes Reservoir project (Wahler 1969, 1970). Based on the elevation of 1,065 feet and original topography from the reservoir site investigation (Wahler 1970), the borrow activities resulted in cuts on the order of 75 to 95 feet deep at the site.

With the exception of the concentrate pipeline alignment’s open space hillside areas in the northwestern project area, and east of Las Virgenes Reservoir, the pipelines are primarily planned beneath existing streets with variable grades. Outside of city streets, pipelines are generally planned beneath existing (dirt) fire roads and trails with variable grades.

8.1.2 Earthquake Faults

Southern California is in a seismically active region, and areas underlain by active faults are at risk of ground rupture from movement of the earth's crust along the fault (USGS 2020). Faults designated as active faults under the Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) have a higher potential for ground surface rupture during an earthquake event. This designation indicates the faulting has resulted in surface offsets in Holocene time (approximately within the last 12,000 years), and the fault's location is well defined (California Department of Conservation 2018).

Although the State of California has not prepared an official Alquist-Priolo Earthquake Fault Zone Map for the Thousand Oaks quadrangle (California Department of Conservation 2018), no known Holocene or Quaternary-aged faults are mapped adjacent to or crossing either the Alternative 1 Agoura Road or Alternative 2 Reservoir AWPF sites (USGS 2020; Campbell et al. 2014).

As shown on Figure 8-2, an undifferentiated Quaternary-aged fault crosses the concentrate pipeline options, mapped as two splays of the Sycamore Canyon fault (USGS 2020). These fault splays are mapped as being concealed by late to middle Pleistocene aged (between 12,000 and 2 million years old) Old Alluvium in the 2014 geologic map prepared for the area (Campbell et al. 2014). Because these splays are concealed by pre-Holocene aged soil, they would not be considered "active" per the Alquist-Priolo Act.

The closest mapped active fault to the project area is the Simi-Santa Rosa fault zone, mapped north of the northern end of the concentrate conveyance near Santa Rosa Road (USGS 2020). The concentrate alignment terminus is planned just south of the southern limit of the Alquist-Priolo Earthquake Fault Zone for the Simi-Santa Rosa Fault (California Department of Conservation 1999).

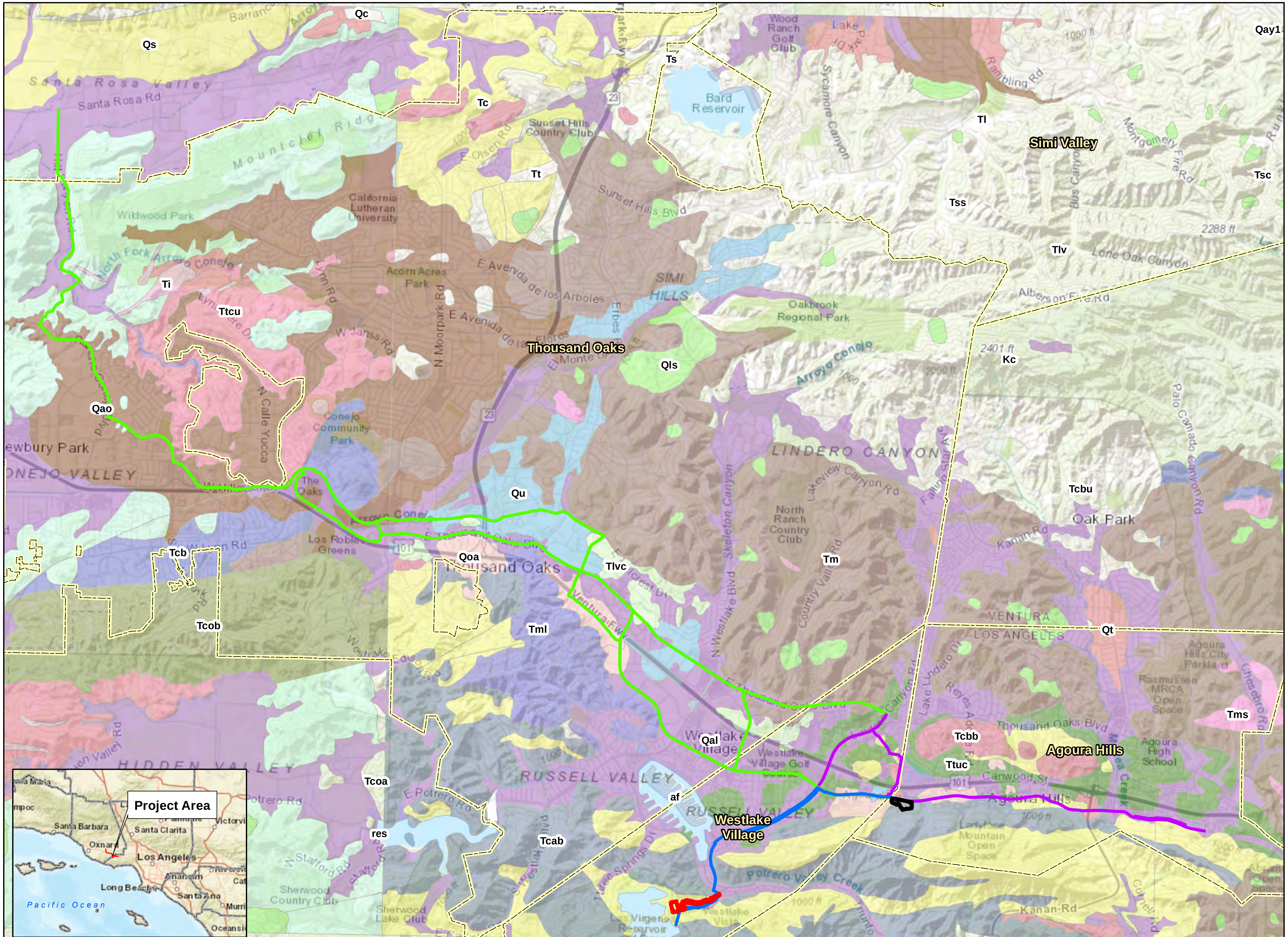
Geologic hazards that could potentially affect the project are described in the following sections. Figure 8-2 shows the locations of the mapped faults.

8.1.2.1 Ground Shaking

Ground shaking from earthquakes can cause extensive damage to property and people. Factors that determine the amount of damage caused from ground shaking are interrelated and include the following factors, among others:

- Magnitude and depth of the earthquake
- Distance from the fault
- Duration of shaking
- Type of bedrock and soils
- Topography

Southern California is subject to strong ground shaking during earthquakes (Figure 8-2). Over the last 100 years, 182 earthquakes (all with a magnitude less than 3.7) have been recorded within approximately 7 miles of the project (USGS 2022). There are no mapped active or potentially active faults underlying the project; however, because of its proximity to regional faults, the area could experience very strong intensity ground shaking during a large earthquake. As shown on Figure 8-2, the project area, where underlain by alluvial sediments, is at risk of higher potential shaking intensity versus those portions of the project area underlain by bedrock.



Legend

- Alternative 1 Agoura Road
- Alternative 2 Reservoir AWPF
- Concentrate Alignment Options
- Purified Water Alignment Options
- Source Water Alignment Options

USDA Soil Types

- af: artificial fill (Holocene)
- Tc: Conejo Volcanics (middle Miocene)
- Tcab: Conejo Volcanics (andesitic to dacitic) (middle Miocene)
- Tcb: Calabasas Formation (of Topanga Group) (middle Miocene)
- Tcbb: Conejo Volcanics (chiefly basaltic) (middle Miocene)
- Tco: Conejo Volcanics (of Topanga Group) (middle Miocene)
- Tcob: Conejo Volcanics (chiefly basaltic) (of Topanga Group) (middle Miocene)
- Ti: Intrusive Rocks (middle and upper Miocene)
- Tm: Modelo Formation (upper Miocene)
- Tml: Monterey Formation (lower) (middle Miocene)
- Tms: Modelo Formation (sandstone unit) (upper Miocene)
- Tlvc: Detritus derived from Conejo Volcanics (middle Miocene)
- Ttcu: Topanga Canyon Formation (of Topanga Group) (middle Miocene)
- Ttuc: Upper Topanga Formation (middle Miocene)
- Qal: Alluvium (Holocene and late Pleistocene)
- Qao: Older alluvium (Holocene and Pleistocene)
- Qoa: Older alluvium (Pleistocene)
- Qs: Saugus Formation (Pleistocene)
- Qt: Terrace deposits (Pleistocene)
- Qu: Alluvium, undivided (Pleistocene)
- Qls: Landslide deposits (Holocene and Pleistocene)

Sources:
USGS, 1991-1995; ESRI World Topo Map; ESRI World Street Map;

0 0.375 0.75 1.5
Miles
1 inch = 1 miles

FIGURE 8-1

Geology

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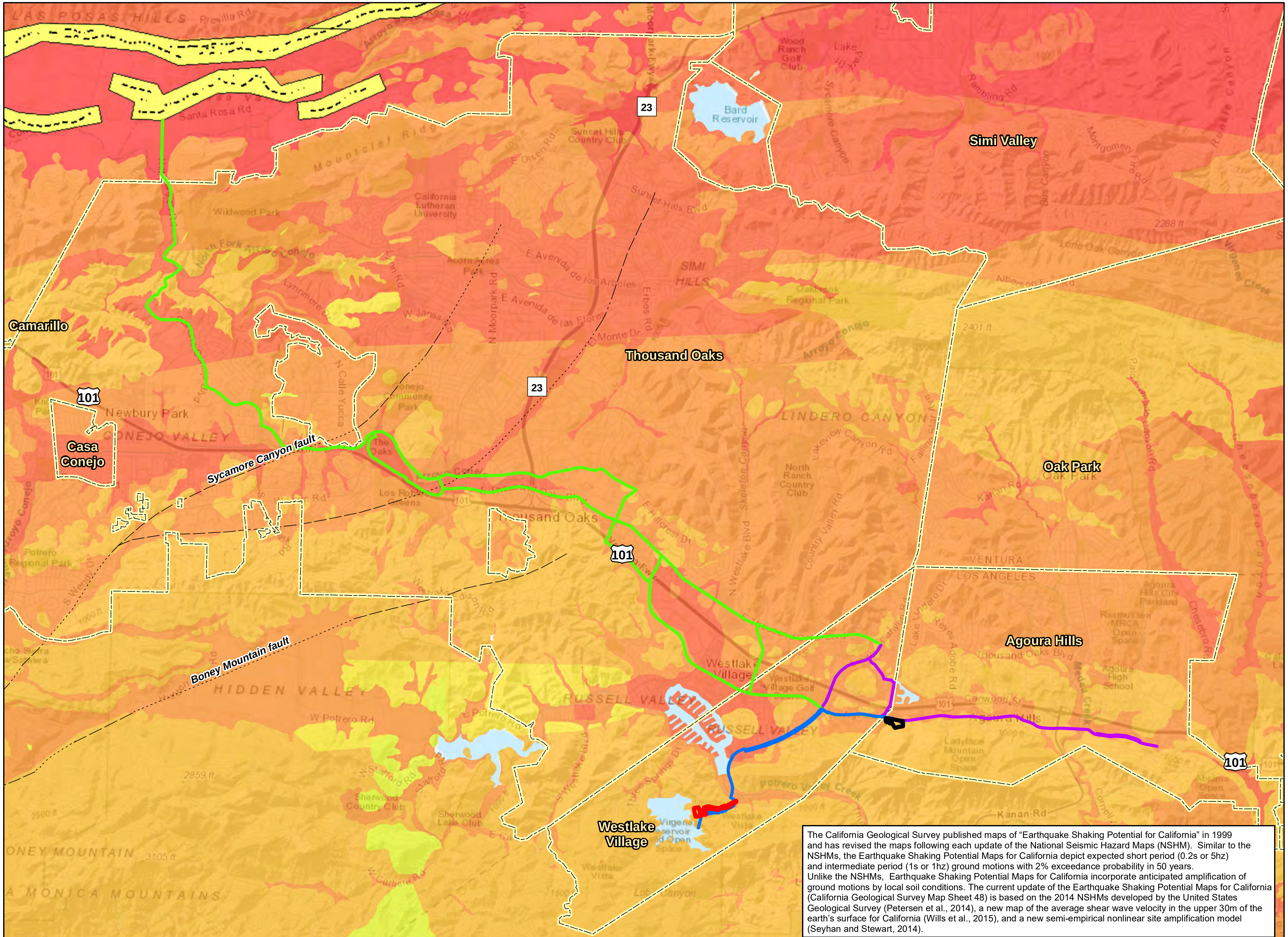


The California Geological Survey published maps of "Earthquake Shaking Potential for California" in 1999 and has revised the maps following each update of the National Seismic Hazard Maps (NSHM). Similar to the NSHMs, the Earthquake Shaking Potential Maps for California depict expected short period (0.2s or 5hz) and intermediate period (1s or 1hz) ground motions with 2% exceedance probability in 50 years.
Unlike the NSHMs, Earthquake Shaking Potential Maps for California incorporate anticipated amplification of ground motions by local soil conditions. The current update of the Earthquake Shaking Potential Maps for California (California Geological Survey Map Sheet 48) is based on the 2014 NSHMs developed by the United States Geological Survey (Petersen et al., 2014), a new map of the average shear wave velocity in the upper 30m of the earth's surface for California (Wills et al., 2015), and a new semi-empirical nonlinear site amplification model (Seyhan and Stewart, 2014).

Legend

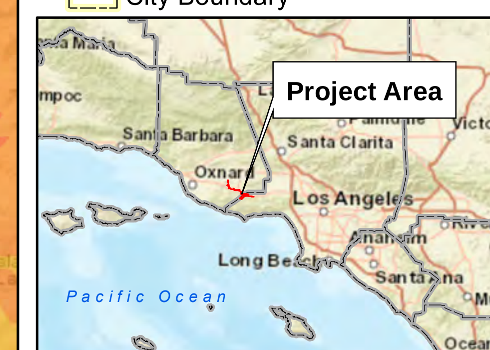
- Concentrate Alignment Options
- Purified Water Alignment Options
- Source Water Alignment Options
- Alternative 1 Agoura Road
- Alternative 2 Reservoir AWPF

Fault Traces

- Accurately Located
- Approximately Located
- Approximately Located, Queried
- Inferred
- Inferred, Queried
- Concealed
- Concealed, Queried
- Aerial Photo Lineament
- Alquist-Priolo Earthquake Fault Zone

Percent Shaking Relative to Gravity

- 100 - 110%
- 90 - 100%
- 80 - 90%
- 70 - 50%
- 60 - 70%
- 50 - 60%
- 40 - 50%
- City Boundary



Sources:
ESRI World Topo Map; ESRI World Street Map;
California Department of Conservation,
Downloaded March 2022;
Seismic Hazards Program, California Geological Survey,
California Department of Conservation,Seismic Hazard
Zones: Alquist-Priolo Fault Traces, 2021; D. Branum,
R. Chen, C. Wills (California Geological Survey);
M. Petersen (United States Geological Survey),
MS: Earthquake Shaking Potential for California, 2016

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Miles
1 inch = 1 miles

Figure 8-2

Shaking Intensity

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8.1.2.2 Landslides

Weak rocks and steep slopes are basic geologic characteristics that contribute to slope instability, including landslides. In susceptible areas, landslides can be triggered by earthquakes, high rainfall, weathering, or by human activities. Based on properties of geologic and soil units mapped within the project area (Table 6-1 and Figure 8-1), the two AWPF sites or conveyance pipelines, are not located in landslide hazard zones of required investigation (CGS 2000b, 2002b), as shown on Figure 8-3.

8.1.2.3 Liquefaction

Liquefaction is the transformation of saturated, unconsolidated material from a solid state to a liquid state because of increased pore pressure that reduces the material's strength. During liquefaction, soil becomes fluid-like and mobile, and permanent displacement of the ground can occur, resulting in damage to utilities and structures. Increased pore pressure in unconsolidated materials is caused by ground shaking during large earthquakes. Liquefaction can cause foundation failures in buildings and other facilities because of the reduction of foundation-bearing strength. The potential for liquefaction depends on the duration and intensity of earthquake shaking, particle size distribution of the soil, density of the soil, and groundwater elevation. Areas at risk of liquefaction typically have a high groundwater table with low- to medium-density sediments, particularly younger alluvium (CGS 2000a, 2002a).

Within the project area, the potential for liquefaction exists in local areas underlain by younger alluvium and historically shallow groundwater. Figure 8-3 shows the project areas with potential for liquefaction. Footprints of both Alternative 1 Agoura Road AWPF and Alternative 2 Reservoir AWPF are not located within mapped zones of required investigation for liquefaction. However, some sections of the pipelines are located within mapped zones of required investigation for liquefaction (CGS 2000b, 2002b).

8.1.2.4 Lateral Spreading

Lateral spreading is a ground failure that involves displacement of large blocks of ground moving down a gentle grade, typically toward a river or stream channel. The potential for lateral spreading is highest in areas underlain by soft, saturated, liquefiable materials, especially where bordered by a river or stream bank. There are sections of the pipeline located within mapped zones of required investigation for liquefaction potential, as shown on Figure 8-3. Those sections near a river or stream channel could be susceptible to lateral spreading.

8.1.3 Soils

The project area contains soil types that vary with landscape position (Figure 8-4). Soil types in the project area have physical properties that could impact design and construction. For Pure Water Project features, such limitations could include:

- Corrosive soils
- Erosion-prone soils
- Soils susceptible to shrink-swell behavior, collapse, or settlement under external loads

Settlement is typically a gradual drop in elevation of a ground surface caused by soils settling or compacting under the weight of fill material or building loads. Settlement may continue over a long period. The degree of settlement is primarily influenced by the following factors:

- Thickness of the settlement-prone soils
- Site history
- Characteristics of fill material
- Characteristics of building loads

Settlement is not always uniform; differential settlement is uneven, causing different parts of a structure to settle at different rates. Differential settlement could potentially occur in areas with nonuniform fill material and thickness due to nonuniform subgrade materials or uneven loading.

Erosion is the process whereby soil particles become detached and are transported by wind or water. Rates of erosion can vary, depending on several factors, including:

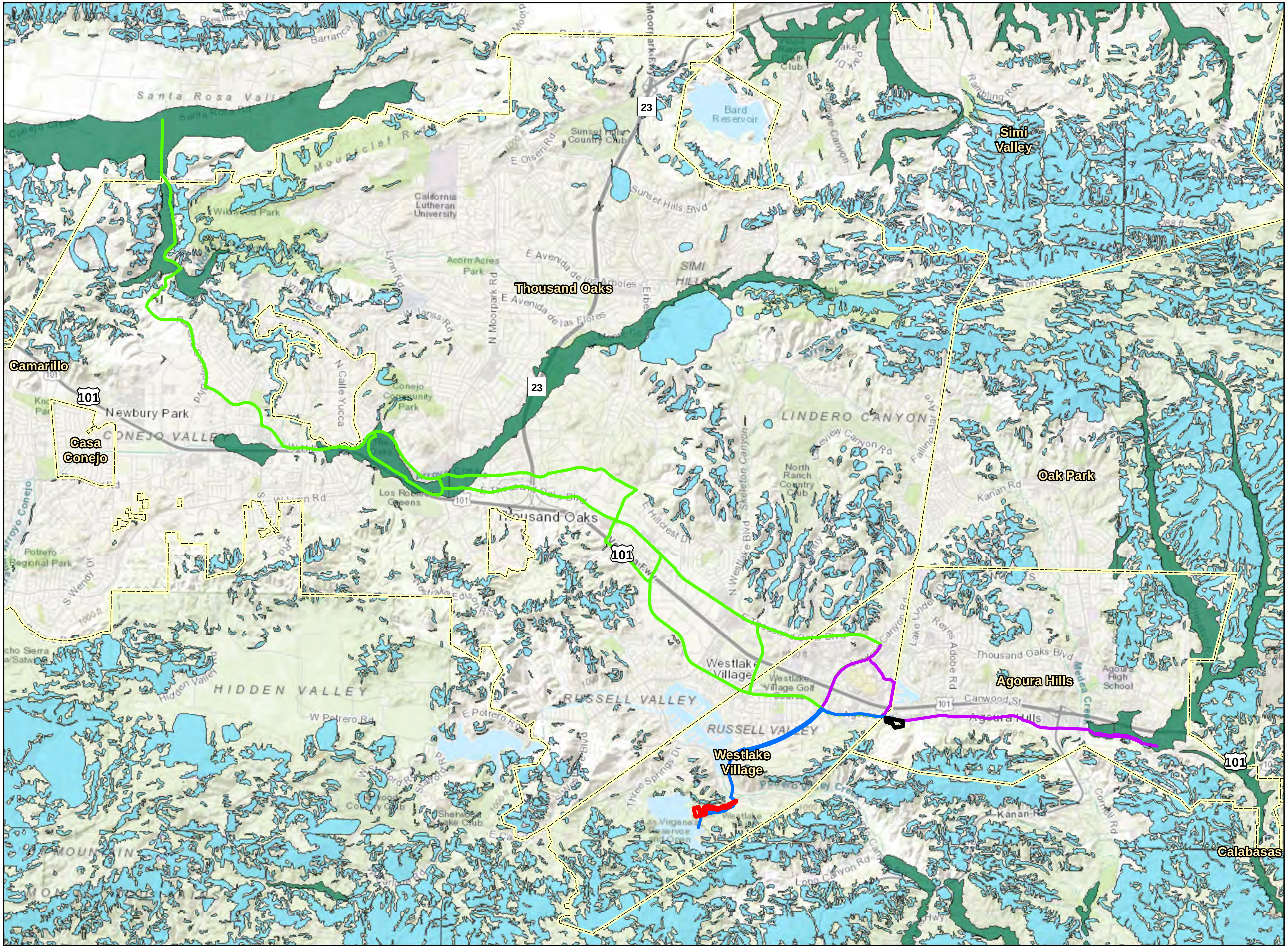
- Soil texture
- Structure
- Amount of soil cover
- Geometry of the slope

Hillside areas of the concentrate pipeline alignment in the northwestern project area and the hillside area east of Las Virgenes Reservoir have a higher risk of erosion. However, most of the proposed construction occurs in more urbanized, relatively flat areas with a low erosion hazard.

Expansive soils exhibit a cycle of shrinking and swelling (contraction and expansion) with drying and wetting. This occurs in fine-textured soils containing expansive clay minerals. Structures built on expansive soils can be damaged over time, and foundations can crack or shift. Soils and soft bedrock with high expansive properties likely underlie portions of the project area. Generally, proper engineering design can mitigate expansive soils problems and their impacts on facilities and structures.

The chemical properties of a soil or bedrock unit can sometimes be detrimental to below-grade structures or improvements. Soil corrosion can significantly impact typical construction materials, such as metals and concrete. Corrosive soils are likely present at least locally in the project area. Similarly, the shrink-swell and collapse potential of the subsurface materials in the project area are likely at least locally prone to these hazards.

Because most of the pipeline alignment alternatives are located within urban lands (existing roads, trails, and easements), surficial soil units have been cut and filled for development, such as construction of roads and buildings. Urban lands are covered by asphalt, concrete, buildings, and other structures; and urban soils mostly contain fill material. These soils are largely engineered and unlikely to exhibit shrink-swell behavior. Where slopes are relatively flat, the erosion hazard is low.



Sources:
California Department of Conservation, 2018;
ESRI World Topo Map; ESRI World Street Map

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Miles
1 inch = 1 miles

Figure 8-3

Slope Stability and Liquefaction Potential

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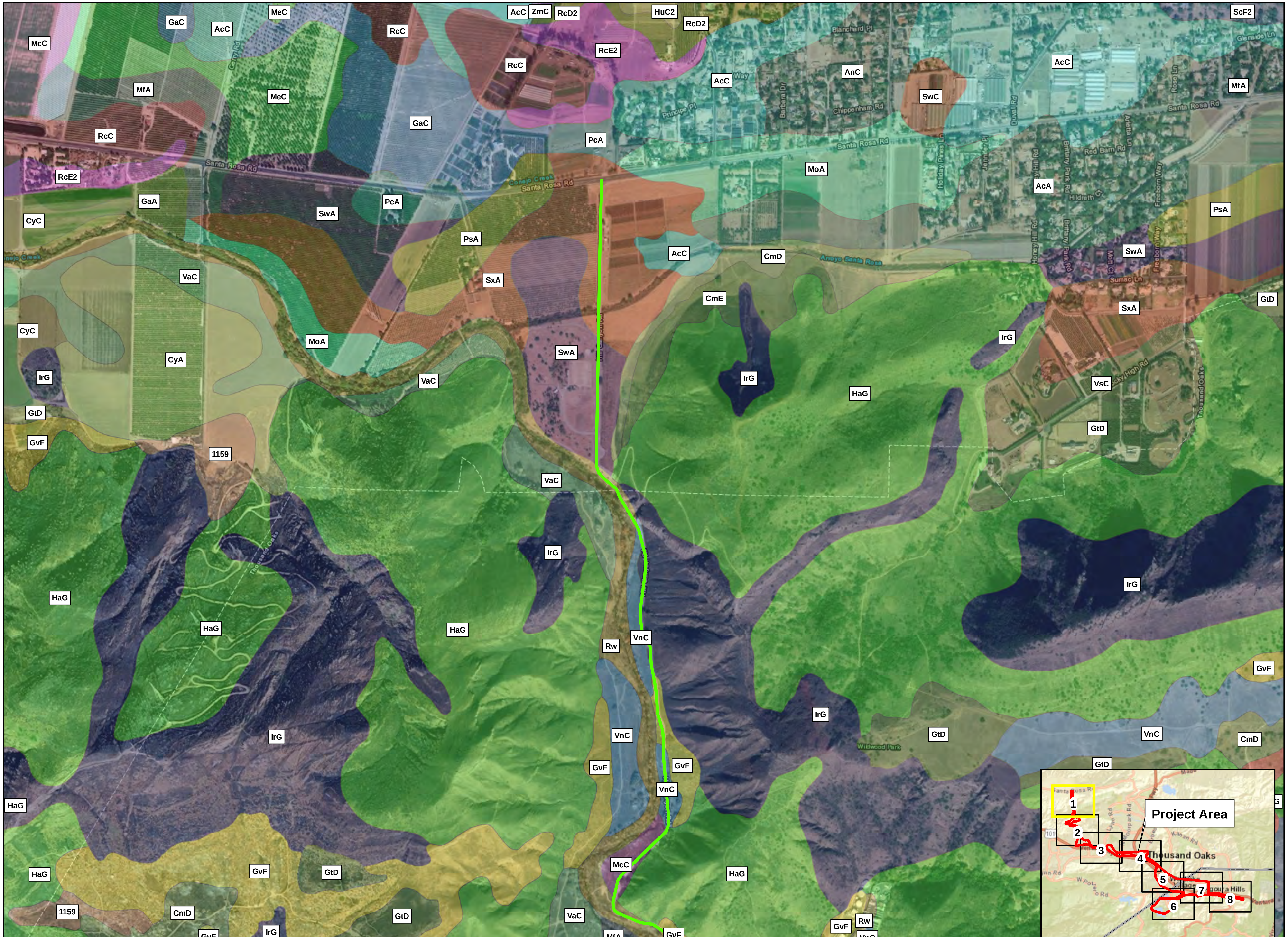

Legend

Concentrate Alignment Options

USDA Soils

- 1159: Topdeck loam, 10 to 35 percent slopes
- AcA: Anacapa sandy loam, 0 to 2 percent slopes
- AcC: Anacapa sandy loam, 2 to 9 percent slopes
- AnC: Anacapa gravelly sandy loam, 2 to 9 percent slopes
- CmD: Cibo clay, 5 to 15 percent slopes
- CmE: Cibo clay, 15 to 30 percent slopes, MLRA 20
- CyA: Cropley clay, 0 to 2 percent slopes, warm MAAT, MLRA 19
- CyC: Cropley clay, 2 to 9 percent slopes, warm MAAT, MLRA 19
- GaA: Garretson loam, 0 to 2 percent slopes
- GaC: Garretson loam, 2 to 9 percent slopes
- GtD: Gilroy-Cibo complex, 5 to 15 percent slopes
- GvF: Gilroy loam, 15 to 50 percent slopes, very rocky
- HaG: Hambright very rocky loam, 15 to 75 percent slopes
- HbF: Hambright rocky clay loam, 30 to 50 percent slopes
- HuC2: Huerhuero very fine sandy loam, 5 to 9 percent slopes, eroded
- HuD2: Huerhuero very fine sandy loam, 9 to 15 percent slopes, eroded
- IrG: Igneous rock land
- McC: Metz loamy fine sand, 2 to 9 percent slopes
- MeC: Metz loamy sand, 2 to 9 percent slopes
- MfA: Metz loamy sand, loamy substratum, 0 to 2 percent slopes
- MoA: Mocho loam, 0 to 2 percent slopes, warm MAAT, MLRA 19
- PcA: Pico sandy loam, 0 to 2 percent slopes
- PsA: Pico loam, sandy substratum, 0 to 2 percent slopes
- RcC: Rincon silty clay loam, 2 to 9 percent slopes, MLRA 19
- RcD2: Rincon silty clay loam, 9 to 15 percent slopes, eroded, warm MAAT, MLRA 19
- RcE2: Rincon silty clay loam, 15 to 30 percent slopes, eroded
- Rw: Riverwash
- ScD2: San Benito clay loam, 9 to 15 percent slopes, eroded
- ScF2: San Benito clay loam, 30 to 50 percent slopes, eroded, MLRA 20
- SwA: Sorrento loam, 0 to 2 percent slopes, MLRA 14
- SwC: Sorrento loam, 2 to 9 percent slopes, warm MAAT, MLRA 19
- SxA: Sorrento silty clay loam, 0 to 2 percent slopes, warm MAAT, MLRA 19
- VaC: Vina loam, 2 to 9 percent slopes
- VnC: Vina gravelly loam, 2 to 9 percent slopes
- VsC: Vina silty clay loam, 2 to 9 percent slopes
- ZmC: Zamora loam, 2 to 9 percent slopes

County Boundary

Sources:
ESRI World Topo Map; ESRI World Street Map; USDA NRCIS Soils, 2021

0 500 1,000 2,000
Feet
1 inch = 1,000 feet

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FIGURE 8-4

Soils

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Legend

Concentrate Alignment Options

USDA Soils

- 1159: Topdeck loam, 10 to 35 percent slopes
- 1258: Urban land-Typic Xerorthents, terraced-Gilroy complex, 5 to 20 percent slopes
- 1259: Urban land-Typic Xerorthents, very gravelly-Topdeck complex, 10 to 35 percent slopes
- AuB: Azule loam, 0 to 5 percent slopes
- AuC2: Azule loam, 2 to 9 percent slopes, eroded
- AuD: Azule loam, 9 to 15 percent slopes, warm
- CaF: Calleguas very channery loam, 30 to 50 percent slopes
- CmD: Cibo clay, 5 to 15 percent slopes
- CyA: Cropley clay, 0 to 2 percent slopes, warm MAAT, MLRA 19
- CyC: Cropley clay, 2 to 9 percent slopes, warm MAAT, MLRA 19
- DbD: Diablo clay, 9 to 15 percent slopes, warm MAAT
- DbE: Diablo clay, 15 to 30 percent slopes
- GtD: Gilroy-Cibo complex, 5 to 15 percent slopes
- GvF: Gilroy loam, 15 to 50 percent slopes, very rocky
- GxG: Gullied land
- HaG: Hambright very rocky loam, 15 to 75 percent slopes
- HbF: Hambright rocky clay loam, 30 to 50 percent slopes
- HuB: Huerhuero very fine sandy loam, 0 to 5 percent slopes
- HuC2: Huerhuero very fine sandy loam, 5 to 9 percent slopes, eroded
- HuD2: Huerhuero very fine sandy loam, 9 to 15 percent slopes, eroded
- IrG: Igneous rock land
- LeD2: Linne silty clay loam, 9 to 15 percent slopes, eroded
- LeE2: Linne silty clay loam, 15 to 30 percent slopes, eroded
- LeF2: Linne silty clay loam, 30 to 50 percent slopes, eroded
- McC: Metz loamy fine sand, 2 to 9 percent slopes
- MfA: Metz loamy sand, loamy substratum, 0 to 2 percent slopes
- MhF: Millsholm loam, 15 to 50 percent slopes
- NaD2: Nacimiento silty clay loam, 9 to 15 percent slopes, eroded
- RcC: Rincon silty clay loam, 2 to 9 percent slopes, MLRA 19
- RcD2: Rincon silty clay loam, 9 to 15 percent slopes, eroded, warm MAAT, MLRA 19
- RcE2: Rincon silty clay loam, 15 to 30 percent slopes, eroded
- Rw: Riverwash
- ScD2: San Benito clay loam, 9 to 15 percent slopes, eroded
- ScE2: San Benito clay loam, 15 to 30 percent slopes, eroded, MLRA 20
- ScF2: San Benito clay loam, 30 to 50 percent slopes, eroded, MLRA 20
- ScG: San Benito clay loam, 50 to 75 percent slopes, MLRA 20
- SeG: Santa Lucia shaly silty clay loam, 50 to 75 percent slopes
- VaC: Vina loam, 2 to 9 percent slopes
- VnC: Vina gravelly loam, 2 to 9 percent slopes
- VsC: Vina silty clay loam, 2 to 9 percent slopes
- ZmC: Zamora loam, 2 to 9 percent slopes
- County Boundary

Sources:
ESRI World Topo Map; ESRI World Street Map; USDA NRCIS Soils, 2021

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Feet
1 inch = 1,000 feet

FIGURE 8-4

Soils

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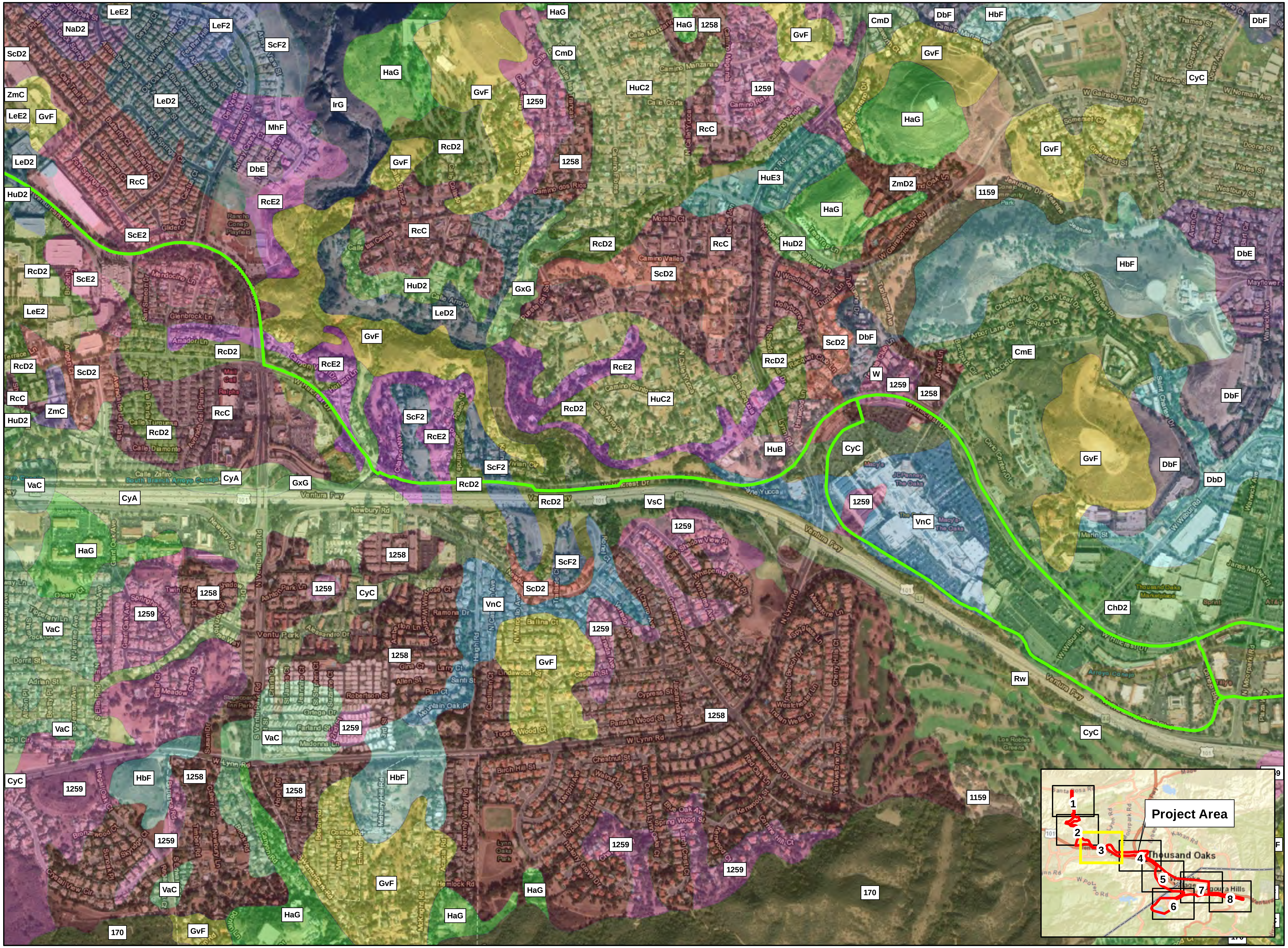

Legend

- Concentrate Alignment Options

USDA Soils

- 1159: Topdeck loam, 10 to 35 percent slopes
- 1258: Urban land-Typic Xerorthents, terraced-Gilroy complex, 5 to 20 percent slopes
- 1259: Urban land-Typic Xerorthents, very gravelly-Topdeck complex, 10 to 35 percent slopes
- 170: Cotharin clay loam, 30 to 75 percent slopes
- AzC: Azule gravelly loam, 5 to 9 percent slopes, warm
- ChD2: Chesterton coarse sandy loam, 5 to 15 percent slopes, eroded
- CmD: Cibo clay, 5 to 15 percent slopes
- CmE: Cibo clay, 15 to 30 percent slopes, MLRA 20
- CyA: Cropley clay, 0 to 2 percent slopes, warm MAAT, MLRA 19
- CyC: Cropley clay, 2 to 9 percent slopes, warm MAAT, MLRA 19
- DbD: Diablo clay, 9 to 15 percent slopes, warm MAAT
- DbE: Diablo clay, 15 to 30 percent slopes
- DbF: Diablo clay, 30 to 50 percent slopes, warm MAAT, MLRA 20
- GvF: Gilroy loam, 15 to 50 percent slopes, very rocky
- GxG: Gullied land
- HaG: Hambright very rocky loam, 15 to 75 percent slopes
- HbF: Hambright rocky clay loam, 30 to 50 percent slopes
- HuB: Huerhuero very fine sandy loam, 0 to 5 percent slopes
- HuC2: Huerhuero very fine sandy loam, 5 to 9 percent slopes, eroded
- HuD2: Huerhuero very fine sandy loam, 9 to 15 percent slopes, eroded
- HuE3: Huerhuero very fine sandy loam, 9 to 30 percent slopes, severely eroded
- IrG: Igneous rock land
- LeD2: Linne silty clay loam, 9 to 15 percent slopes, eroded
- LeE2: Linne silty clay loam, 15 to 30 percent slopes, eroded
- LeF2: Linne silty clay loam, 30 to 50 percent slopes, eroded
- MhF: Millsholm loam, 15 to 50 percent slopes
- NaD2: Nacimiento silty clay loam, 9 to 15 percent slopes, eroded
- RcC: Rincon silty clay loam, 2 to 9 percent slopes, MLRA 19
- RcD2: Rincon silty clay loam, 9 to 15 percent slopes, eroded, warm MAAT, MLRA 19
- RcE2: Rincon silty clay loam, 15 to 30 percent slopes, eroded
- Rw: Riverwash
- ScD2: San Benito clay loam, 9 to 15 percent slopes, eroded
- ScE2: San Benito clay loam, 15 to 30 percent slopes, eroded, MLRA 20
- ScF2: San Benito clay loam, 30 to 50 percent slopes, eroded, MLRA 20
- ScG: San Benito clay loam, 50 to 75 percent slopes, MLRA 20
- VaC: Vina loam, 2 to 9 percent slopes
- VnC: Vina gravelly loam, 2 to 9 percent slopes
- VsC: Vina silty clay loam, 2 to 9 percent slopes
- W: Water
- ZmC: Zamora loam, 2 to 9 percent slopes
- ZmD2: Zamora loam, 9 to 15 percent slopes, eroded
- County Boundary

Sources:
ESRI World Topo Map; ESRI World Street Map; USDA NRCIS Soils, 2021

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Feet
1 inch = 1,000 feet

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FIGURE 8-4

Soils

Pure Water Project Las Virgenes – Triunfo

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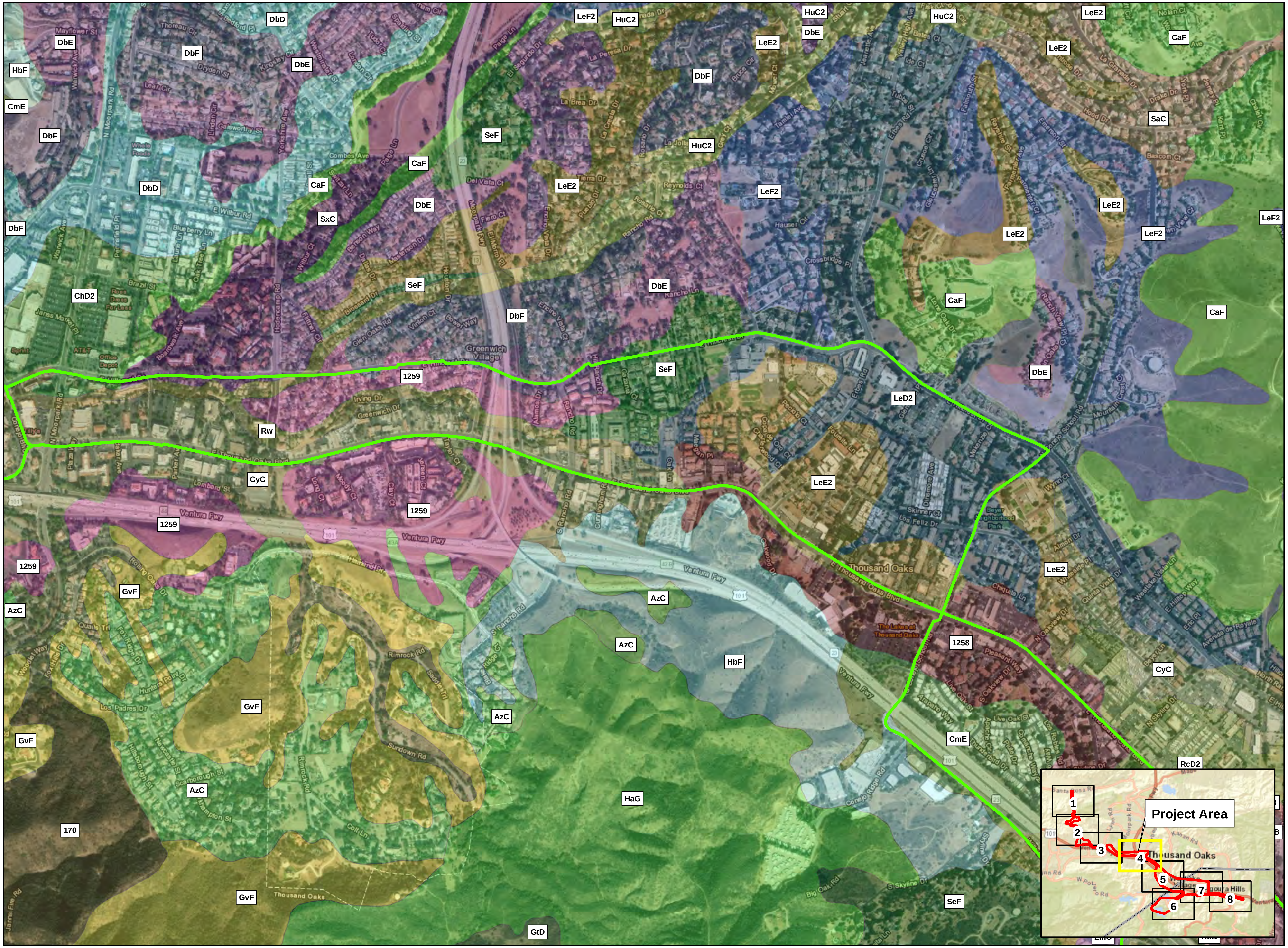

Legend

Concentrate Alignment Options

USDA Soils

- 1258: Urban land-Typic Xerorthents, terraced-Gilroy complex, 5 to 20 percent slopes
- 1259: Urban land-Typic Xerorthents, very gravelly-Topdeck complex, 10 to 35 percent slopes
- 170: Cotharin clay loam, 30 to 75 percent slopes
- AzC: Azule gravelly loam, 5 to 9 percent slopes, warm
- CaF: Calleguas very channery loam, 30 to 50 percent slopes
- ChD2: Chesterton coarse sandy loam, 5 to 15 percent slopes, eroded
- CmE: Cibo clay, 15 to 30 percent slopes, MLRA 20
- CyC: Cropley clay, 2 to 9 percent slopes, warm MAAT, MLRA 19
- DbD: Diablo clay, 9 to 15 percent slopes, warm MAAT
- DbE: Diablo clay, 15 to 30 percent slopes
- DbF: Diablo clay, 30 to 50 percent slopes, warm MAAT, MLRA 20
- GtD: Gilroy-Cibo complex, 5 to 15 percent slopes
- GvF: Gilroy loam, 15 to 50 percent slopes, very rocky
- HaG: Hambright very rocky loam, 15 to 75 percent slopes
- HbF: Hambright rocky clay loam, 30 to 50 percent slopes
- HuB: Huerhuero very fine sandy loam, 0 to 5 percent slopes
- HuC2: Huerhuero very fine sandy loam, 5 to 9 percent slopes, eroded
- LeD2: Linne silty clay loam, 9 to 15 percent slopes, eroded
- LeE2: Linne silty clay loam, 15 to 30 percent slopes, eroded
- LeF2: Linne silty clay loam, 30 to 50 percent slopes, eroded
- RcC: Rincon silty clay loam, 2 to 9 percent slopes, MLRA 19
- RcD2: Rincon silty clay loam, 9 to 15 percent slopes, eroded, warm MAAT, MLRA 19
- RcE3: Rincon silty clay loam, 9 to 30 percent slopes, severely eroded
- Rw: Riverwash
- SaC: Salinas clay loam, 2 to 9 percent slopes
- SeF: Santa Lucia shaly silty clay loam, 30 to 50 percent slopes
- SxC: Sorrento silty clay loam, 2 to 9 percent slopes, warm MAAT, MLRA 19
- ZmC: Zamora loam, 2 to 9 percent slopes

County Boundary

Sources:
ESRI World Topo Map; ESRI World Street Map; USDA NRCIS Soils, 2021

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Feet
1 inch = 1,000 feet

FIGURE 8-4

Soils

Pure Water Project Las Virgenes – Triunfo

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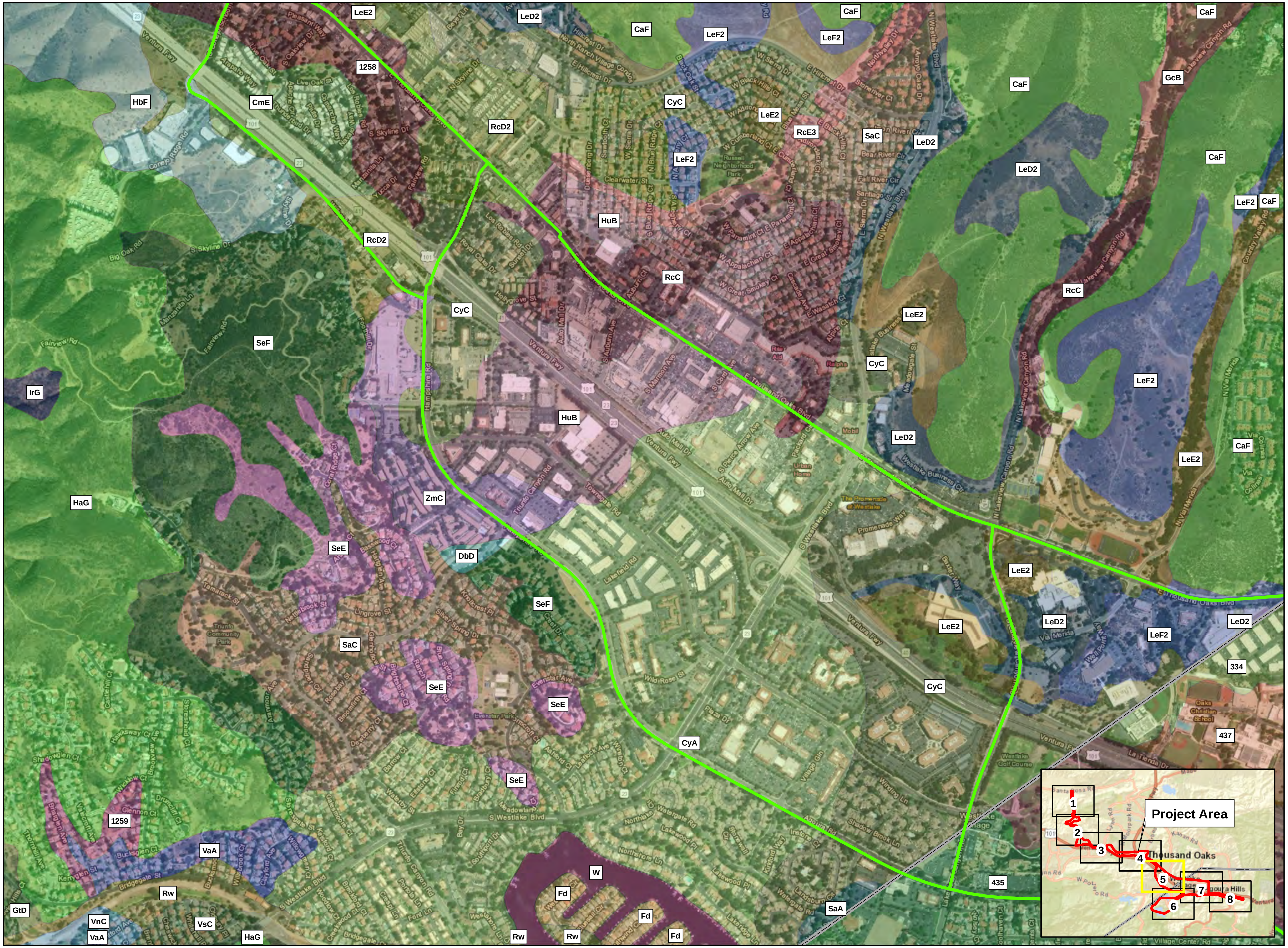

Legend

Concentrate Alignment Options

USDA Soils

- 1258: Urban land-Typic Xerorthents, terraced-Gilroy complex, 5 to 20 percent slopes
- 1259: Urban land-Typic Xerorthents, very gravelly-Topdeck complex, 10 to 35 percent slopes
- 254: Urban land-Xerorthents, fill complex, 0 to 30 percent slope, freeway
- 334: Urban land-Linne-Los Osos, warm complex, 0 to 30 percent slopes
- 435: Urban land-Cropley, fill complex, 0 to 8 percent slopes, residential
- 436: Cropley, fill consociation, 0 to 8 percent slopes, landscaped
- 437: Urban land-Cropley, fill complex, 0 to 8 percent slopes, commercial
- CaF: Calleguas very channery loam, 30 to 50 percent slopes
- CmE: Cibo clay, 15 to 30 percent slopes, MLRA 20
- CyA: Cropley clay, 0 to 2 percent slopes, warm MAAT, MLRA 19
- CyC: Cropley clay, 2 to 9 percent slopes, warm MAAT, MLRA 19
- DbD: Diablo clay, 9 to 15 percent slopes, warm MAAT
- Fd: Fill land
- GcB: Garretson silt loam, calcareous variant, 2 to 5 percent slopes
- GtD: Gilroy-Cibo complex, 5 to 15 percent slopes
- HaG: Hambright very rocky loam, 15 to 75 percent slopes
- HbF: Hambright rocky clay loam, 30 to 50 percent slopes
- HuB: Huerhuero very fine sandy loam, 0 to 5 percent slopes
- IrG: Igneous rock land
- LeD2: Linne silty clay loam, 9 to 15 percent slopes, eroded
- LeE2: Linne silty clay loam, 15 to 30 percent slopes, eroded
- LeF2: Linne silty clay loam, 30 to 50 percent slopes, eroded
- RcC: Rincon silty clay loam, 2 to 9 percent slopes, MLRA 19
- RcD2: Rincon silty clay loam, 9 to 15 percent slopes, eroded, warm MAAT, MLRA 19
- RcE3: Rincon silty clay loam, 9 to 30 percent slopes, severely eroded
- Rw: Riverwash
- SaA: Salinas clay loam, 0 to 2 percent slopes, warm MAAT, MLRA 19
- SaC: Salinas clay loam, 2 to 9 percent slopes
- SeE: Santa Lucia shaly silty clay loam, 15 to 30 percent slopes
- SeF: Santa Lucia shaly silty clay loam, 30 to 50 percent slopes
- VaA: Vina loam, 0 to 4 percent slopes, MLRA 19
- VnC: Vina gravelly loam, 2 to 9 percent slopes
- VsC: Vina silty clay loam, 2 to 9 percent slopes
- W: Water
- ZmC: Zamora loam, 2 to 9 percent slopes

County Boundary

Sources:
ESRI World Topo Map; ESRI World Street Map; USDA NRCIS Soils, 2021

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Feet
1 inch = 1,000 feet

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FIGURE 8-4

Soils

Pure Water Project Las Virgenes – Triunfo

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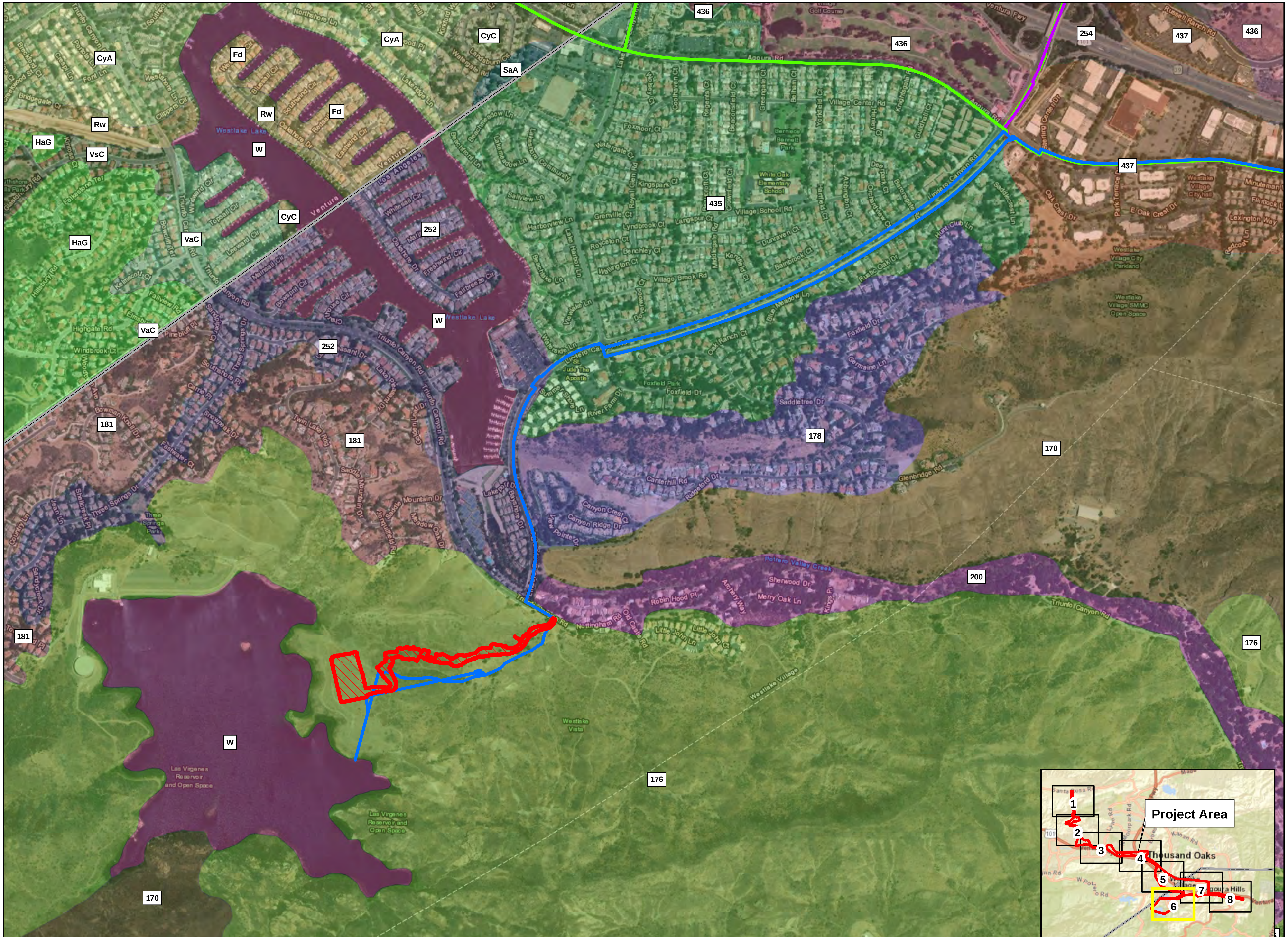

Legend

- Alternative 2 Reservoir AWPF
- Concentrate Alignment Options
- Purified Water Alignment Options
- Source Water Alignment Options

USDA Soils

- 170: Cotharin clay loam, 30 to 75 percent slopes
- 176: Cotharin-Talepop association, 15 to 50 percent slopes, MLRA 20
- 178: Cotharin-Talepop-Urban land complex, 0 to 50 percent slopes
- 181: Urban land-Hambright, landscaped-Talepop complex, 0 to 50 percent, residential
- 200: Cumulic Haploxerolls, 0 to 9 percent slopes
- 252: Urban land-Xerorthents, landscaped, complex, rarely flooded, 0 to 5 percent slopes
- 254: Urban land-Xerorthents, fill complex, 0 to 30 percent slope, freeway
- 435: Urban land-Cropley, fill complex, 0 to 8 percent slopes, residential
- 436: Cropley, fill consociation, 0 to 8 percent slopes, landscaped
- 437: Urban land-Cropley, fill complex, 0 to 8 percent slopes, commercial
- CyA: Cropley clay, 0 to 2 percent slopes, warm MAAT, MLRA 19
- CyC: Cropley clay, 2 to 9 percent slopes, warm MAAT, MLRA 19
- Fd: Fill land
- HaG: Hambright very rocky loam, 15 to 75 percent slopes
- Rw: Riverwash
- SaA: Salinas clay loam, 0 to 2 percent slopes, warm MAAT, MLRA 19
- VaC: Vina loam, 2 to 9 percent slopes
- VsC: Vina silty clay loam, 2 to 9 percent slopes
- W: Water
- County Boundary

Sources:
ESRI World Topo Map; ESRI World Street Map; USDA NRCIS Soils, 2021

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Feet
1 inch = 1,000 feet

FIGURE 8-4

Soils

Pure Water Project Las Virgenes – Triunfo

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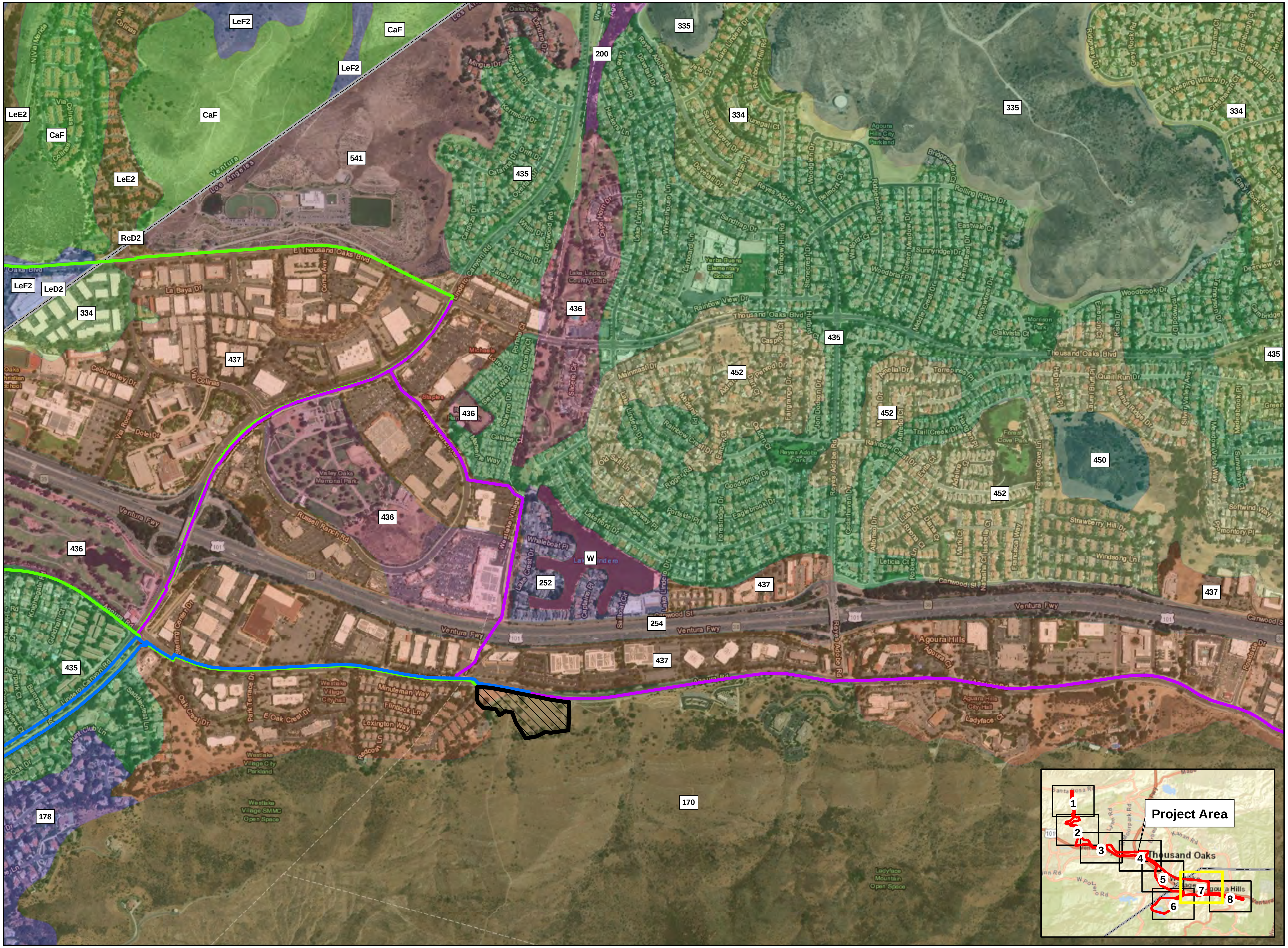

Legend

- Alternative 1 Agoura Road
- Concentrate Alignment Options
- Purified Water Alignment Options
- Source Water Alignment Options

USDA Soils

- 170: Cotharin clay loam, 30 to 75 percent slopes
- 178: Cotharin-Talepop-Urban land complex, 0 to 50 percent slopes
- 200: Cumulic Haploxerolls, 0 to 9 percent slopes
- 252: Urban land-Xerorthents, landscaped, complex, rarely flooded, 0 to 5 percent slopes
- 254: Urban land-Xerorthents, fill complex, 0 to 30 percent slope, freeway
- 334: Urban land-Linne-Los Osos, warm complex, 0 to 30 percent slopes
- 335: Linne-Calcic Haploxeralfs-Calcic Haploxerepts complex, 30 to 75 percent slopes
- 435: Urban land-Cropley, fill complex, 0 to 8 percent slopes, residential
- 436: Cropley, fill consociation, 0 to 8 percent slopes, landscaped
- 437: Urban land-Cropley, fill complex, 0 to 8 percent slopes, commercial
- 450: Sapwi loam, 30 to 75 percent slopes
- 452: Urban land-Sapwi, landscaped-Kawenga, landscaped complex, 0 to 20 percent slopes, residential
- 541: Calcic Haploxerepts-Linne-Haploxererts complex, 15 to 75 percent slopes
- CaF: Calleguas very channery loam, 30 to 50 percent slopes
- LeD2: Linne silty clay loam, 9 to 15 percent slopes, eroded
- LeE2: Linne silty clay loam, 15 to 30 percent slopes, eroded
- LeF2: Linne silty clay loam, 30 to 50 percent slopes, eroded
- RcD2: Rincon silty clay loam, 9 to 15 percent slopes, eroded, warm MAAT, MLRA 19
- W: Water
- County Boundary

Sources:
ESRI World Topo Map; ESRI World Street Map; USDA NRCIS Soils, 2021

0 500 1,000 2,000
Feet
1 inch = 1,000 feet

FIGURE 8-4

Soils

Pure Water Project Las Virgenes –Triunfo

Jacobs

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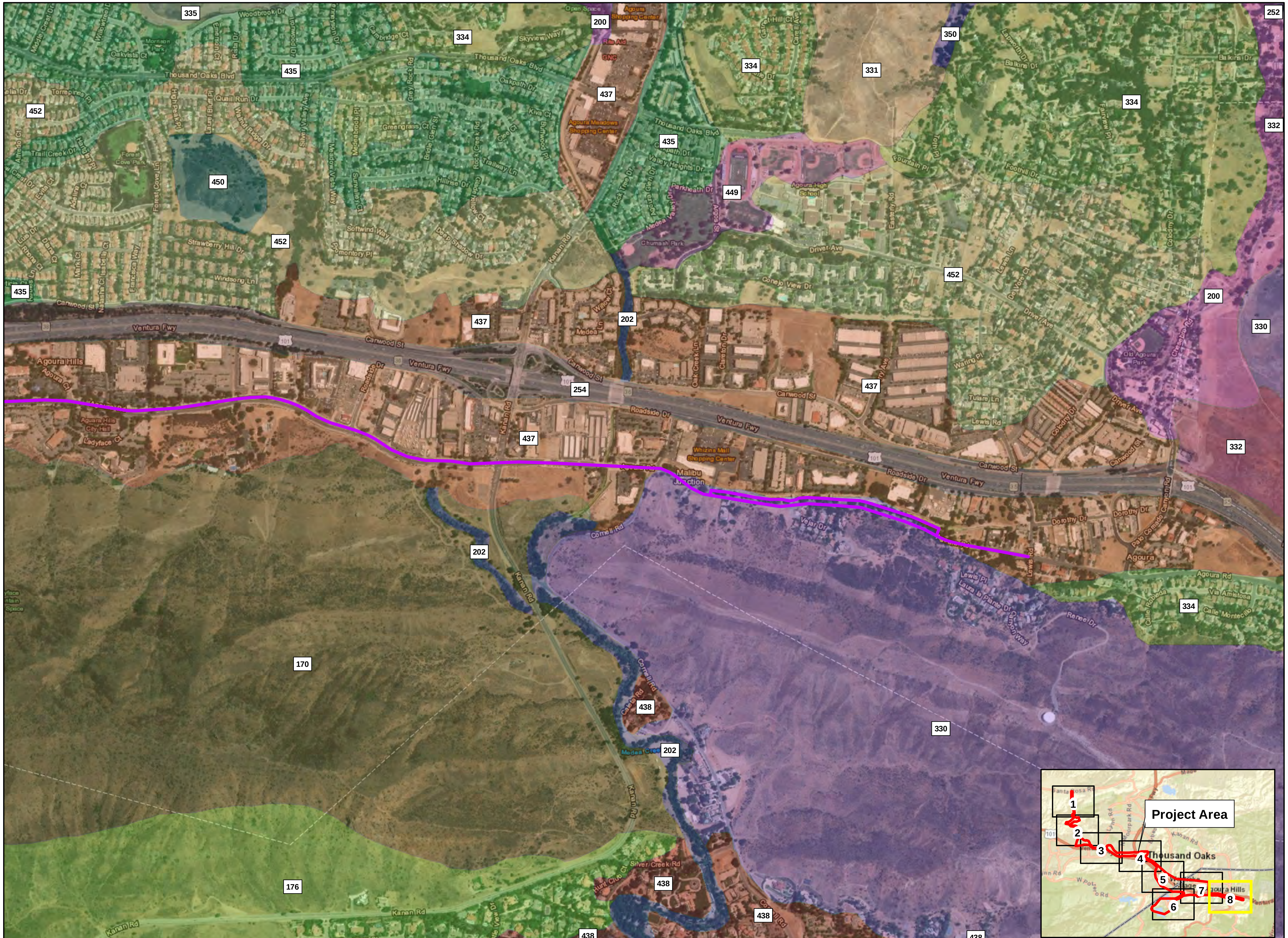

Legend

Source Water Alignment Options

USDA Soils

- 170: Cotharin clay loam, 30 to 75 percent slopes
- 176: Cotharin-Talepop association, 15 to 50 percent slopes, MLRA 20
- 200: Cumulic Haploxerolls, 0 to 9 percent slopes
- 202: Fluvaquents-Riverwash complex, 0 to 5 percent slopes
- 252: Urban land-Xerorthents, landscaped, complex, rarely flooded, 0 to 5 percent slopes
- 254: Urban land-Xerorthents, fill complex, 0 to 30 percent slope, freeway
- 330: Linne-Los Osos, warm-Calcic Haploxerepts association, 15 to 65 percent slopes
- 331: Linne silty clay loam, 15 to 50 percent slopes
- 332: Linne silty clay loam, 9 to 15 percent slopes
- 334: Urban land-Linne-Los Osos, warm complex, 0 to 30 percent slopes
- 335: Linne-Calcic Haploxeralfs-Calcic Haploxerepts complex, 30 to 75 percent slopes
- 350: Los Osos clay loam, warm, 20 to 50 percent slopes
- 435: Urban land-Cropley, fill complex, 0 to 8 percent slopes, residential
- 437: Urban land-Cropley, fill complex, 0 to 8 percent slopes, commercial
- 438: Urban land-Cumulic Haploxerolls, fill-Cropely, fill complex, 0 to 15 percent slopes, residential
- 441: Urban land-Rincon, landscaped-Antioch, landscaped complex, 0 to 8 percent slopes, residential
- 449: Kawenga-Sapwi-Rincon complex, 0 to 8 percent slopes, landscaped
- 450: Sapwi loam, 30 to 75 percent slopes
- 452: Urban land-Sapwi, landscaped-Kawenga, landscaped complex, 0 to 20 percent slopes, residential

County Boundary

Sources:
ESRI World Topo Map; ESRI World Street Map; USDA NRCIS Soils, 2021

0 500 1,000 2,000
Feet
1 inch = 1,000 feet

FIGURE 8-4

Soils

Pure Water Project Las Virgenes –Triunfo

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8.2 Regulatory Framework

This section describes the federal and state laws and regulations, and local policies and ordinances applicable to Pure Water Project implementation with respect to geology and soil resources.

8.2.1 Federal Regulations

This section describes the federal regulations applicable to Pure Water Project implementation with respect to geology and soil resources.

8.2.1.1 Clean Water Act

The federal CWA, as amended, is the fundamental federal law for regulating discharges of waste into waters of the United States. CWA Section 402 provides NPDES requirements, which have been established for stormwater discharges from a range of industrial discharge categories, including construction activities.

The EPA has delegated administrative authority for implementing the NPDES program in California. The California Water Quality Control Board (State Board) and nine Regional Boards have authority to implement the CWA in California. Region 4, the Los Angeles Regional Board, oversees implementation of the NPDES program in the project area (California Water Boards 2022a).

Construction projects that disturb more than 1 acre and are implemented as part of the Pure Water Project would require coverage under the State's CGP (CAS0000001, Order 2009-0009-DWQ, as amended by Orders 2010-0014-DWQ and 2012-0006-DWQ). The permit requires development and implementation of a site-specific SWPPP, which must include BMPs to provide an effective combination of erosion and sediment controls.

8.2.1.2 National Earthquake Hazards Reduction Act (Title 42 U.S. Code Section 7704)

The National Earthquake Hazards Act (NEHA) and associated National Earthquake Hazards Reduction Program (NEHRP) were enacted in 1977, with amendments made in 1990. Regulations were developed to "…reduce the risks to life and property from future earthquakes."

Primary goals, measures, and objectives to reduce potential hazards include:

> *(A) improved design and construction methods and practices, (B) land-use controls and redevelopment, (C) prediction techniques and early-warning systems, (D) coordinated emergency preparedness plans, and (E) public education and involvement programs"*

(NEHRP 2008)

8.2.2 State Regulations

This section describes the state regulations applicable to Pure Water Project implementation with respect to geology and soil resources.

8.2.2.1 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act provides for protection of the quality of all waters of the State of California. The act gives the State Board and the Regional Boards regulatory authority to establish water quality standards and an implementation plan for achieving those standards. State Board and Regional Board authority under the act includes implementation of the NPDES program in California.

8.2.2.2 Seismic Hazards Mapping Act of 1990

The Seismic Hazards Mapping Act of 1990 (PRC, Chapter 7.8, Sections 2690–2699.6) directs the Department of Conservation, California Geological Survey (CGS), to identify and map areas prone to earthquake hazards, including liquefaction, earthquake-induced landslides, and amplified ground shaking. In addition, the act requires local permitting agencies to regulate certain development projects within these hazard zones. Before a local development permit is issued for a site within a seismic hazard zone, a geotechnical investigation of the site must be conducted, and appropriate mitigation measures incorporated into the project design.

8.2.2.3 Alquist-Priolo Earthquake Fault Zoning Act of 1972

The Alquist-Priolo Act prohibits the siting of structures for human occupancy across traces of active faults that represent a potential hazard to structures because of surface faulting or fault creep. The Alquist-Priolo Act only addresses the hazard of surface fault rupture but not other earthquake hazards. The act requires the State Geologist to establish regulatory zones (known as Earthquake Fault Zones) around the surface traces of active faults and to issue appropriate maps. The maps are distributed to all affected cities, counties, and state agencies for use in planning and controlling new or renewed construction. All land divisions and most structures for human occupancy are regulated by local agencies within the Earthquake Fault Zones; however, local agencies can be more restrictive than state laws.

Before a project within an Alquist-Priolo Earthquake Fault Zone can be permitted, cities and counties must require a geologic investigation to demonstrate that proposed buildings would not be constructed across active faults. An evaluation and written report for the specific site must be prepared by a California licensed geologist. If an active fault is found, structures for human occupancy must be set back from the fault (California Department of Conservation 2019).

8.2.2.4 California Building Code

The California Building Code (CBC) is codified in 24 CCR 2. The California Building Standards Commission administers Title 24. The CBC establishes minimum standards to safeguard public health, safety, and general welfare through structural strength, means of egress facilities, and general stability. The CBC regulates and controls the following factors for all buildings and structures within its jurisdiction:

- Design
- Construction
- Quality of materials
- Use and occupancy
- Location
- Maintenance

In addition, the CBC contains requirements based on the American Society of Civil Engineers (*ASCE) 7-10, Minimum Design Loads for Buildings and Other Structures* (2013), including requirements for general structural design and a means for determining earthquake loads and other loads (for example, flood and wind) for inclusion in building codes. CBC provisions apply to the construction, alteration, movement, replacement, and demolition of every building, structure, and appurtenance connected or attached to such buildings or structures throughout California.

CBC earthquake design requirements consider the occupancy category of the structure, site class, soil classifications, and various seismic coefficients used to determine a Seismic Design Category (SDC) for projects. The SDC is a classification system that combines the occupancy categories with the level of expected ground motions at the site; classifications range from SDC A (very small seismic vulnerability) to SDC E/F (very high seismic vulnerability and near a major fault). Design specifications are determined in accordance with the SDC.

8.2.2.5 Surface Mining and Reclamation Act

Enacted in 1975, the State Mining and Reclamation Act (SMARA) required implementation of a system to provide policies associated with past and potential surface mining and reclamation activities to minimize environmental impacts and consideration during land use planning. SMARA required the California State Geologist and California State Mining and Geology Board to classify and prioritize lands and mineral resource areas. The Mineral Resource Zone system identifies boundaries and prioritizes defining areas based on available information.

8.2.3 Local Regulations

This section describes the local regulations applicable to Pure Water Project implementation with respect to geology and soil resources.

8.2.3.1 City of Agoura Hills

Table 8-1 provides the geology and soil goals and policies established by the *City of Agoura Hills General Plan* (City of Agoura Hills 2010b) that are applicable to the project.

Table 8-1. City of Agoura Hills Geology and Soils Goals and Policies

Goal or Policy Name	Goal or Policy Language
Goal LU-3: City of Open Spaces	*Open space lands that are preserved to maintain the visual quality of the City and provide recreational opportunities, protect the public from safety hazards, and conserve natural resources.* *Policy LU-3.2 Hillsides. Preserve ridgelines, natural slopes, and bluffs as open space, minimize hillside erosion, and complement natural landforms through sensitive grading techniques in hillside areas.*
Goal NR-8: Mineral Resources	*Protection of access to and availability of mineral resources, while maintaining protection of the surrounding environment.* *Policy NR-8.1 Mineral Resource Zones. Protect access to and availability of lands designated MRZ, as mapped by the California Geological Survey, for potential further mining, and regulate any such activities consistent with the Surface Mining and Reclamation Act, mineral land classification information, and the California Environmental Quality Act.*
Goal S-2: Protection from Geologic Hazards	*Minimized adverse effects to residents, public and private property, and essential services caused by seismic and geologic hazards.* *Policy S-2.1 Review Safety Standards. Regularly review and enforce all seismic and geologic safety standards, including the City's Building Code, and require the use of best management practices (BMPs) in site design and building construction methods.* *Policy S-2.2 Geotechnical Investigations. Require geotechnical investigations to determine the potential for ground rupture, groundshaking, and liquefaction due to seismic events, as well as expansive soils and subsidence problems on sites, including steep slopes, where these hazards are potentially present.* *Policy S-2.3 Retrofit Critical Facilities. Encourage the upgrade, retrofitting, and/or relocation of all existing critical facilities (e.g., schools, police stations, fire stations, and medical facilities) and other important public facilities that do not meet current building code standards and are within areas susceptible to seismic or geologic hazards.* *Policy S-2.4 Funding Programs. Pursue federal and state programs to provide additional protection against seismic activity*

Source: City of Agoura Hills 2010b

8.2.3.2 City of Westlake Village

Table 8-2 provides excerpts of the goal, objective, and policy language established by the *City of Westlake Village General Plan* (City of Westlake Village 2019a) relative to geology and soils resources and applicable to the project.

Table 8-2. City of Westlake Village Geology and Soils Goals, Objectives, and Policies

Goal, Objective, or Policy Number	Goal, Objective, or Policy Language[a]
Goal 1	*Minimize hazards to public health, safety and welfare which may result from geologic conditions, seismic activity and flooding.*
Objective 2	*Ensure that construction and development activities within the community do not expose residents to avoidable natural hazards.*
Policy 2.1	*Require the preparation of a detailed geologic and soils report to accompany each grading permit application in all hillside management areas (I-4).*
Policy 2.3	*Enforce the provisions of the International Building Code, specifically Chapters 18 and 23 as they relate to earthquake-resistant design and excavation and grading (I-6).*

Source: City of Westlake Village 2019a

[a]Each policy listing "I-" and number in parentheses refers to a corresponding implementation program.

8.2.3.3 City Thousand Oaks

The City of Thousand Oaks Safety Element 2014 Update provides a complement to the long-range comprehensive guide for the physical development of the City's Planning Area (City of Thousand Oaks 2014). The *Thousand Oaks General Plan* and associated updates include a statement of goals and policies related to the community's development, and various elements that provide more detailed policies and standards in certain topic areas (City of Thousand Oaks 2022b).

Table 8-3 provides excerpts of the goal and policy language established by the *Thousand Oaks General Plan* (and updates) related to geology and soils resources and applicable to the project.

Table 8-3. City of Thousand Oaks Geology and Soils Goals and Policies

Goal or Policy Number	Goal or Policy Language
Goal S-1	*Minimize the risk of loss of life, injury, damage to property, and economic and social dislocation resulting from fault rupture and seismically induced ground shaking.*
Policy A-1	*Require site-specific geologic and engineering investigations as specified in the California Building Code (International Building Code with California amendments) and Municipal Code for proposed new developments and/or when deemed necessary by the City Engineer and/or through the CEQA process.*
Policy A-2	*Adopt the latest California Building Code (CBC) and enforce provisions relating to earthquake resistant design.*
Policy A-4	*Continue to allocate a percentage of building permit fees (as specified in Chapter 8 of Division 2 of the Public Resources Code) to a trust fund (Strong Motion Instrumentation Program Fund) which is remitted to the State of California. The moneys are earmarked for seismic education pursuant to the Seismic Hazards Mapping Act of 1990.*
Policy A-5	*Provide setbacks, as determined to be necessary, for any proposed development located on or near an active or potentially active fault. Appropriate setback distances will be determined through engineering geologic investigation.*

Table 8-3. City of Thousand Oaks Geology and Soils Goals and Policies

Goal or Policy Number	Goal or Policy Language
Policy A-6	*Require all developers and/or subdividers of a parcel or parcels in an area of known fault hazard to record a Notice of Geologic Hazards with the County Recorder describing the hazards on the parcel and the level of prior geologic investigation conducted.*
Policy A-7	*Require project modifications, including but not limited to hazard mitigation, project redesign, elimination of building sites, and the delineation of building envelopes, building setbacks and foundation requirements, as deemed necessary, in order to mitigate faulting/seismic hazards.*
Goal S-2	*Safeguard life, limb, health, property, and the public welfare by establishing minimum requirements for regulating grading and procedures by which such requirements may be enforced (Municipal Code Section 7-3.01).*
Goal S-3	*Provide minimum standards to safeguard life or limb, health, property and the public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location, demolition, and maintenance of all buildings and structures within the City and certain equipment specifically regulated therein (Municipal Code Section 8-1.02).*
Policy B-1	*Require any alteration, grading, excavation or fill activity to comply with the City's Grading Ordinance.*
Policy B-2	*Require that all construction be in accordance with the most current version of the California Building Code and Title 8, Chapter 1 of the Municipal Code which incorporates the CBC with specific amendments.*
Policy B-3	*Perform site-specific geologic and engineering investigations for new developments as specified in the CBC and Municipal Code.*
Policy B-4	*Prohibit grading or relocation of earth on land having a natural slope greater than 25% unless approval is obtained from the Planning Commission or City Council and a grading permit has been obtained from the City Engineer (Municipal Code Section 7-3.07).*
Policy B-5	*Continue to regulate grading during the rainy season (November-April) in order to control erosion and protect life and property from damage due to flooding or erosion associated with grading activities.*
Policy B-6	*Conduct soils investigations to evaluate hazards potential for proposed developments in areas of potential liquefaction.*
Policy B-7	*Require project modifications, including but not limited to project redesign, elimination of building sites, building envelopes and drainage and foundation requirements, as necessary in order to mitigate liquefaction hazards.*
Policy B-8	*Require the developers and/or subdividers of a parcel or parcels in a Liquefaction Hazard Zone to record a Notice of Geologic Hazards with the County Recorder describing the potential hazards on the parcel and the level of prior geologic investigation conducted unless the condition has been mitigated.*
Policy B-9	*Require that all development activities provide a setback from potentially unstable areas or from the margins of potential debris flow channels and depositional areas as identified through engineering and geologic studies.*
Policy B-10	*Require drainage plans designed to direct runoff away from unstable areas.*
Policy B-11	*Where washouts or landslides have occurred on public or private roads, require that road reconstruction meet the conditions of appropriate geologic and engineering reports and provide for adequate engineering supervision.*

Table 8-3. City of Thousand Oaks Geology and Soils Goals and Policies

Goal or Policy Number	Goal or Policy Language
Policy B-13	*In an area of known slope stability or debris flow hazards, require developers and/or subdividers of a parcel or parcels to record a Notice of Geologic Hazards with the County Recorder describing the potential hazards on the parcel and the level of prior geologic investigation conducted.*
Policy B-14	*Require project modifications, including but not limited to hazard mitigation, project redesign, elimination of building sites and development of building and septic system envelopes, building setbacks and foundation and drainage requirements as necessary in order to mitigate landslide and debris flow hazards.*
Policy B-15	*Require the preparation of a preliminary soils report, prepared by a registered civil engineer and based upon adequate test borings, for every subdivision and every individual lot where soils have been identified that are subject to expansion, settlement or hydrocompaction.*
Policy B-16	*Require a soils report where there is inadequate soils information prior to issuance of permits for habitable structures and private wastewater disposal (septic) systems.*
Policy B-17	*Require the developers and/or subdividers of a parcel or parcels in an area of known highly expansive soils hazard to record a notice of Geologic Hazards with the County Recorder describing the potential hazards on the parcel and the level of prior geologic investigation conducted.*
Policy B-18	*Require project modifications, including but not limited to hazard mitigation, project redesign, elimination of building sites, building envelopes and drainage and foundation requirements as necessary in order to mitigate hazards associated with soils that may be subject to expansion, settlement or hydro-compaction.*

Source: City of Thousand Oaks 2022b

8.2.3.4 Ventura County

Goals and policies established by the *Ventura County 2040 General Plan* (Ventura County 2020) associated with geology and soils resources that are applicable to the project fall within two elements, as shown in Table 8-4. The Conservation and Open Space Element (COS) includes policies intended to identify preservation and conservation goals for the county's open space environment. The Hazards and Safety Element (HAZ) focuses on identifying risk and protecting the community from unreasonable risk.

Table 8-4. Ventura County Geology and Soils Goals and Policies

Goal or Policy Number	Goal or Policy Language
Goal COS-5	*To preserve and protect soil resources in the county from erosion and for agricultural productivity.*
COS-5.1: Soil Protection	*The County shall strive to protect soil resources from erosion, contamination, and other effects that substantially reduce their value or lead to the creation of hazards.*
COS-5.2: Erosion Control	*The County shall encourage the planting of vegetation on soils exposed by grading activities, not related to agricultural production, to decrease soil erosion.*
COS-5.3: Soil Productivity	*The County shall encourage landowners to participate in voluntary programs that reduce soil erosion and increase soil productivity. To this end, the County shall promote coordination between the Natural Resources Conservation Service, Ventura County Resource Conservation District, University of California Cooperative Extension, and other similar agencies and organizations.*
Goal COS-6	*To manage mineral resources in a manner that identifies economically significant mineral deposits and plans for, and protects access to, extraction, and long-term conservation of mineral resources for existing and future generations.*

Table 8-4. Ventura County Geology and Soils Goals and Policies

Goal or Policy Number	Goal or Policy Language
COS-6.1: Balanced Mineral Resource Production and Conservation	*The County shall balance the development and conservation of mineral resources with economic, health, safety, and social and environmental protection values.*
COS-6.2: Significant Mineral Resource Deposits	*In accordance with California Code of Regulations Section 3676, the County shall maintain classification and/or designation reports and maps of mineral resources deposits as identified by the California State Geologist as having regional or statewide significance and any additional deposits as may be identified by the County, and as provided by the State Mining and Geology Board. The County shall provide notice to landowners and the general public on the location of significant mineral resource deposits.*
COS-6.3: Mineral Extraction Location Priority	*The County shall promote the extraction of mineral resources locally to minimize economic costs and environmental effects associated with transporting these resources.*
COS-6.4: Mineral Resource Area Protection	*Discretionary development within Mineral Resource Zones identified by the California State Geologist shall be subject to the Mineral Resource Protection (MRP) Overlay Zone and is prohibited if the use will significantly hamper or preclude access to or the extraction of mineral resources.*
COS-6.5: Mineral Resource Land Use Compatibility	*The County shall ensure that discretionary development is compatible with mineral resources extraction and processing if the development is to be located in areas identified on the Mineral Resource Zone Maps prepared by the California State Geologist or in County identified mineral resource areas. The County shall:* *1. Require an evaluation to ascertain the significance of the mineral resources deposit located in the area of a discretionary development and to determine if the use would significantly hamper or preclude access to or the extraction of mineral resources.* *2. Require discretionary development proposed to be located adjacent to existing mining operations to provide a buffer between the development and mining operations to minimize land use incompatibility and avoid nuisance complaints.* *3. Establish a buffer distance based on an evaluation of noise, community character, compatibility, scenic resources, drainage, operating conditions, biological resources, topography, lighting, traffic, operating hours, and air quality.*
COS-6.6: In-River Mining	*The County shall require discretionary development for in-river mining to incorporate all feasible measures to mitigate water, biological resource, flooding, and erosion impacts.*
Goal HAZ-4	*To minimize the risk of loss of life, injury, collapse of habitable structures, and economic and social dislocations resulting from geologic and seismic hazards.*
HAZ-4.1: Projects in Earthquake Fault Zones	*The County shall prohibit new structures for human occupancy and subdivisions that contemplate the eventual construction of structures for human occupancy in Earthquake Fault Zones unless a geologic investigation is performed to delineate any hazard of surface fault rupture and appropriate and sufficient safeguards, based on this investigation, are incorporated into the project design.*
HAZ-4.2: Linear Project Intersection with Active Faults	*The County shall require that linear projects, including roads, streets, highways, utility conduits, water transmission facilities, and oil and gas pipelines, avoid intersecting active faults to the extent possible. When such locations are unavoidable, the project design shall include measures to minimize the effects of any fault movement.*
HAZ-4.3: Structural Design	*The County shall require that all structures designed for human occupancy incorporate engineering measures to reduce the risk of and mitigate against collapse from ground shaking.*
HAZ-4.4: Discretionary Development Below Rocky Outcrops	*The County shall require discretionary development below rocky outcrops to evaluate and mitigate potential rockfall hazards including but not limited to by avoiding placement of structures that could be impacted by rockfall hazards, rock removal, rock anchoring, walls, fence barriers, or other similar systems.*

Table 8-4. Ventura County Geology and Soils Goals and Policies

Goal or Policy Number	Goal or Policy Language
HAZ-4.5: Soil Erosion and Pollution Prevention	*The County shall require discretionary development be designed to prevent soil erosion and downstream sedimentation and pollution.*
HAZ-4.6: Vegetative Resource Protection	*The County shall require discretionary development to minimize the removal of vegetation to protect against soil erosion, rockslides, and landslides.*
HAZ-4.7: Temporary Revegetation on Graded Areas	*The County shall require, as necessary, the use of soil stabilization methods on graded areas to reduce the potential for erosion, particularly during the construction phase.*
HAZ-4.8: Seismic Hazards	*The County shall not allow development of habitable structures or hazardous materials storage facilities within areas prone to the effects of strong ground shaking, such as liquefaction, landslides, or other ground failures, unless a geotechnical engineering investigation is performed and appropriate and sufficient safeguards, based on this investigation, are incorporated into the project design.*
HAZ-4.9: Slope Development	*The County shall require geotechnical reports that demonstrate adequate slope stability and construction methods for building and road construction on slopes greater than 50 percent pursuant to the California Building Code Appendix J Section 108.6.*
HAZ-4.10: Development in Landslide/Debris Flow Hazard Areas	*The County shall not allow development in mapped landslide/debris flow hazard areas unless a geologic and geotechnical engineering investigation is performed and appropriate and sufficient safeguards, based on this investigation, are incorporated into the project design.*
HAZ-4.11: Alteration of Land in Landslide/ Debris Flow Hazard Areas	*The County shall not allow alteration of land in landslide/debris flow hazard areas, including concentration of water through drainage, irrigation or septic systems, removal of vegetative cover, and undercutting of the bases of slopes or other grading activity unless demonstrated by geologic, geotechnical, and civil engineering analysis that the project will not increase the landslide/debris flow hazard.*
HAZ-4.12: Slope Drainage	*Drainage plans that direct runoff and drainage away from slopes shall be required for construction in hillside areas.*
HAZ-4.13: Design for Expansive Soils	*The County shall not allow habitable structures or individual sewage disposal systems to be placed on or in expansive soils unless suitable and appropriate safeguards are incorporated into the project design to prevent adverse effects.*
HAZ-4.14: Development in Seiche Hazard Areas	*The County shall not allow development in potential seiche hazard areas unless a geotechnical engineering investigation is performed and appropriate and sufficient safeguards, based on this investigation, are incorporated into the project design.*
HAZ-4.15: Subsidence Hazard – Extraction Wells	*The County shall require that potential ground surface subsidence be evaluated prior to approval of new oil, gas, water, or other extraction well drilling permits and appropriate and sufficient safeguards are incorporated into the project design and facility operation.*
HAZ-4.16: Subsidence and Hydroconsolidation Hazard – Structural Design	*Structural design of buildings and other structures shall recognize the potential for subsidence and hydroconsolidation and provide mitigation recommendations for structures that may be affected.*
HAZ-4.17: Earthquake Fault Zone Maps or Earthquake Zones of Required Investigation	*The County should, where feasible, require that land in Earthquake Fault Zones and potentially Holocene active fault areas be designated Open Space or Agriculture on the General Land Use Diagram.*
HAZ-4.18: Preparation of Plans in Seiche Hazard Areas	*The County shall consider Seiche Hazard Areas during the preparation of regional and area plans and special studies and be used to guide future investigations of the hazard.*

Source: Ventura County 2020

8.3 Assessment Methods and Thresholds of Significance

Potential impacts on geology and soil resources were evaluated using existing information regarding the geologic, soil, and seismic characteristics of the project area and overlaying project feature alternatives on maps of geological and soil constraints. Impact thresholds were based on criteria in Appendix G of the CEQA Guidelines. Impacts related to geology and soil resources may occur if the Pure Water Project would result in the following:

- Exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - Rupture of a known earthquake fault
  - Strong seismic ground shaking
  - Seismically related ground failure, including liquefaction
  - Landslides
- Substantial soil erosion or the loss of topsoil
- Unstable geologic unit or soil, potentially resulting in:
  - Onsite or offsite landslide
  - Lateral spreading
  - Subsidence
  - Liquefaction or collapse
- Locating infrastructure on expansive soil, creating substantial risks to life or property
- 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
- Directly or indirectly destroying a unique paleontological resource or site or unique geologic feature

8.4 Environmental Impacts

This section describes the environmental impacts likely to result from Pure Water Project implementation with respect to geology and soil resources.

8.4.1 Overview

Due to the location of Pure Water Project, there are risks associated with potential seismic activity and composition of underlying geologic and soil units. These risks may increase when combined with periods of heavy rainfall. However, implementing proper design techniques and following local, state, and federal guidelines would minimize potential substantial adverse effects. Appendix G of the CEQA Guidelines provides the basis for impact analysis related to geology and soils in the form of six questions, which are summarized as impacts in Table 8-5 and described in subsequent sections in this chapter.

Table 8-5. Geology and Soils Impact Questions

Would the Pure Water Project	Alternative 1 Agoura Road AWPF	Alternative 2 Reservoir AWPF	Pipelines
Impact 8.1: Seismic Risks	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 8.2: Substantial Soil Erosion or Loss of Topsoil	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 8.3: Unstable Geologic Unit or Soils	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 8.4: Expansive Soils	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 8.5: Soils and Wastewater	No impact	No impact	No impact
Impact 8.6: Unique Geologic Feature	No impact	No impact	No impact

8.4.2 Impact 8-1: Seismic Risks

There are no active faults within the project area according to published geologic data (Dibblee and Ehrenspeck 1990, 1992, 1993; Yerkes and Showalter 1991, 1993; Yerkes and Campbell 1995a, 1995b, 1997a, 1997b; Campbell et al. 2014; USGS 2020); and the project area is not within an Alquist-Priolo Earthquake Fault Zone. Therefore, impacts related to rupture of a known earthquake fault would be less than significant.

The project area is located within a seismically active area and is susceptible to strong ground shaking during major earthquakes because of the proximity to earthquake sources. Ground shaking is amplified and lasts longer where soils are unconsolidated or saturated with water. Ground shaking impacts would be less severe in upland areas underlain by hard bedrock. Within the project area, ground shaking intensity is potentially very strong or violent (Figure 8-2). Potential damage to buildings and utilities would likely be greatest in areas underlain by alluvial deposits, as shown on Figure 8-1 and 8-2.

Ground shaking associated with earthquakes could affect Pure Water Project facilities by causing pipeline breakage or damage to aboveground pump station structures and the AWPF itself. Outside of the AWPF, most project structures would be unoccupied, with only occasional occupancy or visits by Operations staff for maintenance and related activities. The AWPF would be the only regularly occupied structure; damage to this building from ground shaking could expose people to potential adverse effects. Geotechnical engineering and seismic studies mandated by Mitigation Measure 8-1 would be conducted to test and evaluate site conditions; identify appropriate seismic design details; and confirm implementation of suitable construction measures following regulatory guidelines to reduce the potential for adverse impacts to a less than significant level.

The eastern portion of the source water pipeline and portions of the concentrate pipeline located along Hillcrest and Thousand Oaks Boulevard near The Oaks mall and Hill Canyon Fire Road are located within areas with liquefaction potential (Figure 8-3). Neither AWPF locations are within areas with liquefaction potential (Figure 8-3). Pipeline breaks resulting from ground displacement in liquefiable areas (including lateral spread areas) during earthquakes are common. Most of the pipelines would be placed in city rights-of-way (ROWs), primarily in streets, which are easily accessible. Geotechnical engineering and seismic studies mandated by Mitigation Measure 8-1 would be conducted to test and evaluate site conditions; identify appropriate seismic design details; and confirm implementation of suitable construction measures following regulatory guidelines to reduce the potential for adverse impacts to a less than significant level.

8.4.3 Impact 8-2: Substantial Soil Erosion or Loss of Topsoil

Pure Water Project construction activities in urbanized areas and within city ROWs, including roadways, would limit disturbance acreage to the excavation footprint, thereby limiting the risk of erosion. Soils within the relatively flat urban areas have low erosion hazard, further reducing erosion risk. Hillside areas of the concentrate pipeline in the northwestern project area and the hillside area east of Las Virgenes Reservoir have a higher risk of erosion, and measures would need to be implemented during construction to control erosion and loss of topsoil (Figure 8-4).

Pure Water Project construction activities requiring substantial soil trenching or excavation, if not properly managed, could result in substantial erosion of stockpiled soils; and sediment could be transported into storm drains or sensitive receiving waters. Project construction activities, including stockpiling materials in a central location where they could be effectively managed, would reduce the risk of erosion and sediment transport outside of project work areas.

Individual project construction activities may require coverage under the State's CGP if the land disturbance area is greater than or equal to 1 acre. Because many of the project features are within paved, urbanized areas, land disturbance would likely be less than 1 acre; so CGP coverage would not be required. However, local policies require erosion control measures for all development sites where grading activities occur, including those with:

- Landslide deposits
- Past erosion problems
- The potential for stormwater quality impacts
- Slopes of 15% or greater that are to be altered

Therefore, even projects with land disturbance acreage less than 1 acre would be required to implement appropriate erosion and sediment control measures where there is substantial risk of erosion or impacts on water quality. With the implementation of Mitigation Measure 8-2, the impact would be less than significant.

8.4.4 Impact 8-3: Unstable Geologic Unit or Soils

Pure Water Project features are not located within mapped geologic or soil units identified as unstable. However, the project could have geological, seismic, and soil impacts where activities occur on certain geologic units and soils having potential for the following:

- Collapse
- Corrosion
- Erosion
- Landslides
- Lateral spreading
- Liquefaction
- Settlement
- Shrink-swell behavior
- Some combination of these

As mandated by Mitigation Measure 8-1, performing site-specific geotechnical and engineering studies, following regulatory guidelines, and implementing geotechnical and engineering recommendations would reduce the impact to less than significant.

8.4.5 Impact 8-4: Expansive Soils

Most pipeline areas are urbanized and have previously been graded for development, including areas within city streets and easements. Engineered fill is well-graded and would not shrink or swell. Other project features may be underlain by soils that exhibit shrink-swell characteristics of expansive soils.

Subsurface investigations mandated by Mitigation Measure 8-1 would be conducted to test and evaluate soil conditions, identify appropriate design details, and confirm implementation of suitable construction measures following regulatory guidelines to reduce the potential for adverse impacts to a less than significant level.

8.4.6 Impact 8-5: Soils and Wastewater

Alternative 1 Agoura Road AWPF and Alternative 2 Reservoir AWPF would connect to an existing sewer system. Therefore, project construction activities would have no impact on future use of septic tanks or wastewater disposal systems, and no mitigation measures are needed.

8.4.7 Impact 8-6: Unique Geologic Feature

There are no unique geologic features mapped within either AWPF location or along proposed pipeline alignment alternatives. Therefore, project construction activities would have no impact, and no mitigation measures are needed.

8.5 Mitigation Measures

Impacts 8-1 through 8-4 would be less than significant, and Impacts 8-5 and 8-6 would have no impacts. The following mitigation measures will be used during Pure Water Project implementation for geology and soil.

Mitigation Measure 8-1. Review regulation requirements, perform site-specific geotechnical and engineering studies, and implement recommendations. The project and its design engineers will perform site-specific geotechnical and engineering studies as required by local policies to meet the goals and objectives listed in Tables 8-1 through 8-4. The review will verify compliance with federal, state, and local regulations related to reducing earthquake and soils hazards. Approval will be granted for projects in areas of potential geologic hazards only where it can be demonstrated that the project will not be endangered by, or contribute to, the hazardous condition on the site or on adjacent properties.

The studies will include identification of site-specific geotechnical and engineering measures. Typical geotechnical or engineering report measures to reduce impacts related to liquefaction, settlement, or other ground failure could include earthwork and foundation remediation, which will comply with applicable provisions of the CBC.

Mitigation Measure 8-2. Comply with regulations and policies for erosion control. Prior to start of construction, the project's technical engineering team will review local policies (Tables 8-1 through 8-4) and work with construction contractors to develop and implement a project-specific SWPPP for construction projects with a land disturbance area equal to or greater than 1 acre. For projects with disturbance area less than 1 acre, a site-specific Erosion and Sediment Control Plan will be prepared. For projects with any land disturbance, construction will comply with local site development codes and incorporate an effective combination of erosion and sediment control measures identified in the California Stormwater Quality Association (CASQA) *Stormwater Best Management Practice Handbook* (CASQA 2003).

Construction erosion and sediment control BMPs typically include the following measures:

- Scheduling site grading during the dry season (April 15 to October 15), when possible
- Segregating topsoil during rough grading

- Temporarily stabilizing soil during site grading and active construction
- Permanently stabilizing site soil after construction
- Implementing erosion and sediment controls during construction dewatering activities
- Controlling site runon and runoff to isolate the work area and prevent onsite or offsite erosion and sediment transport during construction
- Implementing dust suppression measures
- Managing stockpiles; in accordance with local standard construction practices, materials will be stockpiled at central locations instead of within work areas, where feasible

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9. Greenhouse Gas Emissions

This chapter describes the GHG emissions impacts resulting from implementation of the Pure Water Project.

9.1 Existing Setting

This section describes the project's existing setting as related to GHGs.

9.1.1 Greenhouse Gases

GHGs include both naturally occurring and anthropogenic gases, such as (EPA 2021c):

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)
- Hydro-chlorofluorocarbons
- Perfluorocarbons
- Sulfur hexafluoride (SF_6)

The accumulation of GHGs in the atmosphere influences the long-term range of average atmospheric temperatures. These gases trap the energy from the sun and help maintain the temperature of the Earth's surface, creating a process known as the greenhouse effect (EPA 2021c).

The effect each GHG has on global warming is a combination of the amount of their emissions and their global warming potential (GWP). GWP is a measure of how much energy the emissions of 1 ton of a gas would absorb over a given period of time, relative to the emissions of 1 ton of CO_2. The larger the GWP, the more that a given gas warms the Earth compared to CO_2 over that time period. CH_4 and N_2O are substantially more potent than CO_2. GHG emissions are typically presented in terms of metric tons (MT) of carbon dioxide equivalent (CO_2e), which are calculated as the product of the mass emitted of a given GHG and its specific GWP (EPA 2021c).

The most important GHG in human-induced global warming is CO_2. While many gases have higher GWP than the naturally occurring GHGs, CO_2 is emitted in higher quantities and accounts for 80% of all GHGs emitted by the U.S. (EPA 2021b). Fossil fuel combustion, especially from the generation of electricity and powering of motor vehicles, has led to substantial increases in CO_2 emissions; thus, leading to substantial increases in global atmospheric CO_2 concentrations over the last century.

CO_2 concentrations have increased substantially since the beginning of the industrial era, rising from an annual average of 280 ppm in the late 1700s to 414 ppm in 2021—a 48% increase (EPA 2021d). Almost all of this increase is due to human activities (USGCRP 2017). The National Aeronautics and Space Administration (NASA) reported average monthly measurements exceeding 420 ppm from April through June 2022 (NASA 2022). The buildup of CO_2 in the atmosphere is a result of increased emissions and CO_2's relatively long lifespan in the atmosphere of 50 to 200 years.

Concentrations of the second most prominent GHG, CH_4, have also increased due to human activities, such as:

- Rice production
- The degradation of waste in landfills
- Cattle farming
- Natural gas mining

In April 2022, the atmospheric level of CH_4 was nearly 1,910 ppb (Global Monitoring Laboratory 2022), more than double the preindustrial level (EPA 2021d). This increase is primarily due to agriculture

(IPCC 2022). CH_4 has a relatively short atmospheric lifespan of only 12 years, but it has a higher GWP potential than CO_2 (EPA 2021e).

N_2O concentrations in the atmosphere have rarely exceeded 280 ppb over the past 800,000 years. Levels have risen since the 1920s and reached a new high of 334 ppb in 2021, primarily due to agricultural practices (EPA 2021d). N_2O has a 120-year atmospheric lifespan, meaning that, in addition to its relatively large GWP, its influence is long lasting, which increases its role in global warming.

SF_6, used in the electrical industry and refrigerants such as hydrofluorocarbons and perfluorinated compounds, is present in the atmosphere in relatively small concentrations but is very stable, with an atmospheric lifetime of 3,200 years, making it a potent GHGs (EPA 2022b).

GHGs differ from criteria pollutants in that GHG emissions in the atmosphere do not cause direct adverse human health effects. Rather, the environmental effects of GHG emissions result from changes in global temperatures and climate; which, in turn, can have numerous indirect effects on the environment.

9.1.2 Greenhouse Gases Emission Inventories

The largest source of GHG emissions from human activities in the U.S. is from fossil fuels combustion for electricity, heating, and transportation. Based on the 2019 inventory data, the top contributors of GHG emissions in the U.S. are transportation, electricity production, and industrial sources (EPA 2021b).

In California, transportation sources make up the largest category of GHG-emitting sources (CARB 2021b). In 2019, the annual California statewide GHG emissions were 418.2 million metric tons (MMT) of CO_2e. The transportation sector accounts for about 41% of the statewide GHG emissions. The industrial and electric power sectors account for 24 and 14%, respectively, of the total statewide GHG emissions. The dominant GHG emitted is CO_2, primarily from fossil fuel combustion.

In Los Angeles County, Agoura Hills's GHG emissions were approximately 266,890 MT CO_2e in 2018. The largest portion of the city's 2018 emissions were from transportation (73%), followed by emissions from electricity (12.67%) and natural gas use in buildings (9.99%) (City of Agoura Hills 2022a). The City of Westlake Village currently does not have a citywide GHG inventory.

In Ventura County, the GHG emissions from the County's unincorporated area was prepared for the Ventura County General Plan Update Project using a baseline year of 2015. The total community-wide emissions for the unincorporated area in 2015 were approximately 1.857 MMT CO_2e. Transportation is the top contributor of GHG emissions, and accounted for 37% of the GHG from the county's unincorporated area (Ventura County 2020).

Ventura County Regional Energy Alliance prepared GHG emissions (2010 through 2012) for each of its local government member organizations. The GHG emissions from Thousand Oaks in 2012 were 886,369 MT CO_2e. Emissions from energy use is the largest source of GHGs (51%). Onroad transportation on city roads (excluding state highways) was the second contributor, accounting for about 31% of the city's emissions each year (Ventura County Regional Energy Alliance 2015).

9.2 Regulatory Framework

This section describes the project's regulatory framework as related to GHGs.

9.2.1 Federal Regulations

EPA's authority to regulate GHG emissions stems from the 2007 U.S. Supreme Court decision in Massachusetts v. EPA (549 US 497). The Supreme Court ruled that GHGs meet the definition of air pollutants under the CAA and must be regulated if these gases could be reasonably anticipated to endanger public health or welfare. Responding to the Court's ruling, EPA finalized an endangerment finding in December 2009. EPA found that the following six GHGs taken in combination endanger both the public health and the public welfare of current and future generations:

1) CO_2
2) CH_4
3) Hydrofluorocarbons
4) N_2O
5) Perfluorocarbons
6) SF_6

EPA also found that the combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the greenhouse effect and, under Section 202(a) of the CAA, result in air pollution that endangers public health and welfare.

Based on the endangerment finding, the EPA and the National Highway Traffic Safety Administration took coordinated steps to produce a new generation of clean vehicles with reduced GHG emissions and improved fuel efficiency from onroad vehicles and engines. EPA, in conjunction with the National Highway Traffic Safety Administration, issued a series of GHG emission standards for vehicles that significantly increased the fuel economy standards for new vehicles sold in the country (EPA 2022c).

In 2009, EPA issued the *Final Mandatory Reporting of Greenhouse Gases Rule*, which requires reporting of GHG emissions from large sources and suppliers in the U.S. This rule requires suppliers of fossil fuels and industrial GHGs, manufacturers of vehicles and engines outside the light-duty sector, and facilities that emit more than 25,000 MT CO_2e per year from stationary sources to submit annual reports to the EPA (EPA 2009).

Upon taking office on January 20, 2021, President Joseph Biden issued his “Executive Order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis” (EO 13990). EO 13990 calls for all federal agencies to review climate-related regulations and actions taken in the past 4 years, and tasks the Council on Environmental Quality (CEQ) with updating its final guidance titled *Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews* (81 FR 51866), effective August 5, 2016. Pursuant to EO 13990, CEQ rescinded the draft GHG-related NEPA guidance issued in 2019 and is currently reviewing the 2016 final guidance for revision and update (CEQ 2021).

9.2.2 State Regulations

Executive Order (EO) S-3-05, issued in 2005, established GHG emissions reduction targets for California. The targets called for a reduction of GHG emissions to 2000 levels by 2010, 1990 levels by 2020, and 80% less than 1990 levels by 2050. The CalEPA Secretary is required to coordinate development and implementation of strategies to achieve the GHG reduction targets.

In 2006, the California State Legislature passed the Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32), which provides the framework for regulating GHG emissions in California. This law requires CARB to design and implement emission limits, regulations, and other measures such that statewide GHG emissions are reduced in a technologically feasible and cost-effective manner to 1990 levels by 2020. Calculation of the original 1990 limit approved in 2007 was revised in 2014 using the scientifically updated Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report GWP values, to 431 MMT of CO_2e (CARB 2022c). Total California emissions in 2019 were 418.2 MMT of CO_2e (CARB 2022d).

Part of CARB’s direction under AB 32 was to develop a scoping plan that contains the main strategies California would use to reduce the GHG emissions that contribute to climate change. CARB first approved the AB 32 Scoping Plan in 2008. and its latest adopted plan is the *2017 Climate Change Scoping Plan* (CARB 2017). The Draft 2022 Climate Change Scoping Plan was released in May 2022 and is currently under public and CARB review(CARB 2022e). The scoping plan includes a range of GHG reduction actions, which include:

- Direct regulations
- Alternative compliance mechanisms
- Monetary and nonmonetary incentives
- Voluntary actions
- Market-based mechanisms, such as a cap-and-trade system
- A fee regulation to fund the AB 32 program

One important regulation resulting from AB 32 was CARB's *Mandatory Greenhouse Gas Reporting Regulation*, which came into effect in April 2019 (CARB 2019b). This regulation requires annual GHG emissions reporting from entities that emit 10,000 MT or more of CO_2e per year from stationary combustion or process sources, including:

- Electric power entities
- Fuel suppliers
- CO_2 suppliers
- Operators of petroleum and natural gas systems
- Industrial facilities

On April 29, 2015, Governor Jerry Brown issued EO B-30-15, directing state agencies to implement measures to reduce GHG emissions to 40% less than their 1990 levels by 2030 and to achieve the previously stated goal of an 80% GHG reduction by 2050. On September 8, 2016, Senate Bill (SB) 32 was enacted, which extends California's commitment to reduce GHG emissions by requiring the state to reduce statewide GHG emissions by 40% less than 1990 levels by 2030. The 2017 version of CARB's Scoping Plan established a path that would get California to its 2030 target that's reiterated in the 2022 draft update.

To best support the reduction of GHG emissions consistent with AB 32, CARB released the *Short-Lived Climate Pollutant (SLCP) Reduction Strategy* in March 2017. This plan, required by SB 605, established targets for statewide reductions in SLCP emissions as follows (CARB 2017a):

- 40% less than 2013 levels by 2030 for CH_4 and hydrofluorocarbons
- 50% less than 2013 levels by 2030 for anthropogenic black carbon

The SLCP Reduction Strategy was integrated into the 2022 draft update to CARB's Scoping Plan.

9.2.3 Local Regulations and Climate Actions

City of Agoura Hills is in the process of developing the city's Climate Action and Adaptation Plan; currently there is no officially adopted plan for the city. There are no climate action plans for the City of Westlake Village.

Ventura County developed an integrated approach to addressing climate change in its *Ventura County 2040 General Plan* by incorporating policies and programs that address climate change throughout the general plan elements. As such, the *Ventura County 2040 General Plan* also serves as the County's Climate Action Plan (Ventura County 2020), with a GHG reduction strategy for reducing community-wide GHG emissions in the unincorporated county, with a community GHG reduction target of 41% less than 2015 levels by 2030, 61% less than 2015 levels by 2040, and 80% less than 2015 levels by 2050. The plan documents the County's vulnerability to climate change and its climate adaptation strategy.

The GHG reduction targets for Thousand Oaks are 40% less than 2010 levels by 2030 and 80% less than 2010 levels by 2050, adopted by the City Council in January 2021. The targets are aligned with the state GHG emission reduction goals to guide the development of the City's *Climate and Environmental Action Plan* (City of Thousand Oaks 2021a).

9.3 Assessment Methods and Thresholds of Significance

This section describes the project's GHG assessment methods and thresholds of significance.

9.3.1 CEQA Thresholds of Significance and Impact Criteria

The significance thresholds used to evaluate the project's GHG impacts are outlined in Appendix G of the CEQA Guidelines. According to these guidelines, a significant impact related to GHG would occur if a project would:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment
- Conflict with an applicable plan, policy, or regulation adopted to reduce GHG emissions

The South Coast AQMD has established a GHG Significance Threshold of 10,000 MT CO_2e per year for industrial sources (South Coast AQMD 2019). The threshold applies to annual industrial operation emissions and also includes the amortized construction emissions over a project's lifetime, typically set at 30 years (South Coast AQMD 2008b).

The Ventura County APCD has not yet adopted GHG thresholds. Because Ventura County is adjacent to the South Coast AQMD's jurisdiction and both Los Angeles and Ventura counties are within the Southern California Governments' planning areas, Ventura County APCD has historically used the South Coast AQMD GHG thresholds for industrial sources for its CEQA evaluation.

Impacts of GHG emissions from implementing the project were evaluated based on the comparison to the South Coast AQMD GHG emission threshold, the project's consistency with the state's and region's GHG reduction policies, and whether the project's GHG emissions would hinder or delay the State's ability to meet the statewide GHG reduction targets.

9.4 Environmental Impacts

GHG impacts were evaluated based on the direct and indirect GHG emissions from the project. As summarized in Table 9-1, the project would cause less than significant GHG impacts. The project is not expected to generate GHG emissions that may have a significant impact on the environment; and it would not conflict with an applicable plan, policy, or regulation adopted to reduce GHG emissions. Detailed impact discussions are presented in the following sections.

Table 9-1. Summary of Greenhouse Gas Impacts

Impact	Direct and Indirect GHG Emissions
Impact 4-1: GHG emissions	Less than significant impact
Impact 4-2. Policy consistency	Less than significant impact

9.4.1 Impact 9-1: Greenhouse Gas Emissions

Project construction and operation would have the potential to emit direct and indirect GHG emissions in Los Angeles County (Agoura Hills and Westlake Village) and Ventura County (Thousand Oaks and unincorporated areas) where the AWPF alternatives and pipeline would be built. Because GHG impacts are at global scale instead of at regional or local levels, GHG emissions from the project were combined in this study, regardless of the locations of the activities.

9.4.1.1 Construction Emissions

The project involves construction of either Alternative 1 Agoura Road AWPF and Alternative 2 Reservoir AWPF and the associated pipelines that have the potential to generate direct GHG from the construction equipment and vehicles. GHG emissions from construction activities were estimated using CalEEMod (CAPCOA 2022).

AWPF construction GHG emissions were calculated based on the projected construction schedule and durations, and anticipated equipment and vehicle usage. Construction schedule and equipment activities for Alternative 1 Agoura Road AWPF and Alternative 2 Reservoir AWPF would be the same, thus the GHG emissions were estimated using one set of construction information and assumptions.

Pipeline construction methods and alignment length would be similar for Alternatives 1 and 2. Pipeline construction GHG emissions were estimated based on the alignment length to be constructed and include those from both Los Angeles and Ventura counties. CalEEMod default values were used when project-specific information was not available.

Table 9-2 summarizes the GHG emissions from the AWPF and pipeline construction. Appendix A provides information on the construction calculations and CalEEMod modeling outputs

Table 9-2. Estimated Construction Emissions of Greenhouse Gases

Construction Activities	CO_2e (MT)
AWPF 2025	217.96
AWPF 2026	923.30
AWPF 2027	370.66
Pipelines in Los Angeles County	804.19
Pipelines in Ventura County	1,191.88
Total Construction Emissions	3,507.98
Amortized Construction Emissions over 30 years	116.93

Total GHG emissions from project construction would be approximately 3,507.98 MT CO_2e for Alternatives 1 and 2. The annual GHG construction emissions, amortized over a 30-year lifetime, would be 116.93 MT CO_2e per year. Construction of the project would comply with the state and local regulations. In addition, implementation of the BMPs described in Chapter 4 for criteria pollutants and TAC emission control would also reduce or minimize GHG emissions from the project, such as:

- Maintaining equipment and vehicles in good operating conditions
- Limiting travel speeds
- Restricting equipment and vehicle idling time.

9.4.1.2 Operation Emissions

Project operation would cause both direct and indirect GHG emissions. Direct GHG emissions from the project would be due to the fuel combustion by vehicles and equipment used for the project's operation, including emissions from the vehicle trips for worker commutes and material delivery, as well as from testing and operation of the two emergency engines. Direct GHG emissions from AWPF operation were estimated based on the number of worker commute and delivery truck trips, and the routine maintenance and testing of the emergency generators.

Vehicle emissions factors were obtained from CARB's EMFAC2017 model (CARB 2017b). Emissions from emergency engine were estimated based on 50 hours of testing and maintenance per year, which is the maximum number of hours allowed by CARB's Air Toxics Control Measures for Tier 2 diesel emergency engines (CARB 2011). Emissions factors for emergency engines used off-road engine emission factors from CalEEMod. GHG emissions from water purifying processes at the AWPF and from pipeline maintenance are expected to be negligible.

Indirect emissions from the project would be associated with the power generation needed to provide the electricity for project operation. The project would use electricity from SoCal Edison's distribution grids. Indirect GHG emissions from power generation were estimated using CalEEMod's default emission factors for SoCal Edison. The GHG emissions were calculated using the 100-year GWP values from 40 CFR Appendix Table A-1 to Subpart A of Part 98 - Global Warming Potentials.

Table 9-3 provides a summary of the direct and indirect GHG emissions from project operation, which would mostly be the indirect emissions from power generation to support water purifying process electricity needs. Appendix A provides detailed emission calculations for project operations.

Table 9-3. Operation Emissions of Greenhouse Gases

Emissions	MT CO_2e per Year
Direct AWPF Emissions– Emergency Engine	8.81
Direct AWPF Emissions – Vehicle Trips	71.44
Indirect AWPF Emissions – Electricity Use – Power Generation	1,916.88
Total AWPF Operational Emissions	1,997.12

9.4.1.3 Total Greenhouse Gases Emissions

Table 9-4 summarizes the total GHG emissions from the project, which include both the direct and indirect GHG emissions of project operation and amortized construction emissions over the 30-year lifetime.

Table 9-4. Total Project Greenhouse Gases

Emissions	MT CO_2e per Year
AWPF Direct and Indirect Operation Emissions	1,997.12
Amortized Construction Emissions over 30-Year Lifetime	116.93
Total Operational Emissions	2,114.06
South Coast AQMD GHG Threshold	10,000.00

As shown in Table 9-4, total GHG emissions from the project would be much less than the South Coast AQMD CEQA threshold of 10,000 MT CO_2e per year. Therefore, the project's GHG emissions would have a less than significant impact .

9.4.2 Impact 9-2: Policy Consistency

EO S-3-05 and AB 32 set the goals of reducing statewide GHG emissions to 2000 levels by 2010, to 1990 levels by 2020, and by 80% less than 1990 levels by 2050. To meet the GHG reduction goals, CARB prepared the first AB 32 Scoping Plan in 2008 and updated the plan every 5 years to provide guidelines on statewide GHG reduction strategies. The *2017 Climate Change Scoping Plan* (CARB 2017a) was the primary plan to reduce GHG emissions throughout California and was designed to reduce statewide GHG emissions by 40% by 2030 as compared to 1990 levels. Regional and local climate action plans in the project area, as discussed in Sections 9.2.2 and 9.2.3, have similar or more aggressive goals for GHG reduction.

The project is consistent with AB 32 and its scoping plan, the regional and local general plans, and climate action plans. One of the goals listed in the 2017 Scoping Plan under the water sector is to "…develop and support more reliable water supplies for people, agriculture, and the environment, provided by a more resilient, diversified, sustainably managed water resources system with a focus on actions that provide direct GHG reductions." The project would improve local water supply reliability and drought resilience and effectively eliminate discharges to Malibu Creek, which the Las Virgenes MWD has committed to doing by 2030.

The project would also provide customers of the Las Virgenes MWD with access to a renewable and sustainable source of water. This new supply of locally produced water would reduce the uncertainty of water supply associated with importing water due to climate change and natural disasters, such as earthquakes and long-term drought conditions. The project would also minimize or avoid the GHG emissions associated with importing water from outside of the region.

By incorporating indirect potable recycled water use into the local supply portfolio, and along with other water supply solutions, the project would help increase the water supply and improve resiliency to climate change effects. As such, the project is consistent with the state's AB 32 and the 2017 Scoping Plan goals. In addition, the project-related GHG emissions would be less than the South Coast AQMD threshold for industrial sources, which was developed based on the region's emission reduction goals. Therefore, the project would not conflict with an applicable plan, policy, or regulation adopted to reduce GHG emissions. The project would have less than significant impacts.

9.5 Mitigation Measures

Impacts would be less than significant; therefore, no mitigation is required.

10. Hazards and Hazardous Materials

This chapter describes the existing setting related to hazards and hazardous materials in the project area, as well as the regulatory setting. Hazards and hazardous materials associated with the Pure Water Project and the potential impacts on public health and safety through exposure to hazards and hazardous materials are described. The locations of known past and present hazardous materials sites identified in or near the project area and hazardous materials that would be used in project operations are also described.

For this analysis, the term “hazards” refers to risk associated with such issues as fires, explosions, exposure to hazardous materials, and interference with emergency response plans. The term “hazardous material” is defined in different ways for different regulatory programs. For this analysis, a material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local agency, or if it has characteristics defined as hazardous by such an agency. A hazardous material is defined in 22 CCR 66260.10 as follows:

> *…A substance or combination of substances which, because of its quantity, concentration, or physical, chemical or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of or otherwise managed.*

10.1 Existing Setting

Alternative 1 Agoura Road AWPF is located on vacant, undeveloped land on the southern side of Agoura Road, within Agoura Hills. The adjacent lands to the south and east are similarly undeveloped, while the land to the west is developed with residential uses, and land to the north is predominantly commercial.

Alternative 2 Reservoir AWPF is located near the eastern shoreline of Las Virgenes Reservoir and is undeveloped. The lands immediately adjacent to the north, east, and south of the site are undeveloped. Las Virgenes Reservoir is located west of the site. A residential neighborhood is located approximately 850 feet to the north.

The Pure Water Project pipelines would be located underground, primarily within existing roadways. The Los Robles well is within the existing Los Robles Greens golf course.

A review was conducted of the following databases that list hazardous materials sites:

- EnviroMapper for EnviroFacts (EPA 2022d)
- GeoTracker (State of California 2022a)
- The Cortese list in EnviroStor (DTSC 2022a)

Within 1.0 mile of the project area, there are 41 sites listed in GeoTracker, including 27 that have a status of “closed with no further action required”; and 14 that have a status of “open” with various stages of monitoring, remediation, or closure (Figure 10-1). Most open sites involve groundwater contamination.

Two sites, TFX Aviation Inc. and Lowes Home Center, located approximately 1 mile southwest of the project area, have required maintenance and land use restrictions (DTSC 2022b). The restrictions at TFX Aviation Inc. are the result of previous manufacturing of civilian and military aircraft components between 1956 and 1989. Hazardous wastes were generated during the manufacturing process, including metals, cyanide, chlorinated solvents, and waste oils. Soil and groundwater at the site were impacted from the onsite waste disposal practices that included use of leach fields and two evaporation ponds. Site surface soils have been remediated to industrial/commercial standards, which has allowed for commercial redevelopment. The groundwater remediation is ongoing and is expected to continue for the foreseeable future.

The land use restrictions at Lowes Home Center are the result of agricultural activities from the late 1930s to the mid-1960s and other unknown activities. Soil and soil vapor contain arsenic, tetrachloroethylene (PCE), and trichloroethylene (TCE). Monitoring at the site is conducted annually, and maintenance is performed as needed (DTSC 2022c).

Numerous other sites were identified within 1 mile of the project area, including investigations and active remediation sites (State of California 2022a). No spills, releases, or underground storage tanks were recorded in the GeoTracker, EnviroMapper, or EnviroStor databases for either the Alternative 1 Agoura Road AWPF or Alternative 2 Reservoir AWPF sites.

Other sites or facilities identified in the databases were located more than 1 mile from the project area or were identified as not representing a potential hazard related to the project area or activities.

10.2 Regulatory Framework

Hazardous materials use, transportation, and disposal are governed by laws and regulations at all levels of government. This section describes the regulatory framework for hazardous materials related to the Pure Water Project.

10.2.1 Federal Regulations

The EPA is the lead federal agency that regulates hazardous waste handling, transport, generation, and disposal. The EPA delegates permitting and compliance assurance to the State. Table 10-1 lists federal regulatory agencies that oversee hazardous materials handling and hazardous waste management, and the statutes and regulations they administer.

Table 10-1. Summary of Federal Regulations for Hazardous Waste

Regulatory Agency	Authority	Summary
EPA	CWA	Requires an NPDES permit to discharge water.
	CAA (42 USC 7401 et seq., as amended)	Regulates accidental releases of hazardous materials through hazard assessments and response programs.
	Resource Conservation and Recovery Act	Regulates the generation, transportation, treatment, storage, and disposal of hazardous waste. DTSC is authorized to implement the State's hazardous waste management program for the EPA.
	Toxic Substances Control Act 1976 (15 USC 2605)	Requires reporting, record keeping and testing requirements, and restrictions relating to chemical substances and mixtures.
	Comprehensive Environmental Response, Compensation and Liability Act	Provides funding to clean up uncontrolled or abandoned hazardous waste sites, as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment.
U.S. Department of Transportation	Hazardous Materials Transport Act – CFR 49	Regulates the transportation of hazardous materials, types of hazardous materials, and vehicle marking during transport.
OSHA	Occupational Safety and Health Act (29 CFR 1910)	Protects workers by setting standards related to safety and health.

DTSC = California Department of Toxic Substance Control

OSHA = Occupational Safety and Health Administration

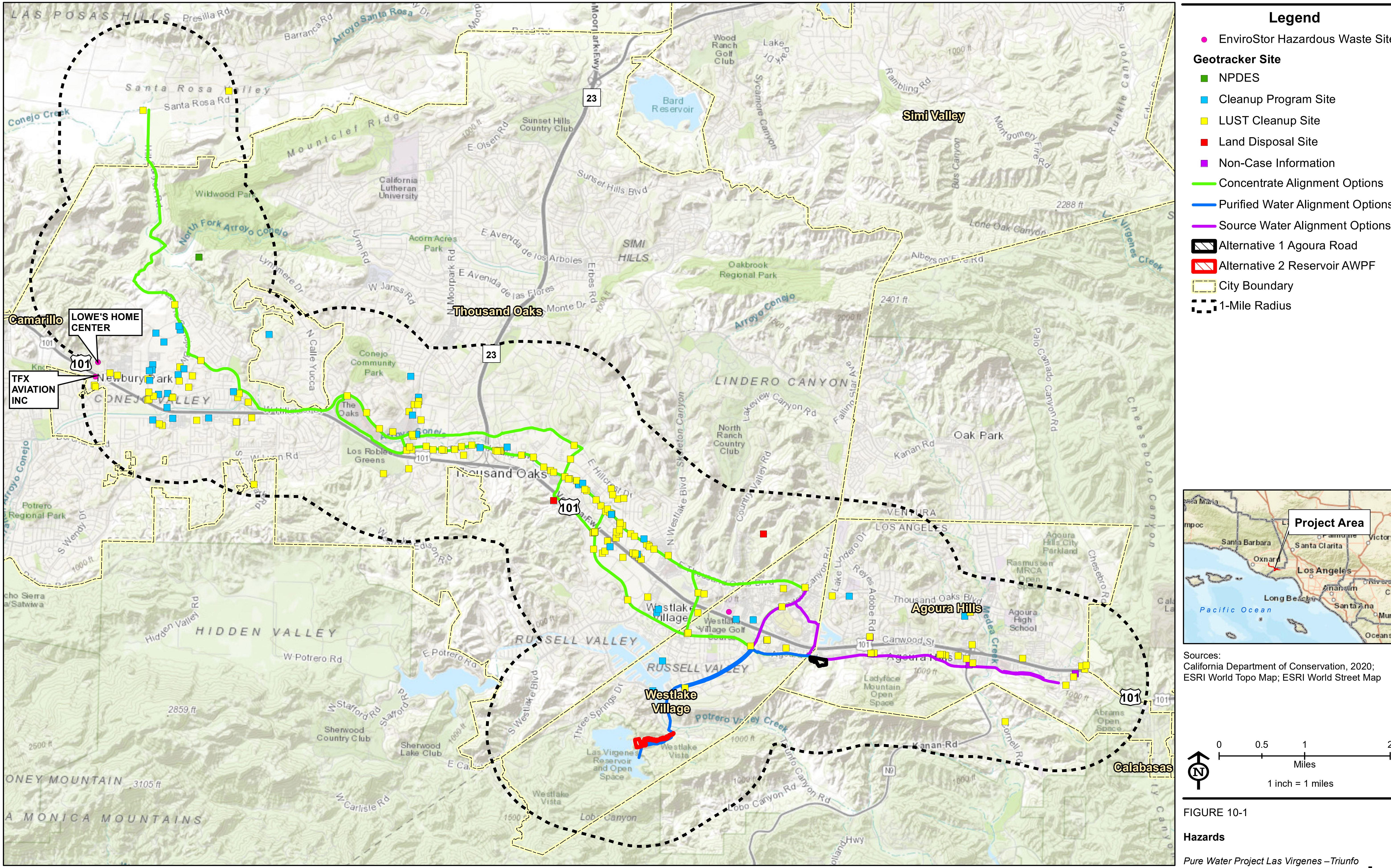

FIGURE 10-1

Hazards

Pure Water Project Las Virgenes – Triunfo

Jacobs

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10.2.2 State Regulations

CalEPA and the State Water Board establish rules governing the use of hazardous materials and management of hazardous waste. Table 10-2 summarizes applicable state laws.

Table 10-2. Summary of California Regulations for Hazardous Waste

Regulatory Agency	Authority	Summary
CalEPA through the Ventura County Resource Management Agency	Ventura CUPA	Ventura County CUPA is certified by Cal/EPA to implement the following statewide environmental programs under their jurisdiction: 1. Hazardous Materials Business Plan (Ventura County 2022b) 2. Hazardous Waste 3. Tiered Permitting 4. Underground Storage Tanks 5. Aboveground Petroleum Storage 6. California Accidental Release Prevention Program A "hazardous material" includes any substance that: ▪ Requires an SDS (California Labor Code, Section 6360); or ▪ Is a substance listed pursuant to 49 CFR; or ▪ Is a substance listed in 8 CCR 339; or ▪ Is listed as a radioactive material (10 CFR, Appendix B); or ▪ Is a hazardous waste (California Health and Safety Code, Chapter 6.5).
CalEPA through Los Angeles County	Los Angeles County Fire Department, Health Hazardous Materials Division, CUP	EPA works with its federal, state, and Tribal regulatory partners to assure compliance with its rules regarding the management of hazardous wastes under the federal Resource Conservation and Recovery Act. While much of the hazardous waste compliance responsibility is delegated to the State, EPA provides oversight of compliance activities to confirm facilities are properly inspected.
California Highway Patrol	California Vehicle Code	Designates routes to be used for the transportation of inhalation hazards.
Department of Industrial Relations	California Occupational Safety and Health Act	Requires employee training, safety equipment, prevention, and hazardous substance exposure warnings. Requires employer to monitor exposure to listed hazardous substances and notify employees of exposure.
The State Office of Emergency Services	Hazardous Materials Release Response Plans and Inventory Law (also known as the Business Plan Act)	Requires the preparation of hazardous materials business plans that include: ▪ An inventory of hazardous materials that are handled ▪ Their storage locations ▪ An emergency response plan ▪ Employee safety training ▪ Emergency response procedures
California Office of Environmental Health Hazard Assessment	Safe Drinking Water and Toxic Enforcement Act	Protects drinking water from chemical contamination.
	Aboveground Petroleum Storage Act	Requires owners or operators of aboveground petroleum storage tanks to file a storage statement and implement measures to prevent spills as part of an inspection program for aboveground storage tanks..

CUP = Conditional Use Permit

CUPA = Certified Unified Program Agency

SDS = Safety Data Sheet

10.2.3 Local Regulations

Policies and guidance related to hazardous materials found in sections of local regulations are discussed in this section.

10.2.3.1 City of Agoura Hills

The City of Agoura Hills has the following hazardous materials management systems in place:

- Hazardous Waste Management Plan Program (City of Agoura Hills 2022c): The City of Agoura Hills is a member of the Las Virgenes-Malibu Council of Governments (Las Virgenes-Malibu COG) and participates in the Las Virgenes-Malibu COG Hazard Mitigation Plan (Las Virgenes COG 2018). The cities within the Las Virgenes-Malibu COG experience similar hazards and combined efforts to create a thorough Hazard Mitigation Plan. While the Las Virgenes-Malibu region could experience a hazardous materials incident, incidents involving hazardous waste have a low historical frequency, and the types of businesses and industry in the area (other than traffic from major highways and railways) pose low risk. As a result, hazardous waste management was left out of the plan.
- Fire Code: The Fire Prevention Regulations of the City of Agoura Hills were adopted with reference to the 2019 edition of the California Fire Code published by the International Code Council, with additions, deletions, and amendments by the City of Agoura Hills.

The *City of Agoura Hills General Plan* (City of Agoura Hills 2010b) includes policies related to hazardous waste, as summarized in Table 10-3.

Table 10-3. City of Agoura Hills Aesthetics and Visual Goals and Policies

Goal or Policy Name	Goal or Policy Language[a]
S-5.1 Interjurisdictional Coordination	*Continue to coordinate with and support the Los Angeles County Sheriff's Department and Fire Department in carrying out inspections, emergency response, and enforcement of hazardous materials and waste compliance procedures for Agoura Hills.*
S-5.2 Hazardous Waste Collection	*Conduct frequent and convenient household hazardous waste round-ups.*
S-5.3 Educate Residents/Businesses	*Educate residents and businesses regarding methods to reduce or eliminate the use of hazardous materials, including the disposal of household hazardous materials, including medications, batteries, e-waste, etc., and the use of safer nontoxic equivalents.*
S-5.4 Hazardous Materials Regulation	*Work with relevant agencies regarding enforcement of applicable laws requiring all users, producers, and transporters of hazardous materials and wastes to clearly identify the materials that they store, use, produce, or transport, and to notify the appropriate county, state, and federal agencies in the event of a violation.*
S-5.5 Known Areas of Contamination	*Require proponents of projects in known areas of contamination from oil operations or other uses to perform comprehensive soil and groundwater contamination assessments, and undertake remedial procedures, as appropriate, prior to grading and development.*
S-5.6 Siting of Sensitive Uses	*Protect sensitive uses, such as schools, medical facilities and hospitals, daycare facilities, eldercare facilities, and residential, from significant impacts from uses that generate, use, or store hazardous materials.*

Source: City of Agoura Hills 2010b

10.2.3.2 City of Westlake Village

The City of Westlake Village has the following hazardous materials management systems in place:

- **Hazardous Waste Management Plan Program**: The City of Westlake Village is also a member of the Las Virgenes-Malibu COG and participates in the Las Virgenes-Malibu COG Hazard Mitigation Plan (Las Virgenes-Malibu COG 2018).
- **Fire Code**: The City of Westlake Village Fire Code was adopted with reference to:
  - Title 32 Fire Code of the Los Angeles County Code, as amended and in effect on April 9, 2020
  - California Fire Code, 2019 Edition
  - International Fire Code, 2018 Edition, with additions, deletions, and amendments

The *City of Westlake Village General Plan* (Westlake Village 2019) addresses the City's approach to minimize the hazards to public health and safety, and to reduce damage to the built and natural environments. Specific policies on hazardous waste are not included.

10.2.3.3 City of Thousand Oaks

The City of Thousand Oaks has the following hazardous materials management systems in place:

- **Hazardous Waste Management:** The City of Thousand Oaks maintains a Household Hazardous Waste Program for households and a hazardous waste disposal program for small businesses (City of Thousand Oaks 2014). The programs provide information and guidance on recycling or disposing of hazardous products.
- **Fire Code** (City of Thousand Oaks 2022c): The Ventura County Fire Department provides fire protection services, medical aid, rescue, hazardous materials response, and a variety of other services to Thousand Oaks.

The *Thousand Oaks General Plan* (City of Thousand Oaks 2022b) includes a Safety Element for the protection of the community from natural and built hazards. The general plan is currently undergoing updates, but policies from the 2014 Safety Element are listed in Table 10-4.

Table 10-4. City of Agoura Hills Aesthetics and Visual Goals and Policies

Goal or Policy Name	Goal or Policy Language[a]
E-1	*Manage hazardous wastes and materials in such a way that waste reduction through alternative technology is the first priority, followed by recycling and onsite treatment, with disposal as the last resort.*
E-2	*Continue to work with the County to implement the County Hazardous Materials Emergency Response Plan (developed by the Ventura County Environmental Health Department).*
E-3	*Strive to locate businesses that utilize hazardous materials in areas which will minimize risk to the public or the environment.*
E-4	*Coordinate with the Ventura County Environmental Health Department and the Regional Water Quality Control Board to encourage cleanup of sites that have been impacted by hazardous materials releases -- especially those that have impacted groundwater.*
E-5	*Implement programs to ensure proper disposal of household hazardous wastes. Educate the public about the importance of complying with such programs.*
E-6	*Continue to coordinate with the Ventura County Sheriff's Department, the California Highway Patrol, and the Ventura County Fire Protection District regarding regional plans for transportation corridors for hazardous materials.*

Source: City of Thousand Oaks 2014

10.2.3.4 Ventura County

Ventura County has the following hazardous materials management systems in place.

- **Hazardous Waste Management Plan Program**: The Ventura County Hazardous Waste Program (Ventura County 2022a) was created to properly manage hazardous wastes to protect public health and the environment. The program provides:
  - Assistance to small-quantity hazardous waste generators
  - Education
  - Coordinated identification
  - Permitting
  - Inspection of the waste generators
- **Fire Code**: The Ventura County Fire Code was adopted with reference to:
  - The 2019 California Fire Code
  - Portions of the 2018 International Fire Code
  - Portions of 19 CCR, with additions, deletions, and amendments by the Board of Directors of the Ventura County Fire Protection District

The *Ventura County 2040 General Plan* (Ventura County 2020) includes policies related to the usage, storage, and disposal of hazardous wastes, as summarized in Table 10-5.

Table 10-5. Ventura County Hazardous Waste Goals and Policies

Goal or Policy Name	Goal or Policy Language
HAZ-5.1 Hazardous Materials and Waste Management	*The County shall manage hazardous materials and wastes produced by County facilities and operations in such a way that waste reduction through alternative technology is the County's first priority. When not possible, the County's priorities will progress from recycling and reuse, then on-site treatment, and finally disposal as the last resort.*
HAZ-5.2 Hazardous Materials and Waste Management Facilities	*The County shall require discretionary development involving facilities and operations which may potentially utilize, store, and/or generate hazardous materials and/or wastes be located in areas that would not expose the public to a significant risk of injury, loss of life, or property damage and would not disproportionally impact Designated Disadvantaged Communities.*
HAZ-5.3 Preventing Contamination of Natural Resources	*The County shall strive to locate and control sources of hazardous materials to prevent contamination of air, water, soil, and other natural resources.*
HAZ-5.4 Household Hazardous Waste	*The County shall continue to develop and distribute educational materials and conduct educational outreach to inform the public about household hazardous waste and the proper disposal methods.*
HAZ-5.5 Hazardous Waste Reduction at the Source	*The County shall, as part of the discretionary review process, require that hazardous wastes and hazardous materials be managed in such a way that waste reduction through alternative technology is the first priority, followed by recycling and on-site treatment, with disposal as the last resort.*
HAZ-5.6 Hazardous Materials – County Regulatory Oversight	*The County shall continue to provide regulatory oversight for all facilities or activities that store, use, or handle hazardous materials.*
HAZ-5.7 Presence of Hazardous Wastes	*Applicants shall provide a statement indicating the presence of any hazardous wastes on a site, prior to discretionary development. The applicant must demonstrate that the waste site is properly closed, or will be closed, pursuant to all applicable state and federal laws before the project is inaugurated.*
HAZ-5.8 Siting Criteria for Hazardous Waste Generators	*The County shall require commercial or industrial uses which generate, store, or handle hazardous waste and/or hazardous materials to locate, operate, and maintain hazardous waste and/or hazardous materials in a manner that does not endanger public health and safety and is located based on objective criteria that do not disproportionally impact Designated Disadvantaged Communities.*

Source: Ventura County 2020

10.3 Assessment Methods and Thresholds of Significance

This section discusses the results of the government database searches, including from EPA and DTSC, and analysis of information about expected hazardous materials and practices relevant to Alternative 1 Agoura Road AWPF, Alternative 2 Reservoir AWPF, source water augmentation (Los Robles well), and all pipelines.

Impacts related to hazards and hazardous materials may occur if projects would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials
- 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
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school
- Be located on a site included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment
- Result in a safety hazard or excessive noise for people residing or working in the project area for a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport

There are no airports or private air strips within 2 miles of the project area. Construction activities within the project area would not be within an area addressed by an airport land use plan and would not create a significant safety hazard. Therefore, no hazards associated with airports would occur, and this issue is not discussed further.

10.4 Environmental Impacts

Table 10-6 summarizes the potential impacts from hazards and hazardous materials.

Table 10-6. Hazards and Hazardous Materials Impacts Summary

Impact	Alternative 1 Agoura Road AWPF	Alternative 2 Reservoir AWPF	Source Water Augmentation	Pipelines
Impact 10-1: Transport, use, or disposal of hazardous materials	Less than significant impact	Less than significant impact	Less than significant impact	Less than significant impact
Impact 10-2: Exposure to hazardous materials	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 10-3: Hazardous emissions within 0.25 mile of schools	No impact	No impact	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 10-4: Hazardous sites	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation

10.4.1 Impact 10-1: Transport, Use, or Disposal of Hazardous Materials

Construction of all Pure Water Project facilities would require the use of vehicles and other construction equipment, which would use hazardous materials, such as fuels, lubricants, and solvents. Accidental releases of small quantities of these materials could expose people and the environment to hazardous materials. However, the handling and storage of these materials would be in accordance with all DTSC, EPA, OSHA, and local Fire Department regulations and would comply with all applicable measures in the local general plans.

Routine activities require the handling, use, and storage of hazardous materials for the operation and maintenance of the AWPF. A Hazardous Materials Business Plan, as required by the *California Environmental Reporting System (CERS)* (State of California 2022c), would be prepared for the site and identify where flammable or toxic materials are used and stored, allowing appropriate response to a fire or other emergency. The Hazardous Materials Business Plan would also include:

- Emergency contact and notification information
- Containment and cleanup procedures
- Cleanup and first aid supplies onsite and their locations
- Facility evacuation procedures

The Hazardous Material Business Plan, training records, and SDSs would be on file at the AWPF.

Compliance with regulatory requirements would minimize potential impacts associated with the use, transport, and disposal of hazardous materials for all Pure Water Project facility construction and operation. Therefore, impacts would be less than significant.

10.4.2 Impact 10-2: Exposure to Hazardous Materials

As described for Impact 10-1, construction activities for all Pure Water Project facilities would include the handling of fuels, oils, and lubricants for construction equipment. Accidental releases of fuels, oils, and lubricants would be contained within the work site and addressed in accordance with all DTSC, EPA, OSHA, and local Fire Department regulations; impacts from the use of these materials during construction would be less than significant.

Likewise, some locations may include soil disturbance in areas of known or unknown contamination, as discussed for Impact 10-4. With implementation of *Mitigation Measure 10-1 Perform a Phase I investigation as needed prior to construction; and remediate, control, or dispose of contaminated materials as appropriate*, contaminated soil and groundwater would be identified and safely removed, and potential impacts would be less than significant.

Routine activities at the AWPF require the handling, use, and storage of hazardous materials for O&M. A Hazardous Materials Business Plan, as required by the CERS, would be prepared and identify where flammable or toxic materials are used and stored, allowing appropriate response to a fire or other emergency.

The Hazardous Materials Business Plan would also include:

- Emergency contact and notification information
- Containment and cleanup procedures
- Cleanup and first aid supplies onsite and their locations
- Facility evacuation procedures

The Hazardous Material Business Plan, training records, and SDSs would be on file at the AWPF. Therefore, impacts would be less than significant.

10.4.3 Impact 10-3: Hazardous Emissions Within 0.25 Mile of Schools

There are no existing schools within 0.25 mile of the Alternative 1 Agoura Road AWPF and Alternative 2 Reservoir AWPF locations. Therefore, there would be no impact.

Ten schools are located within 0.25 mile of the Los Robles well and pipelines:

1) Ascension Lutheran School 0.01 mile
2) Colina Middle School 0.01 mile
3) St. Jude the Apostle school approximately 0.01 mile
4) Enriching Hour Preschool approximately 0.10 mile
5) Little Dreamers Early Childhood 0.10 mile
6) Westlake High School approximately 0.10 mile
7) White Oak Elementary approximately 0.15 mile
8) Oaks Christian School approximately 0.15 mile
9) Carden Conejo School 0.19 mile
10) Conejo Elementary School 0.23 mile

As discussed for Impacts 10-1 and 10-2, the use, storage, transport, and disposal of hazardous materials would occur under existing regulations, programs, and plans, including a Hazardous Materials Business Plan and Spill Prevention Control and Countermeasures Plan. Safety, training, and emergency response procedures would remain in effect during construction and operation of the AWPFs and pipelines and would be updated regularly to account for changes in hazardous materials use.

As discussed for Impact 10-4, with implementation of *Mitigation Measure 10-1 Perform a Phase I investigation as needed prior to construction; and remediate, control, or dispose of contaminated materials as appropriate*, contaminated soil and groundwater would be identified and safely removed and disposed. No significant impacts would be expected due to handling of soils of unknown origin at sites within the project area. Therefore, impacts related to hazardous emissions within 0.25 mile of schools would be less than significant with mitigation for the pipelines.

10.4.4 Impact 10-4: Hazardous Sites

With mitigation, Impact 10-4 would be less than significant.

10.4.4.1 Alternative 1 Agoura Road Advanced Water Purification Facility

Construction of Alternative 1 Agoura Road AWPF would include excavation and other soil-disturbing activities. There are no cases listed in the GeoTracker (State of California 2022a) or EnviroStor (DTSC 2022b, c) in the exact location of the Agoura Road AWPF. However, during excavation, localized contamination could potentially be encountered in soils or groundwater from leaking underground fuel tanks identified by EnviroStor, from previously excavated soils of unknown origin placed on the site, or other sources of known or unknown contamination. Contaminated soils or groundwater could expose workers, the environment, and the public to hazardous materials.

With implementation of *Mitigation Measure 10-1 Perform a Phase I investigation as needed prior to construction; and remediate, control, or dispose of contaminated materials as appropriate*, contaminated soil and groundwater would be identified and safely removed and disposed; and impacts would be less than significant.

10.4.4.2 Alternative 2 Reservoir Advanced Water Purification Facility

Impacts of Alternative 2 Reservoir AWPF would be the same as described for the Agoura Road AWPF. There are no cases listed in the GeoTracker (State of California 2022a) or EnviroStor (DTSC 2022b, c) in the exact location of the Reservoir AWPF. With implementation of *Mitigation Measure 10-1 Perform a Phase I investigation as needed prior to construction; and remediate, control, or dispose of contaminated materials as appropriate*, contaminated soil and groundwater would be identified and safely removed and disposed; and impacts would be less than significant.

10.4.4.3 Source Water Augmentation

Use of the Los Robles well for source water augmentation only includes construction activities associated with the pipeline (Section 10.4.4.4 discusses the pipelines). Therefore, there would be no construction impacts.

Operation of the Los Robles well would extract between 400 and 700 AFY of groundwater from the Conejo Valley groundwater basin. As part of a recent City of Thousand Oaks project review for groundwater pumping from the Los Robles well, DTSC expressed concerns that additional pumping could destabilize the groundwater contamination plume at the TFX Aviation site (City of Thousand Oaks 2021b). This could result in groundwater contamination exceeding the existing treatment system design. Additional studies by the City of Thousand Oaks indicated a limited potential for a significant impact; however, a monitoring program was recommended to confirm the potential impact was addressed (City of Thousand Oaks 2021b). For this reason, source water augmentation system impacts are potentially significant but would be reduced to a less than significant level with the implementation of *Mitigation Measure 10-2 Los Robles Well Monitoring Program*.

10.4.4.4 Pipelines

Impacts from pipeline construction would be the same as described for the Agoura Road AWPF. Along the pipeline alignment options, there are 41 cases listed in the GeoTracker (State of California 2022a) or EnviroStor (DTSC 2022b, c), including:

- 27 that have a status of “closed with no further action required”
- 14 that have a status of “open” with various stages of monitoring, remediation, or closure required

Most open sites involve groundwater contamination. With implementation of *Mitigation Measure 10-1 Perform a Phase I investigation as needed prior to construction; and remediate, control, or dispose of contaminated materials as appropriate*, contaminated soil and groundwater would be identified and safely removed and disposed; and impacts would be less than significant.

10.5 Mitigation Measures

Impacts 10-1 through 10-4 would be less than significant with mitigation, or would not have an impact. The following mitigation measure will be used to control contaminated materials resulting from the project.

Mitigation Measure 10-1. Perform a Phase I investigation as needed prior to construction; and remediate, control, or dispose of contaminated materials as appropriate. New facility locations will be reviewed for inclusion in the lists of hazardous materials compiled pursuant to Government Code Section 65962.5. Where contamination is suspected, a Phase I site assessment of the proposed work area will be performed prior to start of construction activities, including excavation and other soil-disturbing activities, such as tunneling. The Phase I site assessment will comply with the applicable ASTM International (ASTM) standard for site assessments (currently *E-1527-21, Standard Practice For Environmental Site Assessments: Phase I Environmental Site Assessment Process*) and will include recommendations for reducing or eliminating the source or mechanisms of contamination, if contamination is found. Recommendations may include removing the contaminated soil and disposing of it at a licensed facility in accordance with regulations.

Mitigation Measure 10-2. Los Robles Well Monitoring Program. Monitoring will specifically look at groundwater level changes and migration of the groundwater plume. The monitoring system will assess changes in hydraulic control of the TFX Aviation groundwater plume. The monitoring will be performed quarterly after resuming pumping from the Los Robles well as part of the Pure Water Project. The JPA will submit a sampling plan to DTSC that includes this quarterly sampling from the existing TFX Aviation monitoring well sites (or replacement monitoring wells) prior to operating the well for the Pure Water Project. The quarterly sampling will start after the well starts operating and may be reduced to semiannually or annually if there is no destabilization of the groundwater plume (with time frame provided in the sampling plan). Should monitoring indicate that hydraulic control of the groundwater plume is being affected, the JPA will reassess the project impact on plume migration in the next quarter.

11. Hydrology and Water Quality

This chapter describes the Pure Water Project's impact on hydrology and water quality.

11.1 Existing Setting

This section describes the project's existing setting as it relates to hydrology and water quality.

11.1.1 Climate and Precipitation

The climate in the project area is generally characterized as a Mediterranean type with mild, wet winters and hot, dry summers. Coastal fog, produced by a marine inversion layer, commonly occurs in valleys in the spring and summer between the months of May and July (USACE and CDPR 2017). Annual temperatures at the nearest measuring station (in Woodland Hills) range from an average high of 80.6°F to an average low of 48.1°F. Average maximum temperatures are highest in June and July (WRCC 2022a).

Nearly all rainfall occurs between November and April. Rainfall during storm events is not evenly distributed around the watershed and is typically higher across the Santa Monica Mountains, diminishing northward toward the Simi Hills (Las Virgenes-Malibu COG 2001). The average total mean annual precipitation at the nearest measuring station (in Woodland Hills) is 14.14 inches (WRCC 2022a).

11.1.2 Watersheds

The Pure Water Project is located primarily within the Malibu Creek watershed (a subwatershed of the larger Malibu Hydrologic Unit), which encompasses approximately 110 square miles in Los Angeles and Ventura counties (USGS 2021). Approximately two-thirds of the watershed is located in northwestern Los Angeles County, and the remaining one-third is in southeastern Ventura County. Malibu Creek and its tributaries drain into Malibu Lagoon and Santa Monica Bay. Elevations in the watershed range from over 3,100 feet at Sandstone Peak in Ventura County, to sea level at Santa Monica Bay. The western portion of the concentrate pipeline is within the Calleguas Creek watershed.

Pure Water Project features would be developed within portions of four subwatersheds (USGS 2021), as shown on Figure 11-1:

1) Potrero Creek
2) Madea Creek
3) Upper Conejo Arroyo
4) Lower Arroyo Conejo

Natural waterways intersected by project pipelines include:

- Madea Creek and Potrero Valley Creek – Tributaries to Malibu Creek
- Arroyo Conejo and Arroyo Santa Rosa – Tributaries to Conejo Creek in the Calleguas Creek watershed

11.1.3 Local Drainage Systems

This section describes the project's local drainage systems.

11.1.3.1 Pure Water Project Features

Most of the project area is urbanized, with local drainage flowing through constructed features and an underground storm drainage system. The Los Angeles County Flood Control District (Los Angeles FCD) maintains the larger drainage features in Los Angeles County, with additional surface runoff and storm drains managed by the cities of Agoura Hills and Westlake Village. Los Angeles FCD drainage in the project area include (Los Angeles County 2022b):

- **Triunfo Creek Flood Control Channel**: Along Lindero Canyon Road, the former Triunfo Creek is now a trapezoidal channel between Agoura Road and Lakeview Canyon Road (Facility P.D. 728), and an underground culvert connecting to Westlake Lake, which drains to Potrero Valley Creek.
- **Lindero Canyon Flood Control Channel**: The Alternative 1 Agoura Road AWPF site drains to Los Angeles County Sanitation District storm drains on Agoura Road, which discharge to the larger Lindero Canyon channel downstream of Lake Lindero. The Lindero Canyon channel discharges to an unnamed tributary of Medea Creek.
- **Cheseboro Canyon Flood Control Channel**: The Cheseboro Canyon channel follows Agoura Road between Lewis Road and Kanan Road, discharging to Medea Creek.

The Ventura County Watershed Protection District (Ventura County Watershed District) maintains the larger drainage features in Ventura County, with additional surface runoff and storm drains along the concentrate pipeline alignment managed by the City of Thousand Oaks.

11.1.3.2 Malibu Creek

Once seasonal, Malibu Creek flows are now predominantly perennial. Historically, zero-flow conditions occurred in the lower reaches of Malibu Creek (mostly during the dry summer months), but no days with zero flow have occurred since the Tapia WRF began discharging treated effluent to Malibu Creek in the late 1960s. Flows in Malibu Creek are monitored at the existing Stream Gage F130-R near Malibu Canyon Road, south of Piuma Road (Figure 11-2). At this location, flows include storm runoff, local runoff, and permitted reclaimed water discharge. Annual flows from 1931 through 2002 averaged 20,100 AF, compared to a maximum-recorded annual flow of 120,000 AF in 1969. For the period of record from 1931–2002, the average daily flow was 27.1 cfs, the maximum daily flow was 24,200 cfs, and the minimum flow was 0 cfs (USACE and CDPR 2017). During this period of record, the instantaneous peak flow was 33,800 cfs.

Stream flow in Malibu Creek increases rapidly in response to rainfall. Flood hydrographs from single storm events are typically less than 12 hours in duration and are almost always less than 48 hours in duration. Stream flows in Malibu Creek downstream of the Tapia WRF discharge point have been monitored for a number of years (Stream Gage F130-R). Figures 11-3 and 11-4 show monitoring data at this gage location for the 2017 to 2020 water years.

Discharge of recycled water from the Tapia WRF into Malibu Creek generally contributes only a small percentage (less than 10%) of the flow during storm events. Tapia WRF discharges are generally less than 25 cfs, and peak flows often exceed 300 cfs (Figure 11-3). The discharge from the Tapia WRF augments flows during low-flow periods. When stream flows at the Malibu Creek gage are less than 15 cfs, Tapia WRF discharges make up a considerable portion of the flow and, at times, may be the only source of water in Malibu Creek downstream of the discharge point (Figure 11-4).

The JPA is currently building a summer flow augmentation project, consisting of a new pipeline to convey water into Malibu Creek from a nearby Metropolitan potable water pipeline after additional treatment at the existing Tapia WRF overflow structure (JPA 2019). This new pipeline would help maintain minimum instream flows in Malibu Creek during the summer and would support maintaining the instream flow requirements once the Pure Water Project is in operation.

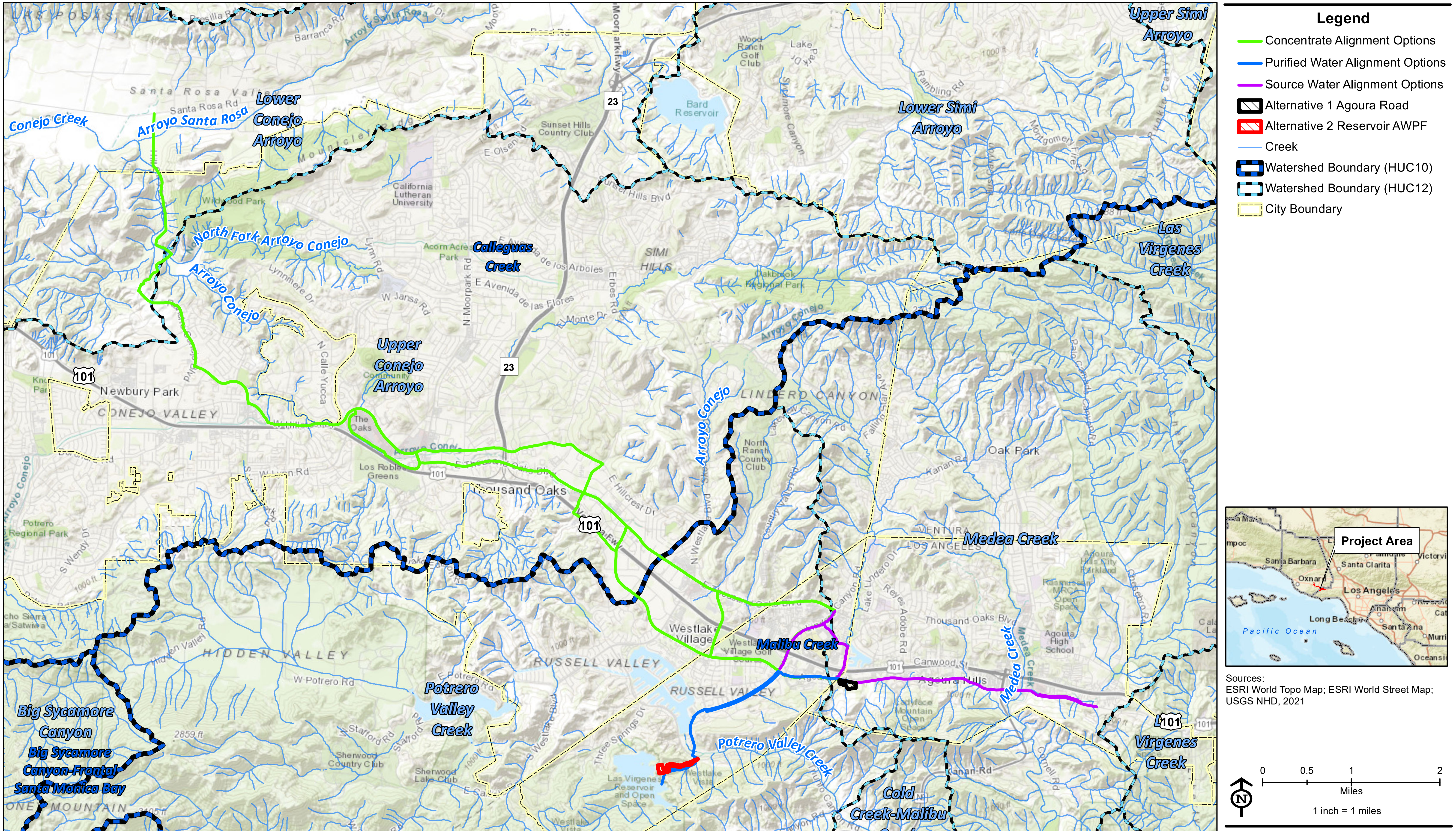

FIGURE 11-1

Surface Water Features

Pure Water Project Las Virgenes – Triunfo

Jacobs

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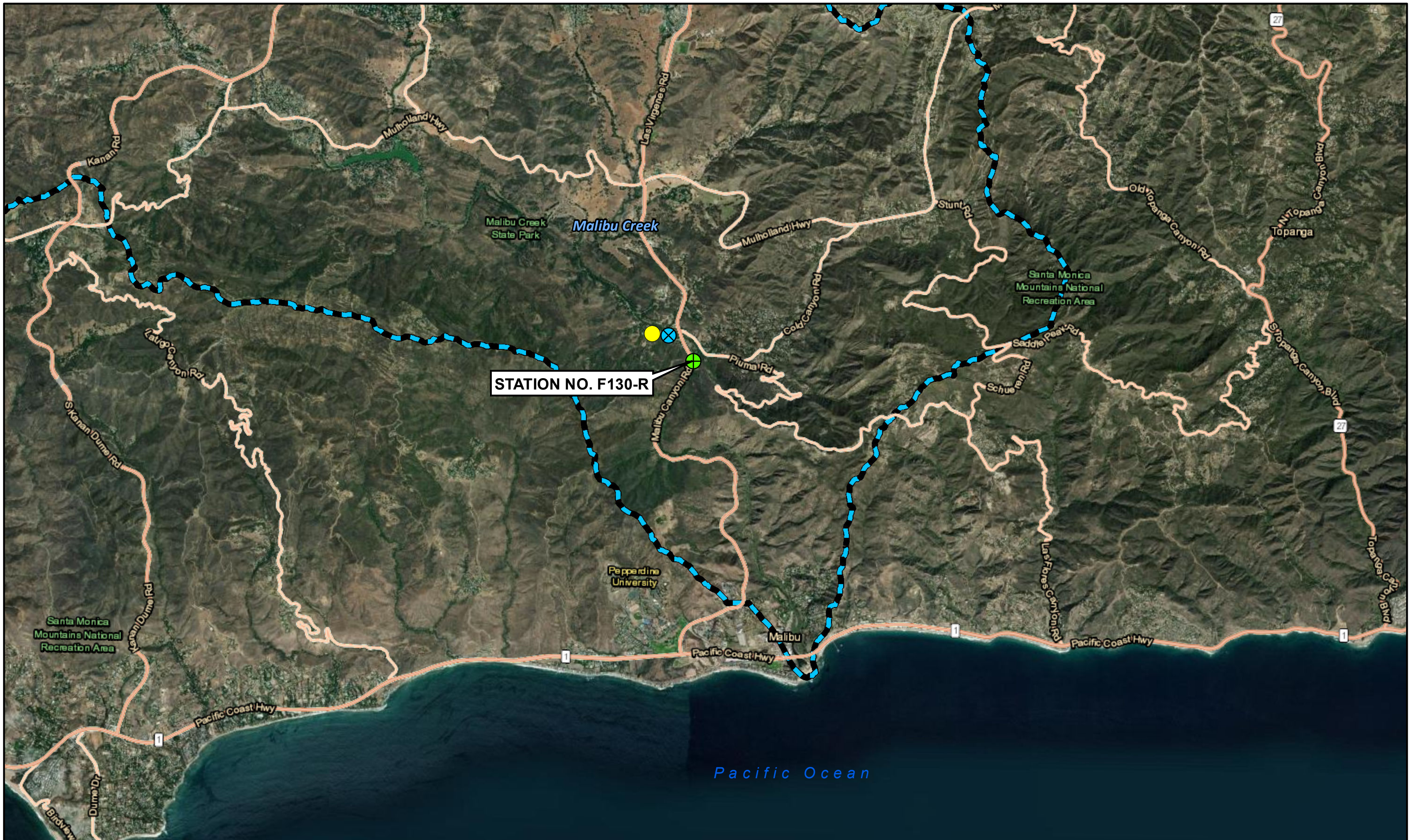

Legend

- Tapia Water Reclamation Facility
- Tapia WRF Discharge Point
- Flow Measurement Gauge
- Malibu Creek Watershed (HUC10)

Sources:
USGS, 2021
ESRI World Street Map

Jacobs

July 19, 2022

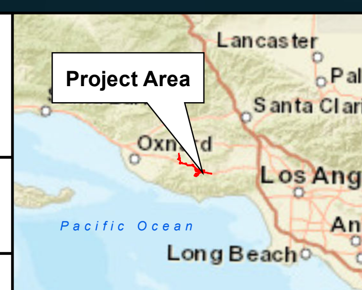

Figure 11-2
Tapia Water Reclamaion Facility

Pure Water Project
Las Virgenes –Triunfo

0 0.5 1 1.5 2
Miles

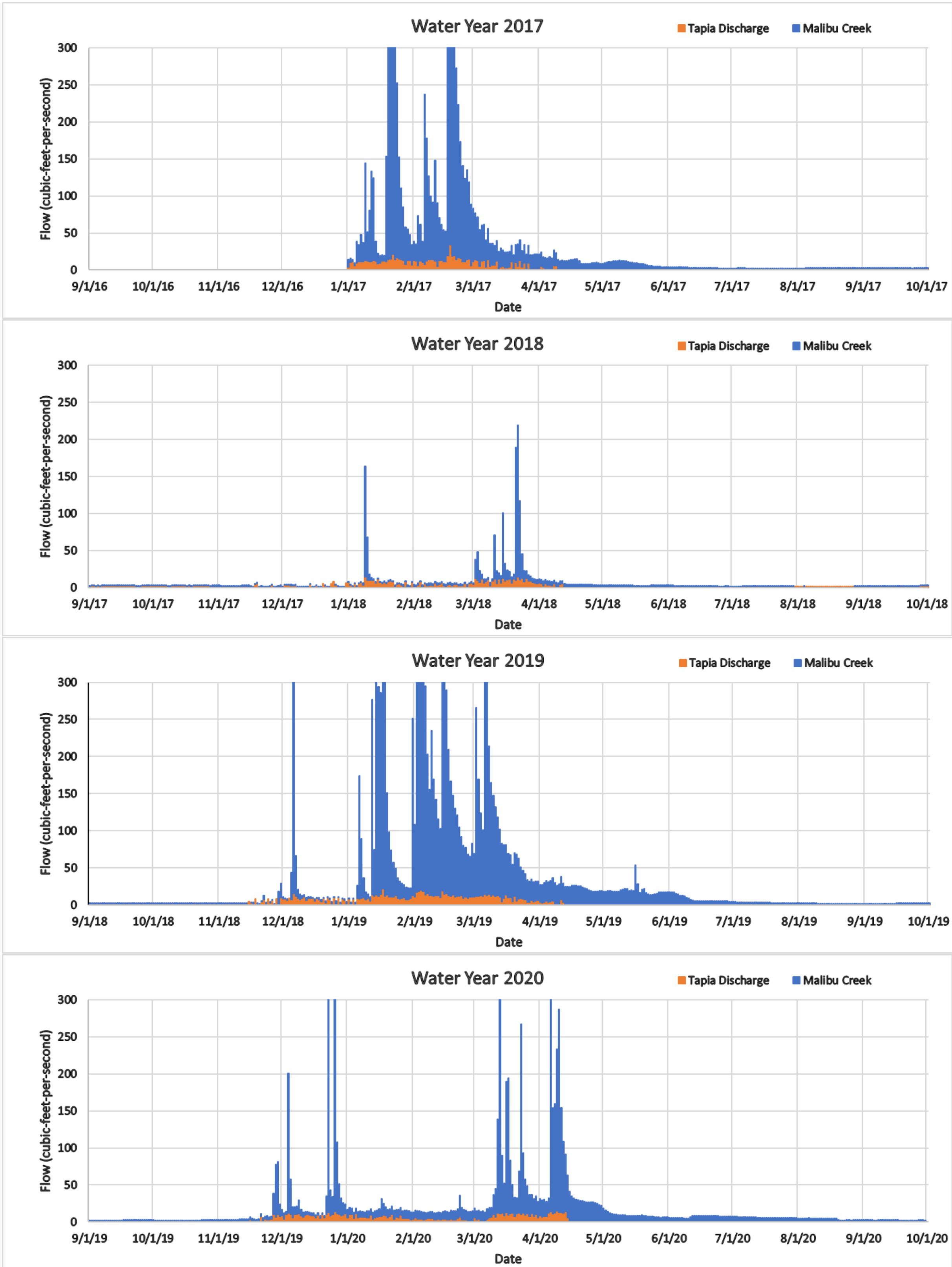

Figure 11-3. Tapia Discharge Contribution to Peak Flows

Source: Malibu Creek flow (Los Angeles County 2018, 2019, 2020a, 2021)

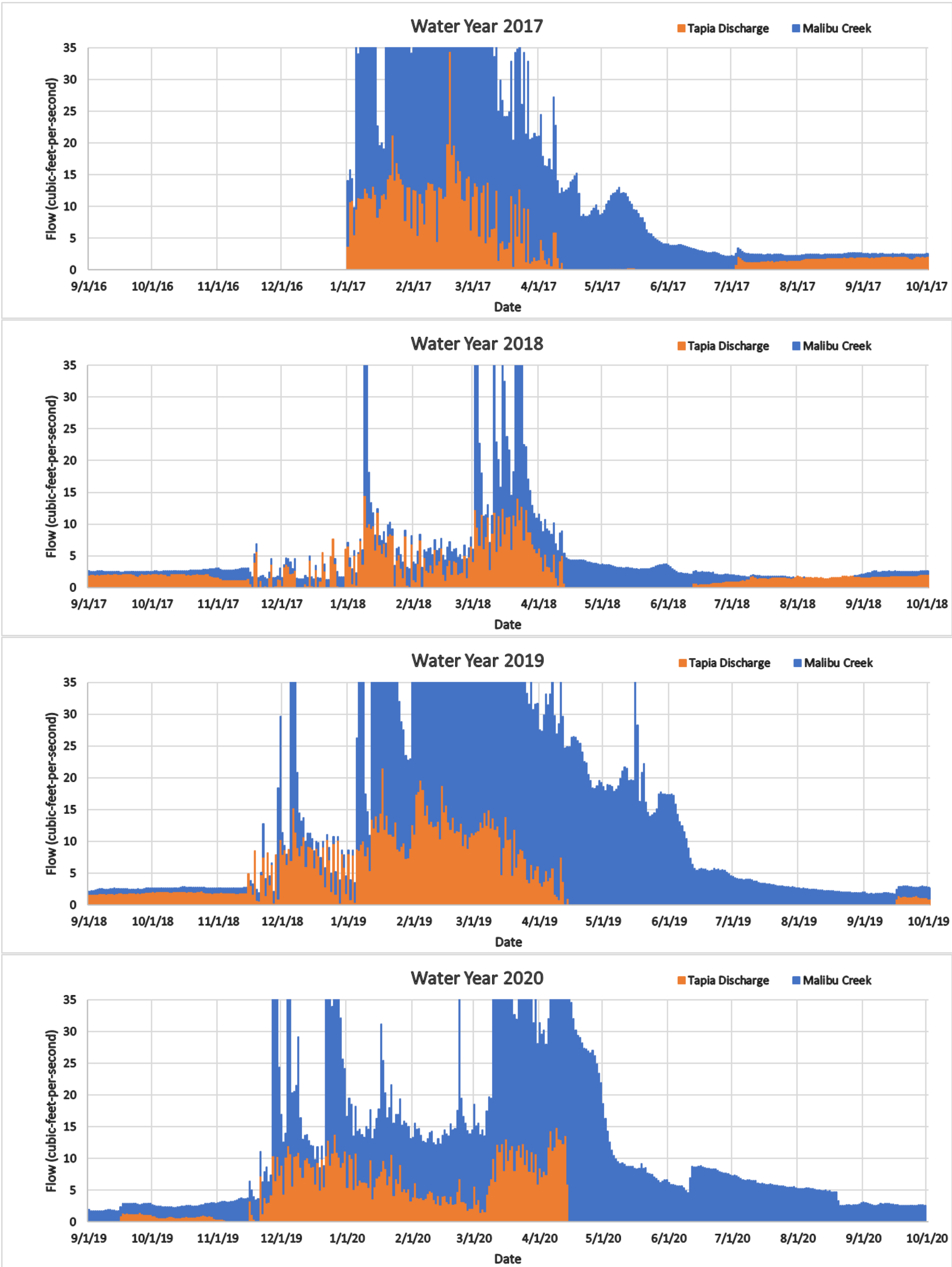

Figure 11-4. Tapia Discharge Contribution to Low Flows

Source: Malibu Creek flow (Los Angeles County 2018, 2019, 2020a, 2021)

11.1.4 Groundwater

Groundwater is not widely used in the project area, with only two wells providing supplemental water to the JPA recycled water system via discharge to the sewer system and to the Tapia WRF for recycled water production (Las Virgenes MWD 2021).

The Alternative 1 Agoura Road AWPF and Alternative 2 Reservoir AWPF sites do not overlie groundwater basins. The Agoura Road AWPF site is near the southern boundary of the Russell Valley groundwater basin, which is described as a relatively small alluvial basin with a total storage capacity of 10,570 AF (DWR 2004).

Pipeline sections would be constructed in the Russell Valley groundwater basin and in three other nearby groundwater basins: Thousand Oaks Area, Conejo Valley, and Arroyo Santa Clara Valley. Source water augmentation would use the Los Robles well, which is in the Conejo Valley groundwater basin. None of the four groundwater basins are in a state of overdraft, and all four are designated as Very Low Priority, meaning that a Groundwater Sustainability Plan is not needed (DWR 2022).

11.2 Regulatory Framework

The Pure Water Project is subject to all federal, state, and local regulations pertaining to water quality, pollutant emissions, and drainage. Regulations pertaining to hydrology and water quality in the service area are discussed in this section.

11.2.1 Federal Regulations

The federal CWA, originally passed in 1972, is the primary surface water protection legislation in the U.S. By using a variety of regulatory and nonregulatory tools and practices, including established water quality standards, permits, and monitoring discharges, and management of polluted runoff, the CWA aims to restore and maintain the chemical, physical, and biological integrity of surface waters to support "…the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water." The CWA regulates both the pollutant content of point source discharges and addresses polluted runoff.

In California, the State Water Board administers the CWA water pollution control and water quality functions. The State Water Board provides policy guidance and delegates authority to nine Regional Boards that regulate surface water and groundwater quality within their respective regions, including planning, permitting, and enforcement activities. The Los Angeles Regional Board administers the federal CWA and state Porter-Cologne Water Quality Control Act in the project area (State Water Board 2022).

The Pure Water Project is subject to federal regulations governing discharge from point sources, such as the Tapia WRF and the proposed discharge into Las Virgenes Reservoir, and wet weather point sources, such as urban storm sewer systems and construction sites. Because these federal regulations are implemented by the state, additional information is described in the Subsection 11.2.2, State Regulations.

11.2.2 State Regulations

The State Water Board makes statewide regulations governing water use and point source and nonpoint source pollutant discharges; the Regional Boards work in regions of the state to implement State Water Board policies and regulations, while also establishing additional region- and area-specific regulations and policies to achieve water quality goals. The Malibu Creek watershed is under the jurisdiction of the Los Angeles Regional Board (Region 4).

With the joint federal and state regulatory framework for protecting water quality, the Pure Water Project is required to follow the following regulatory processes:

- Tapia WRF Discharges: As described in Chapter 1, discharges from the Tapia WRF into Malibu Creek are regulated by NPDES Permit CA0056014 (Order R4-2017-0124).

- Las Virgenes Reservoir Discharges: As described in Chapter 2, discharge of purified recycled water from the AWPF into Las Virgenes Reservoir would require a discharge permit pursuant to state regulations for indirect potable reuse through surface water augmentation.
- AWPF Site Development: The designs for Alternative 1 Agoura Road AWPF and Alternative 2 Reservoir AWPF are required to follow regional guidelines for wet weather point source discharges from new site development.
- AWPF and Pipeline Construction: Construction of all project features is required to follow the statewide program for wet weather point source discharges from construction sites.

Stormwater runoff from urban impervious surfaces and roadways can overwhelm drainage systems and pollute streams, bays, and the ocean. Federal CWA Section 402 prohibits the discharge of any pollutant to waters of the United States from a point source, unless that discharge is authorized by an NPDES permit. Point sources include stormwater discharges from discrete conveyances, such as pipes, storm drains, or constructed ditches and channels. Each Regional Board is responsible for addressing regionwide water quality concerns by adopting, monitoring compliance with, and enforcing NPDES permits.

Under its CWA and Porter-Cologne Water Quality Control Act authority, the Los Angeles Regional Board issued WDRs and NPDES permits for Municipal Separate Storm Sewer System (MS4) Discharges Within the Coastal Watersheds of Los Angeles and Ventura Counties (Regional MS4 Permits) to 85 incorporated cities within the coastal watersheds of Los Angeles County, Ventura County and its Watershed Protection District, and 10 incorporated cities within Ventura County (Order R4-2021-0105). These dischargers are subject to WDRs for their MS4 discharges originating from within their jurisdictional boundaries.

The Regional MS4 Permit Planning and Land Development Program prescribes minimum control measures to be applied to new development. New development projects, such as Alternative 1 Agoura Road AWPF and Alternative 2 Reservoir AWPF, are required to implement hydrological control measures to prevent accelerated downstream erosion and protect stream habitat. Such control measures typically include site design for low-impact development, such as:

- Protecting natural drainages
- Minimizing impervious surfaces
- Installing biofiltration systems, such as grassy swales and wet detention basins
- Installing flow-through treatment systems, such as sand filters and cartridge media filters

Onsite features for low-impact development and hydromodification control require ongoing monitoring and reporting to verify compliance with the Regional MS4 Permit. Where onsite measures are infeasible, projects may comply by agreeing to offsite improvements or by retrofitting existing development.

Under the federal CWA, construction site stormwater discharge must comply with the conditions of an NPDES permit. The State Water Board has adopted a statewide CGP that applies to projects resulting in 1 or more acre of soil disturbance. For projects disturbing more than 1 acre of soil, a construction SWPPP is required that specifies site management activities to be implemented during site development. These management activities include:

- Construction stormwater BMPs
- Erosion and sedimentation controls
- Dewatering
- Runoff controls
- Construction equipment maintenance

The Los Angeles Regional Board requires a Notice of Intent to be filed prior to any stormwater discharge from construction activities, and that the SWPPP be implemented and maintained onsite. Each construction contractor building a Pure Water Project feature, such as the AWPF or one of the pipeline sections, would be required to prepare and implement an SWPPP.

11.2.3 General Plans – Policies and Guidance

Policies and guidance related to hydrology and water quality found in sections of each general plan are discussed in this section.

11.2.3.1 City of Agoura Hills

Table 11-1 provides the hydrology and water quality goals and policies established by the *City of Agoura Hills General Plan* (City of Agoura Hills 2010b) that are applicable to the project. Applicable goals and policies are categorized in:

- A Community Conservation and Development (LU) chapter that contains goals and policies for Land Use and Community Form, Economic Development, Historic and Cultural Resources, and Housing
- A Utilities and Infrastructure (U) chapter that contains goals and policies that provide for high-quality and efficient utility services in Agoura Hills, promote sustainability, and seek to limit impacts to environmentally sensitive areas
- A Natural Resources (NR) chapter that contains goals and policies that address the preservation and maintenance of Agoura Hills' environmental resources
- A Community Safety (S) chapter that contains goals and policies to reduce hazards, mitigate noise impacts, provide for emergency response strategies, and coordinate emergency response agencies

Table 11-1. City of Agoura Hills Hydrology and Water Quality Goals and Policies

Goal or Policy Name	Goal or Policy Language[a]
Goal LU-3: City of Open Spaces	*Open space lands that are preserved to maintain the visual quality of the City and provide recreational opportunities, protect the public from safety hazards, and conserve natural resources.*
Policy LU-3.2: Hillsides	*Preserve ridgelines, natural slopes, and bluffs as open space, minimize hillside erosion, and complement natural landforms through sensitive grading techniques in hillside areas.*
Policy LU-3.5: Creeks and Natural Drainages	*Maintain the form and health of resources and habitat in the City's natural drainages. Explore restoration of those that have been degraded or channelized, such as Medea Creek and Chesebro Creek, as feasible to maintain storm water conveyance and property protection requirements.*
Goal LU-23: Business Park and Natural Open Spaces	*An economically viable business park that is scaled and designed to reflect its natural setting at the base of Ladyface Mountain, while providing high-quality jobs and incorporating a diversity of uses that minimize the need for employees to travel off site.*
Policy LU-23.3: Development Clustering and Location	*Require that buildings be clustered to minimize grading and modifications of the natural topography, with development located below the 1,100-foot elevation.*
Policy LU-26.2 Site Development and Design	*Create a walkable, vibrant pedestrian-oriented district through such techniques as: Minimization of grading and preservation of oak trees and other native landscapes.*
Goal U-3: Stormdrain System	*Stormwater drainage facilities and services that are environmentally sensitive, accommodate growth, and protect residents, businesses, and property.*
Policy U-3.3: Drainage Plans and Studies	*Require developers to prepare watershed drainage plans and studies for proposed developments that define needed drainage improvements per City standards.*
Policy U-3.4: Conservation of Open Space Areas	*Conserve undeveloped, designated open space areas and drainage courses to the extent feasible for the purpose of protecting water resources in the City's watersheds.*
Policy U-3.5: Protection of Water Bodies	*Require new development to protect the quality of water bodies and natural drainage systems through site design, stormwater treatment, and best management practices (BMPs) consistent with the City's NPDES permit.*

Table 11-1. City of Agoura Hills Hydrology and Water Quality Goals and Policies

Goal or Policy Name	Goal or Policy Language[a]
Goal NR-1: Open Space System	*Preservation of open space to sustain natural ecosystems and visual resources that contribute to the quality of life and character of Agoura Hills.*
Policy NR-1.3: Slope Preservation	*Require that uses involving grading or other alteration of land maintain the natural topographic character and ensure that downstream properties and watercourses are not adversely affected by siltation or runoff.*
Goal NR-2: Visual Resources	*Preservation of significant visual resources as important quality of life amenities for residents, and as assets for commerce, recreation, and tourism.*
Policy NR-2.1: Maintenance of Natural Topography	*Require development to be located and designed to maintain the visual quality of hills, ridgelines, canyons, significant rock outcroppings, and open space areas surrounding the City and locate and design buildings to minimize alteration of natural topography.*
Goal NR-4: Natural Areas	*Protection and enhancement of open space resources, other natural areas, and significant wildlife and vegetation in the City as an integral component of a sustainable environment.*
Policy NR-4.2: Conserve Natural Resources	*Continue to enforce the ordinances for new and existing development in the City's hillside areas, such that development maintains an appropriate distance from ridgelines, creek and natural drainage beds and banks, oak trees, and other environmental resources, to prevent erosion, preserve viewsheds, and protect the natural contours and resources of the land.*
Policy NR-4.11: Creeks and Natural Resources	*Support the restoration of creeks and other natural resources. Activities include creek cleanup, erosion and urban runoff control, and weeding of non-native plants.*
Goal NR-6 Water Quality	*Protection of the water quality of local watersheds and groundwater resources.*
Policy NR-6.1: Riparian Habitat	*Protect and enhance the natural qualities of riparian habitat.*
Policy NR-6.4: Protect Open Space Areas and Water Resources	*Conserve undeveloped open space areas and drainage courses and channels for the purpose of protecting water resources in the City's watershed. For construction and post-development runoff, control sources of pollutants and improve and maintain urban runoff water quality through stormwater protection measures consistent with the City's National Pollution Discharge Elimination System (NPDES) Permit.*
Policy NR-6.8: New Development	*The City shall require new development to protect the quality of waterbodies and natural drainage systems through site design, stormwater treatment, and best management practices (BMPs) consistent with the City's NPDES permit.*
Goal S-1: Protection from Flood Hazards	*Residents, workers, and visitors that are protected from flood hazards.*
Policy S-1.7: Flood Mitigation Design	*Require that new development incorporates sufficient measures to mitigate flood hazards, including the design of on-site drainage systems linking with citywide storm drainage, grading of the site so that runoff does not impact adjacent properties or structures on the site, and elevation of any structures above any flooding elevation.*

Source: City of Agoura Hills 2010b

11.2.3.2 City of Westlake Village

The *City of Westlake Village General Plan* (City of Westlake Village 2019a) contains:

- A Community Development chapter that addresses community development issues within Westlake Village
- A Natural Resources chapter that includes goals, objectives, and policies for Biological and Visual Resources, Open Space, and Watershed Areas in Westlake Village

- A Hazards chapter that identifies policies and programs to mitigate potential impacts through preventive and response measures

Table 11-2 provides the hydrology and water quality goals and policies established by the *City of Westlake Village General Plan* (City of Westlake Village 2019a) that are applicable to the project.

Table 11-2. City of Westlake Village Hydrology and Water Quality Goals and Policies

Goal or Policy Name	Goal or Policy Language[a]
Community Development Chapter	
Watershed Areas Overlay Goal	*It shall be the goal of the City of Westlake Village to protect Westlake Village watershed areas.*
Objective 14.1:	*Assure that proposed new development within or adjacent to identified watershed areas does not adversely impact Las Virgenes Reservoir, Triunfo Creek and Westlake Lake.*
Policy 14.1.1:	*Require that developments proposed within a designated watershed area incorporate design measures to fully mitigate the impacts of runoff, siltation, erosion and pollutants on affected water bodies.*
Natural Resources Chapter	
Biological Resources Goal	*It shall be the goal of the City of Westlake Village to preserve and enhance the City's biological resources by assuring that development occurs in a manner which reflects the characteristics, sensitivities and constraints of these resources.*
Objective 2:	*Minimize the impacts of new development on sensitive biological resources.*
Policy 2.1:	*Require development to blend indigenous/native plants into new development landscaping which abut natural vegetation.*
Policy 2.5:	*Prohibit development in riparian habitats to the greatest extent feasible.*
Policy 2.6:	*Review proposed projects in the "Sensitive Biological Communities" to evaluate their conformance with the following standards: a. The development plan shall retain watercourses, riparian habitat and wetlands in their natural condition to the maximum extent feasible. b. Development shall incorporate habitat linkages (wildlife corridors) to adjacent open spaces where appropriate. c. Roads and utilities shall be located and designed such that conflicts with biological resources, habitat areas, linkages or corridors are minimized.*
Visual Resources Goal:	*It shall be the goal of the City of Westlake Village to maintain and enhance the visual quality and character of the community's urban and natural environments.*
Objective 3:	*Provide for the preservation and maintenance of the visual quality of the Community's natural landforms and water bodies.*
Policy 3.5:	*Protect the visual quality of the community's water bodies through the maintenance of building setbacks and landscape treatments, and effective control of erosion and urban runoff.*
Open Space Goal:	*It shall be the goal of the City of Westlake Village to provide for the planned management, preservation and wise utilization of the City's natural resources.*
Objective 2:	*Maximize the potential for open space derived from hillside management, ridgeline protection, and other natural resource preservation/protection policies.*
Policy 2.2:	*Require development to be sited and designed to protect significant environmental resources, including significant ridgelines, hillsides, and watershed areas.*
Watershed Areas Goal:	*It shall be the goal of the City of Westlake Village to protect the quality of water contained in Las Virgenes Reservoir and Westlake Lake.*
Objective 1:	*Protect and enhance the water quality of Westlake Lake by effectively managing erosion and urban runoff within its extended watershed area.*

Table 11-2. City of Westlake Village Hydrology and Water Quality Goals and Policies

Goal or Policy Name	Goal or Policy Language[a]
Policy 1.1:	*Maintain the high water quality of the City's water bodies through interagency coordination and pesticide/fertilizer/herbicide monitoring.*
Policy 1.2:	*Limit the impacts of development on Triunfo Canyon Creek and other riparian habitat areas through interagency coordination and development review.*
Policy 1.3:	*Ensure the effective erosion control and drain maintenance programs.*
Objective 2:	*Protect the drinking water quality of the Las Virgenes Reservoir through the preservation and effective management of its tributary watershed area.*
Policy 2.1:	*Regulate development of properties adjacent to the Las Virgenes Reservoir to assure that all new urban uses are located outside of the Reservoir watershed area.*
Policy 2.2:	*Assure that low intensity recreational uses (i.e., hiking trails, nature walks, vista points, etc.) permitted within the Las Virgenes Reservoir watershed area are located, managed and maintained in a manner that preserves significant natural resources and protects the drinking water quality of the Reservoir.*
Hazards Chapter	
Geologic, Seismic and Flooding Hazards Goal:	*It shall be the goal of the City of Westlake Village to minimize hazards to public health, safety and welfare which may result from geologic conditions, seismic activity and flooding.*
Objective 2:	*Ensure that construction and development activities within the community do not expose residents to avoidable natural hazards.*
Policy 2.1:	*Require the preparation of a detailed geologic and soils report to accompany each grading permit application in all hillside management areas.*
Policy 2.3:	*Enforce the provisions of the International Building Code, specifically Chapters 18 and 23 as they relate to earthquake-resistant design and excavation and grading.*

Source City of Westlake Village 2019a

11.2.3.3 City of Thousand Oaks

Project activities within Thousand Oaks are limited to underground pipelines, most of which would be located under existing paved roadways. Although temporary construction impacts would occur and are discussed in Section 11.4, no general plan goals and policies are applicable.

11.2.3.4 Ventura County

The *Ventura County 2040 General Plan* (Ventura County 2020) is a long-range plan that guides decision making; establishes rules and standards for development and county improvements; and helps to inform residents, developers, and decision makers in Ventura County. The general plan is made up of a collection of elements, or topic categories. Each element contains the goals and policies the County uses to guide future land use, development, resource management, and environmental protection decisions.

Table 11-3 provides the hydrology and water quality goals and policies established by the *Ventura County 2040 General Plan* (Ventura County 2020) that are applicable to the project.

Table 11-3. Ventura County Hydrology and Water Quality Goals and Policies

Goal or Policy Name	Goal or Policy Language[a]
Conservation and Open Space Element	
Goal COS-4: Soil and Mineral Resources	*To preserve and protect soil resources in the county from erosion and for agricultural productivity.*
Policy COS-5.1: Soil Protection	*The County shall strive to protect soil resources from erosion, contamination, and other effects that substantially reduce their value or lead to the creation of hazards.*
Policy COS-5.2: Erosion Control	*The County shall encourage the planting of vegetation on soils exposed by grading activities, not related to agricultural production, to decrease soil erosion.*
Hazards and Safety Element	
Goal HAZ-4: Geologic and Seismic Hazards	*To minimize the risk of loss of life, injury, collapse of habitable structures, and economic and social dislocations resulting from geologic and seismic hazards.*
Policy HAZ-4.2: Linear Project Intersection with Active Faults	*The County shall require that linear projects, including roads, streets, highways, utility conduits, water transmission facilities, and oil and gas pipelines, avoid intersecting active faults to the extent possible. When such locations are unavoidable, the project design shall include measures to minimize the effects of any fault movement.*
Policy HAZ-4.5 Soil Erosion and Pollution Prevention	*The County shall require discretionary development be designed to prevent soil erosion and downstream sedimentation and pollution.*
Policy HAZ-4.6 Vegetative Resource Protection	*The County shall require discretionary development to minimize the removal of vegetation to protect against soil erosion, rockslides, and landslides.*
Policy HAZ-4.7 Temporary Revegetation on Graded Areas	*The County shall require, as necessary, the use of soil stabilization methods on graded areas to reduce the potential for erosion, particularly during the construction phase.*

Source: Ventura County 2020

11.3 Assessment Methods and Thresholds of Significance

This impact analysis focuses on potential effects on drainage, flooding, and water quality associated with implementation of the Pure Water Project. The analysis considered available water quality and hydrologic characteristic information for the project area, and applicable regulations and guidelines. Impacts on hydrology and water quality may occur if a program or project would result in the following:

- Violate any water quality standards or WDRs or otherwise substantially degrade water quality
- 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 that would:
  - Result in substantial erosion or siltation onsite or offsite
  - Substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or offsite
  - Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff
  - Impede or redirect flood flows
- Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin
- In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation
- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan

The project area is not subject to risk of inundation by seiche or tsunami (State of California 2009 a-f; 2021); therefore, impacts associated with inundation impacts are not discussed further.

11.4 Environmental Impacts

Table 11-4 summarizes the potential hydrology and water quality impacts.

Table 11-4. Summary of Hydrology and Water Quality Impacts

Impact	Alternative 1 Agoura Road AWPF	Alternative 2 Reservoir AWPF	Source Water Augmentation	Pipelines	Malibu Creek
Impact 11-1a: Water Quality Standards and WDRs during Construction	Less than significant with mitigation	Less than significant with mitigation	-	Less than significant with mitigation	-
Impact 11-1b: Water Quality Standards and WDRs during Operation	Less than significant	Less than significant	-	Less than significant	-
Impact 11-2: Drainage and Flood Risk	Less than significant	Less than significant	-	No impact	Less than significant
Impact 11-3: Groundwater	No impact	No impact	Less than significant	No impact	-

11.4.1 Impact 11-1a: Water Quality Standards and WDRs during Construction

With mitigations described in this section, Impact 11-1a would be less than significant.

11.4.1.1 Alternative 1 Agoura Road Advanced Water Purification Facility

The Alternative 1 Agoura Road AWPF site drains to Agoura Road and to the larger Los Angeles FCD drainage system, including the Lindero Creek Channel. The site includes a small, unnamed surface drainage that enters the storm drain system at an inlet along Agoura Road. Development of the site includes:

- Grading the 2.7-acre eastern portion of the site to create the building pad and associated paved surfaces for ancillary uses, such as chemical storage, parking, and vehicle circulation
- Temporary construction activities occurring on the smaller, western portion of the site for construction staging and materials storage, with a temporary crossing of the onsite drainage feature

Upon completion of project construction activities, the onsite drainage would be protected and would remain unchanged from its current condition. In addition, the western portion of the site would be restored following its use for construction staging and materials storage, with no impervious surfaces. For these reasons, low-impact development site design requirements are being met. However, the 2.7-acre area containing the new AWPF and associated paved surfaces would create approximately 2.7 acres of impervious areas generating new stormwater runoff (approximately 40% of the 7.1-acre parcel).

Based on design calculations prepared for the site consistent with the hydromodification requirements of the Regional MS4 Permit, postconstruction runoff volumes would exceed preconstruction levels. There is no room on the site to install detention features without further encroaching onto the undeveloped portions of the site, including the onsite drainage. The AWPF design includes onsite measures to protect the downstream water quality associated with increased runoff volumes. Based on the preliminary design, BMPs would be used to intercept onsite stormwater runoff prior to entering the storm drain on Agoura Road, including:

- Planters
- Infiltration basins
- Roof cisterns
- Pervious pavement
- Bioswales

By avoiding the western portion of the site, including the onsite drainage, and installing BMPs to protect stormwater quality, Alternative 1 Agoura Road AWPF would comply with water quality standards and WDRs for municipal stormwater discharges. In addition, site construction would comply with the CGP and local land development policies by preparing an SWPPP following best industry practices for erosion and sediment control during construction, and as prescribed by *Mitigation Measure 8-2: Comply with regulations and policies for erosion control.* For these reasons, impacts would be less than significant.

11.4.1.2 Alternative 2 Reservoir Advanced Water Purification Facility

The Alternative 2 Reservoir AWPF site is mostly flat, with no impervious surfaces. There is no stormwater infrastructure located at or near the site. Upon completion of project construction activities, the new AWPF and associated paved surfaces, including the access road, would create approximately 1.7 acres of impervious areas generating new stormwater runoff. To meet the site development requirements consistent with the Regional MS4 Permit, postconstruction runoff volumes would exceed preconstruction levels. The AWPF design would include onsite measures to protect downstream water quality, including both Las Virgenes Reservoir and storm drains on Triunfo Canyon Road, associated with increased runoff volumes.

Given the flat site and the design features included to protect stormwater quality, Alternative 2 Reservoir AWPF would comply with water quality standards and WDRs for municipal stormwater discharges. In addition, site construction would comply with the CGP and local land development policies by preparing an SWPPP following best industry practices for erosion and sediment control during construction, and as prescribed by *Mitigation Measure 8-2: Comply with regulations and policies for erosion control.* For this reason, impacts would be less than significant.

11.4.1.3 Pipelines

Temporary construction impacts associated with pipeline installation would comply with the CGP and local land development policies, with the construction contractor for each pipeline section preparing an SWPPP following industry best practices for erosion and sediment control during construction, and as prescribed by *Mitigation Measure 8-2: Comply with regulations and policies for erosion control*. Therefore, construction of these project features would comply with water quality standards and WDRs, and the impact would be less than significant.

11.4.2 Impact 11-1b: Water Quality Standards and WDRs during Operation

Impact 11-1b results in less than significant or no impacts.

11.4.2.1 Advanced Water Purification Facility

Both Alternative 1 Agoura Road AWPF and Alternative 2 Reservoir AWPF are being designed to comply with State Water Board regulations for surface water augmentation. Prior to adopting the regulations, the State Water Board conducted an external scientific peer review (Gerba 2016; Lim 2016; Mahendra 2016; Wells 2016). In addition, the State Water Board convened an expert panel to review the proposed regulations, and they found that the proposed regulations would adequately protect public health (State Water Board 2017). The Pure Water Project complies with the State Water Board regulations as follows:

- Treatment at the AWPF would use an advanced, multibarrier membrane approach – in this case, microfiltration or ultrafiltration followed by RO – to remove constituents remaining in the treated Tapia WRF source water, and an advanced oxidation process using ultraviolet disinfection to remove constituents not effectively removed by RO.
- Discharge into Las Virgenes Reservoir would be sufficiently diluted with enough residence time to promote mixing and to provide a buffer in case of a temporary AWPF failure that results in the delivery of purified water that does not fully meet the required specification.
- Treatment at the Westlake Filtration Plant would meet all drinking water criteria, including pathogen removal.

In addition to meeting the State Water Board regulations, discharge of purified water into Las Virgenes Reservoir requires a project-specific NPDES permit and WDRs from the Los Angeles Regional Board. The project would not operate until the Los Angeles Regional Board has completed its regulatory review, including public hearings.

Based on Pure Water Project compliance with the State Water Board regulations and permit review by the Los Angeles Regional Board, operation of the project would comply with water quality standards and WDRs; therefore, the impact would be less than significant.

11.4.2.2 Pipelines

The Calleguas SMP is currently operational from just east of Camarillo to the Pacific Ocean near Port Hueneme; within the next few years, a new branch of the pipeline would be installed along Santa Rosa Road to Simi Valley (Calleguas MWD 2022). The Pure Water Project concentrate pipeline would discharge into the future SMP at the intersection of Santa Rosa Road at Hill Canyon Road.

Discharge into the SMP would comply with the project's NPDES permit (Order R4-2019-0075, NPDES CA0064521), including verifying that concentrate remains within the permit discharge limitations for the following factors:

- Physical and chemical characteristics
- Pathogens
- Metals
- Organic chemicals
- Radioactivity

Pursuant to Calleguas MWD's Ordinance 19, the Pure Water Project would enter into a discharge service connection agreement, pay the associated connection fees, and discharge into the SMP per agreement requirements, including monitoring discharges to the SMP to comply with the discharge limits. By complying with the NPDES permit and Calleguas MWD service agreement standards, the impact would be less than significant.

11.4.2.3 Malibu Creek

Discharges to Malibu Creek are regulated by the Regional Board pursuant to NPDES Permit CA0056014 (Order R4-2017-0124). The order regulates all Tapia WRF discharges, including maintaining the existing Malibu Creek discharge prohibitions, setting a minimum instream flow requirement of 2.5 cfs, and increasing the discharge quality requirements, especially for nitrogen and phosphorus. The JPA would comply with the permit requirements by eliminating Tapia WRF discharges into Malibu Creek (except under an operational emergency or qualifying storm event) and by providing supplemental potable water to meet the instream flow requirements. For these reasons, the Pure Water Project would comply with applicable Malibu Creek water quality standards and WDRs; therefore, the impact would be less than significant.

11.4.3 Impact 11-2: Drainage and Flood Risk

By complying with the regulatory requirements described in this section, Impact 11-2 would be less than significant.

11.4.3.1 Advanced Water Purification Facility and Pipelines

Development of Alternative 1 Agoura Road AWPF and Alternative 2 Reservoir AWPF would comply with site development standards of the Regional MS4 Permit, and the AWPF and all pipeline sections would prepare SWPPPs as required by the CGP. Neither AWPF site is located within a special flood hazard area (FEMA 2021). For these reasons, there would be only minor, local changes to stormwater runoff patterns; and impacts to drainage and flood risk would be less than significant.

11.4.3.2 Malibu Creek

The JPA would comply with the permit requirements by eliminating Tapia WRF discharges into Malibu Creek (except under an operational emergency or qualifying storm event) and by providing supplemental potable water to meet the instream flow requirements. These changes would largely affect stream flow in Malibu Creek during low-flow conditions (Figure 11-5).

Under Impact 11-1b, flows in Malibu Creek downstream of the discharge point would not fall to less than the 2.5-cfs minimum stream flow requirement in the NPDES permit. During storm events, flows in Malibu Creek rise rapidly, peak, and then recede almost as rapidly. If Tapia WRF discharges to Malibu Creek are eliminated during operation of the project, Malibu Creek stream flows would be slightly less than baseline conditions during storm events (Figure 11-6). Therefore, impacts to drainage and flood risk would be less than significant.

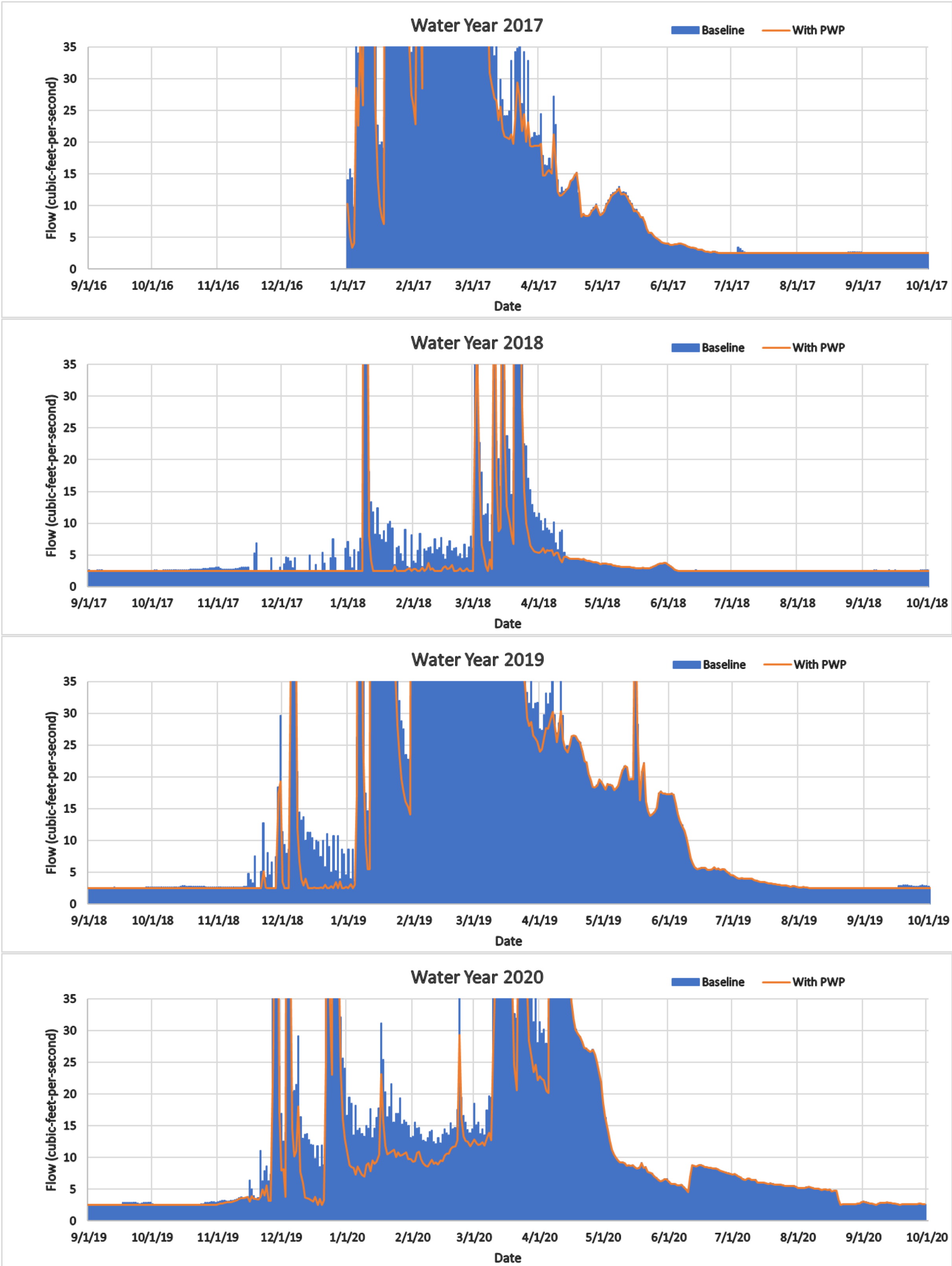

Figure 11-5. Streamflow Conditions in Malibu Creek During Low-flow Conditions

Source: Baseline (Los Angeles County 2018, 2019, 2020a, 2021); With PWP calculated from baseline minus Tapia discharge

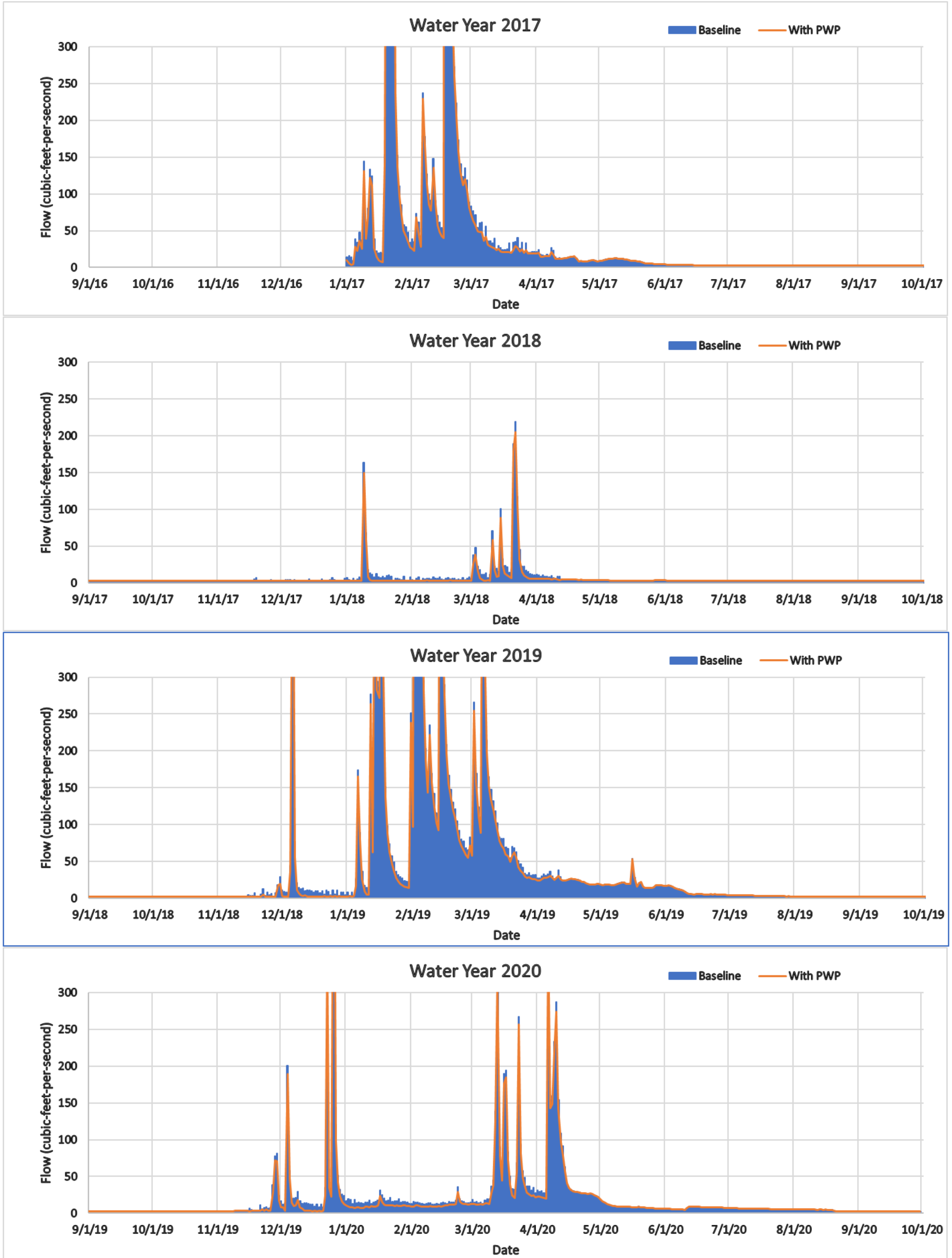

Figure 11-6. Streamflow Conditions in Malibu Creek During Storm Events

Source: Baseline (Los Angeles County 2018, 2019, 2020a, 2021); With PWP calculated from baseline minus Tapia discharge

11.4.4 Impact 11-3: Groundwater

The Alternative 1 Agoura Road AWPF and Alternative 2 Reservoir AWPF sites do not overlie a groundwater basin; therefore, development of the sites would not interfere with groundwater recharge. For these reasons, site development and the new impervious surfaces created would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin. Therefore, there would be no impact.

Source water augmentation using the Los Robles well would extract groundwater from the Conejo Valley groundwater basin for use by the Pure Water Project. The annual volume of groundwater production from the Los Robles well is estimated to be 400 to 700 AFY, based on the estimated sustainable yield of the groundwater basin (Kennedy Jenks 2021). Because groundwater pumping at the Los Robles well would not exceed the sustainable yield, the impact would be less than significant.

11.5 Mitigation Measures

No impacts to hydrology and water quality would be significant; therefore, no mitigation is needed. Construction of all Pure Water Project features will be subject to the CGP and local land development policies by preparing an SWPPP following best industry practices for erosion and sediment control during construction, and as prescribed by *Mitigation Measure 8-2: Comply with regulations and policies for erosion control*.

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12. Land Use and Planning

This chapter describes existing land uses in the project area. Applicable plans and policies related to land use and planning are provided, and potential impacts and mitigation measures are identified.

12.1 Existing Setting

The project area is in the northwestern portion of the greater Los Angeles region, within portions of the cities of Agoura Hills, Westlake Village, Thousand Oaks, and unincorporated Ventura County. Most of the project area is located within an urban setting; however, portions are located within Open Space areas.

Major transportation corridors within the project area include U.S. 101 and SR-23. No airports or railways are in the vicinity.

12.2 Regulatory Framework

This section summarizes existing land use regulations that would apply to the project area. Land use is regulated primarily at the local level.

12.2.1 General Plans – Policies and Guidance

This section discusses city and county general plan land use guidance relevant to the project.

12.2.1.1 City of Agoura Hills

The City of Agoura Hills adopted the current *City of Agoura Hills General Plan* in 2010 as a strategic document to guide the physical development of Agoura Hills. The Land Use Element is in the process of being updated to reflect the housing sites identified in the Housing Element, including an update to the Land Use Map (City of Agoura Hills 2021).

The Land Use Element guides development of Agoura Hills' built environment to the year 2035 and manages how existing neighborhoods, commercial centers, business districts, and open spaces would be conserved and how growth would be managed to protect the city's resources. Additionally, the Land Use Element reflects the City of Agoura Hills' intentions for economic development, job generation, and fiscal balance.

Table 12-1 lists the land use goals and policies established by the *City of Agoura Hills General Plan* (City of Agoura Hills 2010b) that are applicable to the Pure Water Project.

Table 12-1. City of Agoura Hills Land Use Goals and Policies

Goal or Policy Name	Goal or Policy Language
Goal LU-1: Growth and Change	*Sustainable growth and change through orderly and well-planned development that provides for the needs of existing and future residents and businesses, ensures the effective and equitable provision of public services, and makes efficient use of land and infrastructure.*
Policy LU-1.2: Development Locations	*Prioritize future growth as infill of existing developed areas re-using and, where appropriate, increasing the intensity of development on vacant and underutilized properties, in lieu of expanded development outward into natural areas and open spaces. Allow for growth on the immediate periphery of existing development in limited designated areas, where this is guided by* *standards to assure seamless integration and connectivity with adjoining areas and open spaces.*

Table 12-1. City of Agoura Hills Land Use Goals and Policies

Goal or Policy Name	Goal or Policy Language
Policy LU-1.3: Development Phasing	*Phase development and public facilities working with other public entities to assure that adequate public facilities are available at the time of occupancy.*
Policy LU-2.5: Community Services	*Provide a diversity of uses and services supporting Agoura Hills' residents, such as facilities for civic governance and administration, public safety (police and fire), parks and recreation, seniors and youth, community meetings, and comparable activities. Work with external agencies supporting their provision of services and facilities not under the City's jurisdiction, such as public schools and quasi-public infrastructure.*
Goal LU-3: City of Open Spaces	*Open space lands that are preserved to maintain the visual quality of the City and provide recreational opportunities, protect the public from safety hazards, and conserve natural resources.*
Policy LU-3.1: Scenic and Natural Areas	*Provide for the preservation of significant scenic areas and corridors, significant plant and animal habitat and riparian areas, and physiographic features within the City.*
Policy LU-3.5: Creeks and Natural Drainages	*Maintain the form and health of resources and habitat in the City's natural drainages. Explore restoration of those that have been degraded or channelized, such as Medea Creek and Chesebro Creek, as feasible to maintain storm water conveyance and property protection requirements.*
Policy LU-3.6: Development Respect for Environmental Setting	*Encourage development to be located and designed to respect Agoura Hills' natural environmental setting and preserve public views, including scenic hillside areas. Regulate building height and location to avoid obtrusive breaks in the natural skyline.*
Policy LU-3.7: Public Viewsheds	*Whenever possible, preserve vistas of the community from public use areas.*
Policy LU-3.8: Night Sky	*Preserve view of the night sky through control of outdoor lighting.*
Policy LU-3.9: Open Space Preservation	*For any change in allowed use on properties in the OS land use district, a two-thirds vote of the voters of the City is required.*
Policy LU-5.1 Sustainable Building Practices	*Promote sustainable building practices that utilize materials, architectural design features, and interior fixtures and finishings to reduce energy and water consumption, toxic and chemical pollution, and waste in the design and construction of buildings.*
Policy LU-5.4: Sustainable Land Development Practices	*Promote land development practices that reduce energy and water consumption, pollution, greenhouse gas emissions, and waste, incorporating such techniques as:* ▪ *Concentration of uses and design of development to promote walking and use of public transit in lieu of the automobile* ▪ *Capture and re-use of stormwater on-site for irrigation* ▪ *Orientation of buildings to maximize opportunities for solar energy use, daylighting, and ventilation* ▪ *Use of landscapes that protect native soil, conserve water, provide for wildlife, and reduce green waste* ▪ *Use of permeable paving materials* ▪ *Shading of surface parking, walkways, and plazas* ▪ *Management of wastewater and use of recycled water*

Source: City of Agoura Hills 2010b

12.2.1.2 City of Westlake Village

The City of Westlake Village adopted an updated *City of Westlake Village General Plan* in 2019 (2019a), as well as additional updates to the Hazards and Housing Elements in 2021. The general plan gives guidance to decision-makers on issues affecting the allocation of resources and future direction of Westlake Village.

The Community Development chapter contains the Land Use Element, which is the primary land use policy document and serves as the blueprint for the future development of the community.

Table 12-2 lists the land use goals and policies established by the *City of Westlake Village General Plan* that are applicable to the Pure Water Project.

Table 12-2. City of Westlake Village Land Use Goals and Policies

Goal or Policy Number	Goal or Policy Language
Goal 1	*Provide for new land use development and adaptive reuse which is reflective of and complements the overall pattern and scale of existing development, and offers the opportunity for the revitalization and/or reuse of selected subareas as distinctly identifiable activity centers of the City.*
Policy 1.1.2	*Provide for the maintenance and possible expansion of open space and recreation uses in those areas designated as Open Space and Recreation areas on the General Development Policy map.*
Goal 2	*Ensure that new development is adequately served by supporting transportation facilities, and utility infrastructure and public services.*
Policy 2.1.1	*Implement and maintain public infrastructure improvements necessary to support land uses accommodated by the Land Use Plan (as defined in the Circulation, Utility Service, Facilities, and Conservation Elements of the General Plan).*
Policy 2.2.1	*Implement public service improvements necessary to support land uses accommodated by the Land Use Plan (as defined in the Institutions, Public Safety, and Recreation Elements of the General Plan).*
Goal 7	*Provide for public and institutional uses which support the needs and functions of the residents and businesses within the City of Westlake Village.*
Policy 7.1.1	*Accommodate governmental administrative, parks and recreation, public open space, police, fire, educational (schools), cultural (libraries, etc.), health, human services, public utility, religious and other public uses in areas designated as Public-Quasi public.*
Policy 7.1.3	*Require that public sites be designed to incorporate landscaped setbacks, walls, and other appropriate elements to mitigate operational and visual impacts on adjacent land uses.*
Goal 8	*Preserve and protect the City's open space resources as important scenic, environmental, and recreational amenities for all City residents and visitors.*
Policy 8.1.1	*Retain existing publicly and privately owned open space lands which are permanently dedicated or for which an easement has been granted, including areas designated as "Open Space" on the Land Use Plan map.*
Policy 8.2.1	*Require that development be sited and designed to protect significant environmental resources, including the provision of open space, in accordance with the Biological Resources Element policies.*
Goal 11	*Preserve and maintain the natural character and visual amenities of hillsides as a scenic resource.*
Policy 11.1.1	*Permit development within designated Hillside Management areas in accordance with the Hillside Development Standards contained in the Zoning Ordinance (refer to Visual Resources and Scenic Highways Element).*
Goal 12	*Preserve sites of archaeological and historic significance.*

Table 12-2. City of Westlake Village Land Use Goals and Policies

Goal or Policy Number	Goal or Policy Language
Policy 12.1.1	*Prior to authorizing development within designated Cultural Reconnaissance areas, require an intensive and systematic surface reconnaissance to identify significant resources and establish appropriate mitigation measure.*
Goal 14	*Protect Westlake Village watershed areas.*
Policy 14.1.1	*Require that developments proposed within a designated watershed area incorporate design measures to fully mitigate the impacts of runoff, siltation, erosion and pollutants on affected water bodies (refer to Watershed Areas section).*
Goal 15	*Protect highly sensitive biological habitats.*
Goal 15.1.1	*Evaluate the impact of a proposed development on affected habitat areas and require appropriate mitigation measures as a condition of development approval (refer to Sensitive Biological Communities Map) (I-7, Biological Resources' I-1, Biological Resources' I-2, Biological Resources' I-4, and Biological Resources' I-8).*
Goal 16	*Ensure compatibility among the various types and densities of land uses to be accommodated within the City.*
Policy 16.1.2	*Require that the on-site lighting of commercial and industrial uses be unobtrusive and designed or located so that only the intended area is illuminated, off-site glare is minimized, and adequate safety is provided.*
Policy 16.1.4	*Control the development of industrial and other uses which use, store, produce, or transport toxics, air emissions, and other pollutants; requiring adequate mitigation measures confirmed by environmental review and monitoring.*
Goal 17	*Ensure that the City's built environment, including its architecture, landscape, public open spaces, and rights-of-way maintain a high quality of design which is compatible with the City's established suburban character and environmental setting.*
Policy 17.1.1	*Limit the use of reflective glass, bright colors, expansive metal skins and other materials and designs which detract from the community's established character.*
Policy 17.1.2	*Require that air conditioning and other mechanical equipment located on the rooftop of a structure be visually screened from public view and adjacent properties.*

Source: City of Westlake Village 2019a

12.2.1.3 City Thousand Oaks

The *Thousand Oaks General Plan* (City of Thousand Oaks 2022b) provides a long-range comprehensive guide for the physical development of the City's planning area. The general plan includes a statement of goals and policies related to the community's development, and various elements that provide more detailed policies and standards for certain topic areas.

The City of Thousand Oaks does not have a typical stand-alone Land Use Element with associated written text. As of February 2022, a Land Use and Circulation Map is available, as well as a list of goals and policies that were adopted via several resolutions in the 1990s. The City of Thousand Oaks is in the process of the first comprehensive update to the *Thousand Oaks General Plan*.

Table 12-3 lists the land use goals and policies established by the *Thousand Oaks General Plan* that are applicable to the Pure Water Project.

Table 12-3. City of Thousand Oaks Land Use Goals and Policies

Goal or Policy	Goal or Policy Language
Goal	*To provide the framework for a planned and unified community containing a balance of living, working, shopping, educational, civic, cultural and recreational facilities.*
Goal	*To develop appropriate additional tools enabling commercial, industrial and residential development to flourish in an efficient and compatible manner.*
Industrial Policy	*Industrial development should comply with the City's height restrictions. Exceptions, through height overlays, may be appropriate under certain conditions.*
Institutional Policy	*The City shall strive to coordinate planning goals with those of other governmental entities having jurisdiction in the Conejo Valley.*

Source: City of Thousand Oaks 2022b

12.2.1.4 Ventura County

The *Ventura County 2040 General Plan* sets forth the goals, policies, and programs the County would implement to manage future growth and land uses. The general plan, adopted by the Board of Supervisors in September 2020, embodies the vision for the future of unincorporated Ventura County.

The Land Use Element includes policies establishing land use designations that identify the type and intensity of uses permissible in unincorporated areas. In addition, the Land Use Element includes a series of goals and policies identifying the Ventura County's philosophy for future change, development, and natural resource protection. The focus of this section is to preserve agricultural, rural, and open space lands while directing growth to cities and unincorporated communities.

Table 12-4 lists the land use goals and policies established by the *Ventura County 2040 General Plan* that are applicable to the project.

Table 12-4. Ventura County Land Use Goals and Policies

Goal or Policy Number	Goal or Policy Language
Goal LU-1	*To ensure that the County can accommodate anticipated future growth and development while promoting orderly growth and development that enhances quality of life, maintains a safe and healthful environment, preserves valuable natural resources, and plans for adequate public facilities and services.*
LU-1.5	*Infill Development- The County shall encourage infill development within Existing communities and within or adjacent to existing development within unincorporated urban centers to maximize the efficient use of land and existing infrastructure.*
Goal LU-6	*To provide appropriate land use designations that provide for the long-term preservation of the county's rural lifestyle, productive farmland and supporting services, and the vast open space resources that define the county.*
LU-6.1	*Agricultural Buffers- The County shall require non-agricultural land uses adjacent to agricultural uses to incorporate adequate buffers (e.g., fences, setbacks) to limit conflicts with adjoining agricultural operations.*

Source: Ventura County 2020

12.2.2 Land Use and Zoning Designations

While land use designations define what types of general uses are allowed on a particular property, the zoning designation regulates specific characteristics, such as specific permitted uses and development standards. The intent of zoning regulations are to protect the character and stability of neighborhoods and reduce land use conflicts. Local land use and zoning designations within the project area are discussed in this section and shown on Figures 12-1 and 12-2 (located at the end of this section).

The discussion of land use and zoning designations is limited to the Agoura Hills and Westlake Village. Pure Water Project activities within Thousand Oaks and unincorporated Ventura County are limited to underground pipelines. Although temporary construction impacts would occur (as discussed in Section 12.3), no land use plans and zoning designations, specific plans, resource management overlays, or development standards are applicable.

12.2.2.1 City of Agoura Hills

The Alternative 1 Agoura Road AWPF site has both land use and zoning designations of Planned Development. The Planned Development land use designation is intended to designate certain areas of the city for special development and land use regulations that cannot be addressed through the citywide zoning ordinances. Specific regulations are necessary to guide development and land uses in an orderly manner, such that they are compatible with the existing setting, as well as so development seamlessly and cohesively integrates uses and buildings. Specific land use regulations are governed by specific plans adopted by the City of Agoura Hills.

Underground pipelines would be placed underneath existing paved roadways and would not be subject to land use and zoning restrictions.

The Planned Development zoning designation, where the Alternative 1 Agoura Road AWPF site is located, refers to the *Ladyface Mountain Specific Plan* (City of Agoura Hills 1991). The intent of the *Ladyface Mountain Specific Plan* is to provide the City of Agoura Hills with a comprehensive set of plans, policies, regulations, and conditions for guiding and verifying the orderly development and implementation of the Ladyface Mountain Overlay District.

Per Exhibit II-22 of the *Ladyface Mountain Specific Plan*, the AWPF site is located within the Business Park Sub Area. Public utility and public services are conditionally permitted uses within the Business Park Sub Area, meaning that a CUP would normally be required.

Table 12-5 summarizes the development standards for the Alternative 1 Agoura Road AWPF site, within the Business Park Sub Area of the *Ladyface Mountain Specific Plan*.

Table 12-5. Development Standards for Program Components Within Agoura Hills

Zone District	Feature	Standard
Ladyface Mountain Specific Plan	Total Developable Pad Area	2.42 acres.
	Developable Building Square Footage	24,000 ft^2.
	Maximum Building Height	35 feet and no more than 1,100 feet in elevation above sea level.
	Minimum Front Setback	Twice the height of any building; not less than 25 feet.
	Minimum Rear Setback	Twice the height of any building.
	Minimum Side and Street-side Setback	If a building is situated adjacent to an undeveloped parcel, the minimum side setback will equal the height of the building. If two buildings are on the same parcel (adjacent to an undeveloped parcel), the minimum side yard will be 0.75 times the sum of the two building heights.

Source: City of Agoura Hills 2010c

12.2.2.2 City of Westlake Village

The Alternative 2 Reservoir AWPF site has both a land use and zoning designation of Open Space. The Open Space designation is intended to apply to publicly and privately owned land primarily maintained in an unimproved form, such as common open space, lakes, reservoirs, hillsides, and watershed areas.

Per Section 93.313.020 of the City of Westlake Village Municipal Code, water treatment plants, including filtration systems; gauging stations; pumping stations; and any use related to the obtainment, storage, and distribution of water, are a conditionally permitted use.

Underground pipelines would be placed underneath existing paved roadways and would not be subject to land use and zoning restrictions. However, aboveground pump stations may be required for Alternative 2 Reservoir AWPF. Table 12-6 summarizes the program components within Westlake Village and permitted use information.

Table 12-6. Program Components and Zoning Within Westlake Village

Program Component	Location	Zone District	Permitted Use
Alternative 2 Reservoir AWPF	Eastern shoreline of Las Virgenes Reservoir	Open Space	CUP required (water treatment plant)
Pump Station (potential option)	Western side of Lindero Canyon Road, approximately 400 feet northeast of Agoura Road	Commercial Recreation	Not a permitted use; per Section 9.4.050, public utility uses would require a Planning Commission determination
Pump Station (potential option)	Southeastern corner of Lindero Canyon Road and Russel Ranch Road	Multiple Use	CUP required (public utility)

The Alternative 2 Reservoir AWPF site is located on parcels that are not subject to a specific plan. However, several resource management overlays have been applied to the area:

- **Hillside Management Area**: Intended to further the preservation and maintenance of the natural character and visual amenities of hillsides as a scenic resource, and to afford protection from geologic, fire, and other natural hazards. The areas identified as hillside management areas are also classified as Open Space; and as such, would not be developed in the future.
- **Cultural Reconnaissance Area**: Intended to preserve, where feasible, sites of archaeological and historic significance or the information they contain where site preservation is not possible. Biophysical and physiographic features similar to those of areas where cultural resources were previously discovered exist in the unsurveyed portions of the city; therefore, there is a very strong possibility that additional, potentially significant cultural resource remains lie within city limits. As part of any development proposal for property located within or adjacent to a designated cultural reconnaissance area, an intensive, systematic surface reconnaissance program conducted by a qualified archaeologist is required to identify and evaluate the impact of the proposed development and recommend measures to mitigate any such impacts.
- **Watershed Area**: Intended to minimize the effects of development on Las Virgenes Reservoir and Triunfo Canyon. As part of any development proposal for property located within a designated watershed area, measures would be incorporated into the program's design to minimize the impacts of runoff, erosion, and pollutants on affected water bodies.
- **Significant Habitat Area**: Intended to minimize the negative effects of development on the highly sensitive biological habitats identified in the *City of Westlake Village General Plan*. As part of any development proposal for property located within or adjacent to a designated significant habitat area, an analysis by a qualified biologist (subject to City approval) would be required to evaluate the impact of the proposed development on the affected habitats or communities and recommend measures to mitigate any impacts.

Table 12-7 summarizes the development standards for the Alternative 2 Reservoir AWPF site, within the Open Space district, and potential pump stations within Westlake Village that may be required with Alternative 2 Reservoir AWPF.

Table 12-7. Development Standards for Program Components Within Westlake Village

Zone District	Feature	Standard
Open Space	Maximum Building Height	1 story, 20 feet
	Maximum Lot Coverage	-
	Minimum Setback from Abutting Public ROW	20 feet
	Minimum Setback from an Abutting Side Yard	10 feet (landscaped)
Multiple Use (refers to Commercial Planned Development)	Maximum Building Height	2 stories, 35 feet
	Maximum Lot Coverage	35%
	Minimum Setback from Abutting Public ROW	20 feet
	Minimum Setback from an Abutting Side Yard	10 feet (landscaped)
Commercial Recreation	Maximum Building Height	2 stories, 35 feet
	Maximum Lot Coverage	35%
	Minimum Setback from Abutting Public ROW	20 feet
	Minimum Setback from an Abutting Side Yard	10 feet (landscaped)

12.2.3 Water Utility Exemptions

Generally, local agencies are required to comply with the building and zoning ordinances of the cities and counties where facilities are located. However, per Government Code Section 53091(d) and (e), certain water facilities are exempt from building and zoning ordinances. Subdivision (d) provides an absolute exemption for "…facilities for the production, generation, storage, or transmission of water." Subdivision (e) provides an exemption for facilities "…related to storage or transmission of water…" that are integral to the proper operation of particular storage and transmission functions of water districts.

While Government Code Section 53091 applies to permits and zoning ordinances, Government Code Sections 65401, 65402, and 65403 concern general plan compliance. Per these regulations, the water agency would be required to submit its program to the applicable planning department. The submissions to local jurisdictions are for advisory purposes only. Government Code Section 65401 provides:

> *If a general plan or part thereof has been adopted, within such time as may be fixed by the legislative body, each county or city officer, department, board, or commission, and each governmental body, commission, or board, including the governing body of any special district or school district, whose jurisdiction lies wholly or partially within the county or city, whose functions include recommending, preparing plans for, or constructing, major public works, shall submit to the official agency, as designated by the respective county board of supervisors or city council, a list of the proposed public works recommended for planning, initiation or construction during the ensuing fiscal year. The official agency receiving the list*

of proposed public works shall list and classify all such recommendations and shall prepare a coordinated program of proposed public works for the ensuing fiscal year. Such coordinated program shall be submitted to the county or city planning agency for review and report to said official agency as to conformity with the adopted general plan or part thereof.

A submission requirement is also stated under Government Code Section 65402, which requires that local agencies not construct or authorize a public structure in any county until the project has been submitted to and reported upon by the planning agency having jurisdiction over the project as to conformity with the local general plan.

12.3 Assessment Methods and Thresholds of Significance

The assessment of potential impacts was based on Appendix G of the CEQA Guidelines. Impacts on land use may occur if the project results in the following:

- Physically divides an established community.
- Conflicts with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the program, including the general plan, specific plan, local coastal program, or zoning ordinance adopted to avoid or mitigate an environmental effect.

According to Section 15002(g) of the CEQA Guidelines, "…a significant effect on the environment is defined as a substantial adverse change in the physical conditions which exist in the area affected by the proposed project." As stated in Section 15064(b) of the CEQA Guidelines, "…the significance of an activity may vary with the setting." Per Appendix G of the CEQA Guidelines, the potential significance of program impacts on land use and planning were evaluated for each of the criteria.

12.4 Environmental Impacts

This section describes the project's environmental impacts related to land use.

12.4.1 Overview

Potential land use impacts are summarized in Table 12-8 and described in subsequent sections.

Table 12-8. Summary of Land Use Impacts

Impact	Alternative 1 Agoura Road AWPF	Alternative 2 Reservoir AWPF	Pipelines
Impact 12.1: Physically Divides an Established Community	Less than significant impact	Less than significant impact	No impact
Impact 12.2: Conflicts with Land Use Plans, Policies, or Regulations	Less than significant impact	Less than significant impact	No impact

12.4.2 Impact 12-1: Physically Divides an Established Community

The effects of Pure Water Project infrastructure on land use as discussed in this section would be less than significant or have no impact.

12.4.2.1 Alternative 1 Agoura Road Advanced Water Purification Facility

The Alternative 1 Agoura Road AWPF site is currently a vacant, undeveloped property. Surrounding land uses include high-density residential units with associated recreational amenities (tennis courts) to the west, Agoura Road and a business park to the north, and open space to the east and south.

An unofficial north–south oriented trail leading from Agoura Road to the Ladyface Mountain Open Space area is located on the property. During construction, a portion of the trail would not be accessible to the public due to the construction activity. Following the completion of construction activity, trail use could resume; therefore, the impact would be less than significant.

12.4.2.2 Alternative 2 Reservoir Advanced Water Purification Facility

The Alternative 2 Reservoir AWPF site is currently a vacant, undeveloped property. Surrounding land uses include the Las Virgenes Reservoir to the west and open space to the north, east, and south. Although the Reservoir AWPF would include a security fence around the facility, no project features or other built components would introduce a new barrier that physically divides the established community.

Upon construction and operation of the project, the Pentachaeta Trailhead near Triunfo Canyon Road would require a slight permanent relocation, as the Alternative 2 Reservoir AWPF access road would use the same area. Additionally, several unofficial access roads and recreation trails meander through the Alternative 2 Reservoir AWPF site and would require permanent relocation.

Although the Pentachaeta Trail and various unofficial access roads and recreation trails would require a permanent relocation around the Reservoir AWPF, construction and operation of Alternative 2 Reservoir AWPF would not result in a significant physical divide of an established community. The Reservoir AWPF security fence would be a physical barrier from the public using the existing unofficial access roads and recreation trails, resulting in less than significant impacts.

12.4.2.3 Pipelines

Pipelines included in the program would be placed underground; therefore, no pipeline component would introduce a new permanent barrier that physically divides the established community. Temporary lane closures would be required during construction. However, temporary lane closures would not result in the physical division of the established community. Construction and operation of the pipelines would not physically divide an established community, and no impact would occur.

Under Alternative 2 Reservoir AWPF, the two potential pump stations would require a security fence or wall around them. However, no public access would be disrupted at any of the proposed sites. Each pump station would allow for continued access around the perimeter of the facilities. The surrounding community character and uniformity would not be divided as a result of the pump stations. Construction and operation of the pump stations would not physically divide an established community, and no impact would occur.

12.4.3 Impact 12.2: Conflicts with Land Use Plans, Policies, or Regulations

The effects of Pure Water Project infrastructure on land use as discussed in this section would be less than significant.

12.4.3.1 Alternative 1 Agoura Road Advanced Water Purification Facility

Per Government Code Section 53091(d) and (e), the AWPF is exempt from local zoning and building ordinances. However, the Pure Water Project would work with the City of Agoura Hills to comply with the *Ladyface Mountain Specific Plan* and the *City of Agoura Hills General Plan*, including land use and development standards, as much as possible. As shown in Table 12-6, the AWPF is a permitted use in the *Ladyface Mountain Specific Plan* area upon the issuance of a CUP. Based on the site layout and concept design drawings, Alternative 1 Agoura Road AWPF would comply with some *Ladyface Mountain Specific Plan* development standards, including all height and setback requirements. At 2.7 acres, the AWPF exceeds the total developable pad area standard of 2.42 acres. The AWPF habitable area is generally consistent with the developable building square footage standard of 24,000 ft^2, but the overall building footprint (including exterior storage area) is 47,750 ft^2.

Due to Government Code Section 53091(d) and (e) and continued engagement with the City of Agoura Hills regarding the *Ladyface Mountain Specific Plan's* development standards, the AWPF would have a less than significant impact on land use plans, policies, or regulations adopted to avoid or mitigate an environmental effect.

12.4.3.2 Alternative 2 Reservoir Advanced Water Purification Facility

Per Government Code Section 53091(d) and (e), the AWPF is exempt from local zoning and building ordinances. However, the Pure Water Project would work with the City of Westlake Village to comply with the *City of Westlake General Plan* and Municipal Code, including land use and development standards, as much as possible. As shown in Table 12-7, the AWPF is a permitted use in the Open Space zone district upon the issuance of a CUP. Based on the site layout and concept design drawings, Alternative 2 Reservoir AWPF would comply with some City of Westlake Village development standards for the Open Space zone but, at 33 feet high, would exceed the Open Space development standard of 20 feet.

Due to Government Code Section 53091(d) and (e) and continued engagement with the City of Westlake Village, the AWPF would have a less than significant impact on land use plans, policies, or regulations adopted to avoid or mitigate an environmental effect.

12.4.3.3 Pipelines

Per Government Code Section 53091(d) and (e), the program is exempt from local zoning and building ordinances. Further, the pipelines would be located underground and would not be subject to land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect. No impact would result from construction and operation of the pipelines.

The aboveground pump station would comply with the *City of Westlake Village General Plan* and Municipal Codes, including land use and development standards. As shown in Table 12-8, utility structures are permitted upon the issuance of a CUP, with the exception of the potential location on the western side of Lindero Canyon Road, where public utility structures are not a permitted use. At this location, Planning Commission authorization is required.

Compliance with applicable development standards is anticipated, so the program would avoid environmental effects related to land use. Due to Government Code Section 53091(d) and (e) and anticipated compliance with the City of Westlake Village and City of Agoura Hills Municipal Codes' development standards, the program would have no impact on land use plans, policies, or regulations adopted to avoid or mitigate an environmental effect.

12.5 Mitigation Measures

Land use impacts would be less than significant; therefore, no mitigation measures are required.

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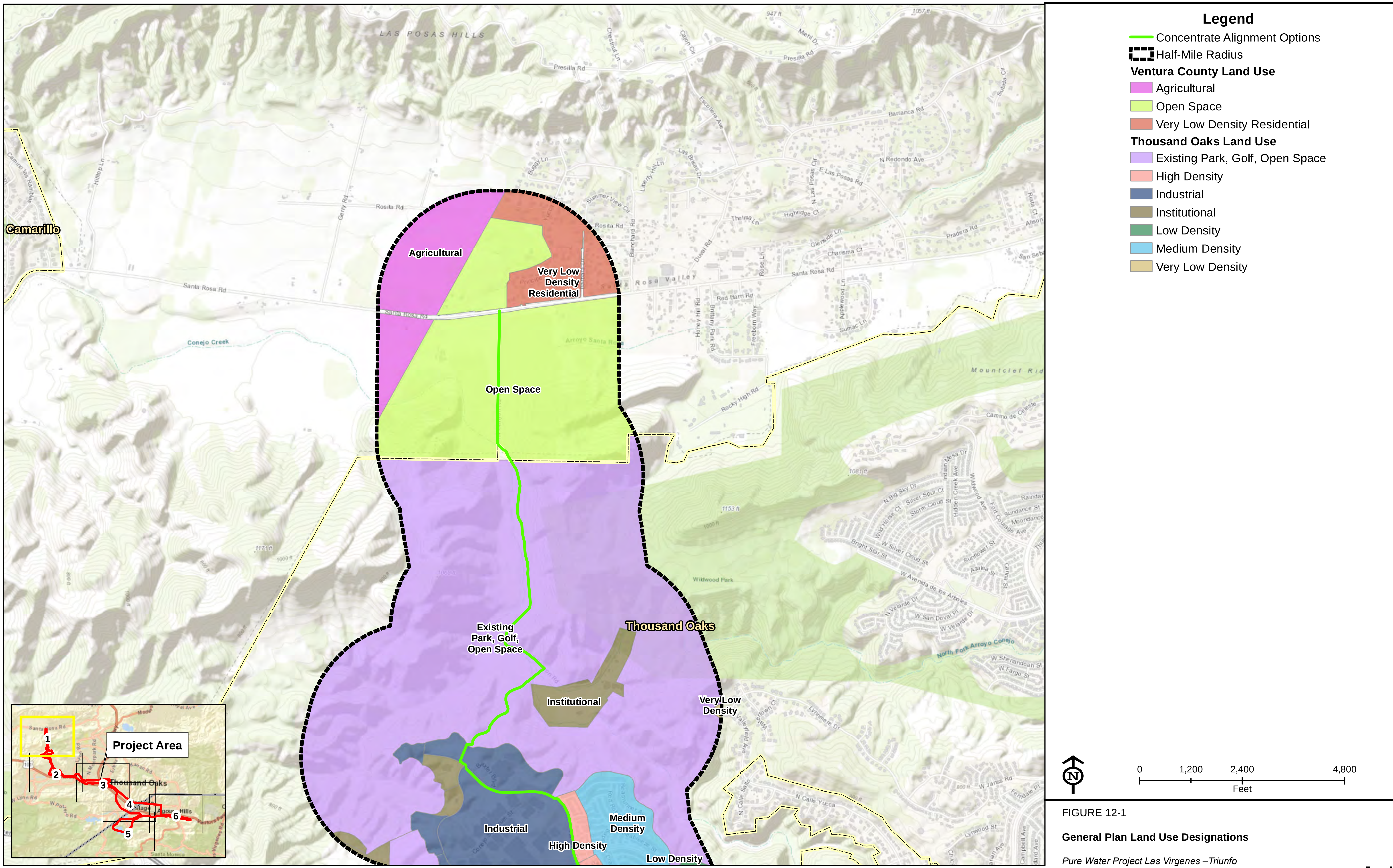

FIGURE 12-1

General Plan Land Use Designations

Pure Water Project Las Virgenes – Triunfo

Jacobs

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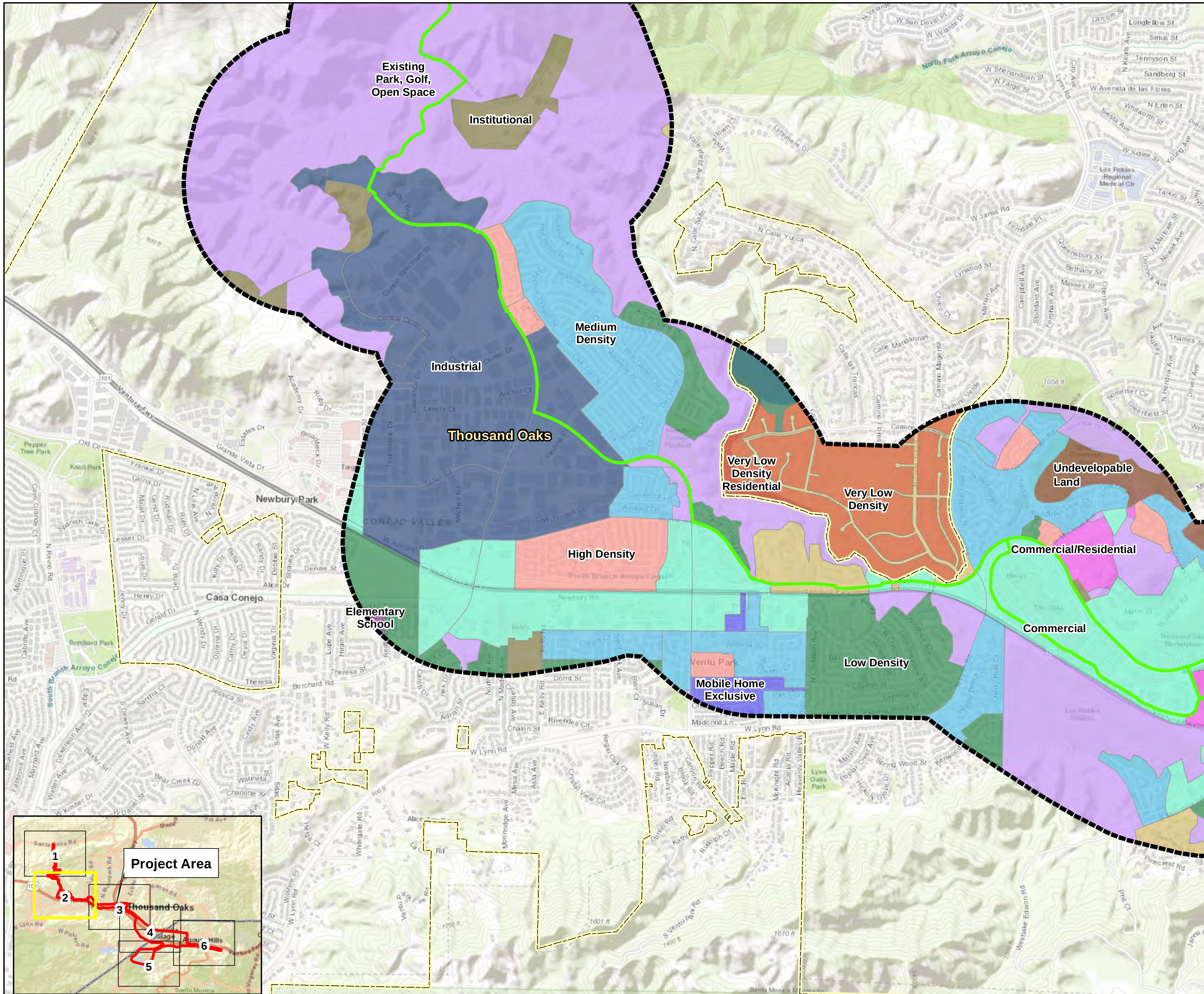
Sources: ESRI World Topo Map; ESRI World Street Map; CDFW CNDDB, 2022



Legend

- Concentrate Alignment Options
- Half-Mile Radius

Ventura County Land Use

- Industrial
- Very Low Density Residential

Thousand Oaks Land Use

- Commercial
- Commercial/Residential
- Elementary School
- Existing Park, Golf, Open Space
- High Density
- Industrial
- Institutional
- Low Density
- Medium Density
- Mobile Home Exclusive
- Undevelopable Land
- Very Low Density

0 1,200 2,400 4,800
Feet

FIGURE 12-1

General Plan Land Use Designations

Pure Water Project Las Virgenes – Triunfo

Jacobs

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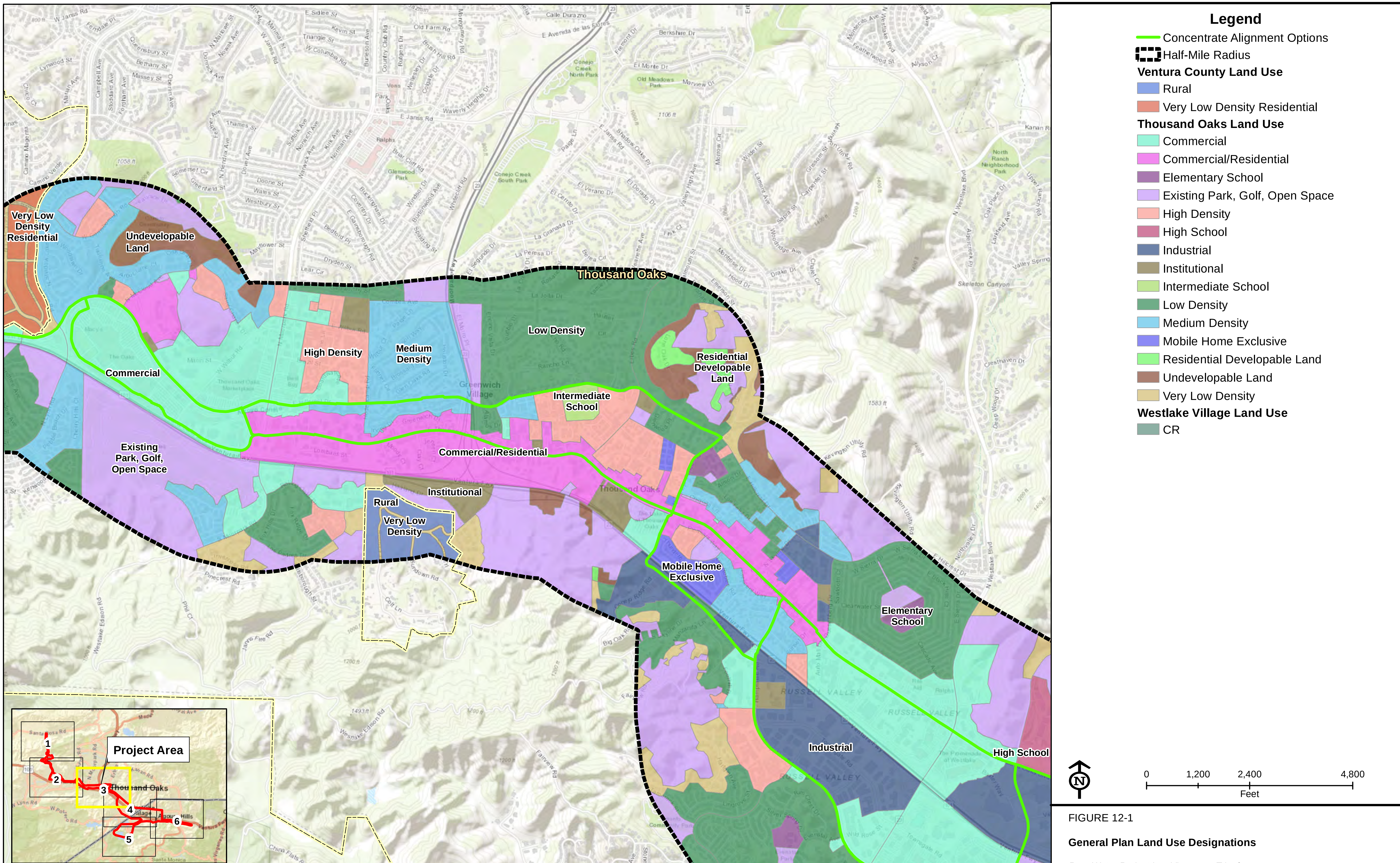

FIGURE 12-1

General Plan Land Use Designations

Pure Water Project Las Virgenes –Triunfo

Jacobs

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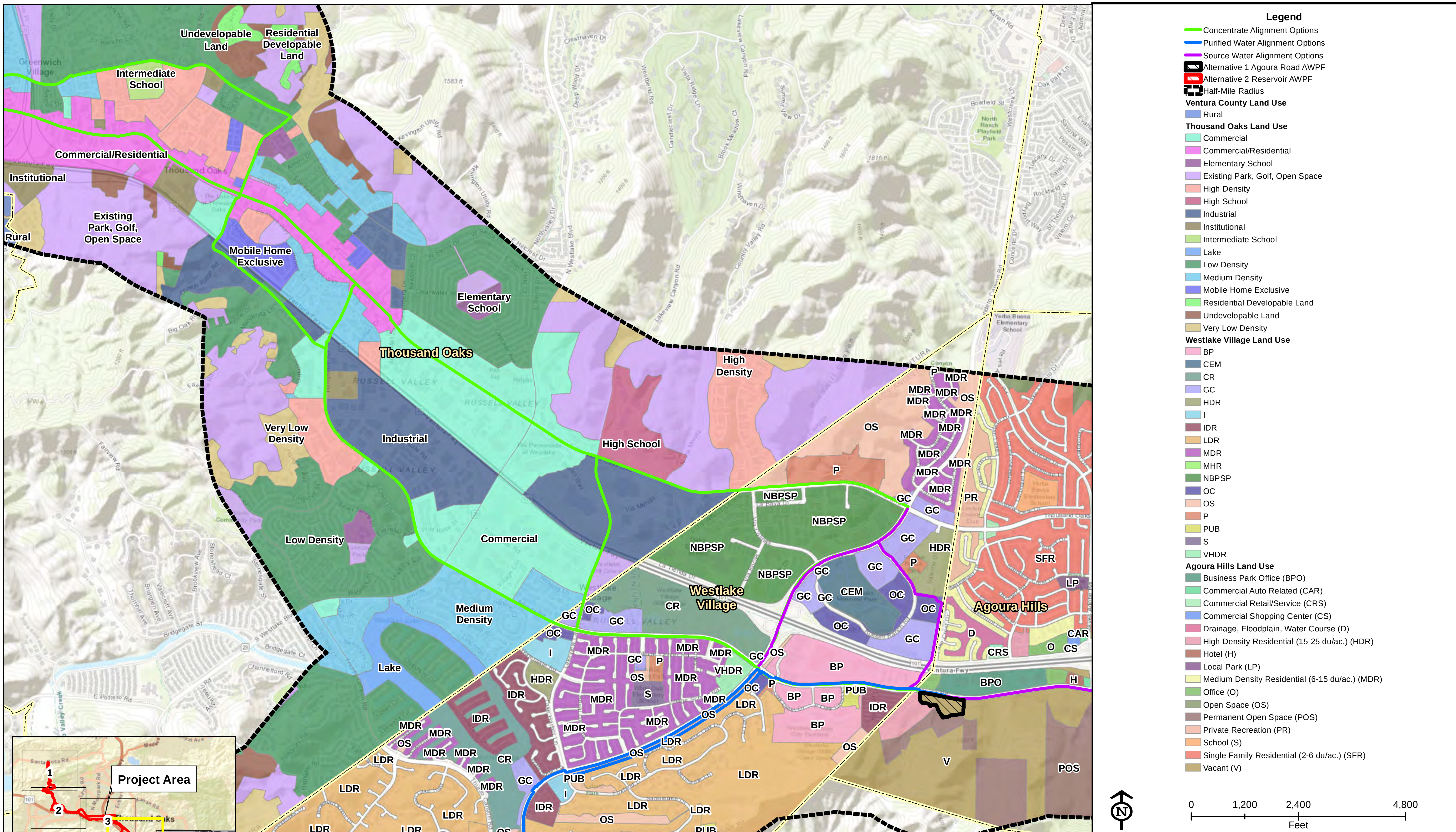

FIGURE 12-1

General Plan Land Use Designations

Pure Water Project Las Virgenes –Triunfo

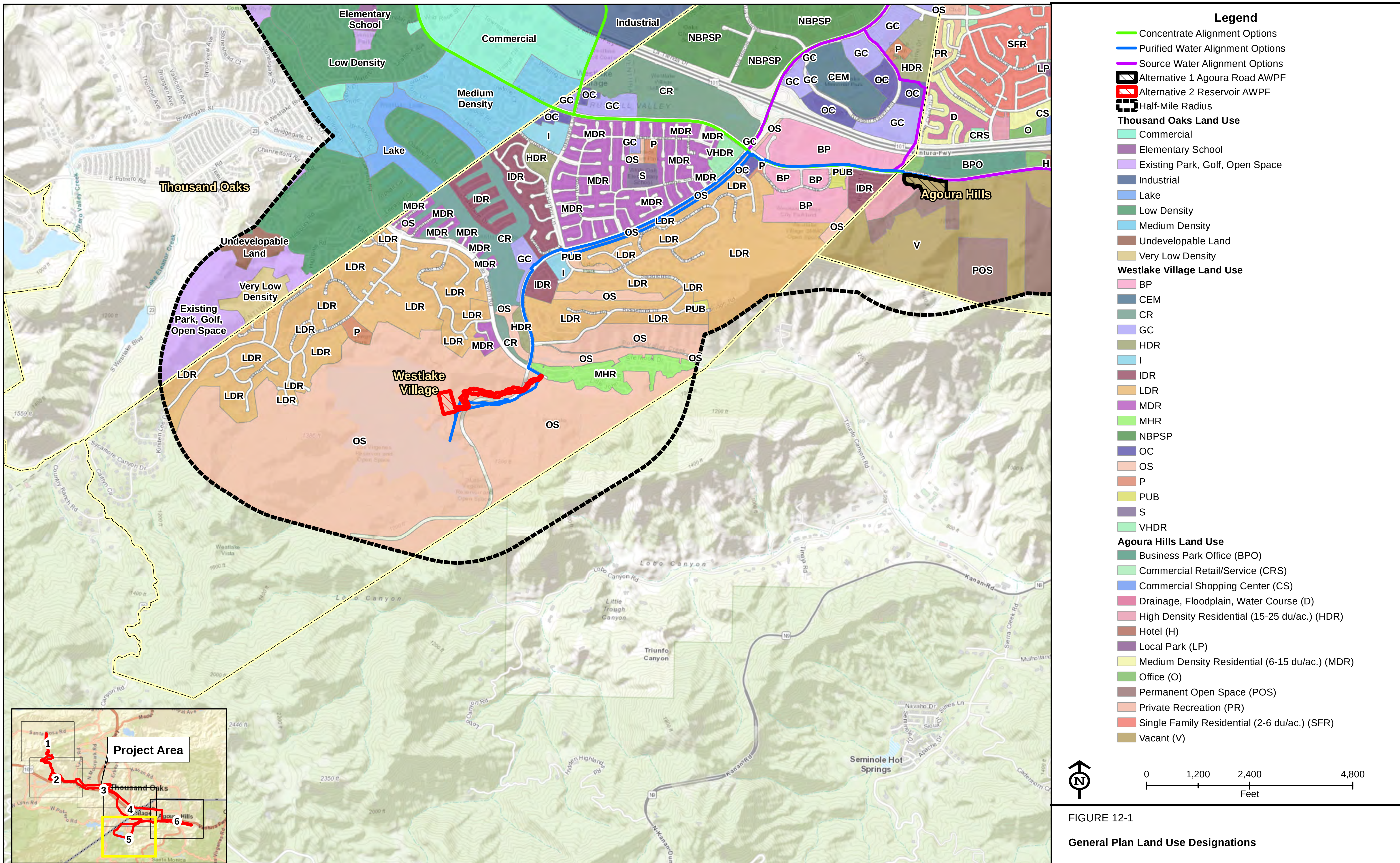

FIGURE 12-1

General Plan Land Use Designations

Pure Water Project Las Virgenes – Triunfo

Jacobs

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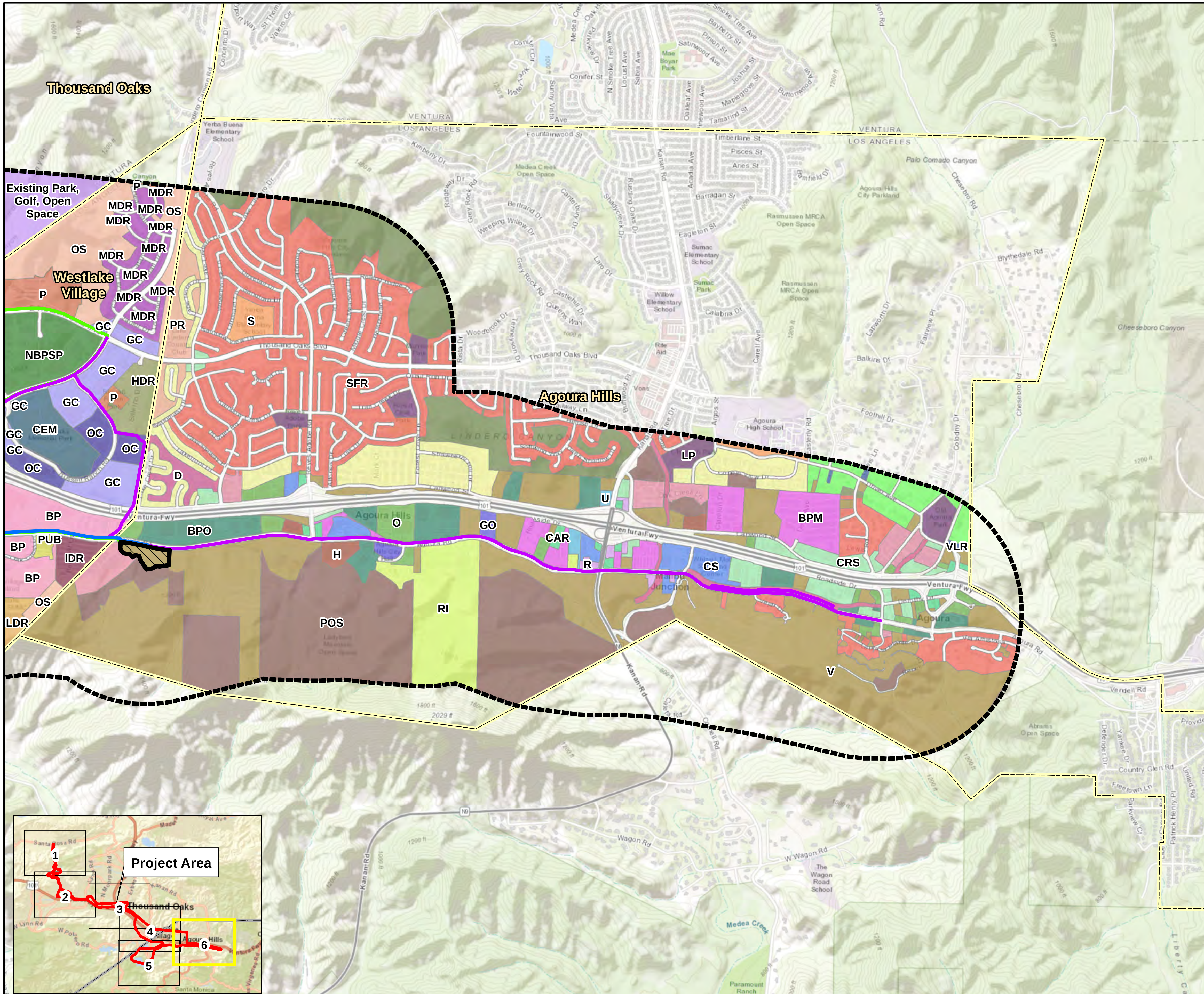
Sources: ESRI World Topo Map; ESRI World Street Map; CDFW CNDDB, 2022



Legend

- Concentrate Alignment Options
- Purified Water Alignment Options
- Source Water Alignment Options
- Alternative 1 Agoura Road AWPF
- Half-Mile Radius

Thousand Oaks Land Use

- Existing Park, Golf, Open Space

Westlake Village Land Use

- BP
- CEM
- GC
- HDR
- IDR
- LDR
- MDR
- NBPSP
- OC
- OS
- P
- PUB

Agoura Hills Land Use

- Business Park Office (BPO)
- Business Park-Manufacturing (BPM)
- Commercial Auto Related (CAR)
- Commercial Retail/Service (CRS)
- Commercial Shopping Center (CS)
- Drainage, Floodplain, Water Course (D)
- Government Office (GO)
- High Density Residential (15-25 du/ac.) (HDR)
- Hotel (H)
- Local Park (LP)
- Low Density Residential (1-2 du/ac.) (LDR)
- Medium Density Residential (6-15 du/ac.) (MDR)
- Office (O)
- Open Space (OS)
- Permanent Open Space (POS)
- Private Recreation (PR)
- Religious Institution (RI)
- Restaurant (R)
- School (S)
- Single Family Residential (2-6 du/ac.) (SFR)
- Utility (U)
- Vacant (V)
- Very Low Density Residential (<2 du/ac.) (VLR)

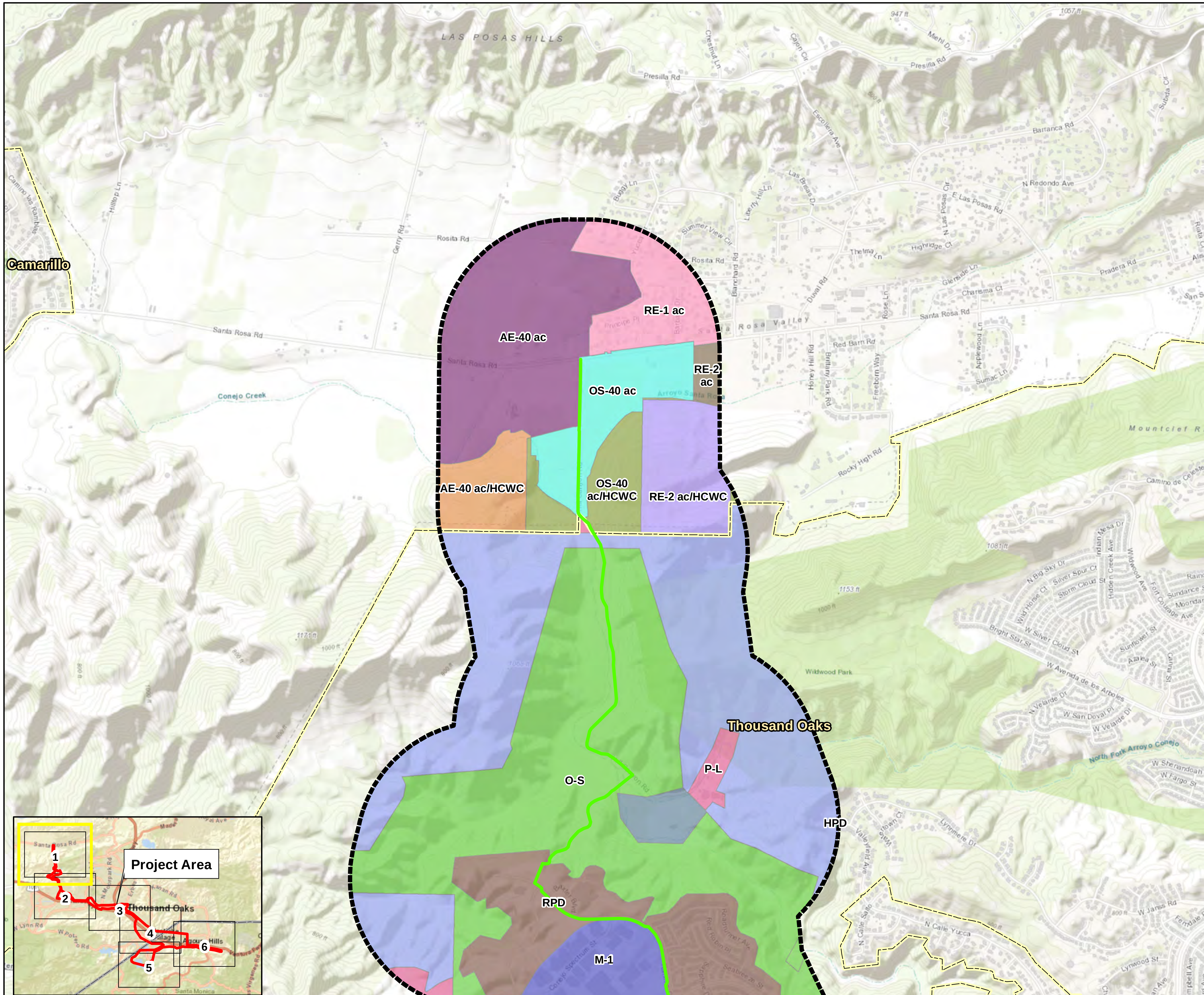
N

0 1,200 2,400 4,800
Feet

FIGURE 12-1

General Plan Land Use Designations

Pure Water Project Las Virgenes –Triunfo



Legend

- Concentrate Alignment Options
- Half-Mile Radius

Ventura County Zoning

- AE-40 ac
- AE-40 ac/HCWC
- OS-40 ac
- OS-40 ac/HCWC
- RE-1 ac
- RE-2 ac
- RE-2 ac/HCWC

Thousand Oaks Zoning

- HPD
- M-1
- O-S
- OS-PR
- P-L
- RPD-0.76U-OS
- RPD-0.76U-SP

0 1,200 2,400 4,800
Feet

FIGURE 12-2

Zoning Designations

Pure Water Project Las Virgenes – Triunfo

Jacobs

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Sources: ESRI World Topo Map; ESRI World Street Map; CDFW CNDDB, 2022

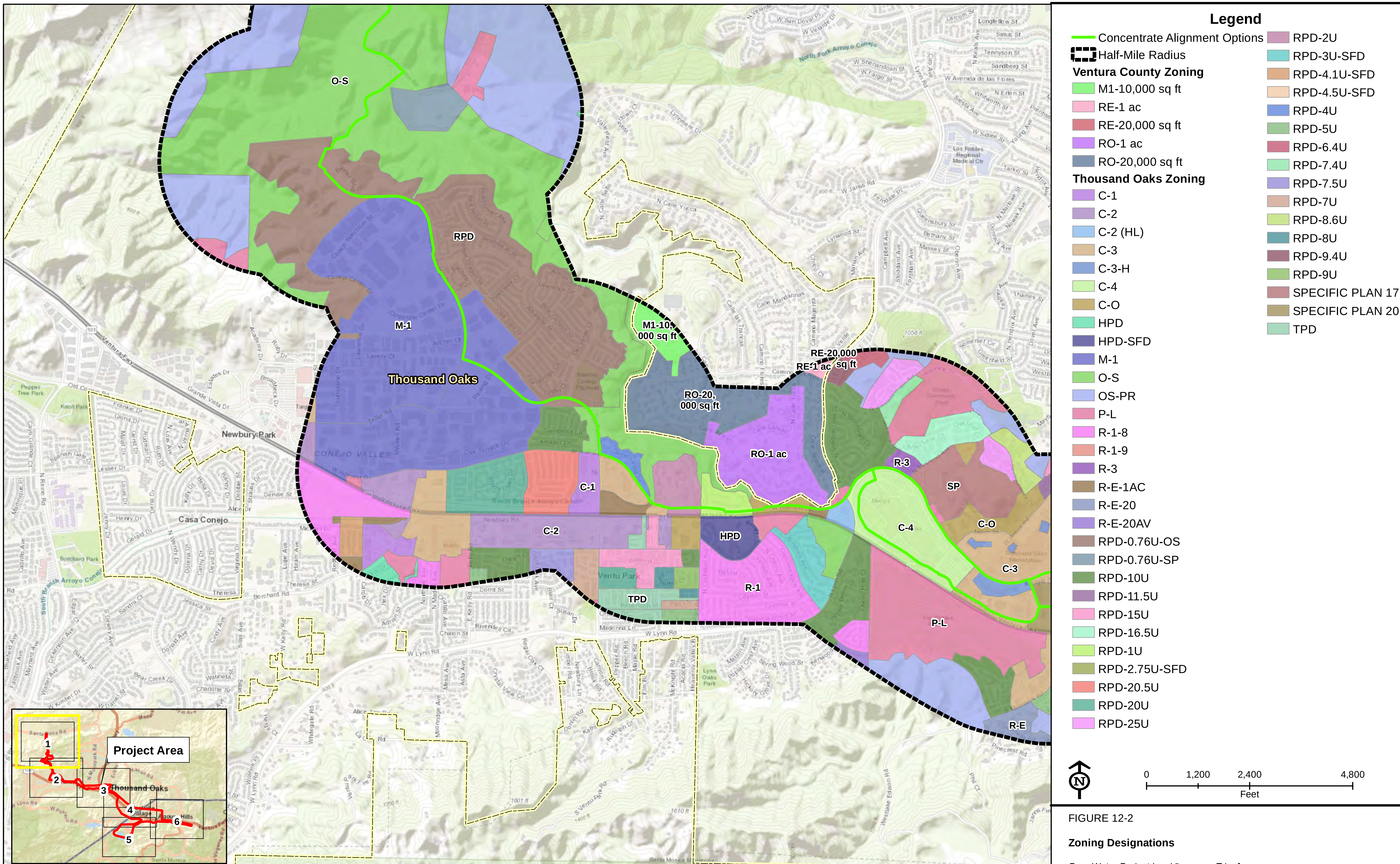

FIGURE 12-2

Zoning Designations

Pure Water Project Las Virgenes – Triunfo

Jacobs

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Sources: ESRI World Topo Map; ESRI World Street Map; CDFW CNDDB, 2022

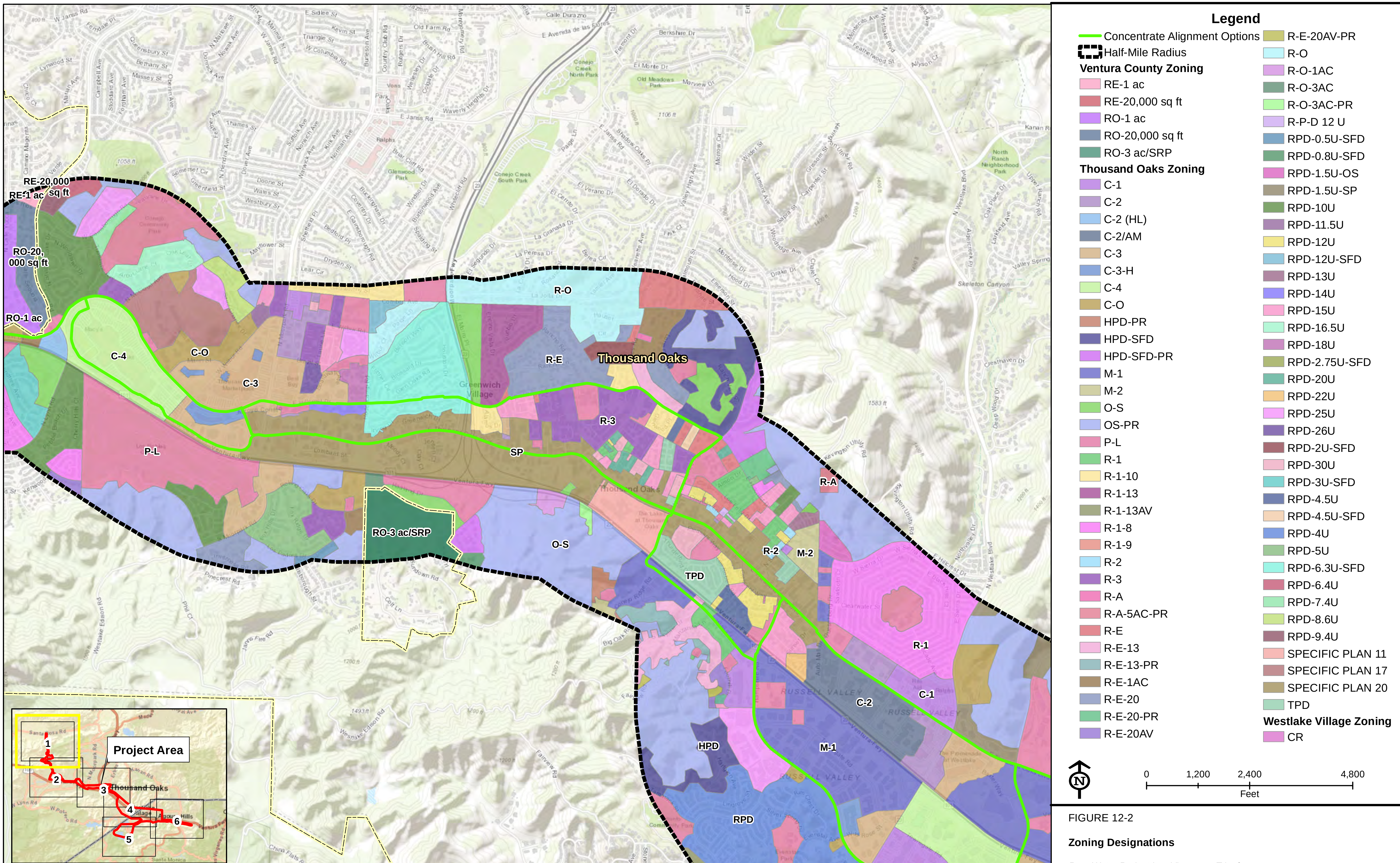

FIGURE 12-2

Zoning Designations

Pure Water Project Las Virgenes –Triunfo

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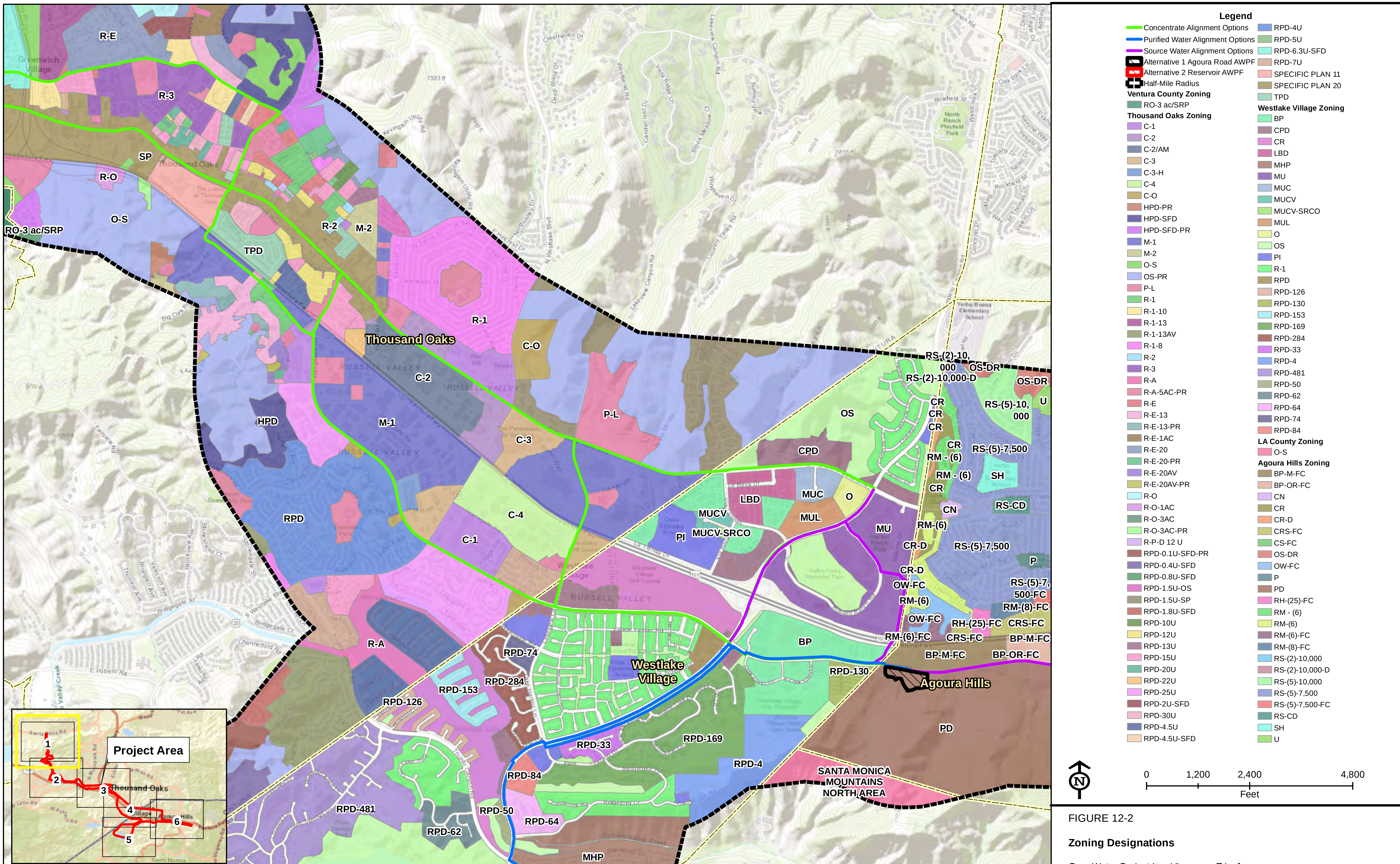

FIGURE 12-2

Zoning Designations

Pure Water Project Las Virgenes – Triunfo

Jacobs

Sources: ESRI World Topo Map; ESRI World Street Map; CDFW CNDDB, 2022

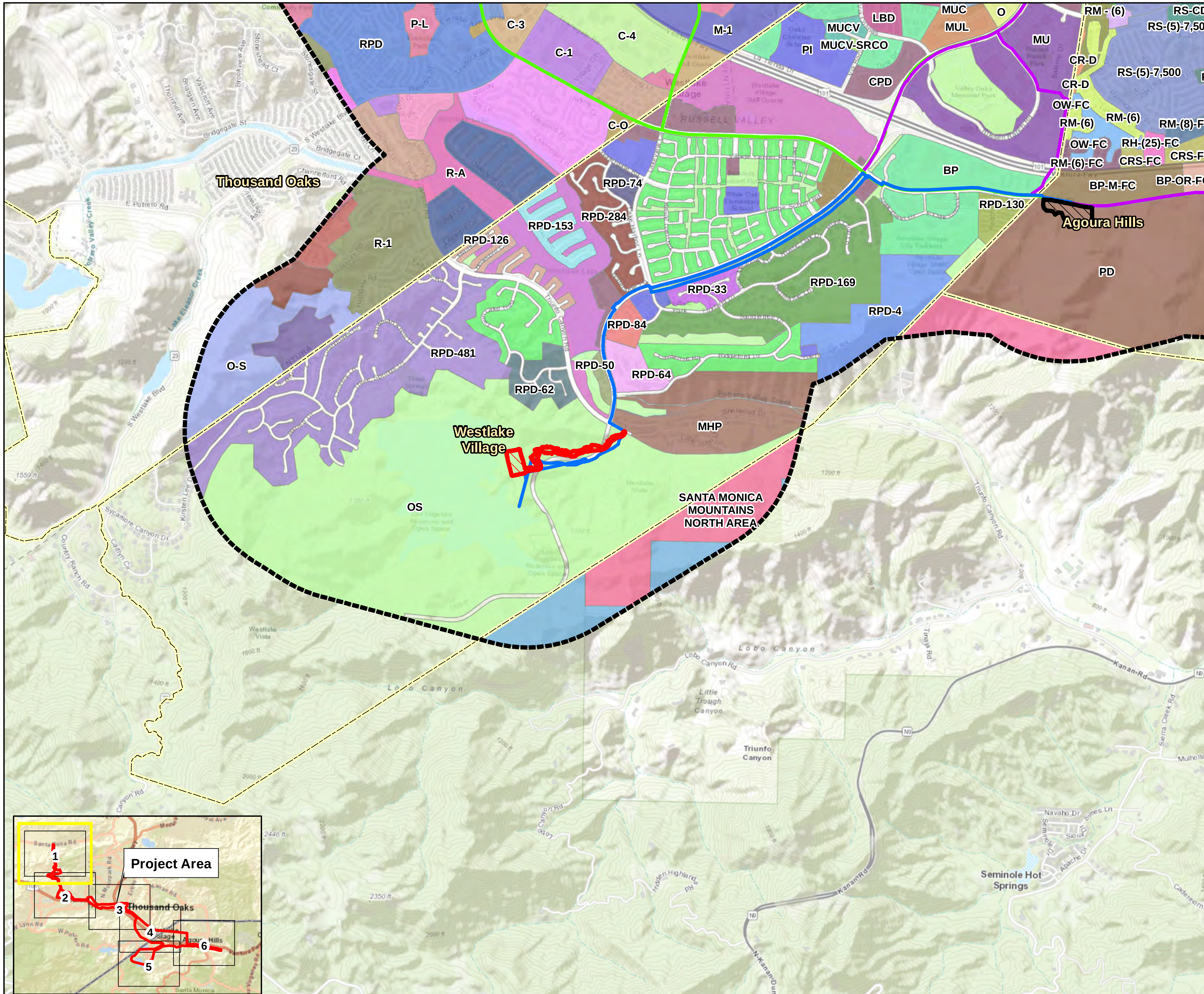

FIGURE 12-2

Zoning Designations

Pure Water Project Las Virgenes –Triunfo

Jacobs

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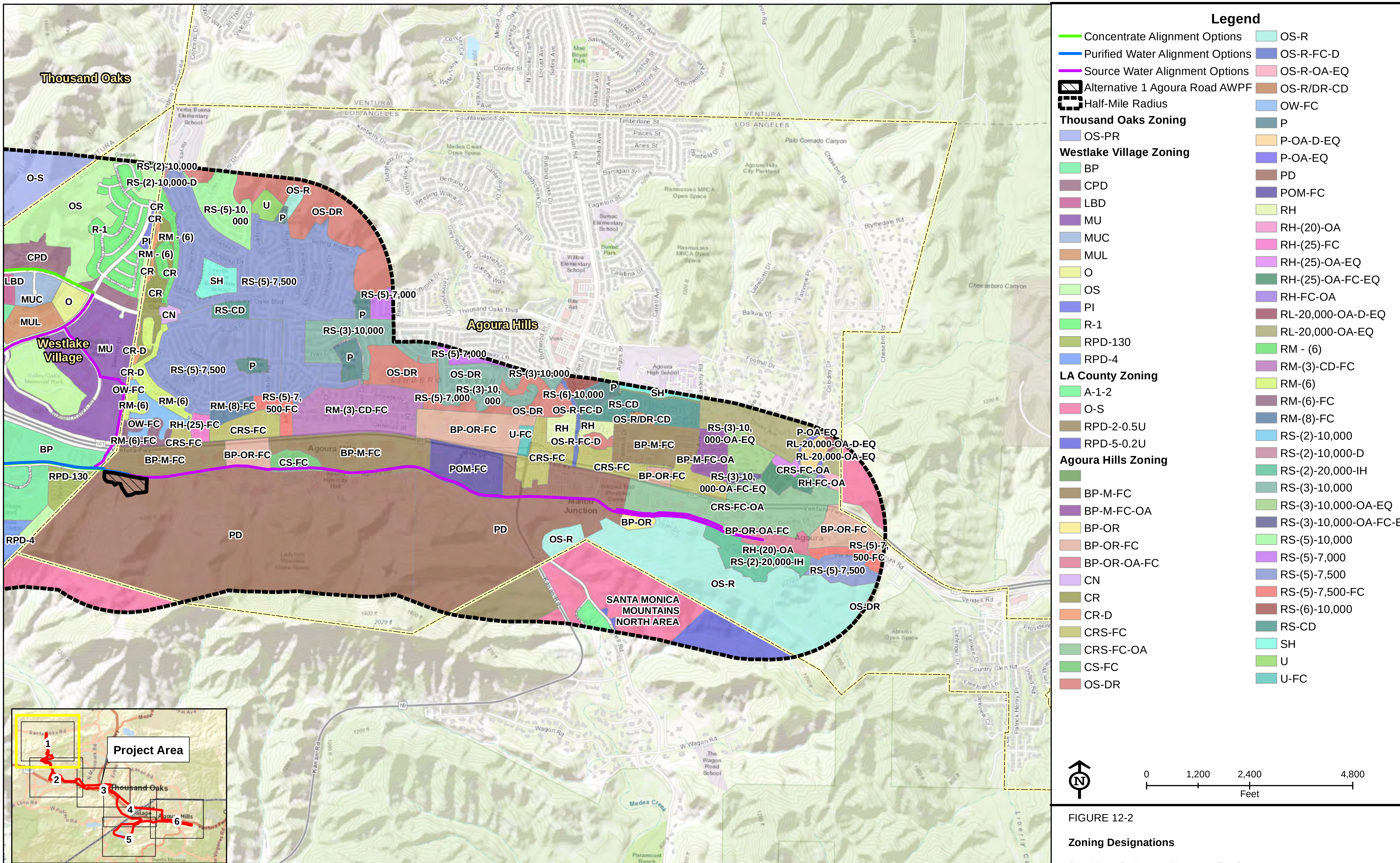

FIGURE 12-2

Zoning Designations

Pure Water Project Las Virgenes – Triunfo

Jacobs

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Sources: ESRI World Topo Map; ESRI World Street Map; CDFW CNDDB, 2022

13. Noise

This chapter evaluates the potential noise impacts caused by construction and operation of the Pure Water Project. The chapter summarizes the relevant existing setting and regulatory framework, identifies the thresholds of significance, and identifies impacts and mitigation measures related to potential noise generation.

13.1 Fundamentals of Acoustics

Acoustics is the study of sound, and noise is defined as unwanted sound. Airborne sound is a rapid fluctuation or oscillation of air pressure above and below atmospheric pressure creating a sound wave. Table 13-1 provides the definitions of some acoustical terms used in this chapter.

Table 13-1. Definitions of Acoustical Terms

Term	Definition
Ambient Noise Level	The composite of noise from all sources, near and far. The normal or existing level of environmental noise or sound at a given location. The ambient noise level is typically defined by the Leq level.
Background Noise Level	The underlying, ever-present, lower-level noise that remains in the absence of intrusive or intermittent sounds. Distant sources, such as traffic, typically make up the background noise level. The background level is generally defined by the L90 percentile noise level.
Intrusive	Noise that imposes over the existing ambient noise level at a given location. The relative intrusiveness of a sound depends upon the following factors: ▪ Amplitude ▪ Duration ▪ Frequency ▪ Time of occurrence ▪ Tonal content ▪ Prevailing ambient noise level ▪ Sensitivity of the receiver The intrusive level is generally defined by the L10 percentile noise level.
Sound Pressure (Noise) Level Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 μPa (20 μN/m^2).
A-Weighted Sound Pressure (Noise) Level (dBA)	The sound level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighted filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound (noise) levels in this report are A-weighted.
Equivalent Noise Level (Leq)	The average A-weighted noise level, on an equal energy basis, during the measurement period.
Percentile Noise Level (Ln)	The noise level exceeded during *n*% of the measurement period, where *n* is a number between 0 and 100 (e.g., L90).
Day-Night Noise Level (Ldn)	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 dB from 10:00 p.m. to 7:00 a.m.

Source: Caltrans 2013, 2015

μN/m^2 = micronewton(s) per square meters
μPa = micropascal(s)
dB = decibel(s)
dBA = A-weighted decibel(s)
Ldn = day-night sound level
Leq = equivalent noise level
Ln = percentile noise level

The most common metric is the overall A-weighted sound level measurement . The A-weighting network mimics the human ear's response to typical environmental sounds. There is consensus that A-weighting is appropriate for estimating the hazard of noise-induced hearing loss. With respect to other effects, such as annoyance, A-weighting is acceptable for typical sounds dominated by middle and high frequencies; however, if the noise is unusually high at low frequencies or contains prominent low-frequency tones, the A-weighting may not give a valid measure.

A-weighted sound levels are typically measured or presented as equivalent noise level (Leq), which is defined as the average noise level, on an equal energy basis for a stated period of time, and is commonly used to measure steady-state sound or noise that is usually dominant, such as highway traffic or equipment operation. Statistical methods are used to capture the dynamics of a changing acoustical environment. Statistical measurements are typically denoted by Lxx, where xx represents the percentile of time the sound level is exceeded. The L90 measurement represents the noise level exceeded during 90% of the measurement period. Similarly, L10 represents the noise level exceeded for 10% of the measurement period.

Some metrics used in determining the impact of environmental noise consider the different responses that people have to daytime and nighttime noise levels. During the nighttime, exterior background noises are generally less noticeable than during the daytime. However, most household noise also decreases at night, so exterior noise becomes more noticeable. Furthermore, most people sleep at night and are sensitive to intrusive noises. The day-night sound level (Ldn) index accounts for greater human sensitivity to nighttime noise levels.

Ldn values are calculated by averaging hourly Leq sound levels for a 24-hour period, and applying a weighting factor to nighttime Leq values. The weighting factor, which reflects the increased sensitivity to noise at night, is added to each hourly Leq sound level before the 24-hour Ldn is calculated. To assess noise, the 24-hour day is divided into two time periods, with the following weightings:

- Daytime: 7:00 a.m. to 10:00 p.m. (15 hours), with weighting factor of 0 dB
- Nighttime: 10:00 p.m. to 7:00 a.m. (9 hours), with weighting factor of 10 dB

The two time periods are averaged to compute the overall Ldn value. For a continuous noise source, the Ldn value is easily computed by adding 6.4 dBA to the overall 24-hour noise level (Leq). For example, if the expected continuous noise level from a facility was 60.0 dBA, the resulting Ldn from the facility would be 66.4 dBA. The Community Noise Equivalent Level (CNEL) is similar to the Ldn, but adds an evening weighting factor of 5 dB for the hours from 7 to 10 p.m. For a continuous noise source, the CNEL value is computed by adding 6.7 dBA to the overall 24-hour noise level (Leq).

The effects of noise on people can be listed in three general categories:

1) Subjective effects of annoyance, nuisance, and dissatisfaction
2) Interference with activities, such as speech, sleep, and learning
3) Physiological effects, such as startling and hearing loss

In most cases, environmental noise produces effects in the first two categories only. However, workers in industrial plants may experience noise effects in the third category. There is no completely accurate way to measure the subjective effects of noise or to measure the corresponding reactions of annoyance and dissatisfaction. This lack of a common standard is primarily due to the wide variation in individual thresholds of annoyance and habituation to noise. Thus, one way of determining a person's subjective reaction to a new noise is by comparing it to the existing, ambient environment that person has adapted to. In general, the more the level or the tonal (frequency) variations of a noise exceed the previously existing ambient noise level or tonal quality, the less acceptable the new noise would be, as judged by the exposed individual.

Figure 13-1 shows the relative A-weighted sound levels from common sounds.

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	— 110 —	Rock band
Jet fly-over at 1,000 feet		
	— 100 —	
Gas lawn mower at 3 feet		
	— 90 —	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	— 80 —	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower, 100 feet	**— 70 —**	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	**— 60 —**	
		Large business office
Quiet urban daytime	**— 50 —**	Dishwasher next room
Quiet urban nighttime	**— 40 —**	Theater, large conference room (background)
Quiet suburban nighttime		
	— 30 —	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	— 20 —	
		Broadcast or recording studio
	— 10 —	
Lowest threshold of human hearing	**— 0 —**	Lowest threshold of human hearing

Source: Caltrans 2013

Figure 13-1. Typical A-weighted Sound Levels

13.2 Existing Setting

The project is located within portions of Agoura Hills, Westlake Village, Thousand Oaks, and unincorporated Ventura County. This section describes the project area's existing setting.

13.2.1 Alternative 1 Agoura Road Advanced Water Purification Facility

The Alternative 1 Agoura Road AWPF site has both land use and zoning designations of Planned Development. The Planned Development land use designation is intended to designate certain areas of the city for special development and land use regulations that cannot be addressed through the citywide zoning ordinances. The AWPF site is located within the Business Park Sub Area. Public utility and public services are conditionally permitted uses within the Business Park Sub Area (City of Agoura Hills 1991).

The AWPF site is currently a vacant, undeveloped property. Surrounding land uses include high-density residential units with associated recreational amenities (tennis courts) to the west, Agoura Road and a business park to the north, and open space to the east and south.

13.2.2 Alternative 2 Reservoir Advanced Water Purification Facility

The Alternative 2 Reservoir AWPF site has land use and zoning designations of Open Space. The Open Space designation is intended to apply to publicly and privately owned land primarily maintained in an unimproved form, such as (City of Westlake Village 2019a):

- Common open space
- Lakes
- Reservoirs
- Hillsides
- Watershed areas

The AWPF site is currently a vacant, undeveloped property. Surrounding land uses include the Las Virgenes Reservoir to the west and open space to the north, east, and south.

13.2.3 Pipelines

The project would require pipeline construction throughout the project area. Pipeline construction would occur mostly along existing city streets in Agoura Hills, Westlake Village, Thousand Oaks, and unincorporated Ventura County. In many areas, pipeline construction would occur in proximity to single-family and multi-family residences and other noise-sensitive land uses, such as parks and schools. The pipelines include appurtenant facilities in some areas, including a pump station along the source water pipeline (Alternative 2 Reservoir AWPF only).

13.3 Regulatory Framework

This section describes the federal, state, and local noise regulations applicable to the project.

13.3.1 Federal Regulations

This section describes the federal noise regulations applicable to the project.

13.3.1.1 U.S. Environmental Protection Agency

EPA guidelines (1974) assist state and local governments in developing state and local laws, ordinances, regulations, and standards for noise. Because local regulations apply to the project, the EPA guidelines are not applicable.

13.3.1.2 Occupational Safety and Health Administration

Onsite and occupational noise levels are regulated through OSHA. The noise exposure level of workers is regulated at 90 dBA over an 8-hour work shift to protect hearing (29 CFR 1910.95). Areas where noise levels exceed 85 dBA would be posted as high-noise level areas, and hearing protection would be required when entering or working in those areas. The project would implement a hearing conservation program for applicable employees and maintain exposure levels to less than applicable requirements.

13.3.1.3 Federal Transit Administration

The Federal Transit Administration (FTA) issued the *Transit Noise and Vibration Assessment Manual* (FTA manual) to guide the assessment of noise and vibration impacts for federally funded transportation projects consistent with NEPA requirements (FTA 2018). This project does not meet the criteria for a transit project defined by the FTA; however, the construction activities and equipment associated with this project are similar to those addressed in the FTA manual. The FTA manual establishes useful and reasonable guidelines for assessing construction noise, particularly when local criteria are not well defined. The FTA manual also establishes absolute noise levels (thresholds) and considers the duration of construction to determine noise impacts on adjacent land uses (Tables 13-2 and 13-3).

Table 13-2. General Construction Noise Impact Evaluated Compared to Land Use

Land Use	$L_{eq.equip}$ (1-hour) (dBA)	
	Day	Night
Residential	90	80
Commercial	100	100
Industrial	100	100

Source: FTA 2018
$L_{eq.equip}$ = average A-weighted noise level for a receiver from the operation of the two noisiest pieces of equipment for each phase of construction over a specified time period

Table 13-3. Detailed Construction Noise Impact Evaluated Compared to Land Use

Land Use	$L_{eq.equip}$ (8-hour) (dBA)		$L_{dn.equip}$ (30-day) (dBA)
	Day	Night	30-day Average
Residential	80	70	75
Commercial	85	85	80[a]
Industrial	90	90	85[a]

Source: FTA 2018

[a] Use a 24-hour $L_{eq(24hr)}$ instead of $L_{dn.equip(30day)}$.

$L_{eq.equip}$ = average A-weighted noise level for a receiver from the operation of all equipment for each phase of construction over a specified time period

$L_{dn.equip}$ = average A-weighted noise level during a 24-hour day, obtained after addition of 10 dB from 10:00 p.m. to 7:00 a.m. for a receiver from the operation of all equipment for each phase of construction over a specified time period

For most projects, the highest levels of vibration occur during construction, so the assessment focuses on evaluating the potential for damage to nearby buildings. The FTA manual establishes construction damage criteria in terms of peak particle velocity (PPV). Table 13-4 summarizes these criteria, which range from a threshold of 0.12 inch per second for "…buildings extremely susceptible to vibration damage…" to 0.5 inch per second for "…reinforced concrete, steel or timber (no plaster)…" (FTA 2018).

Table 13-4. Federal Transit Administration Construction Vibration Damage Criteria

Building Category	PPV (in/sec)	Single Event PPV (in/sec)
Reinforced concrete, steel, or timber (no plaster) buildings in steel or reinforced concrete, such as: ▪ Factories ▪ Retaining walls ▪ Bridges ▪ Steel towers ▪ Open channels ▪ Underground chambers ▪ Tunnels with and without concrete alignment	0.5	1.2
Engineered concrete and masonry (no plaster) 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
Nonengineered timber and masonry buildings, with wooden ceilings and walls in masonry	0.2	0.5
Buildings extremely susceptible to vibration damage, such as construction very sensitive to vibration and objects of historic interest	0.12	0.3

Notes:

These limits and building categories align with the Caltrans (2020) summary of the Swiss Association of Standardization Vibration Damage Criteria for continuous sources. The Swiss criteria provide additional details regarding the building category and a single event limit not addressed by FTA.

in/sec = inch(es) per second

13.3.2 State Regulations

This section describes the state noise regulations applicable to the project.

13.3.2.1 State of California General Plan Guidelines

The State of California requires each county and city to develop a general plan for physical development within the county or city. Noise is one of the seven required elements to be included in the plan. The general plan's Noise Element provides a basis for comprehensive local programs to control and abate environmental noise and to protect residents from excessive exposure to noise (OPR 2017). The content for local general plans is provided by Government Code Section 65040.2.

13.3.2.2 California Department of Industrial Relations, Division of Occupational Safety and Health

The California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA) enforces state noise regulations that are the same as the federal OSHA regulations described previously. Agency regulations are contained in CCR, Title 8, General Industrial Safety Orders, Article 105, Control of Noise Exposure, Sections 5095, et seq.

13.3.3 Local Regulations

Local regulations include noise elements of general plans and noise ordinances established by the City of Agoura Hills, the City of Westlake Village, the City of Thousand Oaks, and Ventura County.

13.3.3.1 City of Agoura Hills

Alternative 1 Agoura Road AWPF and portions of all pipelines are located in Agoura Hills. The Noise Element in the *City of Agoura Hills General Plan* (2010b) establishes goals, objectives, and policies that address how operational noise effects are evaluated within the City's jurisdiction. The City established land use compatibility guidelines for various land uses in Table N-1 and interior and exterior noise standards in Table N-2 of the general plan; these are summarized in Tables 13-5 and 13-6, respectively.

Table 13-5. City of Agoura Hills Noise and Land Use Compatibility Matrix

Land Use Category	CNEL (dBA)			
	Clearly Compatible	Normally Compatible	Normally Incompatible	Clearly Incompatible
Single-Family, Duplex, Multi-Family Residential	50 to 59	60 to 69	70 to 74	> 75
Mobile Homes Residential	50 to 59	60 to 64	65 to 74	> 75
Hotel, Motel, Transient Lodging	50 to 59	60 to 69	70 to 79	> 80
Commercial Retail, Bank, Restaurant, Movie Theater	50 to 69	70 to 79	> 80	-
Office Building, Research and Development, Professional Offices, City Office Building	50 to 64	65 to 74	75 to 79	> 80
Amphitheater, Concert Hall, Auditorium, Meeting Hall	-	50 to 59	60 to 69	> 70
Children's Amusement Park, Miniature Golf Courses, Go-cart Track, Equestrian Center, Sports Club	50 to 64	65 to 74	-	> 75

Table 13-5. City of Agoura Hills Noise and Land Use Compatibility Matrix

Land Use Category	CNEL (dBA)			
	Clearly Compatible	Normally Compatible	Normally Incompatible	Clearly Incompatible
Automobile, Service Station, Auto Dealership, Manufacturing, Warehousing, Wholesale, Utilities	50 to 69	> 70	-	-
Hospitals, Church, Library, School Classroom	50 to 59	60 to 64	65 to 74	> 75
Parks	50 to 64	65 to 69	70 to 74	> 75
Golf Course, Cemeteries, Nature Centers, Wildlife Habitat	50 to 69	70 to 74	> 75	-

Source: City of Agoura Hills 2010b

\- = not applicable

\> = greater than

Table 13-6. City of Agoura Hills Interior and Exterior Noise Standards

Category	CNEL (dBA)	
	Interior	Exterior
Single-Family, Duplex, Multi-Family Residential	45	55
Mobile Homes Residential	45	55
Hotel, Motel, Transient Lodging	45	-
Commercial Retail, Bank, Restaurant	55	-
Office Building, Research and Development, Professional Offices, City Office Building	50	-
Amphitheater, Concert Hall, Auditorium, Meeting Hall	45	-
Gymnasium (multipurpose)	50	-
Sports Club, Movie Theaters	55	-
Manufacturing, Warehousing, Wholesale, Utilities	65	-
Hospitals, Church, Library, School Classroom	45	55
Parks	-	65

Source: City of Agoura 2010b

The general plan also includes a goal pertaining to minimizing noise impacts from construction on sensitive noise receptors. Goal N-3.3 establishes restrictions on construction activities:

> *Continue to enforce restrictions on hours of construction activity so as to minimize the impacts of noise and vibration from the use of trucks, heavy drilling equipment, and other heavy machinery, including property maintenance equipment, to adjacent uses, particularly in residential areas.*

The restricted hours are not stated in the general plan. Rather, the noise implementation program outlined in the general plan states the City will continue to implement the City's noise regulations established by the Agoura Hills Municipal Code. Table 13-7 lists the noise regulations pertaining to residential properties within residentially zoned districts.

Table 13-7. City of Agoura Hills Noise Standards for Residential Properties

Category	Exterior (dBA)		Interior (dBA)	
	Daytime 7 a.m. to 10 p.m.	Nighttime 10 p.m. to 7 a.m.	Daytime 7 a.m. to 10 p.m.	Nighttime 10 p.m. to 7 a.m.
Residential Properties within Designated Noise Zone (Zoned Residential)	55	50	45	45

In addition, Sections 9656.2(B) and 9656.3(B) of the municipal code state noise as measured on any other residential property, either incorporated or unincorporated, may not exceed the following:

- The exterior noise standard for a cumulative period of more than 15 minutes in any hour or the interior noise standard for a cumulative period of more than 5 minutes in any hour
- The exterior noise standard plus 5 dBA for a cumulative period of more than 10 minutes in any hour or the interior noise standard plus 5 dBA for a cumulative period of more than 1 minute in any hour
- The exterior noise standard plus 10 dBA for a cumulative period of more than 5 minutes in any hour or the interior noise standard plus 10 dBA for any period of time
- The exterior noise standard plus 15 dBA for a cumulative period of more than 1 minute in any hour
- The exterior noise standard plus 20 dBA for any period of time

Sections 9656.2(C) and 9656.3(C) address ambient noise levels. In the event the ambient noise level exceeds the noise limit categories, the noise level applicable to each category is increased to reflect the ambient noise level. For interior noise, if the ambient noise level exceeds the interior noise standard plus 10 dBA, the maximum allowable noise level is increased to the ambient noise level.

According to Section 9656.4(E) of the municipal code, construction noise is exempted from the noise regulations provided in Sections 9656.2 and 9656.3, provided construction activities are limited to between 7:00 a.m. and 8:00 p.m. on weekdays and Saturdays. Construction is prohibited outside these hours, or at any time on Sunday or a legal holiday.

Although Section 9656.4(E) of the municipal code includes limits on construction time frames, Section 9656.9 outlines the variance process for owners or operators of a noise source that cannot meet noise ordinance provisions. The application is to be submitted to the health officer stating reasons why immediate compliance cannot be achieved, a proposed method of achieving compliance, and a proposed time schedule for its accomplishment. Granted variances will include terms, conditions, and requirements, including limitations on noise levels and operating hours.

13.3.3.2 City of Westlake Village

Alternative 2 Reservoir AWPF, portions of all pipelines, and pump station options (needed for Alternative 2 Reservoir AWPF) are located in Westlake Village. The Noise Element in the *City of Westlake Village General Plan* (2019a) establishes goals, objectives, and policies that address how operational noise effects are evaluated within the City's jurisdiction. The City established land use compatibility guidelines for various land uses on Figure 31 and interior and exterior noise standards in Table 17 of the general plan; these are summarized in Tables 13-8 and 13-9, respectively.

Table 13-8. City of Westlake Village Land Use Compatibility with Noise

Land Use Category	CNEL in dB			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential - Low Density, Single-Family, Duplex, Mobile Homes	50 to 59	55 to 69	70 to 74	> 70
Residential - Multi-family	50 to 64	60 to 69	70 to 74	> 70
Transient Lodging - Motels, Hotels	50 to 64	60 to 69	70 to 79	> 80
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 to 64	60 to 69	70 to 79	> 80
Auditoriums, Concert Halls, Amphitheaters	-	50 to 69	-	> 65
Sports Arena, Outdoor Spectator Sports	-	50 to 69	-	> 70
Playgrounds, Neighborhood Parks	50 to 69	-	65 to 74	> 75
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 to 74	-	70 to 79	> 80
Office Buildings, Business Commercial, and Professional	50 to 69	65 to 74	75 to 84	-
Industrial, Manufacturing, Utilities, and Agriculture	50 to 69	70 to 79	75 to 84	-

Source: City of Westlake Village 2019a

Table 13-9. City of Westlake Village Interior and Exterior Noise Standards

Category	Exterior (dBA)		Interior (dBA)	
	Daytime 7 a.m. to 10 p.m.	Nighttime 10 p.m. to 7 a.m.	Daytime 7 a.m. to 10 p.m.	Nighttime 10 p.m. to 7 a.m.
Residential	50	45	45	40
Commercial	60	55	-	-
Industrial	70	70	-	-

Source: City of Westlake Village 2019a

The interior and exterior noise standards in Table 13-9 are not applicable to construction noise. The general plan specifically addresses construction noise with time limits and maximum noise thresholds for stationary and mobile equipment. Operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work is limited to weekday hours between 7:00 a.m. and 7:00 p.m. Table 13-10 summarizes the stationary and mobile equipment maximum noise levels for 10 days or more.

Table 13-10. City of Westlake Village Stationary and Mobile Equipment

Category	Stationary Equipment (dBA)		Mobile Equipment (dBA)	
	Daily, Except Sundays and Legal Holidays 7:00 a.m. to 7:00 p.m.	Daily, 7:00 p.m. to 7:00 a.m., and All Day Sunday and Legal Holidays	Daily, Except Sundays and Legal Holidays 7:00 a.m. to 7:00 p.m.	Daily, 7:00 p.m. to 7:00 a.m., and All Day Sunday and Legal Holidays
Single-Family Residential	75	60	60	50
Multi-Family Residential	80	64	65	55
Semi-Residential and Commercial	85	70	70	60
Commercial	85	85	-	-

Source: City of Westlake Village 2019a

Vibration is addressed in the general plan (City of Westlake Village 2019a) by prohibiting operation of any device that creates vibration exceeding the vibration perception threshold of any individual at or beyond the property boundary of the source if on private property, or at 150 feet from the source if on a public space or public ROW.

Noise regulations are established by the Noise Control Ordinance of the City of Westlake Village in the *Westlake Village Municipal Code*. Section 4.4.035(A) pertains to residential properties and establishes a noise level threshold at 5 dBA more than the local ambient noise level as measured at any property line. For any other property, the noise level threshold at 8 dBA more than the local ambient noise level as measured at any property line is established by Section 4.4.035(B).

Two additional regulations prohibit specific noise and vibration potentially applicable to facility operations. Unless enclosed within a sound-insulated structure to prevent noise and sound from being plainly audible at a distance of 50 feet from such structure, or within 10 feet of any residence, Section 4.4.040(B) prohibits the sustained operation or use between the hours of 10:00 p.m. and 7:00 a.m. of any electric or gasoline-powered motor or engine or the repair, modification, reconstruction, testing, or operation of any of the following:

- Automobile
- Motorcycle
- Machine
- Mechanical device
- Other contrivance or facility

Section 4.4.040(A) prohibits the unnecessary or unreasonable making of, or knowingly and unnecessarily permitting to be made, any loud, boisterous, and unusual noise, disturbance, commotion, or vibration in any of the following areas:

- Boarding facility
- Dwelling
- Place of business
- Other structure
- Public street
- Park
- Other place or building

Only ordinary and usual sounds, noises, commotion, or vibration incidental to the operation of these places is allowed when conducted:

- In accordance with the normal standard of practice
- In a manner that would not disturb the peace and comfort of adjacent residences
- In a manner that would not detrimentally affect the operators or customers of adjacent places of business

No specific noise thresholds are provided in the code for construction noise. Instead, construction is limited to specific hours by Section 4.4.040(G). Allowed construction hours are between 7:00 a.m. and 7:00 p.m., Monday through Friday, and 8:00 a.m. and 5:00 p.m. on Saturdays. No construction noise is permitted on Sundays or holidays. Construction noise includes the operation of any of the following during any aspect of construction, including drilling, repair, alteration, demolition, or earthwork:

- Tools
- Equipment
- Impact devices
- Derricks
- Hoists used in or otherwise engaging

Although Section 4.4.040(G) of the municipal code includes these construction prohibitions, Section 4.4.050(D) describes special circumstances allowing for construction noise outside of the allowed hours:

- The provisions of Section 4.4.040 do not apply to any person who performs construction, repair, excavation, or earthmoving work pursuant to the express written permission of the City Manager to perform such work at times prohibited in Section 4.4.040.
- An application must be submitted to the City Manager in writing, stating the reasons for the request. The City Manager may grant written permission for the construction if it is founds that:
  - The work proposed to be done is in the public interest
  - The building or structure involved is devoted or intended to be devoted to a use immediately incident to public defense

13.3.3.3 City of Thousand Oaks

For all alternatives, only construction noise is associated because most of the project's concentrate pipeline is located within Thousand Oaks. While no operational noise is anticipated with the pipelines, applicable limits for operation and construction are provided for reference and completeness.

The Noise Element in the *Thousand Oaks General Plan* (2022b) establishes goals, policies, and noise control strategies that address how operational noise effects are evaluated within the City's jurisdiction. The two noise goals identified in the general plan are:

- Goal N-1: Achieve and maintain an environment where noise-sensitive uses are not disturbed by noise that exceeds exposure guidelines established in the Noise Element
- Goal N-2: Preserve quiet and diminish existing noise levels in areas of noise-sensitive uses to the extent reasonable and feasible, while permitting development in accordance with the Land Use and Circulation Elements of the general plan

The City established land use compatibility guidelines for various land uses on Figure 1 of the general plan, as summarized here in Table 13-11.

Table 13-11. City of Thousand Oaks Land Use Compatibility with Noise

Land Use Category	CNEL or L_{dn} (dBA)				
	Clearly Acceptable	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential - Low Density, Single-Family, Duplex, Mobile Homes	50 to 55	55 to 59	60 to 64	70 to 74	> 75
Residential - Multi-family	50 to 55	55 to 59	60 to 64	70 to 74	> 75
Commercial – Motels, Hotels, Transient Lodging	50 to 59	60 to 64	65 to 69	70 to 79	> 80
Schools, Libraries, Churches, Hospitals, Nursing Homes	-	50 to 59	60 to 69	70 to 79	> 80
Amphitheaters, Concert Halls, Auditoriums, Meeting Halls	-	-	50 to 64	65 to 69	> 70
Sports Arena, Outdoor Spectator Sports	-	-	50 to 69	70 to 74	> 75
Playgrounds, Neighborhood Parks	50 to 54	55 to 67	68 to 74	-	> 75
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 to 54	55 to 74	75 to 79	-	> 80
Office Buildings, Business Commercial, and Professional	50 to 59	60 to 64	65 to 74	75 to 89	-
Industrial, Manufacturing, Utilities, and Agriculture	50 to 64	65 to 69	70 to 79	80 to 89	-

Source: City of Thousand Oaks 2022b

The general plan (City of Thousand Oaks 2022b) includes the objective of determining noise considerations in environmental impact reports using the CEQA thresholds of significance (Figure 13-2).

If the annual average noise level with the proposed project, cumulative projects and general plan buildout in an area currently used for or designated in the general plan for a noise-sensitive land use[1] is expected to be:	A significant project or cumulative impact may result if the change in annual average noise levels from existing conditions due to all sources in an area currently used for or designated in the general plan for a noise-sensitive land use[1] is:	The project alone may be considered to make a substantial contribution to significant cumulative impact if the change in annual average noise level due to the project is:
Less than 55 dB CNEL	Not significant for any change in noise level	Not significant for any change in noise level
55 to 60 dB CNEL	Equal to or greater than 3.0 dB	Equal to or greater than 1.0 dB
60 to 70 dB CNEL	Equal to or greater than 1.5 dB	Equal to or greater than 0.5 dB
Greater than 70 dB CNEL	Equal to or greater than 1.0 dB	Equal to or greater than 0.5 dB

[1] A noise-sensitive land use is a use for which the lower limit of the noise level considered “normally unacceptable” for development because of noise impact is 70 dB CNEL or lower. In identifying land use areas, areas which are undevelopable for noise-sensitive uses because of slope, development restriction, easement, etc., or which are used for non-noise-sensitive components of a multiple-use or mixed-use project, should not be considered noise-sensitive.

Figure 13-2. City of Thousand Oaks Thresholds of Significance for Noise Impact

For projects that would result in a potentially significant impact, the City may require an acoustical study to identify mitigation measures to reduce impacts to a less than significant level.

The general plan states that nuisance noise control is addressed through the City's noise ordinance, described in Chapter 21 of the Municipal Code. Section 5-21.02 addresses powered equipment in residential areas:

> *Between the hours of 9:00 p.m. and 7:00 a.m. of the following day, no person shall operate any lawnmower, backpack blower, lawn edger, riding tractor, or any other machinery, equipment, or other mechanical or electrical device, or any hand tool which creates a loud, raucous or impulsive sound, within any residential zone or within any commercial zone which can be heard from any inhabited real property in a residential zone.*

No specific noise thresholds are provided in the code; instead, to determine whether a noise source is in violation of the code, Section 5-21.03 provides criteria to evaluate a violation against:

- *The level of noise when standing on the property line;*
- *Whether the nature of the noise is usual or unusual for the approved use of the property;*
- *Whether the origin of the noise is natural or unnatural;*
- *The level and intensity of the background or ambient noise, if any;*
- *The proximity of the noise source to residential sleeping facilities;*
- *The nature and zoning of the area within which the noise emanates;*
- *The density of the inhabitation of the area within which the noise emanates;*
- *The time of the day and night the noise occurs;*
- *The duration of the noise;*
- *Whether the noise is recurrent, intermittent, or constant; and*
- *Whether the noise is produced by a commercial or noncommercial activity.*

Section 5-21.04 states that emergency activities are exempt from the noise ordinance; and the ordinance does not apply to any public equipment; public vehicle; or public action taken by the City needed to protect the public health, safety, and welfare.

Construction is limited to between the hours of 7:00 a.m. and 7:00 p.m., Monday through Saturday, unless a permit for each work at different hours or days has first been issued by the Public Works Director per Section 8-11.01 of the City's municipal code. This includes the following activities:

- Any activity associated with the construction of any building or structure
- Earthmoving
- Laying pavement, including excavating
- Clearing or grading of surface land
- Loading or unloading of material, equipment, or supplies.

Permits applications would be made in writing to the Public Works Director and would state the following:

- Name of the applicant
- Business address
- Location of the proposed work
- Reason for seeking a permit to do such work on Sunday or between 7:00 p.m. and 7:00 a.m.
- Estimated time of the proposed operation

Permits would only be granted if the public peace, health, or welfare would not be adversely affected by such issuance or would be harmed by failure to perform the work at the times indicated. According to Section 8-11.02, limitations to construction work hours are not applicable to projects taking place more than 1 mile from any occupied residence.

13.3.3.4 Ventura County

For all alternatives, only construction noise is associated with the project within unincorporated Ventura County. Most of the pipelines associated with the project are located within Thousand Oaks, and only a small portion is located in unincorporated Ventura County. While no operational noise is anticipated with the pipelines, limits for operation and construction are provided for reference and completeness.

Noise is incorporated into the Health and Safety Element of the *Ventura County 2040 General Plan*, adopted in September 2020. Noise is identified in policy HAZ-9, with the goal "…to protect the health, safety, and general welfare of county residents by striving to eliminate or avoid the adverse noise impacts on existing and future noise sensitive uses." The general plan states new noise generators, proposed to be located near any noise-sensitive use, will incorporate noise control measures so that ongoing outdoor noise levels received by the noise-sensitive receptors, measured at the exterior wall of the building, do not exceed any of the following standards:

- Leq1H of 55 dBA or ambient noise level plus 3 dBA, whichever is greater, during any hour from 6:00 a.m. to 7:00 p.m.
- Leq1H of 50 dBA or ambient noise level plus 3 dBA, whichever is greater, during any hour from 7:00 p.m. to 10:00 p.m.
- Leq1H of 45 dBA or ambient noise level plus 3 dBA, whichever is greater, during any hour from 10:00 p.m. to 6:00 a.m.

This policy does not apply to noise generated during the construction phase of a project. Instead, construction noise and vibration are to be evaluated and, if necessary, mitigated in accordance with the *Construction Noise Threshold Criteria and Control Plan* (Ventura County 2010a). As specific construction noise limits for noise-sensitive receptors are not specified in the general plan or the administrative code, the *Construction Noise Threshold Criteria and Control Plan* establishes construction noise thresholds and standard noise monitoring and control measures. The threshold criteria, monitoring, and control measures are to be applied to all public projects. Guidelines for effective noise mitigation measures are provided for projects that exceed the noise threshold criteria. Table 13-12 summarizes the daytime, evening, and nighttime construction activity noise thresholds.

Table 13-12. Ventura County Construction Activity Noise Threshold Criteria

Construction Duration Affecting Noise-sensitive Receptors	Noise Threshold Criteria will be the greater of these noise levels at the nearest receptor area or 10 feet from the nearest noise-sensitive building	
	Fixed L_{eq}(h), dBA	Hourly Equivalent Noise Level (L_{eq}), dBA[a,b]
0 to 3 days	75	Ambient L_{eq}(h) + 3 dB
Daytime (7 a.m. to 7 p.m., Monday through Friday, and 9 a.m. to 7 p.m., Saturday, Sunday, and local holidays)		
4 to 7 days	70	Ambient Leq(h) + 3 dB
1 to 2 weeks	65	Ambient L_{eq}(h) + 3 dB
2 to 8 weeks	60	Ambient L_{eq}(h) + 3 dB
Longer than 8 weeks	55	Ambient L_{eq}(h) + 3 dB
Evening (7 p.m. to 10 p.m.)		
Residential	50	Ambient L_{eq}(h) + 3 dB
Nighttime (10 p.m. to 7 a.m., Monday through Friday, and 10 p.m. to 9 a.m., Saturday, Sunday, and local holidays)		
Residential, Live-in Institutional	45	Ambient L_{eq}(h) + 3 dB

Source: Ventura County 2010a

[a] The instantaneous Lmax will not exceed the noise threshold criteria by 20 dBA more than 8 times per daytime hour, more than 6 times per evening hour, or more than 4 times per nighttime hour.

[b] Local ambient Leq measurements will be made on any mid-week day prior to the project work. Hourly evening local ambient noise measurements will be made on a typical mid-week evening prior to the project work. Hourly nighttime local ambient noise measurements will be made on a typical mid-week night prior to the project work.

Lmax = maximum sound level

13.4 Assessment Methods and Thresholds of Significance

This section describes the impact analysis using the CEQA thresholds of significance and impact evaluation questions for noise and provides the impact findings resulting from the construction and O&M of the project.

13.4.1 CEQA Thresholds of Significance Evaluation

According to the CEQA Guidelines, a significant impact related to noise would occur if a project would:

- Generate a substantial temporary or permanent increase in ambient noise levels near the project exceeding standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- Generate excessive ground-borne vibration or ground-borne noise levels.
- Expose people residing or working in the project area to excessive noise levels if the project is located near a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport.

Project construction may temporarily affect noise receptors within and adjacent to the project area. Section 13.5 discusses the CEQA significance conclusions.

13.4.2 General Construction Noise Evaluation

Project construction would use heavy equipment (such as bulldozers, compactors, and scrapers). Noise levels from heavy equipment operations were estimated based on data and methods derived from the *Roadway Construction Noise Model* (FHWA 2006) and the *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018). The data represent the most recent and comprehensive tabulation of noise from common pieces of heavy equipment. Table 13-13 summarizes the construction equipment noise levels.

Table 13-13. Construction Equipment Noise Levels from the Roadway Construction Noise Model User's Guide

Equipment Description	Acoustical Usage Factor (%)	Specified Lmax at 50 feet (dBA)	Actual Measured Lmax at 50 feet (dBA)	Actual Data Samples (No.)
All other equipment > 5 hp	50	85	-	0
Auger drill rig	20	85	84	36
Backhoe	40	80	78	372
Bar bender	20	80	-	0
Blasting	-	94	-	0
Boring jack power unit	50	80	83	1
Chain saw	20	85	84	46
Clam shovel (dropping)	20	93	87	4
Compactor (ground)	20	80	83	57
Compressor (air)	40	80	78	18
Concrete batch plant	15	83	-	0
Concrete mixer truck	40	85	79	40
Concrete pump truck	20	82	81	30
Concrete saw	20	90	90	55

Table 13-13. Construction Equipment Noise Levels from the Roadway Construction Noise Model User's Guide

Equipment Description	Acoustical Usage Factor (%)	Specified Lmax at 50 feet (dBA)	Actual Measured Lmax at 50 feet (dBA)	Actual Data Samples (No.)
Crane	16	85	81	405
Dozer	40	85	82	55
Drill rig truck	20	84	79	22
Drum mixer	50	80	80	1
Dump truck	40	84	76	31
Excavator	40	85	81	170
Flatbed truck	40	84	74	4
Front end loader	40	80	79	96
Generator	50	82	81	19
Generator (less than 25 kVA, variable message signs)	50	70	73	74
Gradall	40	85	83	70
Grader	40	85	-	0
Grapple (on backhoe)	40	85	87	1
Horizontal boring hydraulic jack	25	80	82	6
Hydra break ram	10	90	-	0
Impact pile driver	20	95	101	11
Jackhammer	20	85	89	133
Person lift	20	85	75	23
Mounted impact hammer (hoe ram)	20	90	90	212
Pavement scarifier	20	85	90	2
Paver	50	85	77	9
Pickup truck	40	55	75	1
Pneumatic tools	50	85	85	90
Pumps	50	77	81	17
Refrigerator unit	100	82	73	3
Rivet buster and chipping gun	20	85	79	19
Rock drill	20	85	81	3
Roller	20	85	80	16
Sand blasting (single nozzle)	20	85	96	9
Scraper	40	85	84	12
Shears (on backhoe)	40	85	96	5
Slurry plant	100	78	78	1
Slurry trenching machine	50	82	80	75
Soil mix drill rig	50	80	-	0
Tractor	40	84	-	0

Table 13-13. Construction Equipment Noise Levels from the Roadway Construction Noise Model User's Guide

Equipment Description	Acoustical Usage Factor (%)	Specified Lmax at 50 feet (dBA)	Actual Measured Lmax at 50 feet (dBA)	Actual Data Samples (No.)
Vacuum excavator (Vac-truck)	40	85	85	149
Vacuum street sweeper	10	80	82	19
Ventilation fan	100	85	79	13
Vibrating hopper	50	85	87	1
Vibratory concrete mixer	20	80	80	1
Vibratory pile driver	20	95	101	44
Warning horn	5	85	83	12
Welder or torch	40	73	74	5

Source: FHWA 2006

hp = horsepower

kVA = kilovolt(s)-ampere

Decibels cannot be directly added arithmetically (for example, 50 dBA plus 50 dBA does not equal 100 dBA). When two sources with equal noise levels are added together, the result will always be 3 dB greater; for example:

50 dBA + 50 dBA = 53 dBA

70 dBA + 70 dBA = 73 dBA

If the difference between the two sources is 10 dBA, the level (when rounded to the nearest whole dB) would not increase; for example (Caltrans 2013):

40 dBA + 50 dBA = 50 dBA

60 dBA + 70 dBA = 70 dBA

The decrease in sound level caused by distance from any single sound source normally follows the inverse square law: the sound pressure level changes in inverse proportion to the square of the distance from the sound source. In a large, open area without obstructive or reflective surfaces, a general rule is that at distances greater than approximately the largest dimension of the noise-emitting surface, the sound pressure level from a single source of sound drops off at a rate of 6 dB with each doubling of the distance from the source. Sound energy is absorbed in the air as a function of temperature, humidity, and sound frequency; this attenuation can be up to 2 dB over 1,000 feet (Caltrans 2013). The drop-off rate will also vary based on terrain conditions and the presence of obstructions in the sound's propagation path.

As described by FTA, the average noise level from each piece of equipment is determined by the following equation for geometric spreading:

$$\text{Typical Noise Level at 50 feet} + 10 \times \log(Adj_{usage}) - 20 \times \log(\text{distance to receptor}/50) - 10 \times G \times \log(\text{distance to receptor}/50)$$

Because specific construction methods or daily schedules for the project have not been determined, and construction is, by its nature, a dynamic activity, the following typical values were used.

Where:

Usage factor (Adj_{usage}) = 1 (such as equipment is operating continuously)

Ground effect factor (G) = 0, representing hard ground (such as a ground condition that does not result in additional attenuation)

The total noise level then becomes solely a function of the type of equipment operating and the distance from the equipment to the noise receptor.

A review of the equipment noise levels presented in Table 13-13 indicates that the loudest equipment generally emits noise in the range of 80 to 90 dBA at 50 feet. Noise at any specific receptor is dominated by the closest and loudest equipment. The types, numbers, and duration of equipment anticipated to be used near any specific receptor location would vary over time. Therefore, a typical noise estimate was developed based on the general assumption of multiple pieces of loud equipment operating near each other, with the exception of impact pile driving, which is addressed separately. Specifically, the scenario evaluated uses five pieces of general construction equipment working near each other, as follows:

- One piece of equipment generating a reference noise level of 85 dBA at 50 feet at the edge of the construction or work area
- Two pieces of equipment generating 85 dBA reference noise levels located 50 feet farther away from the edge of construction or work area
- Two more pieces of equipment generating 85 dBA reference noise levels located 100 feet farther away the edge of construction or work area

Table 13-14 summarizes the expected average equipment noise levels at various distances, based on this scenario.

Table 13-14. Average Equipment Noise Levels Versus Distance

Distance from Activity (feet)	Average Noise Level (dBA)
50	87
100	83
200	78
400	73
800	67
1600	62
3200	56

Figure 13-3 shows a plot of sound level versus distance.

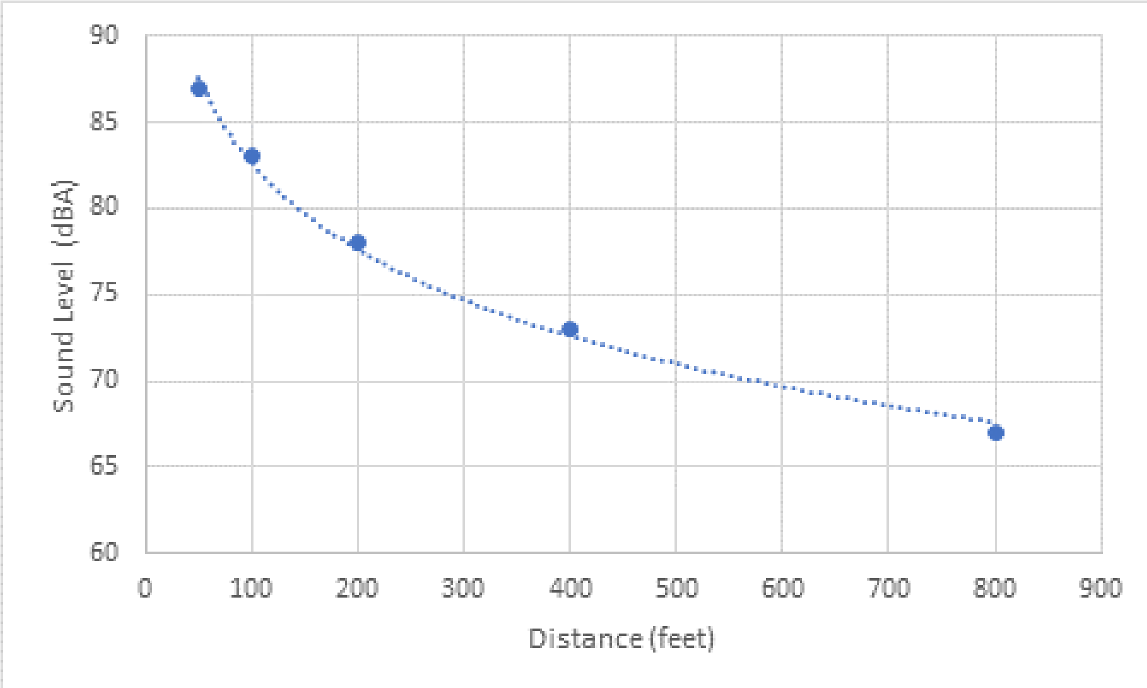


Figure 13-3. Sound Level Versus Distance

13.4.3 General Construction Vibration Evaluation

Construction activities have the potential to result in varying degrees of temporary ground-borne vibration, depending on the specific equipment used and operations involved. Vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. Table 13-15 summarizes vibration levels for typical construction equipment.

Table 13-15. Typical Construction Equipment Vibration Levels

Equipment	PPV at 25 feet (in/sec)
Pile driver (impact – upper range)	1.518
Pile driver (impact – typical)	0.644
Pile driver (sonic – upper range)	0.734
Pile driver (sonic – typical)	0.170
Large bulldozer	0.089
Caisson drilling	0.089
Trucks	0.076
Jackhammer	0.035
Small bulldozer	0.003

Source: FTA 2018

Bulldozers and other heavy civil construction equipment would be regularly used during project construction. In addition, heavy trucks would be used to deliver and remove material to and from the site. As referenced in Table 13-15, the largest vibration source is an impact pile driver. According to FTA, vibration levels associated with the upper range of an impact pile driver are 1.518 inches per second PPV at 25 feet. Trucks generate lower vibration levels of 0.076 inch per second PPV at 25 feet.

The risk of construction vibration damage from each piece of equipment can be assessed by adjusting the PPV from the reference PPV at 25 feet to the actual distance from the equipment to the receiver using the following equation:

$$PPV_{equip} = PPV_{ref} \times \left(\frac{25}{D}\right)^{1.5}$$

Where:

PPV_{equip} = The peak particle velocity of the equipment adjusted for distance (inches per second)

PPV_{ref} = The source reference vibration level at 25 feet (inches per second)

D = The distance from the equipment to the receiver (feet)

To determine the closest distance each building type by building category (Table 13-5) can be to each type of equipment before sustaining damage, the equation was solved to find the distance at which the construction vibration damage criteria were met for each building criterion (Table 13-16).

Table 13-16. Typical Construction Equipment Vibration Levels in Peak Particle Velocity

Equipment	PPV at 25 feet (in/sec)	Building Category (Construction Vibration Damage Criteria)			
		1 (0.5 in/sec)	2 (0.3 in/sec)	3 (0.2 in/sec)	4 (0.12 in/sec)
Pile driver (impact – upper range)	1.518	50	75	100	135
Pile driver (impact – typical)	0.644	30	40	55	75
Pile driver (sonic – upper range)	0.734	30	45	60	85
Pile driver (sonic – typical)	0.170	<25	<25	<25	30
Large bulldozer	0.089	<25	<25	<25	<25
Caisson drilling	0.089	<25	<25	<25	<25
Trucks	0.076	<25	<25	<25	<25
Jackhammer	0.035	<25	<25	<25	<25
Small bulldozer	0.003	<25	<25	<25	<25

Source: FTA 2018

The distances determined indicate that for all building categories, general construction equipment must be less than 25 feet from the building to cause damage. Impact pile driving in the upper range has the greatest potential to cause damage to buildings; 135 feet is the closest that pile driving can occur to a Category 4 building. Category 4 buildings are "…extremely susceptible to vibration damage…" (FTA 2018), with construction very sensitive to vibration and may be objects or buildings of historic interest.

Pile driving is not expected to be required, and in the unlikely event that it is, it would be limited to the treatment facility, which is located over 200 feet away from other structures.

13.5 Environmental Impacts

This section presents an evaluation of the project's environmental impacts regarding noise for both the construction and operation phases. Table 13-17 summarizes the potential noise impacts.

Table 13-17. Summary of Noise Impacts

Impact	Alternative 1 Agoura Road AWPF	Alternative 2 Reservoir AWPF	Pipelines	Pump Station
Impact 13-1: Construction Noise and Vibration	Less than significant	Less than significant with mitigation	Less than significant with mitigation	Less than significant
Impact 13-.2: Noise and Vibration from Facility Operation	Less than significant	Less than significant	Less than significant	Less than significant

13.5.1 Impact 13-1: Construction Noise and Vibration

With the mitigation measures described in this section, Impact 13-1 would result in less than significant impacts.

13.5.1.1 Alternative 1 Agoura Road Advanced Water Purification Facility

The City of Agoura Hills Municipal Code exempts construction noise from regulations, provided construction activities are limited to 7:00 a.m. and 8:00 p.m. on weekdays and Saturdays. Construction is prohibited outside these hours, or at any time on Sunday or a legal holiday. Section 9656.9 of the municipal code outlines the variance process for owners or operators of a noise source that cannot meet the provisions of the noise ordinance. Granted variances would include terms, conditions, and requirements, including limitations on noise levels and operating hours.

The western site boundary for the Agoura Road AWPF is adjacent to apartment complexes and single-family residences (Figure 13-4). The treatment building would be 360 feet from the closest residence. The expected noise level for general construction at this distance is approximately 73 dBA. Nighttime work is not anticipated during the construction of the AWPF. Therefore, impacts would be less than significant.

Figure 13-4. Agoura Road Advanced Water Purification Facility and Surrounding Area

13.5.1.2 Alternative 2 Reservoir Advanced Water Purification Facility

The location of the Alternative 2 Reservoir AWPF site, where most construction activities would occur, is farther from residences than the Agoura Road AWPF, with the nearest sensitive receptor located more than 1,000 feet away (Figure 13-5). The construction of the access road to Reservoir AWPF is located within 160 feet of residences at its termination at Triunfo Canyon Road. No numeric noise thresholds are provided in the City of Westlake Village's Municipal Code for construction noise. Instead, construction is limited to between 7:00 a.m. and 7:00 p.m., Monday through Friday, and 8:00 a.m. and 5:00 p.m. on Saturdays. No construction noise is permitted on Sundays or holidays.

Construction noise includes the operation of any tools, equipment, impact devices, derricks, or hoists used in or otherwise engaging in any aspect of construction, drilling, repair, alteration, demolition, or earthwork. Special circumstances allow for construction noise outside of the allowed hours if the work is done in the public interest. To address construction noise prior to construction, *Mitigation Measure 13-1, Noise Control Plan* is prescribed. With implementation of this measure, construction noise impacts would be less than significant.

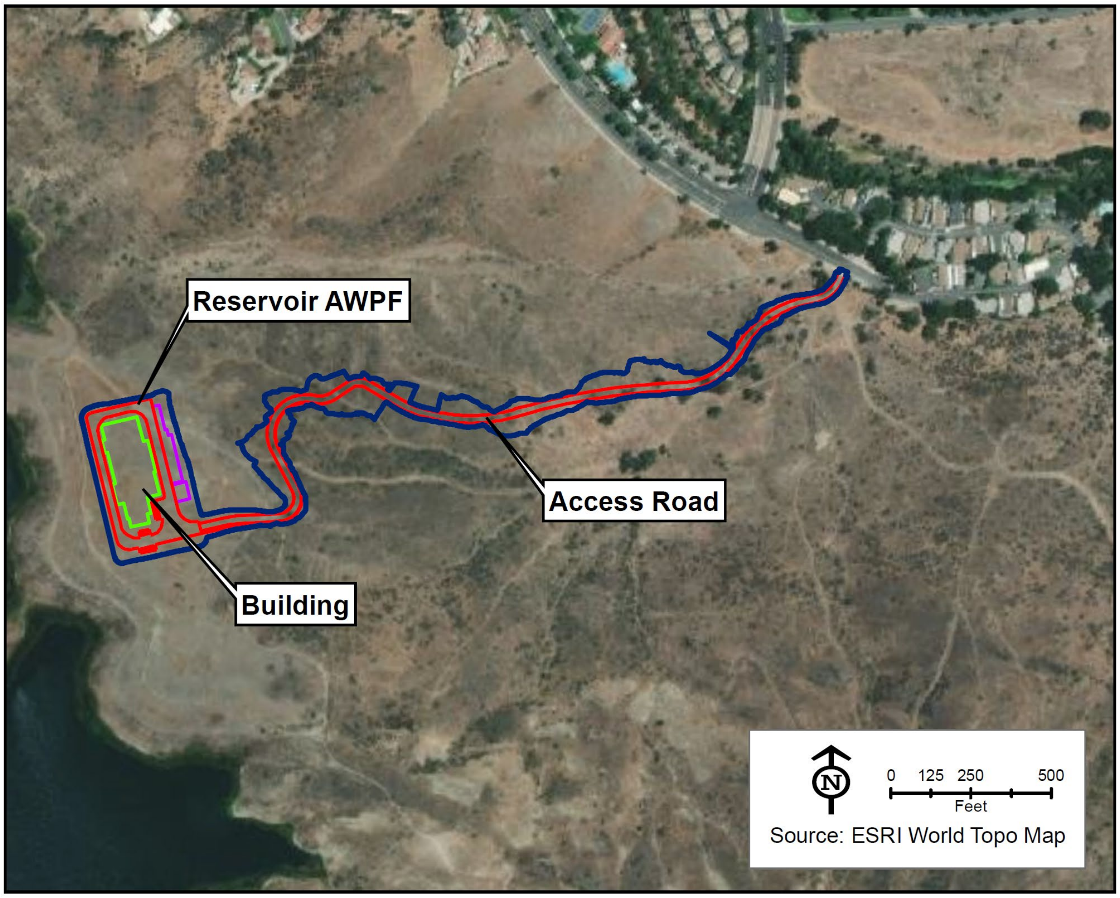


Figure 13-5. Reservoir Advanced Water Purification Facility and Surrounding Area

13.5.1.3 Pipelines

Pipelines would be constructed within all municipal jurisdictions. Applicable regulations for construction are as follows:

- **City of Agoura Hills:** No specified noise thresholds are applicable to construction, but construction activities are limited to between 7:00 a.m. and 8:00 p.m. on weekdays and Saturdays. Construction is prohibited outside these hours, or at any time on Sunday or a legal holiday.
- **City of Westlake Village:** No specific noise thresholds are applicable to construction noise. Instead, construction is limited to between 7:00 a.m. and 7:00 p.m., Monday through Friday, and 8:00 a.m. and 5:00 p.m. on Saturdays. No construction noise is permitted on Sundays or holidays.
- **City of Thousand Oaks:** No noise threshold is established for construction, but construction is limited to between the hours of 7:00 a.m. and 7:00 p.m., Monday through Saturday, unless a permit for each type of work at different hours or days has first been issued by the Public Works Director. Limitations to construction work hours are not applicable to projects taking place more than 1 mile from any occupied residence.
- **Ventura County:** Noise thresholds are applicable to construction work performed in unincorporated Ventura County but are dependent on the duration of work affecting noise-sensitive receptors (Table 13-14). Thresholds vary from:
  - 55 to 75 dBA from 7:00 a.m. to 7:00 p.m., Monday through Friday and from 9:00 a.m. to 7:00 p.m., Saturday, Sunday, and local holidays
  - 50 dBA from 7:00 to 10:00 p.m., 7 days per week
  - 45 dBA from 10:00 p.m. to 7:00 a.m., 7 days per week

Noise-sensitive receptors are located in proximity to a number of areas along the pipeline routes. Ventura County has the most stringent noise thresholds. The County's daytime construction noise thresholds (Table 13-12) vary with duration of the activity. In summary, limits are as follows:

- Activities of 3 days or less: 75 dBA
- Activities of 4 to 7 days: 70 dBA
- Activities longer than 8 weeks: 55 dBA
- Longer-duration activities: Lower levels are permitted

While most of pipeline in unincorporated Ventura County is not near noise-sensitive uses, the farthest limit of the pipeline is within 400 feet of a residence (Figure 13-6). General construction at this distance would result in a noise level of approximately 73 dBA at the residence. The lowest limit of 55 dBA is predicted to be achieved at approximately 3,200 feet. While Table 13-14 indicates 56 dBA at 3,200 feet, this is expected to be a conservative estimate, as it does not consider the additional attenuation afforded by atmospheric absorption or other effects.

Pipeline construction is anticipated to proceed at a rate of 200 feet per day. Conservative evaluation indicates the lowest limit of 55 dBA may be exceeded for the approximately 16 days when activities would be occurring closer than 3,200 feet. If this segment's construction duration is between 2 to 8 weeks, the sound limit would be 60 dBA, which is expected to be achieved within approximately 2,000 feet. Thus, the duration of the potential exceedance may be more limited in duration (10 days) when activities are occurring in proximity to the residences.

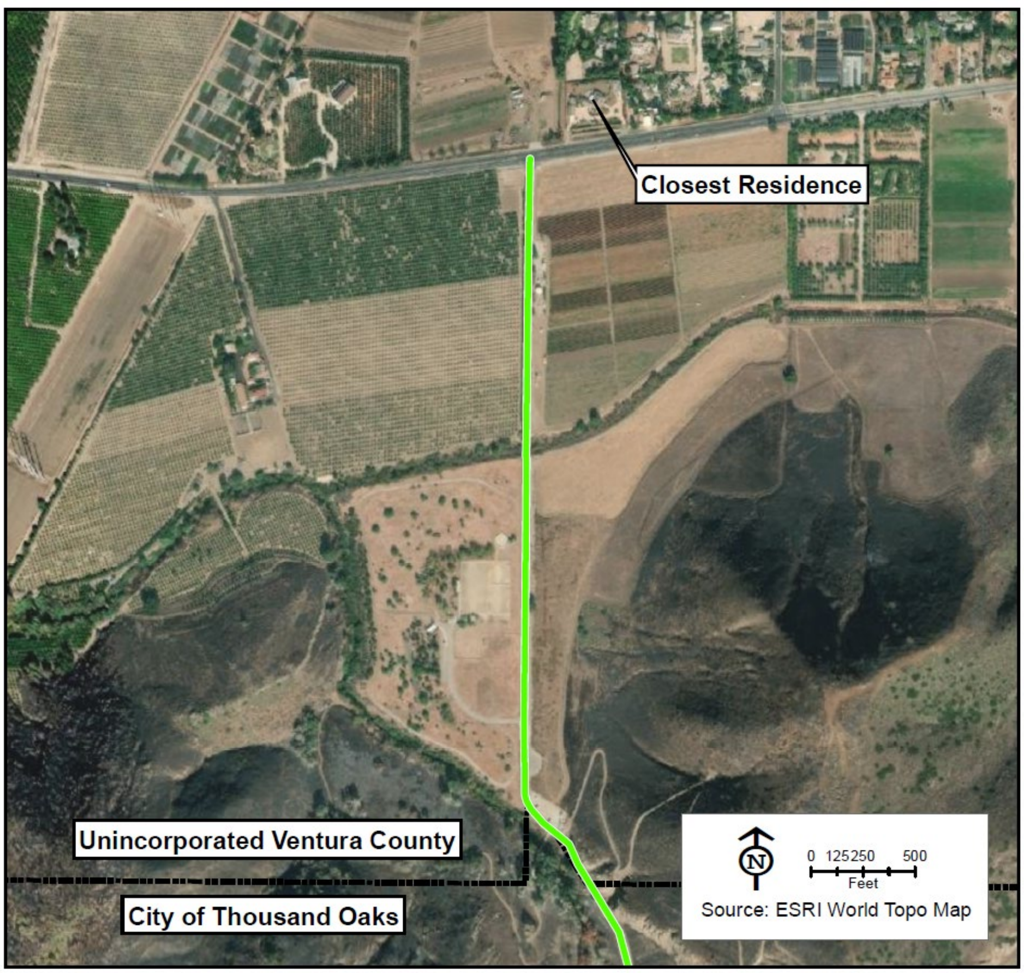


Figure 13-6. Pipeline Alignment in Unincorporated Ventura County with Closest Residence

Specialized construction would be used in two areas that present special challenges: in Triunfo Creek Park and within the Rancho Conejo Open Space area. Both areas are undeveloped, difficult to access, and contain rocky ground that makes open-trench construction difficult. Pipeline installation is expected to occur at a rate of approximately 50 feet per day in these areas. Within these areas, the following construction methods may be used:

- Rockwheel Trencher: A rockwheel is a specialized trench excavation tool that can be used where ground conditions are too rocky for standard excavators. Rockwheels grind the native material into smaller pieces that can be removed with standard excavators or backhoes.
- Jackhammering: In areas where standard or specialized construction equipment, such as a rockwheel, are not sufficient to break up hard rock and create the necessary trench width, jackhammering may be needed.
- Blasting: If necessary, blasting would be used if other methods are infeasible. Highly localized blasting using charges in drilled holes would be used.

In the Triunfo Creek Park area (located in Westlake Village), trenchless construction methods would be used within 1,000 feet of a residential area (Figure 13-7). Noise levels associated with these trenchless construction methods are expected to vary between 85 and 94 dBA at 50 feet (Table 13-14), with blasting being the method with the highest expected noise and vibration level. If blasting is required, a blasting plan would be developed to address noise and vibration. Blasting would occur in the daytime only.

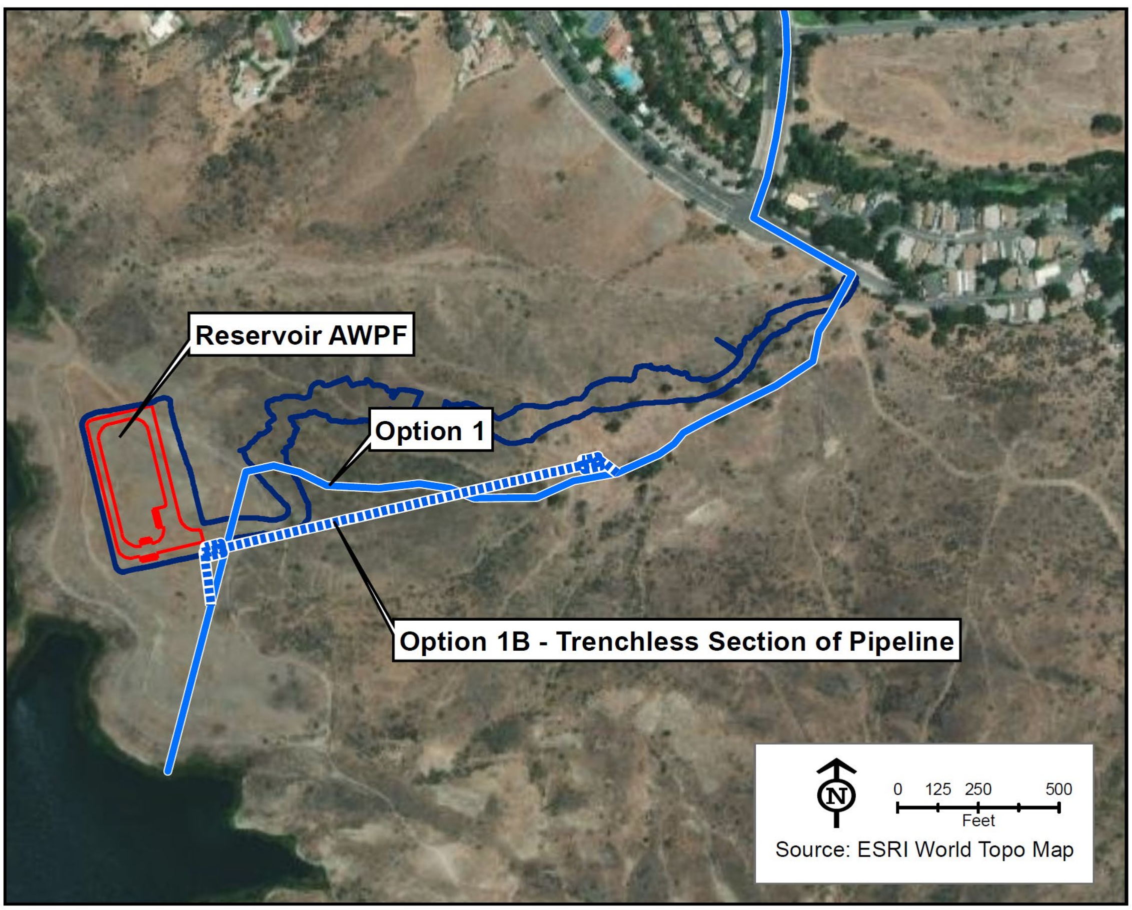


Figure 13-7. Trenchless Construction Option for Pipeline in Triunfo Creek Park Area

Unlike construction at the treatment plant, nighttime construction may be needed for portions of the pipelines. Because the pipelines are generally located within roadways, there may be portions where some nighttime construction work is necessary to minimize conflicts with other resources, such as traffic. Nighttime construction is generally not permitted, but variance procedures are available to permit nighttime work if it is in the public interest (for example, to minimize traffic conflicts). So that construction noise is addressed prior to construction, *Mitigation Measure 13-1, Noise Control Plan* is prescribed. With implementation of this measure, construction noise impacts would be less than significant.

13.5.1.4 Pump Station

Under Alternative 2 Reservoir AWPF, a pump station would be required along Lindero Canyon Road, at one of two optional locations. For the option at Lindero Canyon Road and Russell Ranch Road, the pump station would be within a commercial and office park development located approximately 700 feet from the nearest residence. For the option on Lindero Canyon Road south of U.S. 101, the pump station would be within the Westlake Village Golf Course located approximately 750 feet from the nearest residence.

The City of Westlake Village has no specific noise thresholds applicable to construction noise, but construction is limited to between 7:00 a.m. and 7:00 p.m., Monday through Friday, and between 8:00 a.m. and 5:00 p.m. on Saturdays. No construction noise is permitted on Sundays or holidays.

Nighttime construction is not anticipated to be needed for the pump station. Pump station construction would follow local requirements; therefore, the impact would be less than significant.

13.5.2 Impact 13-2: Noise and Vibration from Facility Operation

With the mitigation measures described in this section, Impact 13-2 would result in less than significant impacts.

Operation of the project is expected to result in the generation of some noise at the AWPF and pump station. No operational noise is expected to be associated with the pipelines. The facility would operate when excess Tapia WRF recycled water supply or supplemental supplies are available: likely about 6 months per year, from late fall through early spring at startup, but may operate year-round in the future. Some year-to-year variation is expected depending on factors such as rainfall amounts.

13.5.2.1 Alternative 1 Agoura Road Advanced Water Purification Facility

Alternative 1 Agoura Road AWPF is subject to the noise limits of the City of Agoura Hills Municipal Code. The noise thresholds depend on the zoning of the noise-sensitive unit. The Agoura Road AWPF site is designated as a Ladyface Mountain Specific Plan Planned Development. The *Ladyface Mountain Specific Plan* indicates the Agoura Road AWPF site is located within the Business Park Sub Area (City of Agoura Hills 1991). As the facility is not within a residentially zoned area, operational noise from the Agoura Road AWPF measured on any residential property may not exceed the following:

- 55 dBA in the daytime (7:00 a.m. to 10:00 p.m.)
- 50 dBA at nighttime (10:00 p.m. to 7:00 a.m.)

In addition, Sections 9656.2(B) and 9656.3(B) of the municipal code state noise as measured on any other residential property may not exceed the following:

- The exterior noise standard for a cumulative period of more than 15 minutes in any hour or the interior noise standard for a cumulative period of more than 5 minutes in any hour
- The exterior noise standard plus 5 dBA for a cumulative period of more than 10 minutes in any hour or the interior noise standard plus 5 dBA for a cumulative period of more than 1 minute in any hour
- The exterior noise standard plus 10 dBA for a cumulative period of more than 5 minutes in any hour or the interior noise standard plus 10 dBA for any period of time
- The exterior noise standard plus 15 dBA for a cumulative period of more than 1 minute in any hour
- The exterior noise standard plus 20 dBA for any period of time

In the event the ambient noise level exceeds the noise limit categories, the noise level applicable to each category would be increased to reflect the ambient noise level.

The major noise-generating equipment would be located within the treatment plant building, which is located 360 feet away from the closest residence. The Agoura Road AWPF would be designed to comply with applicable limits. Operational noise is, therefore, less than significant.

13.5.2.2 Reservoir Advanced Water Purification Facility

The Reservoir AWPF is located in the City of Westlake Village's jurisdiction. Noise regulations are established by the Noise Control Ordinance of the City of Westlake Village in the Westlake Village Municipal Code. The following sections of the code may apply to operations:

- Section 4.4.035(A) of the code establishes a noise level threshold at 5 dBA greater than the local ambient noise level as measured at any residential property line, and 8 dBA greater than the local ambient noise level as measured at any other property line.
- Unless enclosed within a sound-insulated structure to prevent noise and sound from being plainly audible at a distance of 50 feet from such structure, or within 10 feet of any residence, Section 4.4.040(B) prohibits the sustained operation or use between the hours of 10:00 p.m. and 7:00 a.m. of any electric or gasoline-powered motor or engine or the repair, modification, reconstruction, testing, or operation of any of the following:
  - Automobile
  - Motorcycle
  - Machine
  - Mechanical device
  - Other contrivance or facility
- Section 4.4.040(A) prohibits the unnecessary or unreasonable making of, or knowingly and unnecessarily permitting to be made, any loud, boisterous, and unusual noise, disturbance, commotion, or vibration in any:
  - Boarding facility
  - Dwelling
  - Place of business
  - Other structure
  - Public street
  - Park
  - Other place or building

  Only ordinary and usual sounds, noises, commotion, or vibration incidental to the operation of these places is allowed when conducted:

  - In accordance with the normal standard of practice
  - In a manner that would not disturb the peace and comfort of adjacent residences
  - In a manner that would not detrimentally affect the operators or customers of adjacent places of business

The major noise-generating equipment would be located within the treatment plant building, which is located more than 1,000 feet away from the closest residence. The Reservoir AWPF would be designed to readily comply with the regulations listed. Operational noise is, therefore, less than significant.

13.5.2.3 Pump Station

Under Alternative 2 Reservoir AWPF, the two options for the pump stations are located in Westlake Village. The regulations pertaining to noise and vibration resulting from operations of these facilities are described in Section 13.5.2.2. Whichever option is selected, the pump station would be designed to readily comply with Westlake Village standards. Operational noise is, therefore, less than significant.

13.6 Mitigation Measures

During construction, the following measure would be incorporated to minimize construction noise impacts.

Mitigation Measure 13-1 Noise Control Plan. The contractor will be required to develop a Noise Control Plan identifying how noise would be minimized during construction, and as required, apply for a temporary construction noise variance. Noise-reducing methods that may be implemented include the following:

- Minimize the use of impact devices, such as jackhammers, pavement breakers, and hoe rams. Where possible, use concrete crushers or pavement saws rather than hoe rams for tasks such as concrete or asphalt demolition and removal.
- Verify that pneumatic impact tools and equipment used at the construction site have intake and exhaust mufflers recommended by the manufacturers to meet relevant noise limitations.
- Provide impact noise-producing equipment, such as jackhammers and pavement breakers, with noise-attenuating shields, shrouds, or portable barriers or enclosures to reduce operating noise.
- Line or cover hoppers, conveyor transfer points, storage bins, and chutes with sound-deadening material (for example, apply wood or rubber liners to metal bin impact surfaces).
- Avoid blasting and impact-type pile driving to the extent reasonable and feasible.
- Use alternative procedures of construction, and select a combination of techniques that generate the least overall noise and vibration. Such alternative procedures could use electric welders powered by remote generators and mix concrete at nonsensitive offsite locations, instead of onsite.
- Turn off idling equipment when not in use of periods longer than 30 minutes.
- Where building foundation systems are needed, use drilling or alternate foundations systems instead of driven piles where reasonable and feasible.
- Operate equipment so as to minimize banging, clattering, buzzing, and other annoying types of noises, especially near residential and other noise-sensitive areas during the evening and nighttime hours.
- To the extent feasible, configure the construction site in a manner that keeps noisier equipment and activities as far as possible from noise-sensitive locations and nearby buildings.
- Consider the use of broadband or white noise backup alarms as allowed by Cal/OSHA during evening and nighttime hours.
- Maximize physical separation, as far as practicable, between noise generators and noise receptors. Separation includes providing enclosures for stationary items of equipment and noise barriers around particularly noisy areas at the project site, and locating stationary equipment to minimize noise and vibration impacts on the community.
- Minimize noise-intrusive impacts during most noise-sensitive hours. Plan noisier operations during times of highest ambient noise levels.

14. Recreation

This chapter evaluates potential impacts of the project on recreational facilities, including parks, located in the project area.

14.1 Existing Setting

This section describes the project's existing recreational setting.

14.1.1 City of Agoura Hills

Agoura Hills has more than 2,000 acres of land dedicated to open space and recreational use (City of Agoura Hills 2010b). The Agoura Hills Department of Community Services maintains parks and recreation facilities throughout the city and offers various community services oriented toward recreation, education, and community engagement (City of Agoura Hills 2022b). Bicycle lanes are provided on both sides of Agoura Road; otherwise, there are no city park and recreation facilities within the project area.

Hikers currently use the Alternative 1 Agoura Road AWPF site for access to trails in the Ladyface Mountain area. Access appears to be informal, and the trails do not appear to be actively managed by a local or regional parks authority.

14.1.2 City of Westlake Village

Westlake Village encompasses 5.62 square miles and has seven parks. The city is also home to the Las Virgenes Reservoir and Westlake Lake (City of Westlake Village 2019a). The following Westlake Village park and recreation facilities are within or adjacent to the project area:

- Bicycle lanes along both sides of affected city streets
- Russell Ranch Park
- Westlake Golf Course
- Westlake Lake
- Westlake Village Dog Park
- Yarrow Family YMCA

Triunfo Creek Park, managed by the Santa Monica Mountains Conservancy in partnership with the Mountains Recreation and Conservation Authority (MRCA), is located within Westlake Village between Triunfo Canyon Road and Las Virgenes Reservoir (Figure 14-1). The 600-acre park is home to its main feature, the Pentachaeta Trail (MRCA 2022).

The trailhead (with an informational kiosk) is located on Triunfo Canyon Road, east of the southern terminus of Lindero Canyon Road. The other end of the trail is located at the west end of Triunfo Canyon Road, about 1.5 miles west of Kanan Road (MRCA 2022). The trail is about 1.9 miles long with 339-foot elevation and is used for hiking, mountain biking, and horseback riding, and allows dogs on leash. Triunfo Creek Park also hosts the Westlake Vista Trail, which begins at the Pentachaeta trailhead and extends east toward Las Virgenes Reservoir (Los Angeles County Parks 2022).

14.1.3 City of Thousand Oaks

Thousand Oaks contains 1,658 acres of active open space, such as parks and golf courses (City of Thousand Oaks 2013b). The following Thousand Oaks park and recreation facilities are within or adjacent to the project area:

- Beyer Park
- Bicycle lanes along both sides of affected city streets
- Colina Middle School sports facilities

- Gardens of the World
- Hillcrest Center for the Arts
- Rancho Conejo Playfields and Arroyo Conejo Trailhead
- Westlake High School sports facilities

The City of Thousand Oaks maintains a partnership with the Conejo Recreation and Parks District to oversee the conservation and maintenance of over 15,000 acres of natural open space, including over 150 miles of publicly accessible hiking, biking, and horseback riding trails (City of Thousand Oaks 2022d). This partnership, finalized in a Joint Powers Agreement between the two agencies, was created in 1977 to become the Conejo Open Space Conservation Agency (COSCA) (COSCA 2020).

Within the COSCA, the project would intersect with the Arroyo Conejo Nature Preserve, which is a part of the 302-acre Arroyo Conejo Open Space (COSCA 2022b). A portion of the concentrate pipeline is on Rancho Conejo Boulevard that moves north, connecting to the Conejo Canyon Open Space Trail and then continuing up on Hill Canyon Fire Road, where it terminates at Santa Rosa Road in unincorporated Ventura County (Figure 14-2). The portion within Thousand Oaks likely coincides with the Conejo Canyons Unit of the COSCA's Natural Open Space Areas (COSCA 2021a).

14.1.4 Ventura County

Within unincorporated Ventura County, the pipeline corridor would be located on Hill Canyon Road, where it terminates at Santa Rosa Road. There are no bicycle or pedestrian features on Hill Canyon Road. This portion of the pipeline corridor passes Hill Canyon Trailhead and Santa Rosa Valley Park. Hill Canyon Trail to Hawk Canyon is a 3.6-mile trail with 250 feet of elevation change that offers multiple uses, including walking and mountain biking (VisitCamarillo.com 2022). Santa Rosa Valley Park is a regional park that offers 50 acres of natural open space for horseback riding, hiking, wilderness exploring, and other environmentally friendly activities (Ventura County 2022c).

14.1.5 Malibu Creek

Malibu Creek is a 14-mile water course within the Santa Monica Mountains that ends at Malibu Lagoon and is a part of Malibu Creek State Park. Located 25 miles east of Los Angeles, the park offers the following recreational activities (California Department of Parks and Recreation 2022a):

- Bird watching
- Fishing
- Horseback riding
- Hiking
- Mountain biking
- Rock climbing

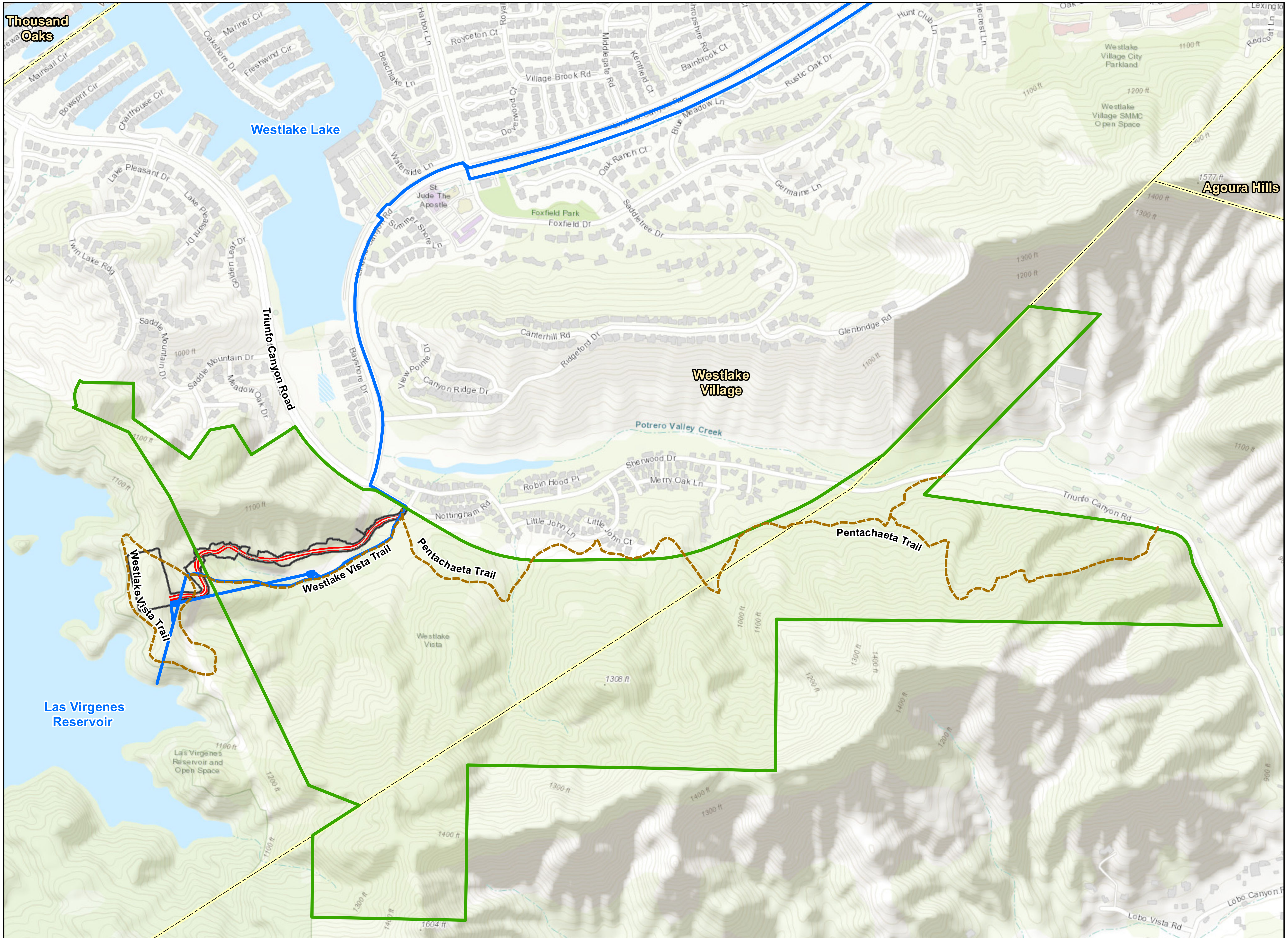
Additionally, there is a popular surfing area where Malibu Creek discharges into Santa Monica Bay, near Malibu Lagoon (California Department of Parks and Recreation 2022b).

14.2 Regulatory Framework

This section discusses the regulatory framework applicable to recreation facilities and parks, including general plan policies and guidance related to recreation resources.

14.2.1 City of Agoura Hills

The City of Agoura Hills adopted the current *City of Agoura Hills General Plan* in 2010 as a strategic document to guide the physical development of Agoura Hills. The Land Use Element guides development of Agoura Hill's built environment to the year 2035 and manages how existing neighborhoods, commercial centers, business districts, and open spaces would be conserved and how growth would be managed to protect city resources.



Legend

- Trail
- Triunfo Creek Park
- Purified Water Alignment Options
- Alternative 2 Reservoir AWPF
- Access Road
- City Boundary

Sources:
LA County, 2022; ESRI World Topo Map;
ESRI World Street Map

0 400 800 1,600
Feet
1 inch = 0 miles

FIGURE 14-1

Triunfo Creek Park

Pure Water Project Las Virgenes-Triunfo

Jacobs

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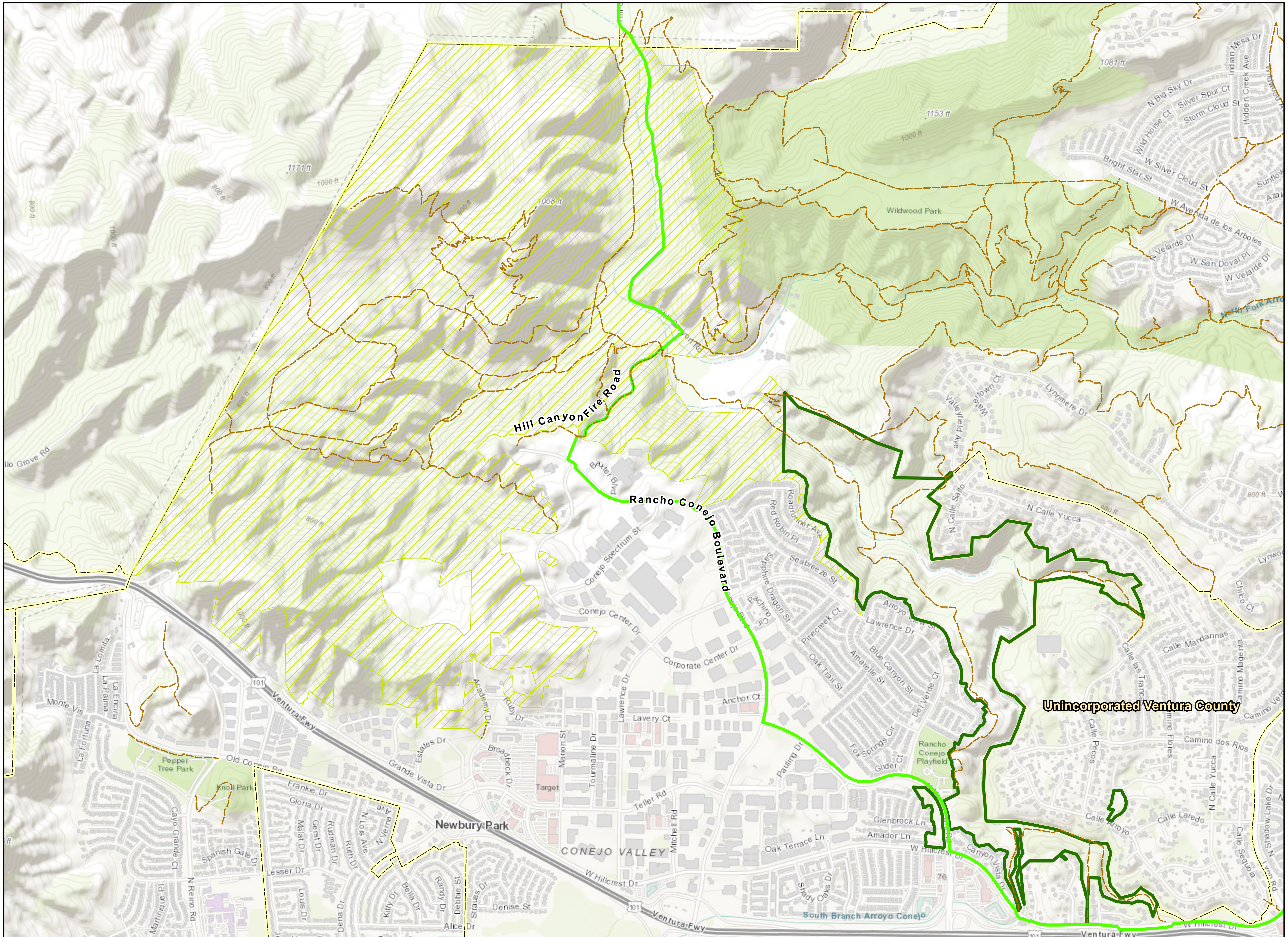

Legend

- Trail
- Arroyo Conejo Open Space
- Conejo Canyons Open Space
- Concentrate Alignment Options
- City Boundary

Sources:
Conejo Open Space Conservation Agency, 2022;
ESRI World Topo Map; ESRI World Street Map

0 800 1,600 3,200
Feet
1 inch = 0 miles

FIGURE 14-2
Recreational Resources within the Conejo Open Space Conservation Agency

Pure Water Project Las Virgenes-Triunfo

Jacobs

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The Infrastructure and Community Services Element addresses the City's priority to support high-quality community services and infrastructure systems that are well maintained and operated in a manner consistent with its commitment to sustainability. Ongoing access to education, recreation, transportation, and utility services are important to maintaining the quality of life in Agoura Hills. The Mobility portion of this element contains policies intended to create a well-connected network that supports a mix of uses, including walking or bicycling for short trips. Through the Community Services portion of this element, the City strives to provide quality recreational, educational, and cultural services through schools, libraries, parks, and community centers, as well as public safety services.

In the Natural Resources Element, the City expresses a commitment to the conservation of natural resources and ensures the ongoing availability of finite resources, such as open space, safe water supply, clean air, scenic vistas, and energy resources. Goals and policies in this element address the preservation and maintenance of Agoura Hills' environmental resources (including open space for recreation), not only to benefit current residents, but also to protect the sustainability of these resources for future generations.

Table 14-1 summarizes the goals and policies established by the *City of Agoura Hills General Plan* (City of Agoura Hills 2010b) that are applicable to recreation resources.

Table 14-1. City of Agoura Hills Goals and Policies Supporting Recreation

Goal or Policy Name	Goal and Policy Language
Goal LU-3: City of Open Spaces	*Open space lands that are preserved to maintain the visual quality of the City and provide recreational opportunities, protect the public from safety hazards, and conserve natural resources.*
Policy LU-3.3: Open Spaces and Greenbelts	*Provide a network of open spaces and greenbelts with pedestrian access where appropriate.*
Goal LU-18: Public and Quasi-Public Uses Supporting Resident Needs	*Governmental, utility, institutional, educational, recreational, cultural, religious, and social facilities and services that are located and designed to complement Agoura Hills' neighborhoods, centers, and corridors.*
Policy LU-19.1: City of Trees and Open Spaces	*Maintain a multi-functional "green infrastructure" consisting of natural areas, open spaces, urban forest, and parklands, which serves as a defining physical feature of Agoura Hills, provides visitors and residents with access to open spaces and recreation, is designed for environmental sustainability, and reduces greenhouse gas emissions.*
Policy LU-19.2: Open Space Preservation	*Place a high priority on acquiring and preserving open space lands for purposes of passive recreation, habitat protection and enhancement, resource conservation, flood hazard management, public safety purposes, and overall community benefit.*
Goal LU-23: Business Park and Natural Open Spaces	*An economically viable business park that is scaled and designed to reflect its natural setting at the base of Ladyface Mountain, while providing high-quality jobs and incorporating a diversity of uses that minimize the need for employees to travel off site.*
Policy LU-23.5: Trail Connectivity	*Require that developers provide pedestrian linkages to trails in the Ladyface Mountain Specific Plan area, as prescribed by the Citywide Trails and Parkways Master Plan.*
Goal M-8: Bikeways	*Enhanced bicycle facilities throughout Agoura Hills for short trips and recreational uses.*
Policy M-8.1: Bikeway Linkages	*Provide bikeway connectivity between residential areas and surrounding natural resource areas, parks, schools, employment centers, and other activity centers in the community.*
Policy M-8.2: Continuous Bikeway Connectivity	*Provide a bicycle network that is continuous, closes gaps in the existing system, and permits easy bicycle travel throughout the community and the region.*
Policy M-8.3: Recreational Biking	*Encourage recreational biking and promote the community's mountain biking trail system to residents and visitors.*

Table 14-1. City of Agoura Hills Goals and Policies Supporting Recreation

Goal or Policy Name	Goal and Policy Language
Goal CS-1: Park and Recreation Facilities	*Balanced and comprehensive recreation facilities for the Agoura Hills community.*
Policy CS-1.1: Service Level Goals	*Develop and maintain parks and recreational areas in accordance with the goals in Table CS-1 (Parks, Community Facility, and Recreation Facility Service Level Goals).*
Policy CS-1.2: Cooperation with External Agencies	*Work with agencies outside of the City that control park lands, including the counties of Ventura and Los Angeles, National Park Service, and Santa Monica Mountains Conservancy, to ensure maximum benefits to local residents.*
Policy CS-1.3: Bicycle and Pedestrian Connections	*Connect recreational facilities with walking paths, trails, bikeways, and equestrian trails.*
Policy CS-1.7: Accessible Facilities	*When renovating and creating new recreational facilities, ensure accessible standards as specified in state and federal laws, such as the Americans with Disabilities Act (ADA).*
Goal CS-5: Trail and Path Network	*A comprehensive trail and pathway system that makes pedestrian and equestrian travel healthy, feasible, safe, and enjoyable modes of transportation and forms of recreation in Agoura Hills.*
Policy CS-5.3: Coordinated Trail Planning	*Coordinate the City's trail system planning, implementation, and management efforts with those of regional jurisdictions and other public agencies.*
Policy CS-5.4: Coordination with Agencies	*Partner with neighborhood groups, private individuals, and local businesses to acquire various trail amenities.*
Policy CS-5.9: Connecting to Trail System	*Require that new development provide connections to adjacent trail systems, as applicable.*
Goal NR-1: Open Space System	*Preservation of open space to sustain natural ecosystems and visual resources that contribute to the quality of life and character of Agoura Hills.*
Policy NR-1.1: Open Space Preservation	*Continue efforts to acquire and preserve open space lands for purposes of recreation, habitat protection and enhancement, resource conservation, flood hazard management, public safety, aesthetic visual resource, and overall community benefit.*
Goal NR-2: Visual Resources	*Preservation of significant visual resources as important quality of life amenities for residents, and as assets for commerce, recreation, and tourism.*
Policy NR-2.2: Trails, Recreation Areas, and Viewing Areas	*Provide public trails, recreation areas, and viewing areas near significant visual resources, where appropriate.*
Goal NR-4: Natural Areas	*Protection and enhancement of open space resources, other natural areas, and significant wildlife and vegetation in the City as an integral component of a sustainable environment.*
Policy NR-4.5: Open Space Preservation	*Place a high priority on acquiring and preserving open space lands for purposes of recreation, habitat preservation and enhancement, resource conservation, flood hazard management, public safety purposes, and overall community benefits.*
Policy NR-4.7: Green Infrastructure	*Maintain a multi-functional "green infrastructure," consisting of natural areas, open spaces, urban forest, and parklands, that serves as a defining physical character of Agoura Hills, provides visitors and residents with access to open spaces and recreation, and is designed for environmental sustainability.*
Policy NR-4.8: Open Space and Activity Centers	*Link open space to activity centers, parks, other open space, and scenic routes to help define urban form and beautify the City.*

Source: City of Agoura Hills 2010b

14.2.2 City of Westlake Village

The City of Westlake Village adopted an updated general plan in 2019. The general plan guides decision-makers on issues affecting the allocation of resources and future direction of Westlake Village. The Community Development chapter contains the Land Use Element, which is the primary land use policy document and serves as the blueprint for the future development of the community. The Infrastructure and Community Services chapter contains the Recreation Element, which presents the goals, objectives, and policies for recreation facilities and programs within Westlake Village. The Natural Resources Element includes goals, objectives, and policies for Biological and Visual Resources, Open Space, and Watershed Areas.

Table 14-2 lists the goals and policies established by the *City of Westlake Village General Plan* (City of Westlake Village 2019a) that are applicable to recreation resources.

Table 14-2. City of Westlake Village Goals and Policies Supporting Recreation

Goal or Policy No.	Goal or Policy Language
Land Use	
Goal 1	*Provide for new land use development and adaptive reuse which is reflective of and complements the overall pattern and scale of existing development, and offers the opportunity for the revitalization and/or reuse of selected subareas as distinctly identifiable activity centers of the City.*
Policy 1.1.2	*Provide for the maintenance and possible expansion of open space and recreation uses in those areas designated as Open Space and Recreation areas on the General Development Policy map.*
Goal 7	*Provide for public and institutional uses which support the needs and functions of the residents and businesses within the City of Westlake Village.*
Policy 7.1.1	*Accommodate governmental administrative, parks and recreation, public open space, police, fire, educational (schools), cultural (libraries, etc.), health, human services, public utility, religious and other public uses in areas designated as Public-Quasi public.*
Goal 8	*Preserve and protect the City's open space resources as important scenic, environmental, and recreational amenities for all City residents and visitors.*
Policy 8.1.2	*Retain existing publicly-owned parks as recreational resources, including areas designated as "Parks" on the Land Use Plan map.*
Policy 8.1.3	*Provide for the preservation of additional open space areas for resource protection and recreational purposes in accordance with the Parks and Recreation Element.*
Policy 8.1.5	*Restrict the development of recreational facilities, including parcels designated as "CR" on the Land Use Plan map, to uses and facilities which are consistent with the intended recreational function.*
Recreation	
Goal 1	*Ensure that adequate park and recreational facilities are provided to meet the recreational needs of the existing and future residents while preserving the natural resources of the community.*
Policy 1.2	*Where appropriate, require new development to provide pedestrian paths, trails and/or sidewalks to facilitate and encourage pedestrian access and recreational enjoyment.*
Policy 1.4	*Cooperate with other jurisdictions to achieve the multiple-use management of public lands, specifically recognizing recreation as a desirable use and provide new opportunities for additional park and recreational facilities and services.*

Table 14-2. City of Westlake Village Goals and Policies Supporting Recreation

Goal or Policy No.	Goal or Policy Language
Policy 1.5	*Increase the City's recreational area through the joint use or multi-purpose use of existing and future open spaces and school facilities, including the coordination and cooperation with adjacent jurisdictions.*
Goal 3	*Ensure that the community has an effective bikeway and trail system which enhances the safety and enjoyment of cyclists, pedestrians and motorists.*
Policy 3.3	*Where appropriate, pursue trail development opportunities in the southern portion of the City to interconnect with trail systems of the National Recreation Area (NRA).*
Natural Resources	
Open Space Goal	*To provide for the planned management, preservation and wise utilization of the City's natural resources.*
Objective 1	*Maintain and enhance the number of acres dedicated to natural and/or recreational open space within the City.*
Policy 1.1	*Promote the public acquisition and maintenance of open space for the preservation of natural resources, provision of outdoor recreation, and protection of the public health and safety.*
Objective 2	*Maximize the potential for open space derived from hillside management, ridgeline protection, and other natural resource preservation/protection policies.*
Policy 2.1	*Encourage new development to cluster building units thereby minimizing the land used by development and maximizing the land remaining for natural and recreational open spaces.*
Watershed Areas Goal	*Protect the quality of water contained in Las Virgenes Reservoir and Westlake Lake.*
Objective 2	*Protect the drinking water quality of the Las Virgenes Reservoir through the preservation and effective management of its tributary watershed area.*
Policy 2.2	*Assure that low intensity recreational uses (i.e., hiking trails, nature walks, vista points, etc.) permitted within the Las Virgenes Reservoir watershed area are located, managed and maintained in a manner that preserves significant natural resources and protects the drinking water quality of the Reservoir.*

Source: City of Westlake Village 2019a

14.2.3 City of Thousand Oaks

The *Thousand Oaks General Plan* provides a long-range comprehensive guide for the physical development of the City's Planning Area. The Conservation Element (City of Thousand Oaks 2013a) identifies the City’s policies and implementation measures for the conservation of natural and cultural resources. A policy is a specific statement that guides decision making. It indicates a clear commitment of the City Council. Implementation measures are fundamental rules and specific actions related to and guided by the policies. These measures are based on community values, generally accepted planning practice, and current technology.

The Open Space Element (City Thousand Oaks 2013b) provides the local planning policies for the use of unimproved land or water for:

- The preservation of natural resources
- The managed production of resources
- Outdoor recreation
- The enhancement of public health and safety

The purpose of this element is to identify policies and implementation measures for the conservation and use of open space resources.

Table 14-3 lists the goals, policies, and implementation measures identified in the *Thousand Oaks General Plan* (2013a, b, 2022b) that are applicable to recreation.

Table 14-3. City of Thousand Oaks Goals and Policies Supporting Recreation

Goal or Policy Name	Goal or Policy Language
Conservation Element	
Streams and Creeks	
Policy CO-12	*Major barrancas should be protected in a natural state. Appropriate land uses for these natural features include recreation trails and open space.*
Open Space Element	
Open Space for Outdoor Recreation and Education	
Policy OS-5	*Trails are a key component of the Open Space Element. A Trail Master Plan providing appropriate controlled access to open space within the Planning Area, and connecting to the regional trail system, is incorporated in the Conejo Recreation and Park District Master Plan. This Trail Master Plan is hereby incorporated as a component of the Open Space Element. In carrying out its responsibilities, the City shall support completion of this trail system in a manner compatible with the other policies of this Element.*
Open Space Management	
Policy OS-27	*Continue efforts to protect water quality of streams located within open space areas from adverse effects associated with recreational use; since the streams and creeks within open space drain the Conejo Valley in general, continue to implement and improve programs and measures to reduce pollution stormwater and nuisance water pollution.*
Implementation Measure 17	*Plan trails collaboratively with the Conejo Recreation and Park District to maximize the visitor's experience and minimize impacts to natural resources.*

Source: City of Thousand Oaks 2013a, b, 2022b

14.2.4 Ventura County

The *Ventura County 2040 General Plan* sets forth the goals, policies, and programs the County would implement to manage future growth and land uses (Ventura County 2020). The Land Use Element includes policies establishing land use designations that identify the type and intensity of uses permissible in unincorporated areas. In addition, the Land Use Element includes a series of goals and policies identifying the County's philosophy for future change, development, and natural resource protection. The focus of this element is to preserve agricultural, rural, and open space lands while directing growth to cities and unincorporated communities.

The Circulation, Transportation, and Mobility Element identifies goals, policies, and programs that establish a framework for decisions in Ventura County concerning the countywide transportation system. Policies in this element encourage development of a "Complete Streets" strategy for public transportation services, and pedestrian and bicycle facility improvements in areas of the county where they would provide residents a range of options for travel to work, shopping, and leisure destinations. The transportation infrastructure promotes everyday physical activity, such as walking and biking, sometimes referred to as "active transportation."

The Public Facilities, Services, and Infrastructure Element provides the framework for decisions in Ventura County concerning public and private infrastructure, utilities, and services. The goals, policies, and programs in this element support the provision and maintenance of infrastructure, facilities, and services in appropriate areas of the unincorporated county, and provide for their timely expansion, if required to maintain adequate services. This element also includes policies, in coordination with the Health and Safety Element, for the provision of facilities and services to protect the safety and welfare of residents and visitors and of property, and with the Water Element for water supply and delivery.

The Conservation and Open Space Element provides guidance and programs for the conservation, management, development, and use of natural and cultural resources; and provides guidance and programs for the long-term preservation and conservation of open space lands. This includes the preservation of natural resources and scenic resources, and the provision of land for outdoor recreation. Policies related to parks and recreational facilities are provided in the Public Facilities, Services, and Infrastructure Element.

Table 14-4 lists the goals and policies established by the *Ventura County 2040 General Plan* (Ventura County 2020) that are applicable to recreation.

Table 14-4. Ventura County Goals and Policies Supporting Recreation

Goal or Policy No.	Goal or Policy Language
Land Use Element	
LU-20	*To encourage the protection and use of state- and federally-owned beaches, hillsides, woodlands, grasslands, rivers, streams, wetlands, estuaries, and cultural resources for the education and enjoyment of Ventura County residents and visitors.*
LU-20.1	*Recreational Access and Use - The County shall encourage federal, state, and local agencies currently providing recreation facilities to maintain, at a minimum, and improve, if possible, their current levels of service.*
Circulation, Transportation, and Mobility Element	
CTM-3	*To develop an accessible and interconnected bicycle network that addresses resident and visitor needs for commuting, daily activities, and recreation.*
CTM-3.3	*Regional Destination Focus for Bicycle Network - The County shall encourage the development of a bicycle network that connects to regional destinations such as parks, trails, educational institutions, employment centers, transit, park and ride lots, and tourist destinations.*
CTM-3.5	*Bicycle Routes in Rural Areas - The County shall plan for bicycle network connectivity in rural, agricultural, and open space areas in a way that supports and complements business and agricultural activities in those areas.*
CTM-3.10	*Bicycle Storage Facilities - The County shall require adequate bicycle storage facilities (e.g., bicycle racks, lockers) for discretionary development as determined by allowable land uses at a given site.*
Public Facilities, Services, and Infrastructure Element	
PFS-10	*To develop and maintain a comprehensive system of parklands and recreational facilities that meet the active and passive recreational needs of residents and visitors, as funding is available.*
PFS-10.1	*Trail Network - The County shall encourage the establishment of a countywide network of trails to meet the needs of equestrians, bicyclists, hikers, and other trail user groups.*
PFS-10.2	*Recreational Use of Public Facilities - The County shall make public facilities, such as flood control channels and easements, available for recreational use, if feasible, safe, and appropriate for the site's primary function.*
Conservation and Open Space Element	
COS-9	*To develop and maintain a comprehensive system of parks, recreation, and natural open space lands that meet the active and passive recreation and open space needs of Ventura County residents and visitors.*
COS-9.3	*Open Space Preservation - The County shall place a high priority on preserving open space lands for recreation, habitat protection, wildlife movement, flood hazard management, public safety, water resource protection, and overall community benefit.*

Source: Ventura County 2020

14.3 Assessment Methods and Thresholds of Significance

The assessment of impacts was conducted based on consideration of the AWPF construction and operation activities and how they might affect use of parks and recreation facilities in the project area.

In accordance with Appendix G of the CEQA Guidelines (CCR Section 15000 et seq.), impacts on recreational resources may occur if the Pure Water Project would result in the following:

- *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.*
- *Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.*

These requirements focus on the potential for population and employment growth induced by the project to increase use of recreation facilities or cause the development of new recreation facilities to accommodate induced growth. As described in Section 18.2, the Pure Water Project would not induce growth during construction or once the project is operational. For this reason, there would be no impact on recreation.

However, the Pure Water Project may affect recreation in other ways. Primarily, this would be from disruption in recreation access during construction. In addition, some permanent project features may change some recreation features in a way that affects use. Impacts to recreation are addressed from this perspective in the sections below.

14.4 Environmental Impacts

This section describes the environmental impacts related to recreation that would result from project implementation. Table 14-5 summarizes potential recreation impacts.

Table 14-5. Summary of Recreation Impacts

Impact	Alternative 1 Agoura Road AWPF	Alternative 2 Reservoir AWPF	Pipelines	Malibu Creek
Impact 14-1: Recreation Access and Opportunities	Less than significant	Significant and unavoidable	Significant and unavoidable	Less than significant

14.4.1 Impact 14-1: Recreation Access and Opportunities

With implementation of mitigations described in this section, Impact 14-1 would be less than significant for Alternative 1 and Malibu Creek, but significant and unavoidable for Alternative 2 and the pipelines.

14.4.1.1 Alternative 1 Agoura Road Advanced Water Purification Facility

Development of the Alternative 1 Agoura Road AWPF site would not affect formal recreation sites or uses. Construction access to the site is not expected to close Agoura Road bike lanes or sidewalks except, perhaps, for short durations (for example, during delivery of heavy equipment). All construction access would be controlled pursuant to a standard traffic control plan (as described in Chapter 15, Transportation and Traffic).

The Agoura Road AWPF site appears to be used informally for access to trails in the Ladyface Mountain area. Use of this informal trail would not be possible during construction but could continue after construction is complete. Because the trails are not actively managed by a local or regional parks authority and given the availability of other trail access points in the area trails, the temporary loss of use would be a less than significant impact to recreation.

14.4.1.2 Alternative 2 Reservoir Advanced Water Purification Facility

Alternative 2 Reservoir AWPF would be constructed near Las Virgenes Reservoir, which is surrounded by a chain-link fence and closed for public use to protect the drinking water source. For this reason, the AWPF itself would have no impact on recreation uses.

However, access to the AWPF would be required both for construction and long-term during operation. The new access road, as well as the associated pipelines and electrical supply, would follow the Westlake Vista Trail within Triunfo Creek Park, resulting in a substantial change to existing recreation use of the trail and its shared trailhead with the Pentachaeta Trail along Triunfo Canyon Road.

During construction, disruption of the trailhead and closure of Westlake Vista Trail may occur over 4 to 6 months, assuming pipeline construction progress of 50 feet per day. Following the completion of construction activities, the trailhead would be repaired, and recreation access to the Pentachaeta Trail and Westlake Vista Trail would be restored.

The disruption of recreation access for 4 to 6 months at the Triunfo Creek Park trailhead and the temporary closure of Westlake Vista Trail is a potentially significant impact. Even with Mitigation Measure 14-1 that would reduce the impact, there would be significant and unavoidable impacts.

14.4.1.3 Pipelines

Most pipeline construction activity would have temporary impacts to recreation uses to parks and related facilities along the pipeline alignment and to bicycle and pedestrian uses along affected roadways. For example, vehicular access to the Rancho Conejo Playfields and Arroyo Conejo Trailhead parking lot may be blocked during construction of the concentrate pipeline. With pipeline construction occurring at a rate of approximately 200 feet per day, each of the two 50-foot-wide parking lot access points are expected to be closed for a portion of 1 day during trench excavation, pipe installation, and backfill, with a second, short closure likely during repaving of the affected area. Given the distance between the two access points (350 feet), it is likely that one entrance can remain open while work activities occur in the immediate vicinity of the other.

How traffic would be managed at this park access would be determined by the construction contractor in its Transportation Management Plan, which would be reviewed and approved by the City of Thousand Oaks (as described in Chapter 15 Transportation). Similar types of temporary impacts would occur for other parks and recreation facilities adjacent to city streets along the pipeline corridor.

Bike lanes along city streets also would be affected during construction, with temporary closures expected to be longer for these linear uses. The duration of each segment closure depends on the determination of reasonable access points, but in some areas, bike lanes could be closed for several weeks. Closures and the determination of acceptable detours would be specified in the contractor's traffic control plan subject to the approval of the City of Agoura Hills, City of Westlake Village, or City of Thousand Oaks.

Overall, pipeline construction would have temporary impacts to recreation uses along city streets, and there would be no long-term impacts once construction is complete. Impacts in these areas would be less than significant.

Pipeline construction would have substantial changes in two areas located away from city streets: within Triunfo Creek Park and in the Conejo Canyons area. In Triunfo Creek Park, construction of the purified water pipeline would disrupt access to the park and to Pentachaeta trailhead on Triunfo Canyon Road and would completely close the Westlake Vista Trail during construction. Based on expected pipeline construction progress of 50 feet per day, disruption of the trailhead and closure of Westlake Vista Trail may occur over 4 to 6 months. If trenchless construction is used for a portion of the purified water pipeline in this area, the upper portion of the trail would be preserved, but there is no possibility of public access through the construction zone.

In the Conejo Canyons area, concentrate pipeline construction would occur along the Conejo Canyon Open Space Trail between Rancho Conejo Boulevard and the Hill Canyon Fire Road.[1] Closure of the trail may occur over 4 to 6 months.

Following the completion of construction activities in both areas, the trails would be repaired, and recreation access would be restored. However, the loss of recreation access for 4 to 6 months in both the Triunfo Creek Park and Conejo Canyons areas is a potentially significant impact. Mitigation Measure 14-1 would reduce the impact, but not to a less than significant level.

14.4.1.4 Malibu Creek

Project-related changes in Malibu Creek flows are described in Chapter 11, Hydrology. In summary, minimum flows of 2.5 cfs would be maintained year-round, and peak flows would remain largely unchanged. Malibu Creek flows would decrease whenever the Pure Water Project is operational, but the hydrologic impacts would be less than significant.

Recreation uses of Malibu Creek do not appear to be flow dependent. There would be no recreation impacts on activities, such as hiking, mountain biking, and rock climbing. Fishing is not expected to be affected because the hydrologic changes are not expected to affect sport fishery.

Project-related flow changes are not expected to adversely affect recreation uses downstream in Santa Monica Bay, including surfing; some effects may be beneficial. Impacts to surfing result from changes to Malibu Lagoon, including the occasional breaching of a natural sand bar during moderate to high Malibu Creek flow conditions. Breaching the sand bar is detrimental to surfing conditions. As described in Chapter 11, Hydrology, flows in Malibu Creek would decrease in general, which is expected to decrease the frequency of breaching the sand bar. Breaching the sand bar, however, would still occur under high-flow conditions because the Pure Water Project would not substantially change Malibu Creek flows during peak flow conditions.

For these reasons, overall impacts to Malibu Creek would be less than significant.

14.5 Mitigation Measures

Even implementing the mitigation measure described in this section, the impact for Alternative 2 and for the pipelines would remain significant and unavoidable. This section describes the project mitigation measure to protect recreation resources.

Mitigation Measure 14-1: Prepare Trail Closure and Restoration Plan. The JPA will prepare trail closure and restoration plans for the Westlake Vista Trail and Conejo Canyon Open Space Trail in collaboration with MRCA and COSCA, respectively. The plans will contain the following information:

- Notification procedures so that trail users are aware of the closures. Notification will consist of posting information at trailheads, newspaper notices, website updates, and other similar measures. The notifications will describe the closure start dates and expected closure durations, and will redirect trail users to other trails in the area.
- Provisions to maintain access to the Pentachaeta Trail as much as possible during construction, including the ability to park at the trailhead and safely access the trail while construction is occurring along the Westlake Vista Trail.
- Restoration of the trailhead area, including replacing demolished or damaged fencing, trailhead signage, and wayfinding features.

[1] The City of Thousand Oaks is proposing to construct a new bridge – the Conejo Canyons Bridge – connecting the Hill Canyon Fire Road to recreational trails on the western side of Arroyo Conejo. The concentrate pipeline would be attached to the new bridge.

- Trench backfill and surface restoration plans appropriate for restoration use. Grades along the restored pipeline corridor will match the existing grades to the extent possible. The top layer of backfill material will consist of decomposed granite or similar material using best practices for trail construction.
- If Alternative 2 Reservoir AWPF is selected as the preferred alternative, additional collaboration with MRCA will be required to determine whether use of the access road for recreation is feasible.

Because of the duration of the closure and the changed character of the trail surface following restoration, and because of the permanent changes under Alternative 2 Reservoir AWPF, the impact cannot be reduced to a less than significant level. The impact would remain significant and unavoidable.

15. Transportation and Traffic

This chapter evaluates the potential for the Pure Water Project to adversely affect transportation and traffic conditions in the project area.

15.1 Existing Setting

This section describes the existing setting for transportation and traffic conditions in the project area, focusing on regional and local roadways. Other transportation modes – bicycle facilities, pedestrian facilities, and transit – are also discussed. Roadway characteristics (cross sections, speed limits, pedestrian facilities) in the project area were determined via a desktop evaluation using Google Street View.

15.1.1 Regional and Local Roadways

This section describes freeways, arterial roads, and collector and local roads in the project area.

15.1.1.1 Freeways

Two freeways, U.S. 101 and SR-23, occur in the project area:

- **U.S. 101** is the backbone of the regional transportation system in the project vicinity. Also known as the Ventura Freeway, it is a north–south freeway that connects the cities of Thousand Oaks, Westlake Village, and Agoura Hills with Ventura and Santa Barbara counties to the north and Los Angeles to the south. U.S. 101 is maintained by Caltrans.

  U.S. 101 would be used to access the project area during construction and O&M. In the project vicinity, U.S. 101 is generally an eight-lane freeway, with four travel lanes in each direction. The speed limit on U.S. 101 is 65 mph. The source water and concentrate disposal pipelines would cross under U.S. 101 along Hampshire Road and Conejo School Road and near Flintlock Lane. The source water and concentrate pipelines would cross over U.S. 101 along Lakeview Canyon Road and Lindero Canyon Road. 2019 average annual daily traffic (AADT) volumes north of Hampshire Road were 193,000 vehicles per day (vpd), and were 160,000 vpd south of Lindero Canyon Road (Caltrans 2022b).

- **SR-23** is a north–south freeway that connects Thousand Oaks with State Route 118 (SR-118) to the north. SR-23 runs concurrently with U.S. 101 for approximately 2 miles. South of U.S. 101, SR-23 becomes Westlake Boulevard, Mulholland Highway, and Decker Avenue before ending at Pacific Coast Highway in Malibu. SR-23 is maintained by Caltrans. The speed limit along SR-23 is 65 mph north of U.S. 101 and 40 mph south of U.S. 101.

  The concentrate pipeline would cross under SR-23 along Hillcrest Road and Thousand Oaks Boulevard. 2019 AADT volumes north of U.S. 101 were 116,000 vpd (Caltrans 2022b).

15.1.1.2 Arterial Roads

Pure Water Project features are proposed within 11 arterial roads in the project area, as described in this section.

Agoura Road is an east–west four-lane arterial road with a raised median from Westlake Boulevard and SR-23 to Kanan Road. East of Kanan Road, Agoura Road is a two-lane arterial road. West of Lindero Canyon Road, Agoura Road is maintained by the City of Thousand Oaks. Between Lindero Canyon Road and Flintlock Lane, Agoura Road is maintained by the City of Westlake Village. East of Flintlock Lane, Agoura Road is maintained by the City of Agoura Hills. The speed limit along most of Agoura Road is 45 mph. The section from Cornell Road to Kanan Road has a speed limit of 35 mph.

The source water, purified water, sewer, and concentrate pipeline options would be placed within the Agoura Road ROW. The 2015-2019 AADT for Agoura Road east of Thousand Oaks Boulevard was 18,725 vpd (KOA 2021).

Hampshire Road is a six-lane principal arterial road with a raised median. Hampshire Road is maintained by the City of Thousand Oaks. The speed limit along Hampshire Road is 45 mph.

The concentrate pipeline would be placed within the Hampshire Road ROW. The 2015-2019 AADT for Hampshire Road west of Thousand Oaks city limits was 18,725 vpd (KOA 2021).

Thousand Oaks Boulevard is an east–west four-lane arterial road with a raised median. West of Auto Mall Drive and Duesenberg Drive, Thousand Oaks Boulevard is undivided with a center turn lane. Thousand Oaks Boulevard is maintained by the City of Thousand Oaks west of the border between Thousand Oaks and Westlake Village, which is located 300 feet west of Via Colinas. East of the border between Thousand Oaks and Westlake Village, Thousand Oaks Boulevard is maintained by the City of Westlake Village. Speed limits along this road vary as follows:

- The speed limit along most of Thousand Oaks Boulevard is 45 mph.
- From Hillcrest Drive to Moorpark Road, the speed limit is 35 mph.
- From Moorpark Road to Westlake Boulevard, the speed limit is 40 mph.

The concentrate pipeline would be placed within the Thousand Oaks Boulevard ROW. The 2015-2019 AADT for Thousand Oaks Boulevard varied by segment, as follows (KOA 2021):

- 19,633 vpd between Wilbur Road and Erbes Road
- 23,033 vpd between Erbes Road and Westlake Boulevard
- 26,800 vpd between Westlake Boulevard and the eastern city limit

Hillcrest Drive is an east–west four-lane arterial road with a raised median between Avenida del Platino and Hodencamp Road. Between Lynn Road and Moorpark Road, Hillcrest Drive is a six-lane arterial road. Hillcrest Drive is maintained by the City of Thousand Oaks. The speed limit along most of Hillcrest Drive is 45 mph.

The concentrate pipeline would be placed within the Hillcrest Drive ROW. The 2015-2019 AADT for Hillcrest Drive varied as follows (KOA 2021):

- 11,450 vpd between Camino Dos Rios and Lynn Road
- 15,125 vpd between Lynn Road and Hodencamp Road
- 12,920 vpd between Hodencamp Road and Westlake Boulevard

Conejo Boulevard is a north–south two-lane minor arterial road with a raised median. Conejo Boulevard is maintained by the City of Thousand Oaks. The speed limit along Conejo Boulevard is not posted but is known in the area to be 25 mph.

The concentrate pipeline would be placed within the Conejo Boulevard ROW. Recent traffic volume data are not available for Conejo Boulevard.

Lakeview Canyon Road is a north–south two-lane minor arterial road north of U.S. 101 and a four-lane minor arterial road south of U.S. 101. Lakeview Canyon Road is maintained by the City of Thousand Oaks. The speed limit along most of Lakeview Canyon Road is 40 mph.

The concentrate pipeline would be placed within the Lakeview Canyon Road ROW. Recent traffic volume data are not available for Lakeview Canyon Road.

Lindero Canyon Road is a north–south six-lane minor arterial road with a raised median north of Agoura Road and divided four-lane minor arterial south of Agoura Road. Lindero Canyon Road is maintained by the City of Westlake Village. The speed limit along most of Lindero Canyon Road is 45 mph.

The source water, purified water, and concentrate pipeline options would be placed within the Lindero Canyon Road ROW. Recent traffic volume data are not available for Lindero Canyon Road.

Conejo School Road is a north–south two-lane minor arterial road with a raised median south of Thousand Oaks Boulevard. Conejo School Road is maintained by the City of Thousand Oaks. The speed limit along Conejo School Road north of Thousand Oaks Boulevard is 30 mph and south of Thousand Oaks Boulevard is 35 mph.

The concentrate pipeline would be placed within the Conejo School Road ROW. Recent traffic volume data are not available for Conejo School Road.

Rancho Conejo Boulevard is a north–south four-lane minor arterial road with a center turn lane. Rancho Conejo Boulevard is maintained by the City of Thousand Oaks. The speed limit along most of Rancho Conejo Boulevard is 40 mph.

The concentrate pipeline would be placed within the Rancho Conejo Boulevard ROW. The 2015-2019 AADT for Rancho Conejo Boulevard between the northern terminus near Conejo Center Drive and Teller Road was 10,300 vpd (KOA 2021).

Triunfo Canyon Road is an east–west two-lane minor arterial road. Triunfo Canyon Road is maintained by the City of Westlake Village. The speed limit along most of Triunfo Canyon Road is 45 mph.

The purified water line would be placed within the Triunfo Canyon Road ROW. For Alternative 2 Reservoir AWPF, both source water and concentrate pipeline options would be placed in Triunfo Canyon Road. Recent traffic volume data are not available for Triunfo Canyon Road.

Ventu Park Road is a north–south four-lane minor arterial road with a raised median. Ventu Park Road is maintained by the City of Thousand Oaks. The speed limit along most of Ventu Park Road is 40 mph.

The concentrate pipeline would be placed within the Ventu Park Road ROW. The 2015-2019 AADT for Ventu Park between Ranco Conejo Boulevard and Lynn Road was 9,600 vpd (KOA 2021).

15.1.1.3 Collector and Local Roads

In addition to the potentially affected freeways and arterial roads, three smaller collector and local roads may be affected, as described in this section.

Willow Lane is an east–west two-lane major collector road. Willow Lane is maintained by the City of Thousand Oaks. The speed limit along most of Willow Lane is 40 mph.

The concentrate pipeline would be placed within the Willow Lane ROW. Recent traffic volume data are not available for Willow Lane.

Russell Ranch Road is a two-lane local roadway with a center turn lane. Russell Ranch Road is maintained by the City of Westlake Village. The speed limit along most of Russell Ranch Road is 40 mph.

The source water line would be placed within the Russell Ranch Road ROW. Recent traffic volume data are not available for Russell Ranch Road.

Hill Canyon Road is a north–south two-lane local roadway, which transitions to a one-lane fire service road 3,400 feet south of Santa Rosa Road. The two-lane portion of Hill Canyon Road is maintained by Ventura County. The fire service road is maintained by the City of Thousand Oaks. The speed limit along most of Hill Canyon Road is 20 mph.

The concentrate pipeline would be placed within the Hill Canyon Road ROW. Recent traffic volume data are not available for Hill Canyon Road.

15.1.2 Bicycle Facilities

Class I bikeways are separated bike paths or shared use paths providing bicyclists dedicated ROW independent from the roadway. Class II facilities are bike lanes. Class III bike routes are designated roads that provide for shared use with vehicular traffic (Caltrans 2020c).

There are Class I bikeways on Hillcrest Drive between Lynn Road and Conejo Boulevard, and on Lindero Canyon Road between Thousand Oaks Boulevard and Agoura Road. Most streets within the project area have bike lanes (that is, Class II facilities). Class III bikeways are provided on Conejo School Road, Willow Lane, and portions of Hillcrest Drive and Thousand Oaks Boulevard (Los Angeles County 2022a; City of Thousand Oaks 2019b).

15.1.3 Pedestrian Facilities

Sidewalks are generally provided along most roadways in the project area. However, there are several sections of roads without sidewalks:

- Agoura Road east of Kanan Road
- Hill Canyon Road
- Portions of Thousand Oaks Boulevard west of Wilbur Road and east of Via Colinas
- Portions of Willow Lane

15.1.4 Transit Services

The Los Angeles County Metropolitan Transportation Authority (LA Metro) and the City of Los Angeles Department of Transportation (Los Angeles DOT) provide regional transit service to Thousand Oaks, Westlake Village, and Agoura Hills. Thousand Oaks Transit (TOT) provides regional transit service to the following areas (City of Thousand Oaks 2022e):

- Thousand Oaks
- Westlake Village
- Unincorporated areas of Ventura County, including:
  - Hidden Valley
  - Lake Sherwood
  - Lynn Ranch
  - Newbury Park
  - Oak Park
  - Rolling Oaks
  - Ventu Park

The following transit lines serve the project area:

- **TOT Bus Route 40** provides service to Thousand Oaks between The Oaks mall and the residential area of Newbury Park. Bus stops within the project area are provided along Hillcrest Road (City of Thousand Oaks 2022e).
- **TOT Bus Route 43** provides service to Thousand Oaks between The Oaks mall and Westlake Village. Bus stops within the project area are provided along Thousand Oaks Boulevard, Westlake Boulevard, and Agoura Road (City of Thousand Oaks 2022e).
- **TOT Bus Route 44** provides service to Thousand Oaks between Rancho Conejo Boulevard to the Transportation Center. Bus stops within the project area are provided along Hillcrest Road. During some hours, the bus service is extended to Westlake Boulevard and Agoura Road (City of Thousand Oaks 2022e).
- **LA Metro Line 161** provides service to the cities of Thousand Oaks, Agoura Hills, and Calabasas, and the neighborhood and business district of Warner Center in Los Angeles. Stops within the project area are provided along Thousand Oaks Boulevard, Westlake Boulevard, Agoura Road, Lakeview Canyon, and Lindero Canyon Road (LA Metro 2021-2022).
- **Los Angeles DOT Commuter Express 422** provides service to Thousand Oaks, Agoura Hills, San Fernando Valley, and Hollywood. Stops within the project area are provided along Thousand Oaks Boulevard, Hampshire Road, Agoura Road, and Lindero Canyon Road (Los Angeles DOT 2022).
- **Los Angeles DOT Commuter Express 423** provides service to the following areas and businesses (Los Angeles DOT 2022):
  - Agoura Hills
  - Calabasas
  - Downtown Los Angeles
  - Encino Park & Ride
  - Los Angeles DOT
  - The University of Southern California
  - Thousand Oaks

Stops within the project area are provided along Hampshire Road, Agoura Road, and Lindero Canyon Road.

15.2 Regulatory Framework

This section describes the project’s regulatory framework considering transportation and traffic.

15.2.1 Federal Regulations

No federal regulations apply to the analysis of transportation and traffic impacts.

15.2.2 State Regulations

Caltrans is responsible for planning, designing, constructing, operating, and maintaining all state-owned roadways. Federal standards for interstate highways are implemented in California by Caltrans. In the project area, Caltrans operates and maintains U.S. 101 and SR-23, which provide regional access to the project area.

In 2020, Caltrans adopted the *Transportation Analysis Framework and Transportation Analysis for CEQA* (Caltrans 2020a). These documents, plus the updated *Transportation Impact Study Guide* (Caltrans 2020b), provide guidance for preparing traffic analysis to meet Caltrans requirements.

SB 743 (2013) addresses the limitations of measuring impacts using level of service (LOS) analysis and provides an alternative to using LOS in the environmental review process. The focus is on assessing project-related changes in vehicle-miles traveled (VMT), with implementation guidelines developed by the Governor's Office of Planning and Research (OPR) website (OPR 2018).

15.2.3 Local Regulations

This section describes the local regulations applicable in the project area. Because each general plan describes traffic conditions in terms of LOS standards, a description of these standards is provided in Table 15-1.

Table 15-1. Level of Service Descriptions

LOS	Description
A	*Free flow operation. Motorists are completely unimpeded in their ability to maneuver within the traffic stream. Delay at intersections is minimal and driver comfort level is very high.*
B	*Reasonably unimpeded operation. The ability to maneuver within the traffic stream is only slightly restricted and intersection delay is not significant. Overall driver comfort is still high.*
C	*Stable operation. The ability to maneuver and change lanes may be more restricted than at LOS B. Longer queues at intersections may contribute to lower travel speeds. Lower driver comfort level.*
D	*Less stable operation. Small increases in flow may cause substantial increases in delay and decreases in travel speed. Low driver comfort level.*
E	*Unstable operation and significant delay. Low speed and limited maneuverability lead to driver frustration.*
F	*Stop and go operation. Very low speed and congested intersections with extensive queuing cause great delay. Drivers are sxtremely* [sic] *frustrated.*

Source: City of Westlake Village 2019a

15.2.3.1 City of Agoura Hills

The *City of Agoura Hills General Plan* (2010a) provides the framework for all zoning and land use decisions within Agoura Hills. State law requires that the general plan include a comprehensive, long-term plan for a city’s physical development. Updates are being made to “…the Circulation Element to replace references to adopted LOS thresholds with VMT as a metric to evaluate traffic impacts of proposed projects.”

LOS standards currently included in the general plan require an LOS C standard on most roadways in Agoura Hills. LOS standards D, E, or F are considered acceptable for Agoura Road east of Kanan Road due to heavy projected volumes and a desire to maintain a two-lane cross section with bicycle lanes (City of Agoura Hills 2010b). One of the City’s main goals is to enhance bicycle facilities throughout Agoura Hills for short trips and recreational uses.

The *City of Agoura Hills Transportation Assessment Guidelines* (2020) outline the requirements for CEQA VMT analysis and traffic impact analysis. A VMT analysis is not required for a project that generates less than 110 trips per day.

The 2010 amendment to the *Ladyface Mountain Specific Plan* (City of Agoura Hills 2010c) requires a Transportation Demand Management (TDM) program for new projects in the area and includes new requirements on providing electric vehicle charging stations, displaying transit and ridesharing information, and promoting alternative modes of travel.

15.2.3.2 City of Westlake Village

As a result of Proposition 111, Los Angeles County was required to develop a Congestion Management Program that affects local agencies. The City of Westlake Village's responsibilities include:

- Analyzing the traffic impacts of local land use decisions
- Adopting and implementing a Trip Reduction and Travel Demand Ordinance
- Adopting an annual self-certification resolution and Local Development Report

The City's adopted TDM Ordinance is intended to reduce the need for future capacity by implementing various types of trip reduction measures to reduce peak period trips. Trip reduction measures include rideshare information, carpool programs, and bike racks.

An LOS C or better is required throughout the City's circulation system. LOS D or better is considered acceptable for the portion of Lindero Canyon Road between Via Colinas and Agoura Road.

The *City of Westlake Village General Plan* (2019a) includes a section on noise restrictions during construction. Construction is prohibited on weekdays between 7:00 p.m. and 7:00 a.m. and on Sundays or holidays at any time. As part of the TDM Ordinance, there is a goal to reduce peak hour trips, including limiting construction truck trips to nonpeak commuter hours.

15.2.3.3 City of Thousand Oaks

The *Thousand Oaks General Plan* (City of Thousand Oaks 2022b) encourages the use of arterial roads through the city and to industrial areas to minimize traffic impacts on collector roads and local streets. Furthermore, street improvements should be focused on improving access to major arterial roads, such as Thousand Oaks Boulevard.

The general plan requires an LOS C on all roads and at all intersections: "Lower levels of service may be tolerated to preserve or enhance landscaping and aesthetic integrity." City goals include maintaining safe, continuous pedestrian and bicycle facilities in all residential, commercial, and industrial areas, in addition to the trail system and the scenic bike route system.

15.2.3.4 Ventura County

The *Ventura County 2040 General Plan* (Ventura County 2020) mentions VMT as a basis of evaluation but does not provide criteria for the evaluation. The general plan requires an LOS C for all minor collectors and local roadways.

15.3 Assessment Methods and Thresholds of Significance

The assessment of potential impacts was conducted using the four criteria defined by CEQA:

1) Consistency with Programs, Plans, Ordinances, and Policies: The relevant CEQA criterion asks whether the project would "…conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadways, bicycle and pedestrian facilities." This criterion generally addresses traffic effects during and after construction.
2) VMT: The relevant CEQA criterion asks whether the project would "…conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)."
3) Design Hazards: The relevant CEQA criterion asks whether the project would "…substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)."
4) Emergency Access: The relevant CEQA criterion asks whether the project would "…result in inadequate emergency access."

15.4 Environmental Impacts

This section summarizes the environmental impacts related to transportation that would result from project implementation. Table 15-2 summarizes the potential impacts of the project on traffic and transportation.

Table 15-2. Summary of Traffic and Transportation Impacts

Impact	Alternative 1 Agoura Road AWPF	Alternative 2 Reservoir AWPF	Pipelines
Impact 15-1: Consistency with Programs, Plans, Ordinances, and Policies	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation
Impact 15.2: VMT	Less than significant impact	Less than significant impact	Less than significant impact
Impact 15.3: Design Hazards	Less than significant impact	Less than significant impact	Less than significant impact
Impact 15.4: Emergency Access	Less than significant impact with mitigation	Less than significant impact with mitigation	Less than significant impact with mitigation

15.4.1 Impact 15-1: Consistency with Programs, Plans, Ordinances, and Policies

With the mitigation described in this section, Impact 15-1 would be less than significant.

15.4.1.1 Alternative 1 Agoura Road Advanced Water Purification Facility

Alternative 1 Agoura Road AWPF is located south of Agoura Road, approximately 1,000 feet east of Flintlock Lane within Agoura Hills. Construction of the Agoura Road AWPF would generate vehicle trips associated with equipment and materials hauling and construction worker trips (employee travel to and from work sites). Peak traffic during construction is expected during the building construction phase.

There would be an estimated 10 vendor trips per day during the building construction phase. An anticipated 65 workers would be driving to and from the worksite daily during the morning and afternoon periods. Construction-related traffic would be short term, lasting approximately 28 months. Most construction-related trips (vehicle and truck trips) would occur on:

- U.S. 101
- Agoura Road
- Lindero Canyon Road
- Reyes Adobe Road

Operations would likely be approximately 6 months per year, from late fall through early spring at startup, but may operate year-round in the future. When in operation, the facility would operate 24 hours per day with a total staff of about 10 (2 or 3 operators per shift). Delivery trucks would likely account for one trip per day.

Alternative 1 Agoura Road AWPF construction activities and operations effects on transportation would not cause substantive conflicts with programs, plans, ordinances, and policies of the affected jurisdictions. The limited AWPF operations trips would not have a substantive effect on traffic operations. Construction traffic could affect travel conditions on Agoura Road, including bicycle and pedestrian travel, through the construction of the new driveway access points, construction equipment and construction workers accessing site from Agoura Road, and delivery of building materials and equipment.

As part of standard preconstruction activity, the contractor would prepare a traffic control plan so that minimum safety standards are met. However, additional proactive engagement in transportation management during construction would further prevent significant impacts. A Transportation Management Plan (TMP) should be prepared to further describe how to minimize impacts on public transit and nonmotorized travel by maintaining access to transit, bicycle, and pedestrian facilities along the project construction area or by providing an alternative route during road and lane closures. The TMP should include procedures for notifying and coordinating with affected agencies, including transit operators, in advance of construction activities. With the implementation of *Mitigation Measure 15-1, Transportation Management Plan*, impacts would be less than significant.

15.4.1.2 Alternative 2 Reservoir Advanced Water Purification Facility

Alternative 2 Reservoir AWPF is located next to Las Virgenes Reservoir, within Westlake Village. A new, paved access road would be constructed and would connect to the eastern end of Triunfo Canyon Road. Construction of the AWPF and access road would generate vehicle trips associated with equipment and materials hauling and construction worker trips (employee travel to and from work sites).

Equipment and materials hauling and construction worker trips for the Reservoir AWPF are expected to be identical to the trips for Agoura Road AWPF. Construction-related traffic would be short term, lasting approximately 28 months. Most construction-related trips (vehicle and truck trips) would occur on:

- U.S. 101
- Lindero Canyon Road
- Triunfo Canyon Road

The number of operations trips associated with the Reservoir AWPF is expected to be the same as for the Agoura Road AWPF.

Like the Agoura Road site, Alternative 2 Reservoir AWPF construction activities and operations effects on transportation would not have substantive conflicts with programs, plans, ordinances, and policies of the affected jurisdictions. The limited operations trips would not have a substantive effect on traffic operations. Although the contractor is required to prepare a traffic control plan, implementing *Mitigation Measure 15-1, Transportation Management Plan*, would make impacts less than significant.

15.4.1.3 Pipelines

The Pure Water Project would require a series of interrelated pipelines, with a total construction period of more than 2.5 years.

There would be about 20 miles of pipeline, mainly along city streets in the following areas:

- Agoura Hills: Agoura Road
- Westlake Village:
  - Agoura Road
  - Lindero Canyon Road
  - Russell Ranch Road
  - Thousand Oaks Boulevard
  - Triunfo Canyon Road
- Thousand Oaks:
  - Agoura Road
  - Conejo Boulevard
  - Conejo School Road
  - Hampshire Road

- Hill Canyon Fire Road
- Hillcrest Drive
- Lakeview Canyon Road
- Rancho Conejo Boulevard
- Thousand Oaks Boulevard
- Ventu Park Road
- Willow Lane

▪ Unincorporated Ventura County: Hill Canyon Road

It is estimated that approximately 200 feet of pipeline would be constructed per day, on average, along city streets. Most work would be conducted between the hours of 7 a.m. and 7 p.m., Monday through Saturday. However, it is possible that some work may occur at night, primarily in commercial areas, following local regulations.

Work crews would consist of approximately 14 workers. One vendor trip is expected per day. Hauling trips are expected to consist of 167 trips per 1,000 feet of pipeline. U.S. 101 and SR-23 would be used to access each section of the pipeline construction. Pipeline construction would result in lane closures on most roadways, with potential road closures on Hill Canyon Fire Road. Boulevards with a raised median may require one-way road closures with a detour.

The number of operations trips associated with the pipelines is negligible, limited to minor O&M of pump stations and other appurtenant facilities.

Pipeline construction activities and operations effects on transportation would not have substantive conflicts with programs, plans, ordinances, and policies of the affected jurisdictions. Roadway capacity changes associated with road and lane closures would be temporary, and the limited operations trips would not have a substantive effect on traffic operations. The contractor-prepared traffic control plan would meet minimum safety standards. Although the contractor is required to prepare a traffic control plan, the implementation of *Mitigation Measure 15-1, Transportation Management Plan*, would mean impacts would be less than significant.

15.4.2 Impact 15-2: Vehicle-Miles Traveled

SB 743 required the OPR to establish new CEQA Guidelines that moved away from vehicle delay and LOS and move toward more multimodal concepts "…that may include, but are not limited to, VMT, vehicle-miles traveled per capita, automobile trip generation rates, or automobile trips generated."

In 2018, Section 15064.3 was added to the CEQA Guidelines to reflect the provisions of SB 743. The section addresses both land use and transportation projects, and broadly describes the methodology, including the potential for qualitative analysis, used to assess VMT. Agencies are given "broad discretion" to select the methodology for analysis, or even apply a qualitative approach.

The *Technical Advisory on Evaluating Transportation Impacts in CEQA* (OPR 2018) addresses a variety of projects, with the recognition that the approach for evaluating impacts is necessarily project specific. As described in Section 15.2.3, except for the City of Agoura Hills, the other affected jurisdictions do not have specific guidelines for assessing VMT impacts. The relevant portion of the City of Agoura Hills' guideline is that VMT analysis is not required for a project that generates less than 110 trips per day.

Without consistent VMT thresholds in all affected jurisdictions, the *Technical Advisory on Evaluating Transportation Impacts in CEQA* (OPR 2018) is used as reference for best assessing VMT. The guidelines are focused on land development and transportation improvement projects and their long-term effects on VMT. The OPR guidance provides screening thresholds for land use projects guidelines that state that:

> *"…absent substantial evidence indicating that a project would generate a potentially significant level of VMT, or inconsistency with a Sustainable Communities Strategy or General Plan, projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less than significant transportation impact."*

This value is consistent with the one used by the City of Agoura Hills. The Pure Water Project would generate a very small number of new vehicle trips, estimated as approximately 10 trips per day during operations. Therefore, there would be a less than significant impact related to VMT.

15.4.3 Impact 15-3: Design Hazards

Construction of Alternative 1 Agoura Road AWPF has the potential to increase hazards due to anticipated road or lane closures. Although most construction would occur onsite and outside of public ROWs, construction of some of the connections would require temporary, intermittent lane closure. These temporary closures would occur intermittently throughout the duration of construction.

Construction of Alternative 2 Reservoir AWPF has the potential to increase hazards due to anticipated road or lane closures, as well as the construction of a new, paved access road to the proposed site. The access road would be built during the site preparation phase of construction and would connect to the eastern end of Triunfo Canyon Road. Although most construction would occur onsite and outside of public ROWs, construction of some of the connections would require temporary, intermittent lane closures. These temporary closures would occur intermittently throughout the duration of construction. The proposed access road would comply with state and local design standards to reduce potential design hazards. No other design features are proposed that would substantially increase hazards.

Construction of the pipelines has the potential to increase hazards due to anticipated road or lane closures. These temporary closures would occur continuously throughout the duration of construction. All applicable local, state, and federal traffic control measures would be implemented for the safety of local traffic and construction traffic. For active construction zones, traffic control, including necessary vehicle, bicycle, and pedestrian detours, would be installed pursuant to industry standards and subject to review and approval of the local agency (City of Agoura Hills, City of Westlake Village, City of Thousand Oaks, or Ventura County). No other design features are proposed that would substantially increase hazards.

Therefore, impacts related to design hazards would be less than significant.

15.4.4 Impact 15-4: Emergency Access

Construction of all project features has the potential to result in inadequate emergency access due to road and lane closures. However, the construction contractor would prepare a traffic control plan and, as required by *Mitigation Measure 15-1, Transportation Management Plan*, would minimize impacts on emergency access, including notifying emergency responders prior to construction and providing access for emergency vehicles to and around construction areas. All applicable local, state, and federal traffic control measures would be implemented for the safety of local traffic and construction traffic. Therefore, impacts related to emergency access would be less than significant with the implementation of Mitigation Measure 15-1.

15.5 Mitigation Measures

Potentially significant impacts are identified for construction activities that affect local roads. Implementation of the following mitigation measure would reduce these impacts to less than significant.

Mitigation Measure 15-1 Transportation Management Plan: A TMP will be prepared to address construction impacts on transportation facilities. The TMP will address the following:

- Potential impacts from construction activities on vehicular, transit, pedestrian, and bicycle access
- Potential impacts from construction activities on mobility, including:
  - Temporary lane and roadway, sidewalk, bicycle facility, and freeway ramp closures
  - Detours
  - Increases in traffic volumes, including:
    - Regular traffic and construction traffic
    - Construction equipment
    - Materials delivery vehicles
    - Waste and haul vehicles
    - Employee commutes
  - Construction parking
  - Emergency services (such as fire, police, ambulances)

Development of the TMP will be coordinated with the affected local jurisdictions and other potentially affected parties (such as school bus and transit operators and police, fire, and emergency services providers). The TMP will identify:

- Specific TMP strategies
- The parties responsible for implementing those strategies
- The agencies and parties the TMP strategies will be coordinated with
- Implementation timing

Specific activities in the TMP may include:

- Install traffic control devices, as specified in Caltrans' *California Manual on Uniform Traffic Control Devices* (Caltrans 2021), where needed to maintain safe driving conditions, including:
  - Use of signage to alert motorists and bicyclists of construction activities, potential hazards, and travel detours
  - Flaggers when appropriate
- Coordinate with the applicable jurisdictions, including local agencies and transit providers.
- Provide construction notification procedures for:
  - Police, public works, fire departments, and other public service providers
  - Cycling organizations, bike shops, and schools
- Inform contractors and subcontractors of work hours, modes and locations of transportation, and parking for construction workers.
- Describe the procedures for construction area evacuation in case of an emergency declared by the city, county, or other local authorities.
- Identify emergency routes available and open for public emergency personnel.
- Designate areas where nighttime construction will occur, if needed.
- Provide information for contact in case of emergency or complaint.

16. Tribal Cultural Resources

This chapter assesses potential effects on Tribal cultural resources. Tribal cultural resources include sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe. A cultural landscape that meets these criteria is a Tribal cultural resource to the extent that the landscape is geographically defined in terms of its size and scope. Historical resources, unique archaeological resources, or nonunique archaeological resources may also be Tribal cultural resources.

In addition, this chapter also identifies applicable state and local regulations; identifies potential impacts; and proposes mitigation measures, where available, to reduce potentially significant impacts on Tribal cultural resources.

16.1 Existing Setting

This section describes the project's existing setting in regard to Tribal cultural resources.

16.1.1 Background Information

Section 6.1, Cultural and Paleontological Resources provides a discussion about the prehistoric context and ethnohistoric setting of the project site, and relevant records search information.

16.1.2 Tribal Outreach

The JPA requested a Sacred Lands File (SLF) search and Native American contact list from the Native American Heritage Commission (NAHC). On December 2, 2021, the NAHC responded with positive results, indicating the Native American resources are present in the project environs, and provided the contact information.

Notifications letters were sent via email to all 14 individuals from 13 Tribes in the NAHC contact list on December 16 and 20, 2021. One response was received on December 21, 2021, by the Fernandeño Tataviam Band of Mission Indians requesting an AB 52 consultation meeting with the lead agency. The Band requested copies of cultural and biological resources reports that may be prepared for the project, as well. On December 22, 2021, JPA representatives responded back to the Band, noting the cultural and biological resources information is still being prepared and set up a meeting with them to discuss the project in more detail.

Another response was received on December 27, 2021, from the Gabrieliño Tongva Indians of California Tribal Council and included information about:

- The Tribe's history
- Their preferred recovery and reburial procedures
- Their procedures for treatment and disposition of human remains and funerary objects
- Their monitoring methodologies

The Tribe also requested to be present during ground-disturbing activities. On January 6, 2022, the JPA responded, acknowledging receipt of the information, and asked whether they would like to have a meeting to discuss the project in more detail.

On January 19, 2022, an AB 52 meeting was held with Fernandeño Tataviam Band of Mission Indians and JPA representatives. The meeting was held via teleconference to:

- Provide additional information to the Band regarding the project
- Continue government-to-government consultation between the Band and the JPA regarding Tribal cultural resources within or near the Pure Water Project area
- Share questions, comments, and concerns

During the meeting, the JPA provided an overview of the main project features and updated the Band on the status of the technical studies, which included preparation of this Program EIR, completion of CHRIS records (State of California 2022b) and NAHC SLF searches, and preparation of a plan to complete archaeological surveys. The Band discussed the area's past land uses by Native Americans; types of cultural resources that may be present, particularly along major roadways in the area; and use of various mitigation measures.

Following the meeting, the JPA provided maps that included locations of project features and requested the Band provide information on constraints or resources of concern.

Appendix E provides copies of correspondence with the Fernandeño Tataviam Band of Mission Indians and the Gabrieliño Tongva Indians of California Tribal Council.

16.2 Regulatory Framework

This section discusses the regulatory framework related to potential Tribal cultural resources in the project area.

16.2.1 California Assembly Bill 52

AB 52 requires lead agencies to establish a meaningful consultation process with California Native American Tribal Governments at the earliest possible point in the CEQA review process. AB 52 also seeks to recognize that California Native American prehistoric, historic, archaeological, cultural, and sacred places are essential elements in Tribal cultural traditions, heritages, and identities. Tribes have expertise with regard to their Tribal history and practices that concern the Tribal cultural resources they are traditionally and culturally affiliated with. Tribal knowledge about the land and Tribal cultural resources at issue should be included in environmental assessments for projects that may have a significant impact on those resources.

PRC Section 21074(a)(1) and (2) defines Tribal cultural resources as "…sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe…" that are either included or determined to be eligible for inclusion in the CRHR, or included in a local register of historical resources, or a resource that is determined to be a Tribal cultural resource by a lead agency, in its discretion and supported by substantial evidence.

PRC Section 21080.3.2(a) identifies the following as potential consultation discussion topics:

- The type of environmental review necessary
- The significance of Tribal cultural resources
- The significance of the project's impacts on the Tribal cultural resources
- Project alternatives or appropriate measures for preservation or mitigation

Consultation is considered concluded when either: (1) the parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a Tribal cultural resource; or (2) a party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached (PRC Section 21080.3.2(b)).

If a California Native American Tribe has requested consultation pursuant to Section 21080.3.1 and has failed to provide comments to the lead agency, or otherwise failed to engage in the consultation process, or if the lead agency has complied with Section 21080.3.1(d) and the California Native American Tribe has failed to request consultation within 30 days, the lead agency may certify an EIR or adopt a Mitigated Negative Declaration (PRC Section 21082.3(d)(2) and (3)).

PRC Section 21082.3(c)(1) states that any information, including the location, description, and use of the Tribal cultural resources, that is submitted by a California Native American Tribe during the environmental review process will not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public without the prior consent of the Tribe that provided the information. If the lead agency publishes any information submitted by a California Native American Tribe during the consultation or environmental review process, that information will be published in a confidential appendix to the environmental document unless the Tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public.

16.3 Assessment Methods and Thresholds of Significance

The analysis of Tribal cultural resources in this section is based on the following:

- Results of the NAHC SLF search
- Results of the CHRIS records search (File 23394.9454)
- Prehistoric context and ethnohistoric setting of the project area, as described in Chapter 6
- Coordination with Native American groups and individuals

Impacts on Tribal cultural resources may occur if a substantial adverse change occurs in the significance of a Tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, or 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:

- Listed or eligible for listing in the CRHR, or in a local register of historical resources as defined in PRC Section 5020.1 (k), or
- 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 PRC Section 5024.1, the lead agency will consider the significance of the resource to a California Native American Tribe

16.4 Environmental Impacts

This section describes the potential environmental impacts related to Tribal cultural resources as a result of the project.

16.4.1 Overview

Potential impacts are evaluated for the project in accordance with the assessment methods and standards of significance. Table 16-1 summarizes the potential impacts to Tribal cultural resources.

Table 16-1. Summary of Tribal Cultural Resources Impacts

Impact	Alternative 1 Agoura Road AWPF	Alternative 2 Reservoir AWPF	Pipelines
Impact 16-1Change to a Tribal Cultural Resource	Less than significant with mitigation	Less than significant with mitigation	Less than significant with mitigation

16.4.2 Impact 16-1: Change to a Tribal Cultural Resource

With mitigations described in this section, Impact 16-1 would be less than significant.

16.4.2.1 Alternative 1 Agoura Road Advanced Water Purification Facility

The archival search conducted in the CHRIS SCCIC, at California State University, Fullerton on February 18, 2022 (Record Search File 23394.9454), identified one cultural resource within the Alternative 1 Agoura Road AWPF site. The identified site P-19-000042 is a lithic scatter that intersects the southern portion of the project area.

This resource was not relocated during the field survey. No Tribal cultural resources were identified within the site as part of AB 52 consultation for the project. Therefore, no impacts to Tribal cultural resources are expected to occur within at the Alterative 1 Agoura Road AWPF site.

In the event a prehistoric resource is identified during construction activities*, Mitigation Measure 6-1b, Halt construction if archaeological resources are discovered* (as described in Chapter 6) would allow coordination with local Native American Tribes to determine whether the discovery qualifies as a Tribal cultural resource and whether implementation of proposed treatments is required.

In addition, the construction contractor is required to follow California Health and Safety Code Section 7050.5(b), which specifies protocols if human remains are discovered.

With implementation of Mitigation Measure 6-1b, impacts of Alternative 1 Agoura Road AWPF on Tribal cultural resources would be less than significant.

16.4.2.2 Alternative 2 Reservoir Advanced Water Purification Facility

The CHRIS records search conducted on February 18, 2022 (Record Search File 23394.9454), identified one cultural resource within the Alternative 2 Reservoir AWPF site. P-19-001791, a lithic scatter, intersects the central northern edge of the site.

The resource was not relocated during the field survey. No Tribal cultural resources were identified within the Alternative 2 Reservoir AWPF as part of AB 52 consultation for the project. Therefore, no impacts to Tribal cultural resources are expected to occur within the Alternative 2 Reservoir AWPF site.

In the event a prehistoric resource is identified during construction activities, *Mitigation Measure 6-1b, Halt construction if archaeological resources are discovered* (as described in Chapter 6) would allow coordination with local Native American Tribes to determine whether the discovery qualifies as a Tribal cultural resource and whether implementation of proposed treatments are required.

In addition, the construction contractor is required to follow California Health and Safety Code Section 7050.5(b), which specifies protocols if human remains are discovered.

With implementation of Mitigation Measure 6-1b, impacts from of Alternative 2 Reservoir AWPF on Tribal cultural resources would be less than significant.

16.4.2.3 Pipeline Alignment Options

The archival search conducted in the CHRIS SCCIC, at California State University, Fullerton on February 18, 2022 (Record Search File 23394.9454), identified 10 cultural resources within the pipeline alignment footprints, consisting of 8 prehistoric resources, 1 historic-era resource, and 1 multicomponent resource (consisting of prehistoric and historic-era resources).

None of the resources were relocated during the survey. Therefore, no impacts to Tribal cultural resources are expected to occur within the pipeline alignment options footprint.

In the event a prehistoric resource is identified during construction activities, *Mitigation Measure 6-1b, Halt construction if archaeological resources are discovered* (as described in Chapter 6) would allow coordination with local Native American Tribes to determine whether the discovery qualifies as a Tribal cultural resource and whether implementation of proposed treatments is required.

In addition, the construction contractor is required to follow California Health and Safety Code Section 7050.5(b), which specifies protocols if human remains are discovered.

With implementation of Mitigation Measure 6-1b, impacts from the pipelines on Tribal cultural resources would be less than significant.

16.5 Mitigation Measures

Pure Water Project impacts to Tribal cultural resources are potentially significant. Implementation of the following mitigation measure would reduce impacts to less than significant.

Mitigation Measure 6-1b, Halt construction if archaeological resources are discovered. In the event of the discovery of archaeological resources, the construction contractor will be responsible for halting construction activities, notifying the lead agency, and retaining a qualified archaeologist. The archaeologist will be required to evaluate the uniqueness of the find, contact local Native American Tribes and historical organizations, and recommend a course of action. The construction contractor will receive training regarding the identification of cultural resources by a qualified archaeologist prior to the start of the construction activities.

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17. Wildfire

This chapter addresses the wildfire impacts associated with construction and operation of the project. Included in this chapter is a description of the wildfire history and conditions in the project area, a summary of applicable regulations related to wildfire, and an evaluation of potential project impacts on wildfire.

17.1 Existing Setting

This section describes the project area setting as related to wildfire risk.

17.1.1 Fire Environment

Fire environment is the surrounding conditions, influences, and modifying forces that determine the behavior of a fire. Fire environments are dynamic systems that incorporate various environmental factors and site conditions. The three major components of a fire environment are fuels, climate, and topography, with the interaction of each component determining the potential characteristics and behavior of a fire.

The Southern California climate generally provides for ideal wildfire conditions. Warm and dry summers result in dry vegetation in many undeveloped areas. As the summer season progresses into fall, high-pressure weather systems tend to develop over the Great Basin, which result in warm and dry offshore winds from the east (Santa Ana Winds). Dry vegetation, in combination with warm and dry wind, form a potent fire environment. Climate change is exacerbating these conditions and lengthening the fire season.

17.1.2 Responsibility Areas and Fire Hazard Severity Zones

Pursuant to California PRC Sections 4125–4137, Responsibility for Fire Protection, State Responsibility Areas (SRAs) are areas where the State of California is financially responsible for the prevention and suppression of wildfires. SRAs do not include lands within city boundaries or in federal ownership. Local Responsibility Areas (LRAs) include incorporated cities and urban regions where the local government is responsible for wildfire protection (State Board of Forestry and Fire Protection 2018). Fire services in LRAs are typically provided by local agencies, such as city and county fire departments.

For SRAs, the California Department of Forestry and Fire Protection (CAL FIRE) maps Fire Hazard Severity Zones based on factors such as fuel, slope, and fire weather to identify the degree of fire hazard throughout California (for example, moderate, high, or very high). Pursuant to the California Government Code (Sections 51175–51189 Moderate, High Fire Hazard Severity Zone [HFHSZ], and Very High Fire Hazard Severity Zones [VHFHSZs]), CAL FIRE also provides recommendations for Fire Hazard Severity Zones within LRAs, but the responsibility for mapping LRAs is the local jurisdiction responsible for fire management and control within the LRA. Fire Hazard Severity Zones do not predict when or where a wildfire will occur; however, they do identify areas where wildfire hazards could be more severe.

Figure 17-1 shows the Fire Hazard Severity Zones and their respective responsible jurisdiction as they relate to the project. Much of the project is located in Local LRA VHFHSZ. The urban areas of incorporated cities of Agoura Hills, Westlake Village, and Thousand Oaks are within LRA jurisdiction but do not include fire hazard areas. The portion of concentrate pipeline along Hill Canyon Road in unincorporated Ventura County is located in SRA VHFHSZ and HFHSZ (CAL FIRE 2022a).

17.1.3 Site Characteristics

The Pure Water Project includes project activities in several areas, as described in this section.

17.1.3.1 Alternative 1 Agoura Road Advanced Water Purification Facility

The Alternative 1 Agoura Road AWPF would be located on vacant, undeveloped land on the southern side of Agoura Road, approximately 500 feet east of Flintlock Lane, within Agoura Hills. The property is hilly and generally slopes to lower elevation toward Agoura Road to the north. Various small hills are present, along with rocky outcroppings along the southern perimeter. Low-lying grassy vegetation, along with pockets of larger trees, are present.

The adjacent lands to the south and east share a similarly undeveloped character, while the land to the west is developed with residential uses, and land to the north is developed with roadway and business uses.

The AWPF site is within the wildland-urban interface, which is the zone between developed and undeveloped areas (Esri 2022). The significant regional geographic feature in the area is the Santa Monica Mountains to the south, including nearby Ladyface Mountain.

17.1.3.2 Alternative 2 Reservoir Advanced Water Purification Facility

Located near the eastern shoreline of Las Virgenes Reservoir, the Alternative 2 Reservoir AWPF site is undeveloped, including the access road from Triunfo Canyon Road. The site is hilly and generally slopes to lower elevation toward Las Virgenes Reservoir to the west. Low-lying grassy vegetation, along with pockets of larger trees, are present. The adjacent lands to the north, east, and south are undeveloped, while the land to the west contains Las Virgenes Reservoir. A residential neighborhood is located approximately 850 feet to the north.

The site is partially within the wildland-urban interface (Esri 2022). The significant regional geographic feature in the area is the Santa Monica Mountains to the south.

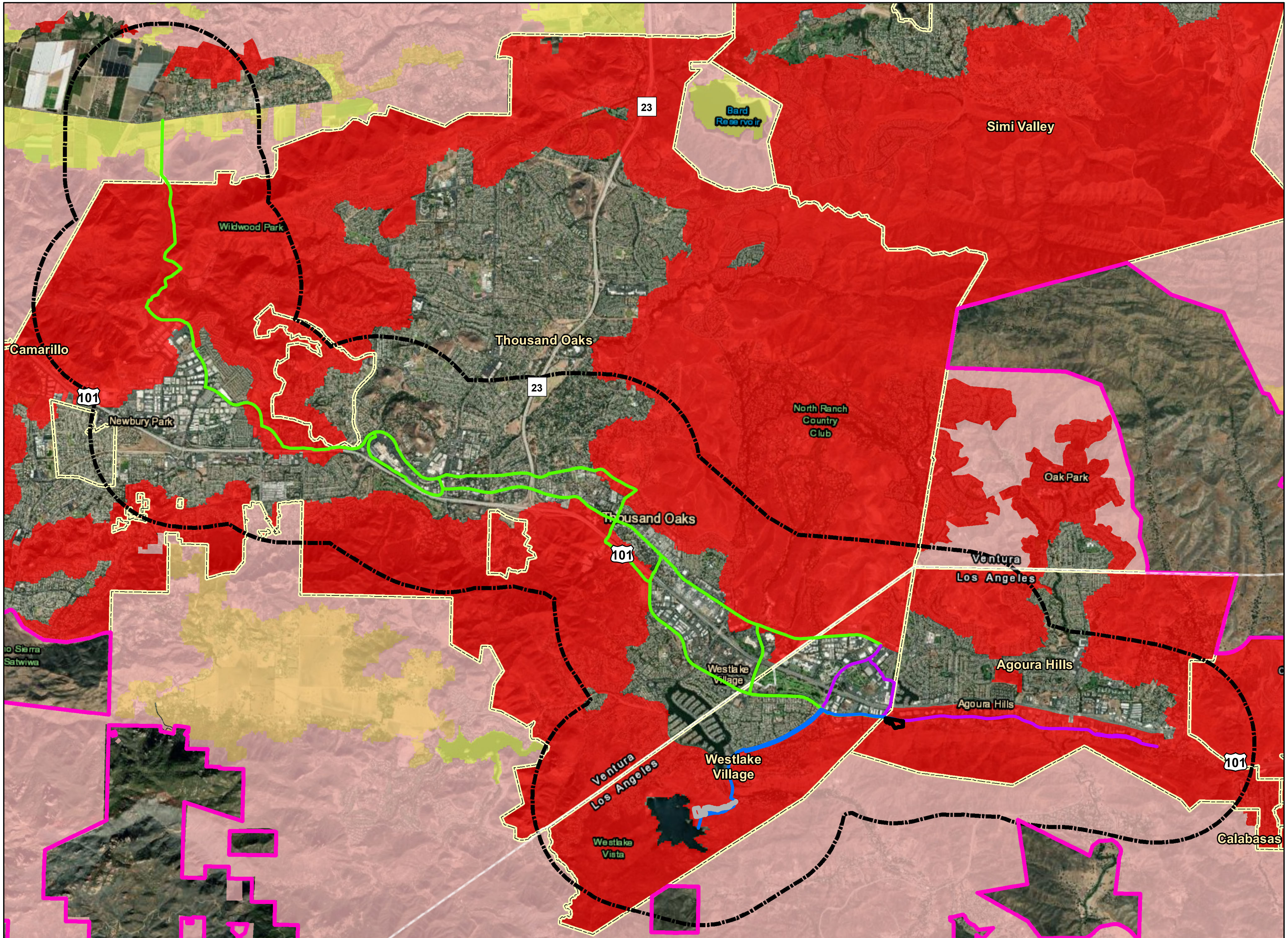
17.1.3.3 Pipelines

Pipelines associated with the project would be located underground within existing roadways. No site characteristics related to the fire setting are applicable. A pump station would be required under Alternative 2 Reservoir AWPF, but neither of the optional sites are within a wildland-urban interface (Esri 2022).

17.1.4 Wildfire History

Fire history information provides for an understanding of fire frequency, fire type, most vulnerable locations, and significant ignition sources. The fire history data for the project area are based on CAL FIRE’s California Statewide Fire Map that shows fires through 1950, and Fire Resource Assessment Program database that assesses the amount and extent of California's forests and rangelands, analyzes their conditions, and identifies alternative management and policy guidelines (CAL FIRE 2022b). These tools show there is significant wildfire potential in the region and the potential for the proposed project site to be subject to occasional wildfire encroachment, most likely originating from the open space areas near the proposed project site.

According to data available from CAL FIRE’s California Statewide Fire Map, there have been 21 fires within a half-mile radius of project facilities since 2005, as shown on Figure 17-2. Of these, the largest include the Hill Fire of 2018 and the Woolsey Fire of 2018. The Hill Fire of 2018 burned from November 8, 2018, through January 4, 2019, covered an area of 4,531 acres, and burned through the proposed project site within Thousand Oaks and unincorporated Ventura County. As of February 2022, the cause of the fire was still under investigation.



Legend

- Concentrate Alignment Options
- Purified Water Alignment Options
- Source Water Alignment Options
- Alternative 1 Agoura Road AWPF
- Alternative 2 Reservoir AWPF
- 1-Mile Radius

Fire Hazard Severity Zone in Local Responsibility Areas

- Very High

Fire Hazard Severity Zone in State Responsibility Areas

- Very High
- High
- Moderate
- Federal Responsibility Area
- City Boundary

Sources:
Cal Fire, 2022; ESRI World Topo Map;
ESRI World Street Map;

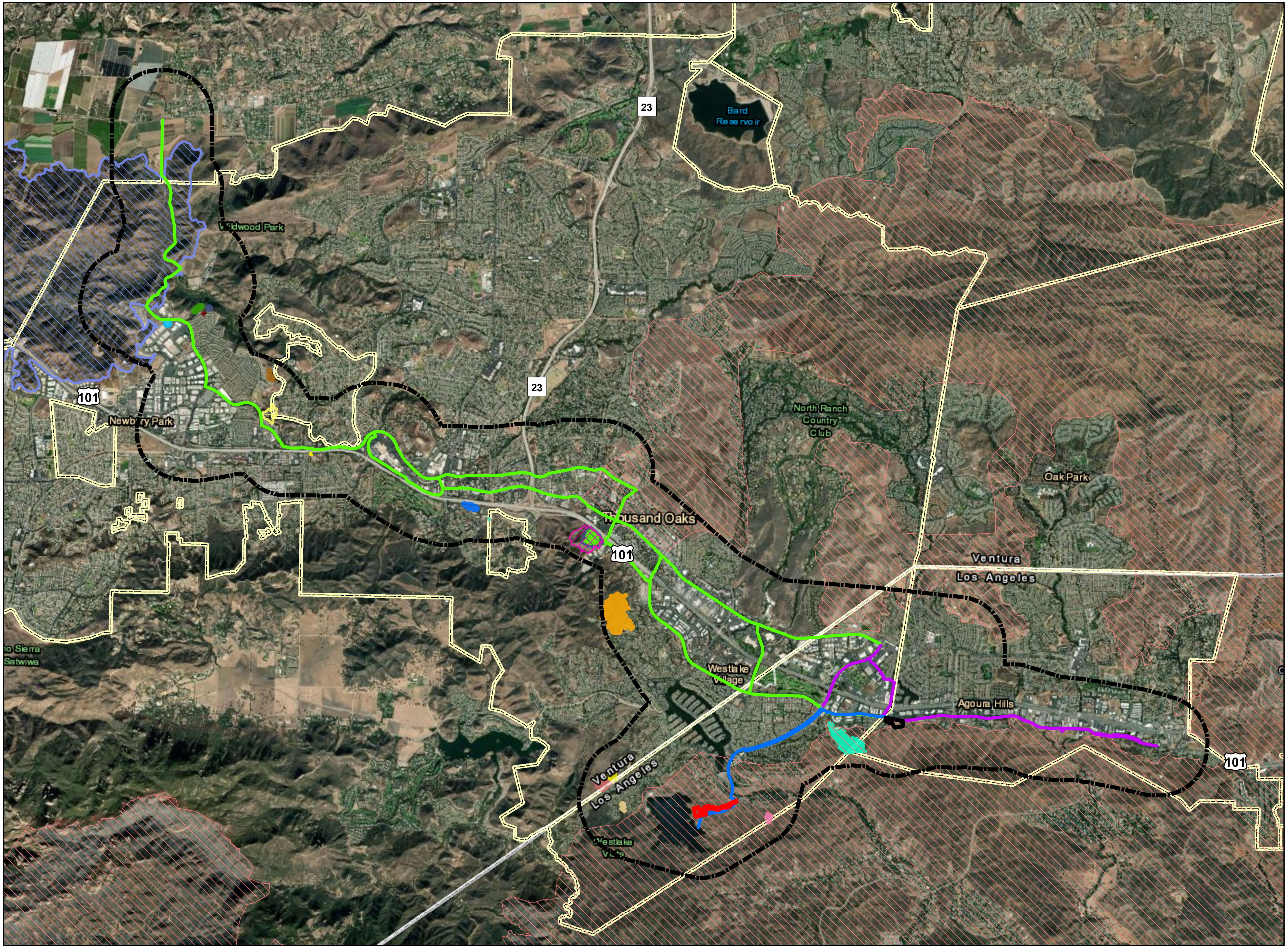
0 0.5 1 2
Miles
1 inch = 1 miles

FIGURE 17-1

Fire Hazard Severity Zones

Pure Water Project Las Virgenes-Triunfo

Jacobs



Sources:
Cal Fire, 2022; ESRI World Topo Map;
ESRI World Street Map;

0 0.5 1 2
Miles
1 inch = 1 miles

FIGURE 17-2

Historic Fires

Pure Water Project Las Virgenes-Triunfo

Jacobs

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The Woolsey Fire of 2018 burned simultaneously with the Hill Fire, from November 8, 2018, through January 4, 2019, and covered an area of 96,949 acres, impacting 1,600 structures. The fire was responsible for the deaths of three people. The Woolsey Fire burned within multiple project sites, including the Agoura Road AWPF and Reservoir AWPF. The Woolsey Fire was caused by electrical and communication equipment owned by SoCal Edison (California Department of Justice 2021). The Woolsey Fire is the last wildfire to burn through the project area.

17.1.5 Vegetation (Fuels)

Vegetation communities at the Alternative 1 Agoura Road AWPF and Alternative 2 Reservoir AWPF sites are described in Chapter 5, Biological Resources. Vegetation present at the two sites can be summarized as follows:

- Alternative 1 Agoura Road AWPF: The site is dominated by seminatural grassland communities, such as wild oats and annual brome grasslands and upland mustard and star thistle fields (Rincon 2022). Other vegetation communities include valley oak woodland.
- Alternative 2 Reservoir AWPF: The site includes natural communities, such as deerweed scrub shrubland, clustered tarweed fields, and California buckwheat scrub shrubland; and seminatural grassland communities, such as upload mustard and star thistle fields and wild oats and annual brome grasslands. Other vegetation communities include scrub oak chaparral and valley oak woodland (Rincon 2022).

17.2 Regulatory Framework

This section describes the state and local wildfire regulatory framework applicable to the project area. There are no federal regulations related to wildfire applicable to the project.

17.2.1 State

This section describes the state wildfire regulatory framework applicable to the project area.

17.2.1.1 California Fire Code (Title 24 California Code of Regulations Part 9)

The California Fire Code (CFC) is found in 24 CCR 9, as a subset of the CBC. The CFC combines the International Fire Code with amendments necessary to address California's unique needs. The CFC establishes regulations to safeguard against the hazards of fire, explosion, or dangerous conditions in new and existing buildings, structures, and premises.

The CFC also establishes requirements intended to provide safety for and assistance to firefighters and emergency responders during emergency operations. The provisions of the CFC apply to the following activities for every building or structure throughout California:

- Alteration
- Construction
- Demolition
- Enlargement
- Equipment
- Location
- Maintenance
- Movement
- Removal
- Repair
- Replacement
- Use and occupancy

The CFC includes regulations regarding:

- Fire-resistance-rated construction
- Fire protection systems, such as alarm and sprinkler systems
- Fire service features, such as:
  - Fire apparatus access roads
  - Means of egress
  - Fire safety during construction and demolition
  - Wildland-urban interface areas

Typical fire safety requirements of the CFC include:

- Installation of sprinklers in all high-rise buildings
- Establishment of fire-resistance standards for fire doors, building materials, and particular types of construction
- Clearance of debris and vegetation within a prescribed distance from occupied structures in wildfire hazard areas

The CFC applies to all occupancies in California, except where more stringent standards have been adopted by local agencies.

17.2.1.2 California Department of Industrial Relations, Division of Occupational Safety and Health Administration Regulations (Title 8 California Code of Regulations)

Cal/OSHA has primary responsibility for developing and enforcing workplace safety regulations in California. Because California has a federally approved OSHA program, it is required to adopt regulations that are at least as stringent as those found in 29 CFR. Cal/OSHA standards are generally more stringent than federal regulations.

The use of hazardous materials in the workplace requires:

- Employee safety training
- Safety equipment
- Accident and illness prevention programs
- Hazardous substance exposure warnings
- Emergency action and fire prevention plan preparation

17.2.1.3 California Public Resources Code

The PRC was established in 1939 by the California Code Commission. The PRC contains law relating to natural resources; the conservation, use, and supervision of those resources; along with law relating to mines and mining, oil and gas, and forestry. The following sections of the PRC are relevant to the Pure Water Project:

PRC 4427

> *During any time of year when burning permits are required in an area pursuant to this article, no person will use or operate any motor, engine, boiler, stationary equipment, welding equipment, cutting torches, tarpots, or grinding devices from which a spark, fire, or flame may originate, and that is located on or near any forest-covered, brush-covered, or grass-covered land, without doing both of the following:*
>
> - *First clear away all flammable material, including snags, from the area around such operation for a distance of 10 feet.*

- *Maintain one serviceable round-point shovel with an overall length of not less than 46 inches and one backpack pump water-type fire extinguisher fully equipped and ready for use at the immediate area during the operation.*

This section does not apply to portable power saws and other portable tools powered by a gasoline-fueled internal combustion engine.

PRC 4428

No person, except any member of an emergency crew or the driver or owner of any service vehicle owned or operated by or for, or operated under contract with, a publicly or privately owned utility, that is used in the construction, operation, removal, or repair of the property or facilities of such utility when engaged in emergency operations, will use or operate any vehicle, machine, tool, or equipment powered by an internal combustion engine operated on hydrocarbon fuels, in any industrial operation located on or near any forest-covered, brush-covered, or grass-covered land between April 1 and December 1 of any year, or at any other time when ground litter and vegetation will sustain combustion permitting the spread of fire, without providing and maintaining for firefighting purposes only, suitable and serviceable tools in the amounts, manner, and location prescribed in this section.

Other requirements include:

- *On any such operation, a sealed box of tools will be located within the operating area, at a point accessible in the event of fire. This fire toolbox will contain:*
  - *One backpack pump-type fire extinguisher filled with water*
  - *Two axes*
  - *Two McLeod fire tools*
  - *Enough shovels so that each employee at the operation can be equipped to fight fire*
- *One or more serviceable chainsaws of 3.5 or more horsepower (hp), with a cutting bar 20 inches in length or longer, will be immediately available within the operating area. Alternatively, a full set of timber-felling tools will be located in the fire toolbox, including:*
  - *One crosscut falling saw 6 feet in length*
  - *One double-bit ax with a 36-inch handle*
  - *One sledge hammer or maul, with a head weight of 6 pounds or more, and handle length of 32 inches or more*
  - *Not less than two falling wedges*
- *Each passenger vehicle used in such operation will be equipped with one shovel and one ax; and any other vehicle used in the operation will be equipped with one shovel. Each tractor used in such an operation will be equipped with one shovel.*

PRC 4431

During any time of the year when burning permits are required in an area pursuant to this article, no person will use or operate. or cause to be operated in the area, any portable saw, auger, drill, tamper, or other portable tool powered by a gasoline-fueled internal combustion engine on or near any forest-covered, brush-covered, or grass-covered land, within 25 feet of any flammable material, without providing and maintaining at the immediate locations of use or operation of the saw or tool, for firefighting purposes, one serviceable round-point shovel, with an overall length of not less than 46 inches, or one serviceable fire extinguisher.

The required fire tools will at no time be farther from the point of operation of the power saw or tool than 25 feet with unrestricted access for the operator from the point of operation.

PRC 4442

Requirements from this PRC section applicable to wildfire in the project area include:

- *Except as otherwise provided in this section, no person will use, operate, or allow to be used or operated, any internal combustion engine that uses hydrocarbon fuels on any forest-covered, brush-covered, or grass-covered land, unless the engine is equipped with a spark arrester, as defined in subdivision (c), maintained in effective working order. Engines constructed, equipped, and maintained for the prevention of fire pursuant to Section 4443 are acceptable.*
- *Spark arresters affixed to the exhaust system of engines or vehicles subject to this section will not be placed or mounted in such a manner as to allow flames or heat from the exhaust system to ignite any flammable material.*
- *A spark arrester is a device constructed of nonflammable materials specifically for the purpose of removing and retaining carbon and other flammable particles over 0.0232 of an inch in size from the exhaust flow of an internal combustion engine that uses hydrocarbon fuels, or that is qualified and rated by the U.S. Forest Service.*
- *Engines used to provide motive power for trucks, truck tractors, buses, and passenger vehicles, except motorcycles, are not subject to this section if the exhaust system is equipped with a muffler, as defined in the Vehicle Code.*
- *Turbocharged engines are not subject to this section if all exhausted gases pass through the rotating turbine wheel, there is no exhaust bypass to the atmosphere, and the turbocharger is in effective mechanical condition.*
- *Motor vehicles, when being operated in an organized racing or competitive event upon a closed course, are not subject to this section if the event is conducted under the auspices of a recognized sanctioning body and by permit issued by the fire protection authority having jurisdiction.*

17.2.1.4 California Building Code

The CBC includes regulations that are consistent with nationally recognized standards of good practice, intended to facilitate protection of life and property. Among other things, CBC regulations address:

- Mitigation of the hazards of fire explosion
- Management and control of the storage, handling, and use of hazardous materials and devices
- Mitigation of conditions considered hazardous to life or property in the use or occupancy of buildings
- Provisions to assist emergency response personnel

Chapter 7 of the CBC details the materials, systems, and assemblies used in the exterior design and construction of new buildings located within a Wildland-Urban Interface Fire Area, as defined in Section 702A. This geographical area is identified by the areas of a Fire Hazard Severity Zones in accordance with PRC Sections 4201 through 4204 and Government Code Sections 51175 through 51189, or other areas designated by the enforcing agency to be at a significant risk from wildfires.

Fire Hazard Severity Zones are geographical areas classified as very high, high, or moderate in SRAs or in LRAs as VHFHSZs. Fire Hazard Severity Zones, which are determined based on factors such as fuel, slope, and fire weather, do not predict when or where a wildfire will occur, but they do identify the degree of fire hazard (very high, high, or moderate).

The CBC details the materials, systems, and assemblies used for structural fire resistance and fire-resistance-rated construction separation of adjacent spaces to safeguard against the spread of fire and smoke within a building and the spread of fire to or from buildings.

17.2.2 Local

This section describes the local regulations relevant to fire in the project area.

17.2.2.1 County of Los Angeles Operational Area Emergency Response Plan

The *Operational Area Emergency Response Plan* establishes a coordinated emergency management system, which includes prevention, protection, response, recovery, and mitigation within the operational areas, which includes Los Angeles County and all 88 cities within the county (Los Angeles County 2012). The purpose of the plan is to:

- Establish Operational Area emergency organization
- Establish authorities and responsibilities of the Operational Area emergency organization
- Identify mutual aid processes during emergencies to support effective coordination of needed resources

This plan is applicable to most of the project area, including the Alternative 1 Agoura Road AWPF and Alternative 2 Reservoir AWPF sites.

17.2.2.2 County of Los Angeles All-Hazards Mitigation Plan

The *2020 County of Los Angeles All-Hazards Mitigation Plan* was developed to assess risks posed by natural hazards and to provide a mitigation action plan for reducing the risks in unincorporated Los Angeles County (Los Angeles County 2020b). The plan's hazard identification and risk assessment include the following subjects:

- Climate change
- Dam failure
- Earthquake
- Flood
- Landslide
- Tsunami
- Wildfire

Wildfire mitigation strategies are identified in Chapter 5, and include:

- Red flag warning public outreach
- A vegetation management program
- Fireproof coating of critical assets
- Auxiliary power for critical facilities
- A brush clearance program
- A wildland-urban interface ordinance
- Community wildfire protection plans

This plan is applicable to most of the project area, including the Alternative 1 Agoura Road AWPF and Alternative 2 Reservoir AWPF sites.

17.2.2.3 Las Virgenes-Malibu Council of Governments 2018 Multi-Jurisdictional Hazards Mitigation Plan

The Las Virgenes-Malibu COG comprises the cities of Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village. The Las Virgenes-Malibu COG was voluntarily established by its members under a Joint Powers Agreement to provide a vehicle for members to engage in regional and cooperative planning and coordination of government services and responsibilities (Las Virgenes-Malibu COG 2018).

The Las Virgenes-Malibu COG also provides a local area organization for the coordination of regional projects and studies funded by federal, state, and local governments. In 2005, the Las Virgenes-Malibu COG chose to develop the *Multi-Jurisdictional Hazard Mitigation Plan* to coordinate efforts and resources (Las Virgenes-Malibu COG 2018). The plan has been updated several times, most recently in 2018. The plan contains four major goals:

1. To protect life, property, and environment
2. Public awareness
3. Partnerships and implementation
4. Emergency management

This plan is applicable to the project components located within the Agoura Hills and Westlake Village, including the Alternative 1 Agoura Road AWPF and Alternative 2 Reservoir AWPF sites.

17.2.2.4 Ventura County Operational Area Emergency Operations Plan

The Ventura County Sheriff's Office of Emergency Services is in the process of updating the Ventura County Emergency Operations Plan. This plan addresses the County's planned response to extraordinary emergency situations and natural, human-caused, or technological disasters and requires reviewing and updating every 3 years. Ventura County published a draft of the updated plan for public review and comment in 2021. The plan includes information on emergency management organization and responsibilities, operational areas, and evacuation procedures (Ventura County 2021). The plan includes:

- Purpose, situation, and assumptions
- Concept of operations, including organizational structures, roles and responsibilities, administration and logistics, and policies and protocols for providing emergency support
- Protocols for plan development and maintenance
- Authorities and references
- Response and short-term recovery activities
- Procedures to use in all emergencies and disasters
- Pre-incident and post-incident public awareness, and education and communications plans and protocols

Although wildfire is not expressly identified as a hazard or threat within the document, emergency operations and procedures may still be applicable. This plan is applicable to the portion of the concentrate pipeline within unincorporated Ventura County.

17.2.2.5 Ventura County Hazard Mitigation Plan

The overarching goal of the *2010 Ventura County Hazard Mitigation Plan* is to inventory potential hazards that Ventura County is most vulnerable to; assess risks to the County's community members, resources, buildings, and critical facilities; and develop mitigation strategies to reduce the risk of exposure and allow a swift, equitable, and organized recovery should a disaster occur (Ventura County 2010b). The plan's hazard identification includes the following subjects:

- Agriculture biological hazards
- Earthquake
- Flooding: Dam failure
- Flooding: Levee failure
- Flooding: Riverine and coastal
- Geological
- Post-fire debris flow
- Severe winter storm
- Tsunami
- Wildfire

Wildfire mitigation strategies are identified in Chapter 7, and include a vegetation management program, a fuel modification program, and a hazards fuel treatment program. Additionally, evacuation systems are discussed in Chapter 5. This plan is applicable to the concentrate pipeline within unincorporated Ventura County.

17.3 Assessment Methods and Thresholds of Significance

The assessment of potential impacts was based on Appendix G of the CEQA Guidelines. Impacts on wildfire may occur if the project is located in or near SRAs or lands classified as VHFHSZs and would result in the following:

- Substantial impairment of an adopted emergency response plan or emergency evacuation plan
- Exacerbation of wildfire risks, thereby exposing project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire due to slope, prevailing winds, and other factors
- Requirements for 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
- Exposure to 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

According to Section 15002(g) of the CEQA Guidelines, "…a significant effect on the environment is defined as a substantial adverse change in the physical conditions which exist in the area affected by the proposed project." As stated in Section 15064(b) of the CEQA Guidelines, the significance of an activity may vary with the setting. Per Appendix G of the CEQA Guidelines, the potential significance of project impacts on wildfire were evaluated for each of the criteria listed in Table 17-1.

17.4 Environmental Impacts

This section describes the project's environmental impacts related to fires.

17.4.1 Overview

Table 17-1 summarizes the potential impacts from wildfire risks.

Table 17-1. Summary of Impacts from Wildfire Risks

Impact	Alternative 1 Agoura Road AWPF	Alternative 1 Reservoir AWPF	Pipelines
Impact 17-1: Emergency Response or Emergency Evacuation Plan	No impact	No impact	Less than significant impact
Impact 17-2: Wildfire Risks	Less than significant impact	Less than significant impact	Less than significant impact
Impact 17-3: Associated Infrastructure	Less than significant impact	Less than significant impact	Less than significant impact
Impact 17-4: Runoff, Slope Instability, or Drainage Changes	Less than significant impact	Less than significant impact	Less than significant impact

17.4.2 Impact 17-1: Emergency Response or Emergency Evacuation Plan

The effects of Pure Water Project infrastructure on wildfire risk would be expected to have no impact as discussed in this section. The project is located in areas identified by CAL FIRE as LRAs and SRAs. Within the LRA, the fire hazard severity is very high (VHFHSZ). Within the SRAs, the fire hazard severity is both very high and moderate. As discussed in Chapter 15, Transportation, project construction involves underground pipelines that would be placed below existing roadways, requiring temporary lane closures.

Traffic would continue to proceed through construction zones because full road closures are not anticipated. Onsite construction personnel, such as traffic flaggers, would prioritize and expedite emergency vehicles through the construction zone. This would be included in standard traffic control plans and in the required *Mitigation Measure 15-1, Transportation Management Plan*.

The project would be subject to encroachment permits and associated emergency vehicle access requirements for work within roadways. In the event of an emergency requiring public evacuation through local roadways under construction, construction personnel would maximize the functioning roadway area for public use. For these reasons, impacts from pipeline construction would be less than significant.

During operation of the project, no roadways would be impacted. Therefore, evacuation procedures identified in adopted emergency response plans and emergency evacuation plans would not be substantially impaired.

Construction of Alternative 1 Agoura Road AWPF and Alternative 2 Reservoir AWPF would modify the existing vegetation and fuels within the sites, resulting in less vegetation and fuel, as compared to the existing natural open space. During operation of Alternative 1 Agoura Road AWPF and Alternative 2 Reservoir AWPF, landscaping and vegetation clearance would occur, and the project would comply with vegetation and fuel requirements within adopted emergency response plans. Therefore, Alternative 1 Agoura Road AWPF and Alternative 2 Reservoir AWPF project would have no impact on adopted emergency response plans and emergency evacuations plans.

17.4.3 Impact 17-2: Wildfire Risks

The effects of Pure Water Project infrastructure on wildfire risk would be expected to be less than significant as discussed in this section.

The slopes surrounding the Alternative 1 Agoura Hills AWPF and Alternative 2 Reservoir AWPF sites and along portions of the pipelines are susceptible to prevailing winds. Brush and grassland habitats within the project site are highly flammable and have burned in recent wildfires. During construction, equipment and onsite diesel fuel could pose a risk to wildfire with possible ignition sources, such as internal combustion engines; gasoline-powered tools; and equipment that could produce a spark, fire, or flame. The use of spark-producing construction machinery within fire risk areas could expose temporary project workers and contractors to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire.

However, construction personnel on the project site would have to comply with PRC Sections 4427, 4428, 4431, and 4442, which include regulations relating to the handling of combustible fuels and equipment that can exacerbate fire risks. During construction, compliance with these PRC sections would make construction personnel responsible for all monitoring and safety measures, and exacerbated wildfire risk would be reduced. Additionally, all construction personnel must comply with fire protection and prevention requirements specified by the CCR and Cal/OSHA. This includes various measures, such as:

- Easy accessibility of firefighting equipment
- Proper storage of combustible liquids
- No smoking in service and refueling areas
- Worker training for incipient stage fire suppression

Slopes susceptible to prevailing winds coupled with brush and grassland habitats within the project site create a high fire hazard environment. The project would involve development of high fire hazard areas, resulting in a reduction of flammable surface area within the VHFHSZs, which could prevent or reduce uncontrolled spread of wildfire. Cleared brush around the AWPF sites, maintained landscaping, and improved access to previously undeveloped areas would provide for increased firefighting conditions in the event of a wildfire.

Operation-related activities would involve a limited number of maintenance and delivery trucks, operational staff, and visitors. These vehicles would be limited to established access roads and parking areas, which would have a low potential of producing sparks, fire, or flame that could result in uncontrolled spread of wildfire. Nevertheless, due to the site topography and wildfire risk, operators of the proposed project site would comply with PRC Sections 4427, 4428, 4431, and 4442, which include regulations relating to the handling of combustible fuels and equipment that can exacerbate fire risks.

For these reasons, the project would have a less than significant impact on exacerbating wildfire risks that would expose project occupants to pollutant concentrations from wildfire due to slope, prevailing winds, and other factors.

17.4.4 Impact 17-3: Associated Infrastructure

The effects of Pure Water Project infrastructure on wildfire risk would be less than significant as discussed in this section.

The project includes construction and operation of new access roads, utility connections, and pipelines to support water treatment and delivery. This new infrastructure does not pose additional risk to exacerbation of wildfires other than what is discussed in Impact 17-2. All utility connections installed as part of the project would be placed underground and would comply with 24 CCR, significantly reducing the possibility of fire risk.

The project would have a less than significant impact on the exacerbation of fire risk due to the installation and maintenance of infrastructure.

17.4.5 Impact 17-4: Runoff, Slope Instability, or Drainage Changes

The effects of the Pure Water Project on wildfire risk would be less than significant as discussed in this section.

Site alteration through movement of substantial quantities of soil and earth materials during construction has the potential to result in landslides as a result of runoff or drainage changes. As discussed in Chapter 8, Geology and Soils, the project would be required to comply with the CGP and local stormwater ordinances. These state and local requirements were developed to control erosion on construction sites.

The CGP requires preparation and implementation of an SWPPP, which requires applications of BMPs to control runon and runoff from construction work sites. The BMPs would include:

- Installation of physical barriers to prevent erosion and sedimentation
- Construction of sedimentation basins
- Limitations on work periods during storm events
- Use of infiltration swales
- Protection of stockpiled materials
- A variety of other measures that would substantially reduce or prevent erosion from occurring during construction

If a wildland fire is followed by a rain event and results in downstream flooding or landslides from post-fire runoff, the BMPs required to be implemented under the SWPPP would reduce the risk of runoff, post-fire slope instability, and drainage changes. With compliance with existing regulations, impacts would be less than significant.

Operation of the project would be managed to not result in significant runoff, post-fire slope instability, or drainage changes from potential wildland fire. As a result, impacts would be less than significant.

17.5 Mitigation Measures

Based on the analysis provided in this chapter, impacts would be less than significant with the implementation of state and local regulations. Therefore, no additional mitigation is required.

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18. Other Required CEQA Considerations

This chapter describes other CEQA considerations for the Pure Water Project.

18.1 Cumulative Impacts

This section describes the Pure Water Project's cumulative impacts.

18.1.1 Introduction

Cumulative impacts could occur when the effects of the Pure Water Project are combined with other planned and foreseeable projects such that environmental impacts are more intense or longer in duration.

According to CEQA Guidelines Section 15130(a), "…an EIR shall discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable." "Cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed with the effects of past projects, other current projects, and possible future projects. As stated in CEQA Guidelines Section 15355, cumulative impacts can result from individually minor but collectively significant projects taking place over time.

In addition, Section 15130(b) identifies that the following elements are necessary for an adequate cumulative analysis:

- Either:
  - *A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency*

  or

  - *A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document that has been adopted or certified, which described or evaluated regional or area-wide conditions contributing to the cumulative impact; any such planning document will be referenced and made available to the public at a location specified by the lead agency*
- Plus:
  - *A definition of the geographic scope of the area effected by the cumulative effect, and a reasonable explanation for the geographic limitation used*
  - *A summary of the expected environmental effects to be produced by those projects, with specific reference to additional information stating where that information is available*
  - *A reasonable analysis of the cumulative impacts of the relevant projects; an EIR will examine reasonable, feasible options for mitigating or avoiding the project's contribution to significant cumulative impacts*

When a lead agency is examining a project with an incremental effect that is not cumulatively considerable, the lead agency need not consider that effect significant but will briefly describe its basis for concluding that the incremental effect is not cumulatively considerable.

18.1.2 Cumulative Setting

The geographic scope of the broadly affected area includes the Las Virgenes MWD and JPA service areas, as well as Thousand Oaks and unincorporated Ventura County along the concentrate disposal pipeline alignment. However, all impacts of the Pure Water Project would occur at specific sites and are mostly construction impacts that would occur at or near each individual project site. This analysis focuses on construction of Pure Water Project features because construction impacts are the most common and widespread impacts expected to occur over the long project implementation period.

The cumulative impacts analysis focuses on the environmental resources analyzed in Chapters 3 through 17. Additional information about the setting for each of these resources can be found in each of the individual resource chapters.

The cumulative setting conditions are based on the existing land uses within the service areas, which exist because of past and present development activity. In addition, consideration was given to new development projects that may occur during the Pure Water Project implementation period. Although the exact nature and extent of these future projects is not known, the general character of foreseeable future development is expected to be consistent with approved land use plans that apply to the service areas and are similar in nature to current development projects. In general, foreseeable future projects are expected to include the following:

- Continued buildout of the *Ladyface Mountain Specific Plan* (City of Agoura Hills 1991), which encompasses 747.3 acres, but with a developable pad area limited to 30.18 acres, including the Alternative 1 Agoura Road AWPF site. At buildout, the specific plan area is expected to consist of mostly business park development, with limited retail and residential uses.
- Redevelopment and general intensification of land uses along older streets on the concentrate pipeline alignment options, especially implementation of development projects and public improvement envisioned in *Thousand Oaks Boulevard Specific Plan* (City of Thousand Oaks 2016).
- Small suburban development projects that are likely to occur throughout the service areas, such as new residential units and small neighborhoods, and new office and light industrial buildings in existing office parks.
- City of Thousand Oaks public improvements between the Hill Canyon Wastewater Treatment Plant (WWTP) and the Municipal Service Center on Rancho Conejo Boulevard, including:
  - Conejo Canyons Bridge at Hill Canyon WWTP: The City of Thousand Oaks and the COSCA propose to install a new bridge across Arroyo Conejo and a small access road connecting the bridge to Hill Canyon Road. The Pure Water Project concentrate pipeline is proposed to be installed within a utility sleeve on the new bridge.
  - Municipal Service Center Access Road: The City of Thousand Oaks may pursue additional improvements to connect the new Conejo Canyons Bridge to the Municipal Service Center by improving an existing fire road to accommodate city vehicles. The City of Thousand Oaks and the JPA would continue to coordinate, with the goal of constructing the new access road and concentrate pipeline on the same alignment and at the same time.
- The Calleguas SMP has been partially installed and would continue to be expanded, including a new pipeline along Santa Rosa Road.

No other major, citywide utility repair or capital projects have been identified that compare in scale to the Pure Water Project. Consistent with typical utility operations, routine maintenance work and minor capital improvement projects are expected to occur throughout the project area, such as small water pipeline installations, storm drain repairs, and road resurfacing. Some of these activities may occur at the same time as construction of the Pure Water Project; however, the scale of these individual projects would be small.

In addition to these development activities within the project area, the Malibu Creek Ecosystem Restoration Project may contribute to cumulative effects within the Malibu Creek watershed. The project is centered on Rindge Dam, a legacy structure on Malibu Creek downstream of the Tapia WRF, and consists of sediment removal and transport, dam removal, and onsite restoration (USACE and CDPR 2017). The project is expected to improve Malibu Creek aquatic habitat along the 8.5-mile reach from an area upstream of Rindge Dam to Malibu Lagoon.

18.1.3 Cumulative Analysis

The cumulative impacts analysis is based on the analysis of environmental resources in Chapters 3 through 17, together with the potential effects from the projects discussed in this chapter.

18.1.3.1 Aesthetics

Aesthetic impacts are focused on the visual changes associated with the AWPF alternatives. Alternative 1 Agoura Road AWPF would be constructed in a manner consistent with the *Ladyface Mountain Specific Plan*, which also applies to other future development along Agoura Road in this area. The specific plan provides a framework that addresses the potential for cumulative aesthetic impacts so that impacts would be less than significant. Therefore, development consistent with the specific plan also would be less than significant.

Alternative 2 Reservoir AWPF would be built in an undeveloped area next to Las Virgenes Reservoir, in an area where no additional, future development is expected. Because there would be no additional development, cumulative aesthetic impacts of this alternative would be less than significant.

18.1.3.2 Air Quality

Air quality impacts are primarily from construction of the AWPF alternatives, the pipelines, and other project features. Land development and other construction activities may occur in some parts of the project area at the same time, such as along Agoura Road and Thousand Oaks Boulevard. Depending on timing, other construction may be occurring during installation of the concentrate pipeline in the Conejo Canyon area, primarily from City of Thousand Oaks projects, such as the Conejo Canyons Bridge. Construction work from other projects is not expected in other areas, such as within Triunfo Creek Park.

Other construction activities may contribute to significant cumulative impacts, such as construction vehicle emissions and dust generation. To minimize these typical construction impacts from all project types, both the South Coast AQMD and the Ventura County APCD have developed standard construction measures that apply to the Pure Water Project as well as other projects occurring at the same time or in the same location as Pure Water Project features. Because the Pure Water Project would follow regional measures for air pollution control during construction, the project would have a less than significant contribution to this significant cumulative impact.

18.1.3.3 Biological Resources

The Pure Water Project would affect biological resources, such as special-status plants, oak trees, and wetlands. These impacts would also occur as a result of other development activities under the *Ladyface Mountain Specific Plan*, which would occur on similar land covers and habitat types. Also, the Municipal Service Center Access Road project would affect special-status plants and wetlands along the Conejo Open Space Trail, with more impact expected because of the wider construction footprint in comparison to the concentrate pipeline project. Most other development, such as the intensification of land uses associated with redevelopment, is expected to occur within urban areas, and most other utility work along public roads is not expected to significantly affect biological resources.

Overall, there would be a significant cumulative effect because of the local and statewide importance of the affected resource. Preconstruction surveys, avoidance and minimization measures, habitat restoration, and offsite compensatory mitigation are typically prescribed for these types of effects consistent with local policies and state and federal requirements. Other projects with discretionary approvals are likely to follow mitigation requirements similar to Mitigation Measures 5-1 through 5-4 in this document. With implementation of these measures, the Pure Water Project's cumulative contribution to biological resources impacts would be reduced to a less than cumulatively considerable level.

The Malibu Creek Ecosystem Restoration Project – primarily the removal of Rindge Dam – is expected to improve habitat conditions along Malibu Creek and within Malibu Lagoon. These benefits would be different than the expected Pure Water Project water quality benefits, but the Pure Water Project would contribute to cumulative benefits along with removal of Rindge Dam.

18.1.3.4 Cultural Resources

Development of most Pure Water Project facilities would occur in urbanized areas that have been previously disturbed; however, the previous cultural surveys described in Chapter 6, Cultural Resources, indicate the potential presence of undisturbed subsurface archaeological and paleontological resources in some portions of the project area. Construction of the Pure Water Project, in combination with cumulative development, would increase the potential to disturb these undiscovered resources. This is a potentially significant cumulative impact.

Preconstruction surveys with avoidance and minimization measures are typically prescribed in these cases consistent with local policies, code provisions, and standard conditions of project approval. With implementation of these measures, the Pure Water Project's cumulative contribution to cultural resources impacts would be reduced to a less than cumulatively considerable level.

18.1.3.5 Energy

Pure Water Project energy impacts are primarily associated with the design of the AWPF for energy efficiency. Facility design would be consistent with California standards for energy efficiency and low-impact design, including local implementation of these statewide regulations (for example, the *Climate Action and Adaptation Plan* [City of Agoura Hills 2022a]).

To achieve these statewide goals from all project types, the regulations apply to the Pure Water Project as well as other projects occurring at the same time or in the same location as Pure Water Project features. Because the Pure Water Project would follow statewide measures for energy efficiency, the project would have a less than significant contribution to this significant cumulative impact.

18.1.3.6 Geology and Soils

Geotechnical impacts related to seismic hazards and similar physical features are site specific rather than cumulative in nature. Like the Pure Water Project, all development would be subject to uniform site development and construction standards appropriate for regional geology and soil conditions. Therefore, there would be no cumulative impact. For an additional discussion of erosion and sediment control, Section 18.1.3.9 provides details.

18.1.3.7 Greenhouse Gas Emissions

In general, operation of the Pure Water Project as well as other potential development would be consistent with regional growth projections and would use electricity from the SoCal Edison power grid. In this manner, all projects are expected to comply with the Renewable Portfolio Standards and AB 32 scoping plan requirements. There would be no cumulative impacts.

For other projects occurring throughout the project area, construction equipment would be required to follow standard BMPs pursuant to the air district regulations, including minimizing idling times and maintaining equipment in good condition. Therefore, the Pure Water Project cumulative contribution to GHG impacts during construction would be reduced to a less than cumulatively considerable level.

18.1.3.8 Hazards and Hazardous Materials

Impacts from hazards and hazardous materials are site specific rather than cumulative in nature. Like the Pure Water Project, all other projects that include the routine use, storage, transport, and disposal of hazardous construction materials would follow DTSC, EPA, OSHA, and local Fire Department requirements, including preparation of a hazardous communication program, hazardous materials business plan, and spill prevention and countermeasures plan. Therefore, there would be no cumulative impact.

18.1.3.9 Hydrology and Water Quality

Development of Alternative 1 Agoura Road AWPF would result in changes in surface runoff patterns. The extent of other potential development in this area is not expected to worsen runoff conditions, as development would be limited to the *Ladyface Mountain Specific Plan* area with a developed storm drain system. Therefore, there would be no cumulative impact. Furthermore, all projects that increase impervious surfaces would follow the Regional MS4 Permit (Order R4-2021-0105) standards for stormwater management and discharges.

Alternative 2 Reservoir AWPF would be built in an undeveloped area next to Las Virgenes Reservoir, where no additional, future development is expected. Because there would be no additional development, drainage impacts of this alternative would be less than significant.

Construction of all Pure Water Project features could result in erosion and siltation, with subsequent water quality impacts. This is expected to occur primarily during construction, as almost all operations activities would be contained within the AWPF site where runoff is treated. For all projects occurring throughout the project area, similar water quality effects could occur during construction, and additional effects could occur from rainfall onto developed sites after construction is finished. This is a potentially significant cumulative impact.

All projects would prepare an SWPPP to address specific, onsite pollutant sources and controls during and after construction. Therefore, the Pure Water Project’s cumulative contribution to water quality impacts during and after construction would be reduced to a less than cumulatively considerable level.

18.1.3.10 Land Use and Planning

Land use impacts may occur for new Pure Water Project development, primarily the two AWPF alternatives. Alternative 1 Agoura Road AWPF would be constructed in a manner consistent with the *Ladyface Mountain Specific Plan*, which also applies to future development along Agoura Road in this area. The specific plan provides a framework that addresses the potential for cumulative land use impacts such that impacts would be less than significant. Therefore, development consistent with the specific plan also would be less than significant.

Alternative 2 Reservoir AWPF would be built in an undeveloped area next to Las Virgenes Reservoir where no additional, future development is expected. Because there would be no additional development, land use impacts of this alternative would be less than significant.

18.1.3.11 Noise

Potential noise impacts during operations would be concentrated in the vicinity of the new AWPF. The extent of other potential development in this area is not expected to result in noise impacts, as the area is designated primarily for office and light industrial business parks, which are not sensitive land uses.

The Pure Water Project pipeline construction projects would occur throughout the project area, with potentially significant noise impacts. Other potential development projects occurring in nearby areas also could result in significant noise impacts. The additional contribution of these other projects occurring at the same time as Pure Water Project construction activities could further worsen noise levels and result in a significant cumulative impact.

All projects would follow the local construction noise restrictions, including weekday and weekend construction hour limits, which is expected to help reduce cumulative noise impacts to a less than significant level. Because the Pure Water Project would follow local measures for noise control during construction, the project would have a less than significant contribution to local noise impacts.

18.1.3.12 Recreation

The Pure Water Project does not contain features that would increase demand for recreation facilities during operations due to the small number of additional staff required to operate the AWPF. During construction, some recreation facilities could be disrupted from pipeline construction. For the most part, these types of temporary impacts would be site specific rather than cumulative in nature; and, in most areas, disruptions associated with other projects in addition to the Pure Water Project are not anticipated. This applies to the significant recreation effect from temporary closure of the Westlake Vista Trail within Triunfo Creek Park, where no other trail closures or similar recreation effects are expected.

Along the Conejo Open Space Trail, two other projects are expected to contribute to cumulative effects in addition to the concentrate pipeline: the Conejo Canyons Bridge and the Municipal Service Center Access Road. The bridge project is expected to be fully installed and operational when the concentrate pipeline is built, thereby allowing the pipeline to be installed within the bridge itself. The access road has not been approved, and construction work is not scheduled. However, construction may occur at the same time or immediately following pipeline installation. These three projects have both positive and negative recreation impacts.

For example, although there would be temporary impacts, the bridge project is expected to improve access to trails by providing a dedicated crossing of Arroyo Conejo. Overall, there would be a significant cumulative effect. The concentrate pipeline would have temporary impacts. Although the temporary impact would be significant, the trail would return to recreation use at the end of construction and, for that reason, would not result in a significant contribution to a significant cumulative effect.

18.1.3.13 Transportation and Traffic

The Pure Water Project does not contain features that would substantially increase long-term demand for transportation services and facilities due to the small number of additional staff required to operate the AWPF. However, the project would increase vehicle use during construction activities, and also would require street and lane closures that would hinder full use of the local transportation system. For all construction activities occurring throughout the project area, similar types of temporary transportation impacts could occur. This is a potentially significant cumulative impact.

All projects would include general safety standards for traffic control, including measures to protect traffic safety, bicycle and pedestrian access, and coordination with transit and emergency service providers. The Pure Water Project would implement these standard measures, and in addition, would implement a TMP that would further coordinate traffic impacts and lane closures with the local communities. Therefore, the Pure Water Project’s cumulative contribution to transportation impacts during construction would be reduced to a less than cumulatively considerable level.

18.1.3.14 Tribal Cultural Resources

Development of most Pure Water Project facilities would occur in urbanized areas that have been previously disturbed; however, previous cultural surveys (described in Chapter 6, Cultural Resources) and Tribal consultation activities (described in Chapter 16, Tribal Cultural Resources) indicate the potential presence of undisturbed subsurface Tribal cultural resources in some portions of the project area. Construction of the Pure Water Project, in combination with cumulative development, would increase the potential to disturb these resources. This is a potentially significant cumulative impact.

Based on Tribal engagement activities and the inclusion of requested measures, such as preconstruction surveys, the Pure Water Project’s cumulative contribution to Tribal cultural resources impacts would be reduced to a less than cumulatively considerable level.

18.1.3.15 Wildfire

Pure Water Project construction is within Fire Hazard Severity Zones. In addition, other development activity and similar projects also are expected to be under construction at the same time as the Pure Water Project. Given the presence of VHFHSZ in some portions of the project area, construction-related wildfires are a potentially significant cumulative effect.

To address wildlife concerns associated with construction activity, state and local regulations have been adopted to require BMPs that minimize fire risk. These regulations apply to the Pure Water Project as well as other projects occurring at the same time or in the same location as Pure Water Project features. Because the Pure Water Project would follow statewide and local measures to minimize fire risk, the project would have a less than significant contribution to this significant cumulative impact.

18.2 Growth-inducing Impacts

CEQA Guidelines Section 15126.2(d) requires that an EIR identify the likelihood that a proposed project could “foster” or stimulate “…economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment.”

Urban growth within the Las Virgenes MWD service area is regulated by four incorporated cities – Calabasas, Hidden Hills, Agoura Hills, and Westlake Village – and by unincorporated Los Angeles County. The *Urban Water Management Plan* studied growth projections within these areas and estimated that 5,485 new dwelling units may be constructed by 2040, corresponding to an approximately 18% population increase (Las Virgenes MWD 2021). Future water demands would be met by available supplies during normal, single dry, and multiple dry years, including the contribution of the Pure Water Project (approximately 12% of total supplies).

The Pure Water Project is being developed, in part, to supplement imported water supplies with a local source. As described in Chapter 1, approximately 96% of Las Virgenes MWD drinking water is directly provided by Metropolitan from its SWP supply. Metropolitan considers its imported water supply system to be reliable but is working to increase local supplies within its large Southern California service area (Metropolitan 2021).

Similarly, Las Virgenes MWD assumes more uncertainty in SWP deliveries (Las Virgenes MWD 2021). Although the Pure Water Project’s contribution to meet total water demands may contribute to future growth in the area, its intent is to soften the impact of severe curtailments in imported water deliveries while also ensuring continued (and more balanced) use of the existing recycled water system.

18.3 Significant Irreversible Environmental Changes

CEQA Guidelines Section 15126.2(c) requires agencies to consider to the fullest extent possible irreversible and irretrievable commitments of resources that would be involved in the proposed action should it be implemented. Nonrenewable resources committed during Pure Water Project implementation might be irreversible because commitments of such resources might permanently remove the resources from further use. CEQA requires an evaluation of irretrievable resources to assure that consumption is justified. For example, cultural resources are nonrenewable; therefore, any destruction or loss of those resources means they are irreplaceable.

Both of the AWPF alternatives and all conveyance projects would result in use of construction materials that could not be restored (for example, metal materials; excavating and importing soils and rocks; and energy used to manufacture, transport, or install the new pipelines) and the use of nonrenewable resources (for example, fuel) to operate construction equipment. In addition, operation of the AWPF would result in use of energy resources (for example, fossil fuels and electricity) and chemicals. Consumption of these nonrenewable energy resources would be minimal and would not represent a significant impact on irreversible and irretrievable environmental commitments.

18.4 Significant and Unavoidable Environmental Impacts

CEQA Guidelines Section 15126.2(b) requires agencies to describe the significant environmental effects that cannot be avoided if the proposed project is implemented. Based on the analysis in Chapters 3 through 17, two environmental effects were identified as significant and unavoidable:

- Impact 5-1 Special-Status Species
- Impact 14-1 Recreation Access and Opportunities

All other environmental effects would be mitigated to a less than significant level.

19. Alternatives

This chapter discusses a reasonable range of alternatives to the Pure Water Project.

19.1 Introduction

CEQA requires that a lead agency evaluate the comparative effects of a range of reasonable alternatives to the project that would feasibly attain most of the project's primary objectives but would avoid or substantially lessen the project's significant effects (CEQA Guidelines, Section 15126.6(a)). Section 15126.6 also states that an EIR is required to present only those alternatives necessary to permit a reasoned choice. Significant effects of the alternatives should be discussed – but in less detail – than those of the project.

An EIR is required to assess the identified alternatives and determine which of the alternatives is environmentally superior. One of the alternatives assessed must be the No Project alternative. If the No Project alternative is identified as the environmentally superior alternative, then another of the remaining alternatives must be identified as the next environmentally superior alternative.

This Program EIR evaluates two alternatives at an equal level of detail: Alternative 1 Agoura Road AWPF and Alternative 2 Reservoir AWPF. This chapter contains the No Project alternative as required by CEQA, as well as three other alternatives appropriate for the program-level decisions under consideration: upgrade of the Tapia WRF, the Encino Reservoir Project, and other routes for the conveyance pipelines.

19.2 No Project Alternative

The No Project alternative does not include any new facilities or operational changes to the existing JPA system. Water demands would continue to be met primarily from the SWP, and Tapia WRF effluent would continue to be used for landscape irrigation when needed (primarily during summer months). Tapia WRF discharges into Malibu Creek would still be needed most of the time to meet the minimum instream flow requirement or because there is no demand for recycled water.

None of the project objectives would be met by the No Project alternative. In addition, the No Project alternative does not include any features needed to comply with the Malibu Creek water quality requirements for nitrogen and phosphorus removal and may still require some discharges into the creek when otherwise prohibited by the discharge permit. For this reason, the No Project alternative is not feasible.

19.3 Tapia Water Reclamation Facility Upgrade Project

In the absence of the Pure Water Project, the Las Virgenes MWD would still be required to meet Malibu Creek discharge requirements, including strict new limits on nitrogen and phosphorus concentrations. Additional treatment facilities would be required at the Tapia WRF to meet these requirements. A Tapia WRF expansion project would include a new treatment process for nitrogen and phosphorus removal using RO – like the proposed AWPF processes at the Alternative 1 Agoura Road and Alternative 2 reservoir sites. The existing Tapia WRF property does not contain sufficient room for such a facility; therefore, new site development would be required nearby. Information about a potential Tapia WRF expansion project is based on *Pure Water Project Las Virgenes-Triunfo Joint Powers Authority Title XVI Feasibility Study* (Las Virgenes MWD 2018).

The new RO facility would generate a reject stream that requires disposal; therefore, the Tapia WRF Upgrade Project also includes a concentrate pipeline. The new pipeline would follow Las Virgenes Road to Agoura Road (approximately 9 miles) and then follow one of the Pure Water Project concentrate pipeline alignments to connect to the SMP on Santa Rosa Road in unincorporated Ventura County.

The Tapia WRF Upgrade Project would not meet the objective of increasing water supply reliability. In terms of Malibu Creek discharges and balancing recycled water system demands, the objectives would partially be met. Nitrogen and phosphorus concentrations would meet the discharge permit standards, and the minimum instream flow requirements could be met from Tapia WRF discharges.

19.4 Encino Reservoir Project

The Pure Water Project was defined in a 2018 feasibility study that helped define the project objectives and explore opportunities for additional recycled water use, and developed two primary alternatives: the Pure Water Project and the Encino Reservoir Project (Las Virgenes MWD 2018). At the conclusion of that study, the JPA decided to advance the Pure Water Project for detailed consideration as the proposed project.

The Encino Reservoir Project is a seasonal storage project to convey surplus recycled water to the currently dormant Encino Reservoir during the low-demand winter season for use during the high-demand summer season. Figure 19-1 shows the reservoir location and the two pipeline alignments that were considered.

The project would require minimal additional treatment beyond the existing recycled water treatment process, as the stored water would only be available for nonpotable use. Encino Reservoir is owned by Los Angeles Department of Water and Power; thus, this project would be developed in cooperation with the City of Los Angeles, including seismic upgrades and other improvements to the reservoir.

The Encino Reservoir Project would receive Title 22 recycled water from the Tapia WRF that already meets standards for unrestricted nonpotable reuse. However, small treatment facilities would be constructed at Encino Reservoir to remove algae or debris from the open-air reservoir. Although treatment facilities would be small relative to the Pure Water Project, more conveyance improvements (pipelines and pump stations) would be needed. Approximately 80,000 feet of new pipelines would be installed to connect the existing recycled water system to Encino Reservoir for storage and from the reservoir back into the recycled water system, along one of two optional alignments (Wells Drive and Mulholland Drive).

The project would meet the objectives of eliminating Tapia WRF discharges into Malibu Creek and helping balance recycled water system demands; however, it would not meet the objective of increasing water supply reliability. In comparison to the Pure Water Project, the Encino Reservoir Project would have fewer capital costs, but in the long run, would be less cost-efficient primarily because this alternative would not produce a new source of potable water; therefore, it would not reduce the cost or impact of importing potable water (Las Virgenes MWD 2018).

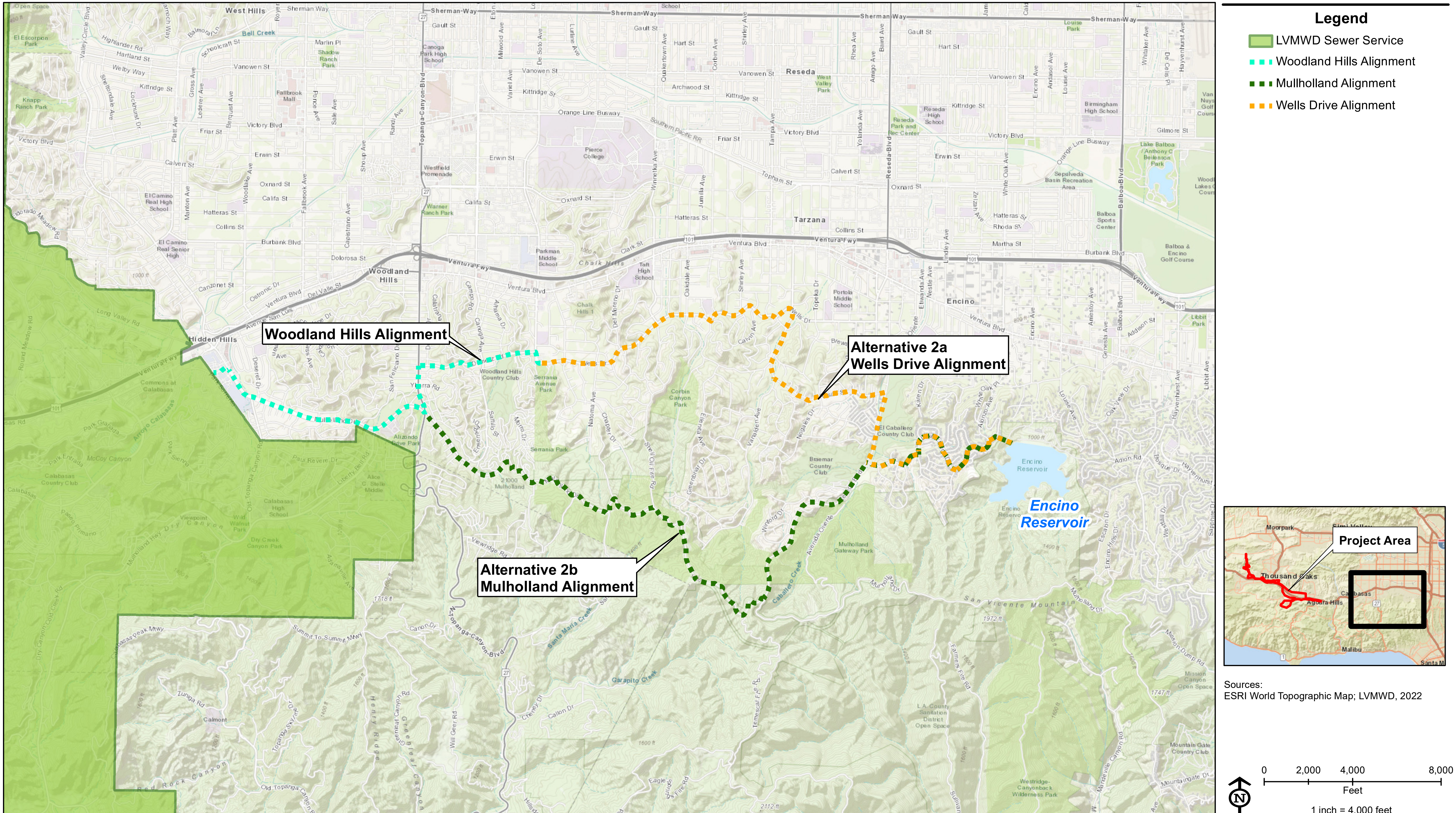

Figure 19-1

Encino Reservoir Project Alternatives

Pure Water Project Las Virgenes – Triunfo

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As part of the feasibility study, the qualitative benefits of the Encino Reservoir Project were presented in comparison to the Pure Water Project. Table 19-1 shows those comparative benefits as reported in the feasibility study (Las Virgenes MWD 2018).

Table 19-1. Qualitative Benefits of Alternatives

Benefit	Pure Water Project	Encino Reservoir Project
Reduce Reliance on Imported Water	Significantly reduces dependence	Somewhat reduces dependence
Increase Use of Local Water Source	Maximizes use of local supply	Increases use of local supply
Reduce Discharge to Malibu Creek	Eliminates discharges	Eliminates discharges
Provide Increased Seasonal Flexibility	Provides year-round flexibility for indirect potable reuse	Provides seasonal flexibility for nonpotable reuse
Maximize Beneficial Reuse	Retains full benefit for JPA customers	Retains some benefit for new recycled water customers
Save Energy	Significantly offsets demand for energy-intensive imported water	Somewhat offsets demand for energy-intensive imported water
Reuse Existing Infrastructure	Efficiently uses existing assets in combination with new infrastructure	Somewhat uses existing assets in combination with new infrastructure
Implement Forward Thinking	Is visionary and consistent with JPA Board's adopted Guiding Principles	Expands current use only
Offer Regional Benefits	Reduces regional demands on imported water supplies	Offers unallocated surplus for regional use
Remove Salt from Basin	Removes salt via new brine line	Does not remove salt

Source: Las Virgenes MWD 2018

19.5 Alternative Conveyance Routes

The Program EIR evaluates various conveyance route options for the source water, purified water, and concentrate pipelines. Other routes are available. Early work for the Pure Water Project identified a wider range of alignments for all three pipeline types, which are shown on Figure 19-2 and summarized in this section.

These other alignments would meet all of the project objectives; but, for various reasons, they were considered to be less desirable than the options evaluated in this Program EIR and were not carried forward for detailed study:

- Source Water Pipeline along Reyes Adobe Road – This option would connect the existing recycled water system on Thousand Oaks Boulevard to one of the AWPF alternatives with an alignment along Reyes Adobe Road, crossing U.S. 101 within the existing bridge structure.
- Source Water Pipeline along Russell Ranch Road – This option would connect the existing recycled water system at the intersection of Thousand Oaks Boulevard and Lindero Canyon Road to one of the AWPF alternatives following the southern portion of Russell Ranch Road, crossing U.S. 101 near In-N-Out Burger restaurant using trenchless construction.
- Purified Water Pipeline Greenfields and Ridgeford Drive Alignment – This option would connect the Agoura Road AWPF to Las Virgenes Reservoir through the Lexington Apartments and along Ridgeford Drive, after following a greenfield alignment behind residential areas in Westlake Village.
- Purified Water Pipeline Residential Alignment – This option would connect the Agoura Road AWPF to Las Virgenes Reservoir along Lindero Canyon Road but would reach the reservoir along residential streets rather than through Triunfo Creek Park. The alignment would follow Triunfo Canyon Road and

Three Springs Drive, reaching the reservoir along the existing Westlake Filtration Plant access road off Torchwood Place. From the Westlake Filtration Plant, the pipeline would be installed across the dam and along the reservoir shoreline to the discharge point.

- Concentrate Pipeline Erbes, Pederson, and Moorpark Alignment – This option would connect one of the AWPF alternatives to the SMPs following one of the proposed alignments to Erbes Road. From that point, the alignment would follow Erbes Road, Pederson Road, and Moorpark Road, with a connection point at Santa Rosa Road at Moorpark Road.
- Concentrate Pipeline Moorpark Alignment – This option would connect one of the AWPF alternatives to the SMP following one of the proposed alignments to Moorpark Road. From that point, the alignment would follow Moorpark Road to a connection point at Santa Rosa Road at Moorpark Road.
- Concentrate Pipeline Lynn Road and North Fork Arroyo Conejo Alignment – This option would connect one of the alternatives to the SMP following one of the proposed alignments to Lynn Road. From that point, the alignment would follow Lynn Road to Avenida De Las Flores and Flaming Star Avenue, and then along the North Fork Arroyo Conejo to the Hill Canyon WWTP, with a connection point at Santa Rosa Road at Hill Canyon Road.
- Concentrate Pipeline Conejo Canyon Alignment – This option would connect one of the alternatives to the SMP following one of the proposed alignments to just past Lynn Road. From that point, the alignment would follow Arroyo Conejo through Conejo Canyon to the Hill Canyon WWTP, with a connection point at Santa Rosa Road at Hill Canyon Road.
- Concentrate Pipeline Lawrence and Roadrunner Alignment – This option would connect one of the alternatives to the SMP following one of the proposed alignments to Ventu Park Road. From Ventu Park Road, the alignment would then follow Lawrence Drive and Roadrunner Avenue, crossing through a greenfield alignment to the Hill Canyon WWTP, with a connection point at Santa Rosa Road at Hill Canyon Road.
- Concentrate Pipeline U.S. 101 Alignment – This option would connect one of the alternatives to the SMP following one of the proposed alignments to Ventu Park Road. Rather than turning onto Ventu Park Road, the alignment would continue along Hillcrest Drive, Camino Dos Rios, and Grande Vista Drive, paralleling U.S. 101. From that point, the alignment would follow the U.S. 101 westbound shoulder to Camarillo Springs Road. From that point, the alignment would follow Ridge View Street, Adohr Lane, and Pleasant Valley Road, with a connection point at Pleasant Valley Road at Lewis Road.

19.6 Comparison of Alternative and Environmentally Superior Alternative

Table 19-2 provides a comparison of the alternatives.

The No Project Alternative is the only alternative that would avoid or substantially lessen the significant and unavoidable impacts of the Pure Water Project. Therefore, the No Project alternative would be considered the environmentally superior alternative. However, it would not meet any Pure Water Project objectives and would conflict with regulatory requirements associated with Malibu Creek discharges.

As shown in Table 19-2, of the remaining alternatives, only Alternative 1 Agoura Road AWPF and Alternative 2 Reservoir AWPF would meet all Pure Water Project objectives. In addition, other alternatives could result in the same or greater impacts. As described in Chapters 3 through 17, the two AWPF alternatives would have similar impacts in type, scale, and location; but the overall scale of the anticipated environmental impacts under Alternative 2 Reservoir AWPF would be greater for the following reasons:

- The need to construct an access road between Triunfo Canyon Road and the AWPF site, considering:
  - The access road would have construction impacts that would not occur under Alternative 1 Agoura Road AWPF, including new disruptions (for example, noise impacts) to Westlake Village residents, such as along Saddle Mountain Drive.
  - Operation of the AWPF would involve new vehicle trips in the area by plant operators and for materials delivery (for example, to replenish chemical supplies).

- More construction improvements required for pipelines and electrical supplies along the Westlake Vista Trail within Triunfo Creek Park. Alternative 1 Agoura Road AWPF requires installation of a purified water pipeline within this area. Alternative 2 Reservoir AWPF requires installation of a source water pipeline, concentrate disposal pipeline, sewer pipeline, and electrical conduits. The larger footprint associated with these additional facilities would worsen the impacts in this area, including impacts to special-status plants, oak trees, and recreation use.
- The need to construct a pump station at one of two optional sites along Lindero Canyon Road, which would not be needed under Alternative 2 Agoura Road AWPF.
- Overall longer length of pipeline construction – approximately 23 miles compared to 20 miles under Alternative 1 Agoura Road AWPF. This includes a larger construction footprint along Lindero Canyon Road to accommodate two pipelines (source water and concentrate disposal) rather than one pipeline (purified water) under Alternative 1 Agoura Road AWPF.

Table 19-2. Comparison of the Alternatives

Alternative	Major Characteristics	Environmental Impacts	Meets Objectives?
Alternative 1 Agoura Road AWPF	▪ Treatment facility on 2.8 acres ▪ ~20 miles of new pipelines	▪ Loss of recreation access during construction ▪ Removal of oak trees at AWPF and in Triunfo Creek Park ▪ Disruption of native plant occurrences ▪ Potential to disrupt buried resources, including Tribal cultural resources ▪ Construction disruptions (traffic, noise) along city streets	Yes.
Alternative 2 Reservoir AWPF	▪ Treatment facility on 2.8 acres ▪ Pump station on Lindero Canyon Road ▪ ~23 miles of new pipelines	▪ Loss of recreation access during construction ▪ Removal of oak trees in Triunfo Creek Park ▪ Disruption of native plant occurrences in Triunfo Creek Park ▪ Potential to disrupt buried resources, including Tribal cultural resources ▪ Construction disruptions (traffic, noise) along city streets	Yes.
No Project Alternative	▪ None	▪ None	No.
Tapia WRF Upgrade Project	▪ New treatment process at Tapia WRF ▪ Concentrate pipeline (~24 miles)	▪ Disruption of recreation uses near Tapia WRF ▪ Removal of oak trees and other native vegetation ▪ Potential to disrupt buried resources	Partially meets Malibu Creek and recycled water objectives. Does not meet water supply objective.
Encino Reservoir Project	▪ Pipelines to and from Encino Reservoir (~15 miles) ▪ Improvements at dam and reservoir area	▪ Potential to disrupt buried resources, including Tribal cultural resources ▪ Construction disruptions (traffic, noise) along city streets	Meets Malibu Creek and recycled water objectives. Does not meet water supply objective.
Alternative Conveyance Routes	▪ Optional pipeline routes of various lengths	▪ Potential to disrupt buried resources, including Tribal cultural resources ▪ Construction disruptions (traffic, noise) along city streets	Yes.

~ = approximately

20. Report Preparation

This EIR was prepared by Jacobs, at the request of the JPA. Lead Agency, Jacobs EIR authors and report contributors, and associated support involved in the preparation and distribution of the EIR are listed in this chapter.

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21. References

Abramson, M. 1998. “Appendix E, Malibu Creek Steelhead.” *The Malibu Creek Watershed: a framework for monitoring enhancement and action*. M. Abramson and J. Olson, editors. Heal the Bay and California State Coastal Conservancy.

Akyuz, Linda. 2012. *Addendum to Cultural Resources and Paleontological Resources Assessment for the Agoura Road Widening Project (2011).*

American Society of Civil Engineers (ASCE). 2013*. ASCE 7-10, Minimum Design Loads for Buildings and Other Structures*. https://ascelibrary.org/doi/book/10.1061/9780784412916.

Anaya-Morga, Laura. 2021. “Caltrans Projected to Break Ground on Wildlife Bridge Over 101 Freeway in January 2022.” *Los Angeles Times*. October 9. https://www.latimes.com/california/story/2021-10-09/caltrans-wildlife-bridge-101-freeway-agoura-hills-january-2022.

Aquatic Bioassay and Consulting Laboratories. 2019. *Las Virgenes Municipal Water District Tapia Water Reclamation Facility Spring 2018 Bioassessment Monitoring Report (NPDES CA0056014).* Submitted to Las Virgenes Municipal Water District. March.

Aquatic Bioassay and Consulting Laboratories. 2020. *Las Virgenes Municipal Water District Tapia Water Reclamation Facility 2019 Bioassessment Monitoring Report (NPDES CA0056014).* Submitted to Las Virgenes Municipal Water District. March.

Aquatic Bioassay and Consulting Laboratories. 2021. *Las Virgenes Municipal Water District Tapia Water Reclamation Facility 2020 Bioassessment Monitoring Report (NPDES CA0056014).* Submitted to Las Virgenes Municipal Water District. March.

Bean, L. J. 1974. “Social Organization in Native California.” *Antap: California Indian Political and Economic Organization.* Anthropological Papers 2:93-110. Ramona: Ballena Press.

Begun, R. 2006. *The Newburys of Newbury Park*. California: Conejo Valley Historical Society.

Bidwell, C. A. 1989. *The Conejo Valley: Old and New Frontiers.* Conejo Valley, California: Windsor Publications.

Bolton, H. E. 1926. *Captain Portola in San Luis Obispo County 1769.* Morro Bay, California: Tabula Rasa Press.

Browning, P., ed. 1992. *The Discovery of San Francisco Bay - The Portolá Expedition of 1769– 1770: The Diary of Miguel Costansó*. Lafayette, California: Great West Books.

builditgreen.org. 2022. *Homes Neighborhoods Planet*. https://www.builditgreen.org/.

Bureau of Land Management (BLM). 1984. *Manual 8400 - Visual Resource Management*. April 5. Washington, DC: U.S. Government Printing Office. https://www.blm.gov/sites/blm.gov/files/uploads/mediacenter_blmpolicymanual8400.pdf.

Calflora. 2022. *The Calflora Database information on California plants*. Berkeley, California. Accessed July 21, 2022. https://www.calflora.org/.

California Air Pollution Control Officers Association (CAPCOA). 2021. *California Emission Estimator Model (CalEEMod) User’s Guide*. May. http://www.aqmd.gov/caleemod/user%27s-guide.

California Air Pollution Control Officers Association (CAPCOA). 2022. *CalEEMod California Emission Estimator Model.* Version 2020.40. http://www.aqmd.gov/caleemod/download-model.

California Air Resources Board (CARB). 1998. “Part A Exposure Assessment.” *Report to the Air Resources Board on the Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant*. April 22. https://ww2.arb.ca.gov/sites/default/files/classic/toxics/dieseltac/part_a.pdf.

California Air Resources Board (CARB). 2011. *Final Regulation Order Amendments to the Airborne Toxic Control Measure for Stationary Compression Ignition Engines*. May 19. https://ww2.arb.ca.gov/sites/default/files/classic/diesel/documents/finalreg2011.pdf.

California Air Resources Board (CARB). 2016. *Ambient Air Quality Standards*. May 4. https://www.arb.ca.gov/research/aaqs/aaqs2.pdf.

California Air Resources Board (CARB). 2017a. *California’s 2017 Climate Change Scoping Plan*. November. https://ww2.arb.ca.gov/sites/default/files/classic/cc/scopingplan/scoping_plan_2017.pdf.

California Air Resources Board (CARB). 2017b. “EMFAC2017.” V1.0.3. *Emissions Inventory*. https://arb.ca.gov/emfac/emissions-inventory/5fcd0c7cd1fb556bd60a11f96655fe0edec70c03.

California Air Resources Board (CARB). 2019a. *Summaries of Historical Area Designations for State Standards*. Effective July 2019. https://ww2.arb.ca.gov/our-work/programs/state-and-federal-area-designations/state-area-designations/summary-tables.

California Air Resources Board (CARB). 2019b. *Mandatory Greenhouse Gas Reporting Regulation.* January. https://ww2.arb.ca.gov/mrr-regulation#:~:text=The%20Regulation%20for%20the%20Mandatory,%2C%202019%2C%20for%202019%20data.

California Air Resources Board (CARB). 2021a. “Model Version EMFAC2017 v1.0.3.” *Emissions Inventory*. https://arb.ca.gov/emfac/emissions-inventory/5fcd0c7cd1fb556bd60a11f96655fe0edec70c03.

California Air Resources Board (CARB). 2021b. “2000–2019 GHG Inventory (2021 Edition).” *Current California GHG Emission Inventory Data*. https://ww2.arb.ca.gov/ghg-inventory-data.

California Air Resources Board (CARB). 2022a. *California Air Basin Map*. Accessed March 28, 22. https://www.arb.ca.gov/ei/maps/statemap/abmap.htm.

California Air Resources Board (CARB). 2022b. *Naturally Occurring Asbestos*. https://ww2.arb.ca.gov/our-work/programs/naturally-occurring-asbestos/about.

California Air Resources Board (CARB). 2022c. *GHG 1990 Emissions Level & 2020 Limit*. https://ww2.arb.ca.gov/ghg-2020-limit.

California Air Resources Board (CARB). 2022d. *Current California GHG Emission Inventory Data*. https://ww2.arb.ca.gov/ghg-inventory-data.

California Air Resources Board (CARB). 2022e. California’s 2022 Climate Change Scoping Plan. Draft. https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents.

California Building Standards Commission. 2022. *2022 California Green Building Standards code, Title 24, Part 11*. July. https://codes.iccsafe.org/content/CAGBC2022P1.

California Department of Conservation. 1999. *Earthquake Fault Zones Official Map, Newbury Park 7.5-minute Quadrangle, Ventura County California*. Division of Mines and Geology. May 1. https://www.lib.berkeley.edu/EART/UCONLY/CDMG/south/pdf/ventura/newbrypk.pdf.

California Department of Conservation. 2018. *Earthquake Fault Zones, A Guide for Government Agencies, Property Owners/Developers, and Geoscience Practitioners for Assessing Fault Rupture Hazards in California.* CGS Special Publication 42. California Geological Survey. https://www.conservation.ca.gov/cgs/Documents/Publications/Special-Publications/SP_042.pdf.

California Department of Conservation. 2019. *Alquist-Priolo Earthquake Fault Zones*. California Geological Survey. https://www.conservation.ca.gov/cgs/alquist-priolo.

California Department of Fish and Wildlife (CDFW). 2018. *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities*. March 20. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18959&inline.

California Department of Fish and Wildlife (CDFW). 2022a. *California Natural Communities List*. July 5. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153398&inline.

California Department of Fish and Wildlife (CDFW). 2022b. *California Natural Diversity Database (CNDDB).* Accessed February 11, 2022. https://map.dfg.ca.gov/rarefind/view/RareFind.aspx.

California Department of Forestry and Fire Protection (CAL FIRE). 2022a. *FHSZ Viewer*. Accessed on January 27, 2022. https://egis.fire.ca.gov/FHSZ/.

California Department of Forestry and Fire Protection (CAL FIRE). 2022b. *Fire and Resource Assessment Program*. https://frap.fire.ca.gov/.

California Department of Justice. 2021. *California Department of Justice Closes Criminal Investigation into the Woolsey Fire*. Press Release. August 13. https://oag.ca.gov/news/press-releases/california-department-justice-closes-criminal-investigation-woolsey-fire.

California Department of Parks and Recreation. 2022a. *Malibu Creek State Park*. https://www.parks.ca.gov/?page_id=614.

California Department of Parks and Recreation. 2022b. *Malibu Lagoon State Beach*. https://www.parks.ca.gov/?page_id=835.

California Department of Toxic Substances Control (DTSC). 2022a. "DTSC's Hazardous Waste and Substances Site List – Site Cleanup (Cortese List)." *Site Mitigation & Restoration Program*. Accessed March 2022. https://dtsc.ca.gov/dtscs-cortese-list/.

California Department of Toxic Substance Control (DTSC). 2022b. "TFX AVIATION INC (CAD008383127)." *EnviroStor*. Accessed March 2022. https://www.envirostor.dtsc.ca.gov/public/hwmp_profile_report?global_id=CAD008383127&starttab=.

California Department of Toxic Substance Control (DTSC). 2022c. "LOWE'S HOME CENTER (60002398)." *EnviroStor.* Accessed March 2022. https://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=60002398.

California Department of Transportation (Caltrans). 2013. *Technical Noise Supplement*. September. Sacramento, CA: Environmental Program, Noise, Air Quality, and Hazardous Waste Management Office. https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tens-sep2013-a11y.pdf.

California Department of Transportation (Caltrans). 2015. *Noise Study Report Annotated Outline.* April. Sacramento, CA: Environmental Program, Noise, Air Quality, and Hazardous Waste Management Office. https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/ser/noise-study-report-annotated-outline.docx.

California Department of Transportation (Caltrans). 2020. *Transportation and Construction Vibration Guidance Manual*. April. https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf.

California Department of Transportation (Caltrans). 2020a. *Transportation Analysis Framework Evaluating Transportation Impacts of State Highway System Projects*. 1st Ed. Sacramento, California. September. https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/sb-743/2020-09-10-1st-edition-taf-fnl-a11y.pdf.

California Department of Transportation (Caltrans). 2020b. *Vehicle Miles Traveled-Focused*. *Transportation Impact Study Guide*. May 20. https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/sb-743/2020-05-20-approved-vmt-focused-tisg-a11y.pdf.

California Department of Transportation (Caltrans). 2020c. *Highway Design Manual (HDM)*. 7th Ed. https://dot.ca.gov/programs/design/manual-highway-design-manual-hdm.

California Department of Transportation (Caltrans). 2021. *California Manual on Uniform Traffic Control Devices*. 2014 Edition. Revision 6. March 30. https://dot.ca.gov/programs/safety-programs/camutcd/camutcd-files.

California Department of Transportation (Caltrans). 2022a. *Scenic Highways*. https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways.

California Department of Transportation (Caltrans). 2022b. "2019-AADT (XLSX). Traffic Volumes: Annual Average Daily Traffic (AADT)." *Traffic Census Program*. Accessed February 7, 2022. https://dot.ca.gov/programs/traffic-operations/census.

California Department of Water Resources (DWR). 2004. "Russell Valley Groundwater Basin. Hydrologic Region South Coast." *California's Groundwater Bulletin 118*. Sacramento, CA. February 27. https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/4_020_RussellValley.pdf.

California Department of Water Resources (DWR). 2022. "Submit and View SGMA Information and Data." *SGMA Portal*. Accessed March 22, 2022. https://sgma.water.ca.gov/portal.

California Energy Commission. 2022a. *2022 Building Energy Efficiency Standards for Residential and Nonresidential Buildings for the 2022 Building Efficiency Standards Title 24, Part 6, and Associated Administrative Regulations in Part 1*. Publication Number CEC-400-2022-010. Updated July 12. https://www.energy.ca.gov/publications/2022/2022-building-energy-efficiency-standards-residential-and-nonresidential.

California Energy Commission. 2022b. *EZ Building Climate Zone Finder*. Accessed March 26, 2022. https://caenergy.maps.arcgis.com/apps/webappviewer/index.html?id=5cfefd9798214bea91cc4fddaa7e643f.

California Geological Survey (CGS). 2000a. *Seismic Hazard Zone Report for the Thousand Oaks 7.5-minute Quadrangle, Ventura and Los Angeles Counties, California*. Seismic Hazard Zone Report 042. California Department of Conservation.

California Geological Survey (CGS). 2000b. *Seismic Hazard Zones Official Map, Thousand Oaks 7.5-minute Quadrangle, Ventura and Los Angeles Counties, California*. November 17.

California Geological Survey (CGS). 2002a. *Seismic Hazard Zone Report for the Newbury Park 7.5-minute Quadrangle, Ventura County, California*. Seismic Hazard Zone Report 055. State of California, Department of Conservation.

California Geological Survey (CGS). 2002b. *Seismic Hazard Zones Official Map, Newbury Park 7.5-minute Quadrangle, Ventura County California*. February 7.

California Native Plant Society (CNPS). 2022. *CNPS Rare Plant Inventory.* Online edition, v8-03 0.39. Accessed June 2022. http://www.rareplants.cnps.org.

California Stormwater Quality Association (CASQA). 2003. *Stormwater Best Management Practice Handbook.* January. https://www.casqa.org/sites/default/files/BMPHandbooks/BMP_Municipal_Complete.pdf.

Calleguas Municipal Water District (Calleguas MWD). 2022. *Calleguas Salinity Management Pipeline: Enhancing the Use of Local Water Supplies*. Accessed March 28, 2022. crsmpbroc.pdf (calleguas.com)

Campbell, R. H., and R. F. Yerkes. 1980. *Geologic guide to the stratigraphy and structure of the Topanga Group, central Santa Monica Mountains, Southern California*. Los Angeles Basin Geological Society, 1980 Pacific Section AAPG Spring Field Trip, Guidebook Number 49. pp. 1–22.

Campbell, R.H., C.J. Wills, P.J. Irvine, and B.J. Swanson. 2014. *Preliminary Geologic Map of the Los Angeles 30' x 60' Quadrangle, California*. Version 2.1. California Geological Survey.

Center for Advanced Technology in Education (CATE). 2022. *The Web de Anza Project*. Center for Advanced Technology in Education, College of Education, University of Oregon. https://webdeanza.org/.

Chartkoff, J. L., and K. K. Chartkoff. 1984. *The Archaeology of California.* Stanford, California: Stanford University Press.

Christopher A. Joseph & Associates. 2009. *Historic Context Statement for the City of Calabasas*. April.

City of Agoura Hills. 1991. *Agoura Hills Final Ladyface Mountain Specific Plan*. September. https://www.agourahillscity.org/department/planning-community-development/ladyface-mountain-specific-plan.

City of Agoura Hills. 2010a. *City of Agoura Hills General Plan 2035 EIR*. Accessed March 21, 2022. https://www.agourahillscity.org/home/showpublisheddocument/8007/635045247851600000.

City of Agoura Hills. 2010b. *City of Agoura Hills General Plan*. March. https://www.agourahillscity.org/department/planning-community-development/general-plan.

City of Agoura Hills. 2010c. *Ladyface Mountain Specific Plan Amendment*. May 12. https://www.agourahillscity.org/home/showpublisheddocument/21747/637057722588030000.

City of Agoura Hills. 2015. *Architectural Design Standards & Guidelines*. Department of Planning and Community Development. https://www.agourahillscity.org/department/planning-community-development/architectural-design-standards-guidelines.

City of Agoura Hills. 2020. *Transportation Assessment Guidelines*. July. https://www.agourahillscity.org/home/showpublisheddocument/23449/637345476945830000.

City of Agoura Hills. 2021. *General Plan Update Underway.* Accessed on December 21, 2021. https://www.agourahillscity.org/department/planning-community-development/general-plan.

City of Agoura Hills. 2022a. *Climate Action and Adaptation Plan.* April 27. https://www.agourahillscity.org/department/planning-community-development/climate-action-and-adaptation-plan-caap.

City of Agoura Hills. 2022b. *Community Services/Parks & Recreation*. Accessed March 16, 2022. https://www.agourahillscity.org/department/community-services-parks-recreation.

City of Agoura Hills. 2022c. *Household Hazardous Waste/E-Waste Disposal*. Accessed March 2022. https://www.agourahillscity.org/department/solid-waste-management/household-hazardous-waste-e-waste-disposal.

City of Thousand Oaks. 2013a. “Conservation Element.” *Thousand Oaks General Plan*. October. https://www.toaks.org/home/showpublisheddocument?id=332.

City of Thousand Oaks. 2013b. “Open Space Element.” *Thousand Oaks General Plan*. October. www.conejo-openspace.org/assets/os-element-2013-final.pdf.

City of Thousand Oaks. 2014. “Safety Element 2014 Update.” *Thousand Oaks General Plan*. March. https://www.toaks.org/home/showpublisheddocument?id=344.

City of Thousand Oaks. 2016. *Thousand Oaks Boulevard Specific Plan*. Adopted November 2011. Amended August 2016. https://www.toaks.org/departments/community-development/planning/thousand-oaks-blvd.

City of Thousand Oaks. 2021a. *Climate and Environmental Action Plan*. https://www.toaks.org/departments/public-works/sustainability/climate-action-planning#:~:text=City%20Council%20Direction%20%E2%80%93%20Jan%2012,Climate%20and%20Environmental%20Action%20Plan.

City of Thousand Oaks. 2019b. *Existing Bikeways*. https://www.toaks.org/home/showpublisheddocument?id=24601.

City of Thousand Oaks. 2021b. *Groundwater Utilization Project Final Initial Study/Mitigated Negative Declaration*. Prepared by Kennedy/Jenks Consultants. August.

City of Thousand Oaks. 2022a. “History.” *Public Information Office*. City Manager’s Office. Accessed February 21, 2022. https://www.toaks.org/departments/city-manager-s-office/public-information-office/history.

City of Thousand Oaks. 2022b. *General Plan*. Accessed March 2022. https://www.toaks.org/departments/community-development/planning/general-plan.

City of Thousand Oaks. 2022c. *Fire*. Accessed March 2022. https://www.toaks.org/departments/fire.

City of Thousand Oaks. 2022d. *Trails & Open Space*. Accessed March 16, 2022. https://www.toaks.org/departments/community-development/trails-open-space.

City of Thousand Oaks. 2022e. *Bus Routes and Schedules*. https://www.toaks.org/departments/public-works/transit/bus-routes-and-schedules.

City of Westlake Village. 2019a. *City of Westlake Village General Plan*. Adopted on January 9. https://www.wlv.org/DocumentCenter/View/2525/General-Plan-Cover-and-TOC-2019-01?bidId=.

City of Westlake Village. 2019b. *Fire Prevention Regulations*. https://library.municode.com/ca/westlake_village/codes/code_of_ordinances?nodeId=ART3PUSA_CH3.1FIPR.

City of Westlake Village. 2020. “Chapter One – Community Development.” *General Plan*. June 24. https://www.wlv.org/DocumentCenter/View/2521/General-Plan-Chapter-1-Community-Development-2019-01?bidId=.

City of Westlake Village. 2022. *City History.* Accessed February 5, 2022. https://www.wlv.org/116/City-History.

Conejo Open Space Conservation Agency (COSCA). 2020. *Who We Are.* http://www.conejo-openspace.org/about.html.

Conejo Open Space Conservation Agency (COSCA). 2021a. *Natural Open Space Areas*. http://www.conejo-openspace.org/assets/natural-open-space-20210604_.pdf.

Conejo Open Space Conservation Agency (COSCA). 2022b. *Arroyo Conejo*. Accessed on March 16, 2022. http://www.conejo-openspace.org/arroyo-conejo.html.

Cooper, J. D., and P. J. Eisentraut. 2002. Orange County Archaeo/Paleo Curation Draft Guidelines, Procedures and Policies - Draft Document. Prepared for County of Orange, Board of Supervisors.

Council on Environmental Quality (CEQ). 2021. *Guidance on Consideration of Greenhouse Gases*. https://ceq.doe.gov/guidance/ceq_guidance_nepa-ghg.html.

Dagit, R., and J. Krug. 2011. *Summary Report Santa Monica Bay Steelhead Monitoring 2009-2011*. Final Report to CDFG Contract No. P0850021. Agoura Hills, California: Resource Conservation District of the Santa Monica Mountains.

Dagit, Rosi, and Mark Abramson. 2007. *Malibu and Arroyo Sequit Creeks Southern California steelhead Monitoring.* Prepared for California Department of Fish and Game.

Dagit, Rosi, Sabrina Drill, Ph.D., and Bo Meyer. 2005. *Historic Distribution of Southern Steelhead Trout in the Santa Monica Bay Region.* Prepared for California Department of Fish and Game and NOAA Fisheries. July.

David, L. R. 1943. *Miocene fishes of southern California*. Geological Society of America Special Paper 43:92.

Dibblee, T.W. Jr. 1992. *Geologic Map of the Calabasas Quadrangle*. 1:24,000 Dibblee Geological Foundation Map DF-37.

Dibblee, T.W., and H.E. Ehrenspeck, eds. 1990. “Geologic map of the Camarillo and Newbury Park quadrangles, Ventura County, California.” Dibblee Foundation Map DF-28, scale 1:24,000. Dibblee Geological Foundation. *National Geologic Map Database*. https://ngmdb.usgs.gov/Prodesc/proddesc_183.htm.

Dibblee, T.W., and H.E. Ehrenspeck, eds. 1992. “Geologic map of the Calabasas quadrangle, Los Angeles and Ventura Counties, California.” Dibblee Geological Foundation Map DF-37, scale 1:24,000. Dibblee Geological Foundation. *National Geologic Map Database*. https://ngmdb.usgs.gov/Prodesc/proddesc_219.htm.

Dibblee, T.W., and H.E. Ehrenspeck, eds. 1993. “Geologic map of the Thousand Oaks quadrangle, Ventura County, California.” Dibblee Geological Foundation Map DF-49, scale 1:24,000. Dibblee Geological Foundation. *National Geologic Map Database*. https://ngmdb.usgs.gov/Prodesc/proddesc_220.htm.

EnergySoft. 2009. *2009 Savings By Design Healthcare Modeling Procedures*. Prepared for Pacific Gas and Electric Company and Southern California Edison. October. https://www.pge.com/includes/docs/pdfs/mybusiness/energysavingsrebates/incentivesbyindustry/healthcarebio/2009%20Healthcare%20Baseline.pdf.

Envicom Corporation. 2014. *Spring 2014 Rare Plant Survey – The Park at Ladyface Project Site*. June 19.

Esri. 2021. *World Topo Map*. Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community. https://www.arcgis.com/home/item.html?id=30e5fe3149c34df1ba922e6f5bbf808f.

Esri. 2022. *Wildland Urban Interface*. ArcGIS webmap. Accessed March 2022. https://www.arcgis.com/home/webmap/viewer.html?layers=a4985d64969743db8feddf01c96c9435.

Federal Emergency Management Agency (FEMA). 2021. *National Flood Hazard Layer*. Accessed December 17, 2021. https://www.fema.gov/flood-maps/national-flood-hazard-layer.

Federal Highway Administration (FHWA). 1988. *Visual Impact Assessment for Highway Projects*. FHWA-HI-88-054. U.S. Department of Transportation. https://www.placer.ca.gov/DocumentCenter/View/8259/FHWA-1981-Visual-Impact-Assessment-PDF.

Federal Highway Administration (FHWA). 2006. *Roadway Construction Noise Model*. Final Report. U.S. Department of Transportation. FHWA-HEP-05-054. DOT-VNTSC-FHWA-05-01. January. https://www.gsweventcenter.com/Draft_SEIR_References/2006_01_Roadway_Construction_Noise_Model_User_Guide_FHWA.pdf.

Federal Transit Administration (FTA). 2018. *Transit Noise and Vibration Impact Assessment Manual*. FTA Report No. 0123. Prepared By John A. Volpe National Transportation Systems Center. September. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf.

Gerba, Charles P. 2016. *Review of Proposed Recycling Criteria for Indirect Potable Reuse through Surface Water Augmentation*. May 23.

Global Monitoring Laboratory. 2022. 2022. "Global CH4 Monthly Means." *Trends in Atmospheric Methane*. Ed Dlugokencky, NOAA/GML, compiler. August 5. https://gml.noaa.gov/ccgg/trends_ch4/.

Golla, V. 2007. “Linguistic Prehistory.” *California Prehistory.* T. L. Jones and K. A. Klar, editors. Lantham, Maryland: AltaMira Press.

Goodman, D. H., S. B. Reid, M. F. Docker, G. R. Haas, and A. P. Kinziger. 2008. “Mitochondrial DNA evidence for high levels of gene flow among populations of a widely distributed anadromous lamprey *Entosphenus tridentatus*.” *Journal of Fish Biology.* 72:400–417.

Governor’s Office of Planning and Research (OPR). 2017. *State of California General Plan Guidelines*. July 31. https://www.opr.ca.gov/docs/OPR_COMPLETE_7.31.17.pdf.

Governor's Office of Planning and Research (OPR). 2018. *Technical Advisory on Evaluating Transportation Impacts in CEQA*. December. http://opr.ca.gov/docs/20190122-743_Technical_Advisory.pdf.

Greenwood, R.S. 1978. “Obispeño and Purisimeño Chumash.” *Volume 8, California, Handbook of North American Indians*. Robert F. Heizer, editor. Washington DC: Smithsonian Institution.

Hazzard, J. C. 1940. Geology of a part of the Santa Susana-San Gabriel Mountains district, Los Angeles County, California: Unpublished Union Oil Company Report 49, including 1 plate, scale 1:18,000.

Hoover, R. 1986. *Archaeological Survey Report for the Proposed Shell-Union Oil Pipeline Connection, Price Canyon Facility.* Santa Barbara: Central Coast Information Center, Department of Anthropology, University of California.

Intergovernmental Panel on Climate Change (IPCC). 2013. *Climate Change 2013: The Physical Science Basis.* Working Group I contribution to the IPCC Fifth Assessment Report. Cambridge, United Kingdom: Cambridge University Press. www.ipcc.ch/report/ar5/wg1.

Intergovernmental Panel on Climate Change (IPCC). 2022. *Climate change 2022: Mitigation of climate change*. Working Group III contribution to the IPCC Sixth Assessment Report. Cambridge, United Kingdom: Cambridge University Press. https://www.ipcc.ch/report/sixth-assessment-report-working-group-3/.

Jefferson, G. T. 1991a. *A catalogue of Late Quaternary Vertebrates from California: Part One, nonmarine lower vertebrate and avian taxa*. Natural History Museum of Los Angeles County Technical Reports No. 5.

Jefferson, G. T. 1991b. *A catalogue of Late Quaternary Vertebrates from California: Part Two, Mammals*. Natural History Museum of Los Angeles County Technical Reports No. 7.

Jones, G.R., I. Jones, B.A. Gray, B. Parker, J.C. Coe, J.B. Burnham, and N.M. Geitner. 1975. “A Method for the Quantification of Aesthetic Values for Environmental Decision Making.” *Nuclear Technology*. 25(4):682–713. https://doi.org/10.13182/NT75-A16126.

KellerLynn, K. 2008. *Geological Resource Evaluation Scoping Summary: Santa Monica Mountains National Recreation Area, California*. Denver, Colorado: National Park Service, Geologic Resources Division. September 23. https://irma.nps.gov/DataStore/DownloadFile/597748.

Kennedy Jenks. 2021. *Thousand Oaks Extended Pumping at Los Robles Golf Course*. Prepared for City of Thousand Oaks. Kennedy Jenks Project Number 2044405*00.

KOA Corporation (KOA). 2021. *City of Thousand Oaks Local Roadway Safety Plan*. May. https://www.toaks.org/home/showpublisheddocument?id=37932.

Kroeber, A. L. 1925. *Handbook of the Indians of California*. Bulletin 78 of the Bureau of American Ethnology of the Smithsonian Institution, Government Printing Office, Washington. Republished in 1976 by New York: Dover Publications, Inc.

Landberg, L. C. W. 1965. *The Chumash Indians of Southern California*. Southwest Museum Papers No. 19. Los Angeles: Southwest Museum.

Lander, E. B., compiler. 2011. “Stratigraphy, biostratigraphy, biochronology, geochronology, magnetostratigraphy, and plate tectonic history of the early Middle Eocene to late Early Miocene Sespe, Vaqueros, and lower Topanga formations, east-central Santa Monica Mountains, Los Angeles County, southern California.” *Western Association of Vertebrate Paleontologists 2011 Annual Meeting Field Trip Volume and Guidebook*. Los Angeles, California: Natural History Museum of Los Angeles County.

Las Virgenes Municipal Water District (Las Virgenes MWD). 2018. *Pure Water Project Las Virgenes Triunfo Joint Powers Authority Title XVI Feasibility Study*. Final Draft. Prepared by Kennedy Jenks Consultants. September 6. https://www.triunfowsd.com/wp-content/uploads/2020/03/11-05-18_JPA_Meeting_Agenda_Packet.pdf.

Las Virgenes Municipal Water District (Las Virgenes MWD). 2021. *Urban Water Management Plan*. July 12. https://www.lvmwd.com/your-water/urban-water-management-plan.

Las Virgenes Municipal Water District (Las Virgenes MWD). 2022. *Tapia Water Reclamation Facility*. https://www.lvmwd.com/about-us/joint-powers-authority/wastewater-services/tapia-water-reclamation-facility.

Las Virgenes-Malibu Council of Governments (Las Virgenes-Malibu COG). 2001. *Watershed Management Area Plan for the Malibu Creek Watershed*. Prepared by PCR Services Corporation and WaterCycle LLC.

Las Virgenes-Malibu Council of Governments (Las Virgenes-Malibu COG). 2018. *Las Virgenes-Malibu Council of Governments Multi-Jurisdictional Hazard Mitigation Plan.* Version 2.2. March 12. http://wlv.org/Archive/ViewFile/Item/1383.

Las Virgenes-Triunfo Joint Powers Authority (JPA). 2019. *Preliminary Design Report: Summer Flow Augmentation of Malibu Creek*. Prepared by Stantec. January. p. 15. https://www.triunfowsd.com/wp-content/uploads/2020/03/03-04-19_JPA_Meeting_Agenda_Packet.pdf.

Lim, Mong Hoo. 2016. *External Peer Review of Proposed Uniform Water Recycling Criteria for Indirect Potable Reuse through Surface Water Augmentation*. May 9.

Los Angeles County Department of Parks and Recreation (Los Angeles County Parks). 2022. *Pentachaeta Trail*. Accessed on March 16, 2022. https://trails.lacounty.gov/Trail/369/pentachaeta-trail.

Los Angeles County Department of Regional Planning (LACDRP). 2022. *Significant Ecological Areas*. Accessed February 25, 2022. https://planning.lacounty.gov/sea/regional_habitat_linkages_and_wildlife_corridors/..

Los Angeles County Metropolitan Transportation Authority (LA Metro). 2021-2022. *Maps & Schedules*. Accessed February 7, 2022. https://www.metro.net/riding/schedules/.

Los Angeles County. 2012. *Los Angeles County Operational Area Emergency Response Plan.* June. https://ceo.lacounty.gov/wp-content/uploads/2019/12/OAERP-Approved-Adopted-Version-6-19-2012.pdf.

Los Angeles County. 2018. *Hydrologic Report 2016-2017*. Los Angeles County Public Works. https://dpw.lacounty.gov/wrd/report/index.cfm.

Los Angeles County. 2019. *Hydrologic Report 2017-2018*. Los Angeles County Public Works. https://dpw.lacounty.gov/wrd/report/index.cfm.

Los Angeles County. 2020a. *Hydrologic Report 2018-2019*. Los Angeles County Public Works. https://dpw.lacounty.gov/wrd/report/index.cfm.

Los Angeles County. 2020b. *2020 County of Los Angeles All-Hazards Mitigation Plan*. May 18. https://ceo.lacounty.gov/wp-content/uploads/2022/04/County-of-Los-Angeles-All-Hazards-Mitigation-Plan-APPROVED-05-2020.pdf.

Los Angeles County. 2021. *Hydrologic Report 2019-2020*. Los Angeles County Public Works. https://dpw.lacounty.gov/wrd/report/index.cfm.

Los Angeles County. 2022a. *LA County Bikeways Map*. Accessed February 7, 2022. https://dpw.lacounty.gov/bike/map.cfm.

Los Angeles County. 2022b. *Los Angeles County Storm Drain System*. Accessed March 21, 2022. https://pw.lacounty.gov/fcd/StormDrain/disclaimer.cfm?CFID=13853750&CFTOKEN=4c61e5624941f7dc-32BFD2DB-C6A1-696A-20815AC450F9E7CB.

Los Angeles Department of Transportation (Los Angeles DOT). 2022. "Commuter Express." *LADOT Transit*. Accessed February 7, 2022. https://www.ladottransit.com/#mNavCE.

Los Angeles Regional Water Quality Control Board (Regional Board). 2020. *Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties.* May 18. Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties | Los Angeles Regional Water Quality Control Board (ca.gov).

Mahendra, Shaily. 2016. *External Peer Review of Proposed Uniform Water Recycling Criteria for Indirect Potable Reuse through Surface Water Augmentation*. June 10.

Malibu Creek Watershed Management Group. 2015. Enhanced Watershed Management Program for Malibu Creek Watershed. Draft Report. June 25.

Metropolitan Water District of Southern California (Metropolitan). 2021. *2020 Urban Water Management Plan*. June. 2020-urban-water-management-plan-june-2021.pdf (mwdh2o.com).

Miller, W. E. 1971. *Pleistocene Vertebrates of the Los Angeles Basin and Vicinity: exclusive of Rancho La Brea.* Los Angeles County Museum of Natural History, No. 10.

Mountains Recreation and Conservation Authority (MRCA). 2022. *Triunfo Creek Park*. https://mrca.ca.gov/parks/park-listing/triunfo-creek-park/.

Moyle, P.B., R.M. Quinones, Katz, J.V, and J. Weaver. 2015. *Fish species of special concern in California*. Sacramento: California Department of Fish and Wildlife.

Murphy, A. L. 1979. *A Comprehensive Story of Ventura County, California*. Oxnard: M&N Printing.

National Aeronautics and Space Administration (NASA). 2022. *Carbon Dioxide*. February. https://climate.nasa.gov/vital-signs/carbon-dioxide/.

National Earthquake Hazards Reduction Program (NEHRP). 2008. "Earthquake Hazards Reduction Act of 1977, As Amended." *About Us*. December 19. https://www.nehrp.gov/about/PL108-360.htm.

National Marine Fisheries Service (NMFS). 2012. *Southern California Steelhead Recovery Plan*. Long Beach, California: Southwest Region, Protected Resources Division. https://www.fisheries.noaa.gov/resource/document/southern-california-steelhead-recovery-plan#:~:text=The%20goal%20of%20this%20Recovery,Distinct%20Population%20Segment%20(DPS).

National Park Service (NPS). 2022. *2018 Woolsey Fire*. Accessed March 30, 2022. https://www.nps.gov/samo/learn/management/2018-woolsey-fire.htm.

O'Brien, J. W., and R. M. Barabe. 2022. "Status and distribution of Arroyo Chub within its native range." *California Fish and Wildlife.* 108(1):93-107.

Padre Associates, Inc. 2019. *Final Environmental Impact Report, Calleguas Municipal Water District Las Virgenes Municipal Water District Interconnection Project*. Prepared for the Calleguas Municipal Water District, Thousand Oaks, California 91360. August.

Priestley, H. I. 1937. *A Historical, Political, and Natural Description of California by Pedro Fages, Written for the Viceroy in 1775*. Translated by Herbert Ingram Priestley. Berkeley: University of California Press.

Resource Conservation District of the Santa Monica Mountains (RCDSMM). 2021. "Malibu Creek Watershed." *Watersheds of the SMM*. https://www.rcdsmm.org/resources/watersheds/.

Reynolds, S.F.B., and R.L. Reynolds. 1991. "The Pleistocene beneath our feet: near-surface Pleistocene fossils in inland southern California basins." *Inland Southern California: the last 70 Million Years*. M.O. Woodburne, S.F.B. Reynolds, and D.P. Whistler, editors. Redlands, San Bernardino County Museum Special Publication 38(3&4): 41-43.

Rincon Consultants (Rincon). 2022. *Vegetation Community Report for the Pure Water Project*. June 22.

Sampson, M. 2022. "Humaliwo: Where The Surf Sounds Lovely." *Humaliwo: An Ethnohistoric Overview of the Chumash in Malibu*. California Department of Parks and Recreation. http://www.parks.ca.gov/?page_id=24435.

Sapphos Environmental. 2014. *County of Los Angeles General Plan Environmental Impact Report*.

Society of Vertebrate Paleontology (SVP). 1995. *Assessment and mitigation of adverse impacts to nonrenewable paleontologic resources: standard guidelines*. Society of Vertebrate Paleontology News Bulletin 163:22–27.

Society of Vertebrate Paleontology (SVP). 2010. *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources*. https://vertpaleo.org/wp-content/uploads/2021/01/SVP_Impact_Mitigation_Guidelines-1.pdf.

South Coast Air Quality Management District (South Coast AQMD). 1993. *Air Quality Analysis Handbook*. http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook.

South Coast Air Quality Management District (South Coast AQMD). 2008a. *Localized Significance Thresholds*. http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/localized-significance-thresholds.

South Coast Air Quality Management District (South Coast AQMD). 2008b. *Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans.* December 5. http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgboardsynopsis.pdf?sfvrsn=2.

South Coast Air Quality Management District (South Coast AQMD). 2017. *Final 2016 Air Quality Management Plan*. https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.pdf?sfvrsn=15.

South Coast Air Quality Management District (South Coast AQMD). 2019. *South Coast AQMD Air Quality Significance Thresholds*. http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2.

South Coast Wildlands. 2008. *South Coast Missing Linkages: A Wildland Network for the South Coast Ecoregion*. March. http://www.scwildlands.org/reports/SCMLRegionalReport.pdf.

Squires, R.L. 1997. "Geologic Profile of Simi Valley." *Simi Valley – A Journey Through Time*. P. Havens and B. Appleton, editors. Simi Valley Historical Society and Museum. pp. 293-301.

Stadum, C.J., and P.W. Weigand. 1998. "Fossil Wood from the Middle Miocene Conejo Volcanics, Santa Monica Mountains, California." *Bulletin of the Southern California Academy of Sciences*. Vol. 98. pp. 15-25.

Stanton, R., and J.M. Alderson. 2013. "Limestone interbedded with submarine volcanics: the Early–Middle Miocene Conejo Volcanics, California." *Facies.* 59:467–480. https://www.semanticscholar.org/paper/Limestone-interbedded-with-submarine-volcanics%3A-the-Stanton-Alderson/5fe14fc19b2ba85654f3850d4f3e0ae53deb4d05.

State Board of Forestry and Fire Protection. 2018. *2018 Strategic Fire Plan for California*. California Department of Forestry and Fire Protection (CAL FIRE). August 22. https://osfm.fire.ca.gov/media/5590/2018-strategic-fire-plan-approved-08_22_18.pdf.

State of California. 2009a. *Tsunami Inundation Map for Emergency Planning, Oxnard Quadrangle, Ventura County*. Mapped at 1:24,000 scale. Produced by California Emergency Management Agency, California Geological Survey, and University of Southern California – Tsunami Research Center.

State of California. 2009b. *Tsunami Inundation Map for Emergency Planning, Pitas Point Quadrangle, Ventura County*. Mapped at 1:24,000 scale. Produced by California Emergency Management Agency, California Geological Survey, and University of Southern California – Tsunami Research Center.

State of California. 2009c. *Tsunami Inundation Map for Emergency Planning, Point Mugu East Quadrangle, Ventura County.* Mapped at 1:24,000 scale. Produced by California Emergency Management Agency, California Geological Survey, and University of Southern California – Tsunami Research Center.

State of California. 2009d. *Tsunami Inundation Map for Emergency Planning, Point Mugu West Quadrangle, Ventura County.* Mapped at 1:24,000 scale. Produced by California Emergency Management Agency, California Geological Survey, and University of Southern California – Tsunami Research Center.

State of California. 2009e. *Tsunami Inundation Map for Emergency Planning, Triunfo Pass Quadrangle, Ventura County*. Mapped at 1:24,000 scale. Produced by California Emergency Management Agency, California Geological Survey, and University of Southern California – Tsunami Research Center.

State of California. 2009f. *Tsunami Inundation Map for Emergency Planning, Ventura Quadrangle, Ventura County*. Mapped at 1:24,000 scale. Produced by California Emergency Management Agency, California Geological Survey, and University of Southern California – Tsunami Research Center.

State of California. 2021. *Los Angeles Count Tsunami Hazard Areas*. Mapped at multiple scales. Produced by the California Governor's Office of Emergency Services, the California Geological Survey, and AECOM Technical Services, the Tsunami Research Center at the University of Southern California. Accessed on March 21. 2022. https://www.conservation.ca.gov/cgs/tsunami/maps/los-angeles.

State of California. 2022a. *GeoTracker*. California Water Boards. Accessed March 2022. https://geotracker.waterboards.ca.gov/.

State of California. 2022b. *California Historical Resources Information System*. Accessed March 2022. https://ohp.parks.ca.gov/?page_id=1068.

State of California. 2022c. *California Environmental Reporting System (CERS)*. California Environmental Protection Agency. https://cers.calepa.ca.gov/.

State Lands Commission. n.d. *Grants of Land in California Made by Spanish or Mexican Authorities*. https://www.slc.ca.gov/wp-content/uploads/2018/11/1982-GrantsSpanishMexican.pdf.

State Water Resources Control Board (State Water Board). 2017. *Initial Statement of Reasons – Surface Water Augmentation Regulations*. File No. SBDDW-16-02. February 14. https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Surface_Water_Augmentation_Regulations.html.

State Water Resources Control Board (State Water Board). 2022. *About The Water Board*. Accessed March 28, 2022. https://www.waterboards.ca.gov/about_us/.

Swift and Howard. 2009. Current Status and Distribution of the Pacific Lamprey South of Point Conception, Coastal Southern California, USA. *Proceedings of the American Fisheries Society Symposium.* 72:269–278.

Swift, C.C., T.R. Haglund, M. Ruiz, and R.N. Fisher. 1993. "The status and distribution of the freshwater fishes of southern California." *Bulletin of the Southern California Academy of Sciences*. 92:101-167.

The Bay Foundation. 2019. *Malibu Lagoon Restoration and Enhancement Project. Final Comprehensive Monitoring Report (Year 6).* August. https://www.santamonicabay.org/resources/malibu-lagoon-final-comprehensive-monitoring-report-year-6/?project=malibu-lagoon.

Triem, J. 1985. *Ventura County, Land of Good Fortune.* Chatsworth, California: Windsor Publications.

Turner, Robin. 2011. *Cultural Resources and Paleontological Resources Assessment for the Agoura Road Widening Project (2011).*

Tweet, J. S., V. L. Santucci, and T. Connors. 2012. *Paleontological resource inventory and monitoring: Mediterranean Coast Network.* Natural Resource Technical Report NPS/MEDN/NRTR—2012/640. Fort Collins, Colorado: National Park Service.

U.S. Army Corps of Engineers (USACE) and California Department of Parks and Recreation (CDPR). 2017. *Malibu Creek Ecosystem Restoration Study, draft Integrated Feasibility Report (IFR) with Environmental Impact Statement/Environmental Impact Report (EIS/EIR) Los Angeles and Ventura Counties, California*. https://usace.contentdm.oclc.org/digital/collection/p16021coll7/id/3678/.

U.S. Army Corps of Engineers (USACE). 1987. *Corps of Engineers Wetlands Delineation Manual*. Technical Report Y-87-1. Vicksburg, MS: Environmental Laboratory, Waterways Experiment Station, Wetlands Research Program. https://www.nae.usace.army.mil/Missions/Regulatory/Jurisdiction-and-Wetlands/Wetland-Delineation-Manual/.

U.S. Army Corps of Engineers (USACE). 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region.* Version 2.0. J. S. Wakeley, R. W. Lichvar, and C. V. Noble, editors. ERDC/EL TR-08-28. Vicksburg, MS: U.S. Army Engineer Research and Development Center. https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1046489.pdf.

U.S. Army Corps of Engineers (USACE). 2013. Draft Fish and Wildlife Coordination Act Report. Malibu Canyon Ecosystem Restoration Feasibility Study Los Angeles County, California. Ventura, California: U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office.

U.S. Environmental Protection Agency (EPA). 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. March. https://archive.epa.gov/epa/aboutepa/epa-identifies-noise-levels-affecting-health-and-welfare.html.

U.S. Environmental Protection Agency (EPA). 1994. *Fact Sheet: Final Air Toxics General Provisions Rule.* March 1. https://www3.epa.gov/airtoxics/gp/gpfact94.pdf.

U.S. Environmental Protection Agency (EPA). 2007. *Control of Hazardous Air Pollutants from Mobile Sources.* February.

U.S. Environmental Protection Agency (EPA). 2009. *Final Mandatory Reporting of Greenhouse Gases Rule.* October. https://www.epa.gov/regulations-emissions-vehicles-and-engines/final-rule-mandatory-reporting-greenhouse-gases.

U.S. Environmental Protection Agency (EPA). 2013. *Malibu Creek and Lagoon Sedimentation and Nutrients TMDL to Address Benthic Community Impairments*. July 2. Final Malibu Creek & Lagoon TMDL for Sedimentation and Nutrients to Address Benthic Community Impairments - Signed - 07/02/2013 (ca.gov).

U.S. Environmental Protection Agency (EPA). 2021a. *Summary of the Clean Air Act*. September 28. https://www.epa.gov/laws-regulations/summary-clean-air-act.

U.S. Environmental Protection Agency (EPA). 2021b. *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2019.* https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2019.

U.S. Environmental Protection Agency (EPA). 2021c. *Understanding Global Warming Potentials*. October 18. https://www.epa.gov/ghgemissions/understanding-global-warming-potentials.

U.S. Environmental Protection Agency (EPA). 2021d. *Climate Change Indicators: Atmospheric Concentrations of Greenhouse Gases.* July 21. https://www.epa.gov/climate-indicators/climate-change-indicators-atmospheric-concentrations-greenhouse-gases#:~:text=Over%20the%20past%20800%2C000%20years,is%20primarily%20due%20to%20agriculture.

U.S. Environmental Protection Agency (EPA). 2021e. *Overview of Greenhouse Gases.* July 21. https://www.epa.gov/ghgemissions/overview-greenhouse-gases#methane.

U.S. Environmental Protection Agency (EPA). 2022a. *Nonattainment Areas for Criteria Pollutants (Green Book)*. February 28. https://www.epa.gov/green-book.

U.S. Environmental Protection Agency (EPA). 2022b. *Sulfur Hexafluoride (SF6) Basics*. April 29. https://www.epa.gov/eps-partnership/sulfur-hexafluoride-sf6-basics.

U.S. Environmental Protection Agency (EPA). 2022c. *Regulations for Onroad Vehicles and Engines.* February 7. https://www.epa.gov/regulations-emissions-vehicles-and-engines/regulations-onroad-vehicles-and-engines.

U.S. Environmental Protection Agency (EPA). 2022d. *EnviroMapper for EnviroFacts*. Accessed March 2022. https://enviro.epa.gov/enviro/em4ef.home.

U.S. Fish and Wildlife Service (USFWS). 2000. *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants*. January. https://cnps.org/wp-content/uploads/2019/10/Bot-Cert_US-Fish-and-Wildlife-Service-guidelines-botanical-inventories-LR.pdf.

U.S. Fish and Wildlife Service (USFWS). 2022. *IPaC Information for Planning and Consultation*. Database. Accessed March 2022. https://ipac.ecosphere.fws.gov/.

U.S. Forest Service (USFS). 1995. *Landscape Aesthetics: A Handbook for Scenery Management.* Agriculture Handbook Number 701. December. https://www.nrc.gov/docs/ML1224/ML12241A377.pdf.

U.S. Geological Survey (USGS). 1903. *Camulos Quadrangle Topographical Map. 1:25,000*. https://www.mapsofthepast.com/usgs-topo-map-camulos-california-1903.html.

U.S. Geological Survey (USGS). 2020. *Quaternary Fault and Fold Database of the United States*. Last updated September 2, 2020. https://usgs.maps.arcgis.com/apps/webappviewer/index.html?id=5a6038b3a1684561a9b0aadf88412fcf

U.S. Geological Survey (USGS). 2021. *National Hydrography Dataset*. Accessed December 17, 2021. https://www.usgs.gov/national-hydrography/national-hydrography-dataset.

U.S. Geological Survey (USGS). 2022. *Earthquake Hazards Program, Search Earthquake Catalog*. Accessed August 15, 2022. https://earthquake.usgs.gov/earthquakes/search/.

U.S. Global Change Research Program (USGCRP). 2017. *Climate Science Special Report: Fourth National Climate Assessment.* Vol. 1. D.J. Wuebbles, D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock, editors. Washington, DC. doi: 10.7930/J0J964J6. p. 470. https://www.nrc.gov/docs/ML1900/ML19008A410.pdf.

U.S. Green Building Council. 2022. *LEED rating system*. https://www.usgbc.org/leed?utm_medium=ppc&gclid=CjwKCAjw0a-SBhBkEiwApljU0kIfkl8632C7MT60BmNozre_DX8LfepiWR2-mRzcnwqtFnGZLnsvkRoC-bsQAvD_BwE.

U.S. Geological Survey (USGS). 1903. "Camulos Quad." *Historical Topographic Maps - Preserving the Past*. National Geospatial Program. https://www.usgs.gov/programs/national-geospatial-program/historical-topographic-maps-preserving-past.

U.S. Soil Conservation Service (SCS). 1978. *Procedure to Establish Priorities in Landscape Architecture*. Technical Release No. 65. Washington, DC.

U.S. Supreme Court. 1995. *Babbitt, Secretary of Interior, et al., Petitioners v. Sweet Home Chapter of Communities for a Great Oregon, et al. (No. 94-859).* June 29.

U.S. Supreme Court. 2001. *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers, 531 U.S. 159*. City

University of California at Berkeley (Berkeley). 2022. *Databases*. UC Museum of Paleontology. Accessed March 2022. https://ucmp.berkeley.edu/collections/databases/.

Ventura County Air Pollution District (Ventura County APCD). 2003. *Ventura County Air Quality Assessment Guidelines*. October. http://www.vcapcd.org/pubs/Planning/VCAQGuidelines.pdf.

Ventura County Air Pollution District (Ventura County APCD). 2017. *2016 Ventura County Air Quality Management Plan.* http://www.vcapcd.org/AQMP-2016.htm.

Ventura County Regional Energy Alliance. 2015. *Climate on the Move*. https://www.vcenergy.org/wp-content/uploads/Climate_on_the_Move_Final.pdf.

Ventura County. 2005. *Final Subsequent Environmental Impact Report for Focused General Plan Update and Related Amendments to the Non-Coastal Zoning Ordinance and Zone Change ZN05-0008*. Resource Management Agency. June 22. https://docs.vcrma.org/images/pdf/planning/plans/SEIR_for_GPU.pdf.

Ventura County. 2010a. *Construction Noise Threshold Criteria and Control Plan.* Prepared by Advanced Engineering Acoustics for Ventura County. Adopted November 2005. Amended July 2010.

Ventura County. 2010b. *2010 Ventura County Hazard Mitigation Plan*. Final Draft. October. Prepared by URS. https://www.oxnard.org/wp-content/uploads/2016/06/FINAL_DRAFT_VenturaCountyHazardMitigationPlan-Oct2010.pdf.

Ventura County. 2019. *Ventura County General Plan, Goals, Policies and Programs*. Last Amended by the Ventura County Board of Supervisors on March 19.. Resource Management Agency Planning Division. https://docs.vcrma.org/images/pdf/planning/plans/Goals-Policies-and-Programs.pdf.

Ventura County. 2020. *Ventura County 2040 General Plan.* September 15.. https://vc2040.org/.

Ventura County. 2021. *Ventura County Operational Area Emergency Operations Plan.* Office of Emergency Services. https://s29710.pcdn.co/wp-content/uploads/2021/03/EOP-Draft-Public.pdf.

Ventura County. 2022a. *Hazardous Waste Program*. Accessed March 2022. https://vcrma.org/hazardous-waste-program.

Ventura County. 2022b. *Hazardous Materials Business Plan Program*. https://vcrma.org/hazardous-materials-business-plan-program.

Ventura County. 2022c. "Santa Rosa Valley Park, Camarillo." *Parks Department*. https://www.ventura.org/parks-department/inland-parks/santa-rosa-valley-park-camarillo/.

VisitCamarillo.com. 2022. "Hill Canyon Trail." *Digital Visitors Guide*. https://visitcamarillo.com/business/recreation/hill-canyon-trail/.

W&S Consultants (W&S). 1997. *Phase I Archaeological Survey and Cultural Resources Assessment for the Northwest Golf Course Community Specific Plan Study Area, Oxnard, Ventura County, California*. Prepared for Impact Sciences, Inc.

W.A. Whaler and Associates (Wahler). 1969. *Site and Laboratory Investigation for Westlake Reservoir.* Project Number 0152. September.

W.A. Whaler and Associates (Wahler). 1970. *Site and Laboratory Investigation for Westlake Reservoir – Supplementary Report.* Project Number 0152A. March.

Wells, Scott A. 2016. *Review of the Proposed Uniform Water Recycling Criteria for Indirect Potable Reuse through Surface Water Augmentation*. May 5.

Western Regional Climate Center (WRCC). 2016a. *Woodland Hills Pierce College, California (041484)*. Period of Record Monthly Climate Summary. Accessed March 31, 2022. https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca1484.

Western Regional Climate Center (WRCC). 2016b. *Woodland Hills Pierce College, California*. POR - Daily Temperature Averages and Extremes. Accessed March 31, 2022. https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca1484.

Western Regional Climate Center (WRCC). 2022a. "1981-2010 Monthly Climate Summary." *Woodland Hls Pierce CL, California (049785).* Accessed January 27, 2022.. https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca9785.

Western Regional Climate Center (WRCC). 2022b. "1981-2010 Monthly Climate Summary." *Topanga Ptrl Stn FC6, California (048967).* Accessed August 15, 2022.. https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca8967.

Whitley, D. S., and C. W. Clewlow, Jr. 1979. "The Organizational Structure of the Lulapin and Humaliwo." *The Archaeology of Oak Park, Ventura County, California*. Volume 3. C. W. Clewlow and D. S. Whitley, editors. Monograph 11. Los Angeles: Institute of Archaeology, University of California.

Whitley, D. S., and M. P. Beaudry. 1991. "Chiefs on the Cost: Developing Chiefdoms in the Tiquisate Region in Ethnohistoric Perspective." *Development of Complex Societies in Southeastern Mesoamerica*. W. Fowler, editor. Boca Raton, Florida: CRC Press.

Wlodarski, R. J. 1988. *An Archaeological Reconnaissance Report for Portions of Land Located within the Northeast Industrial Assessment District, City of Oxnard, Ventura County, California*. Prepared for the City of Oxnard.

Yerkes, R.F., and P.K. Showalter. 1991. *Preliminary Geologic Map of the Thousand Oaks 7.5-minute Quadrangle, Southern California*. U.S. Geological Survey Open File Report 91-2188.

Yerkes, R.F., and P.K. Showalter. 1993. *Preliminary Geologic Map of the Calabasas 7.5' Quadrangle, Southern California*. U.S. Geological Survey Open File Report 93-205.

Yerkes, R.F., and R.H. Campbell. 1979. *Stratigraphic nomenclature of the central Santa Monica Mountains, Los Angeles County, California*. U.S. Geological Survey Bulletin 1457 -E:E1 -E31.

Yerkes, R.F., and R.H. Campbell. 1995a. *Preliminary Geologic Map of the Calabasas 7.5' Quadrangle, Southern California: A Digital Database*. U.S. Geological Survey Digital Database Open File-Report 95-51.

Yerkes, R.F., and R.H. Campbell. 1995b. *Preliminary Geologic Map of the Thousand Oaks 7.5-minute Quadrangle, Southern California: A Digital Database.* U.S. Geological Survey Open File Report 95-88.

Yerkes, R.F., and R.H. Campbell. 1997a. *Preliminary Geologic Map of the Newbury Park 7.5-minute Quadrangle, Southern California*. U.S. Geological Survey Open File Report 97-428.

Yerkes, R.F., and R.H. Campbell. 1997b. *Preliminary Geologic Map of the Newbury Park 7.5-minute Quadrangle, Southern California: A Digital Database.* U.S. Geological Survey Open File Report 97-459.

Appendix A
Emissions Calculations

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Construction Emissions Summary

Maximum Daily Emissions within SCAQMD (onsite and offsite)

	ROG	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2e
	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
AWPF 2025	1.3055	12.6925	12.9445	0.0438	1.2502	0.5905	4,485.47
AWPF 2026	2.6102	20.891	25.1006	0.0803	3.5904	1.443	8,098.19
AWPF 2027	1.4282	10.5277	11.9179	0.0354	2.1005	0.8131	3,506.93
Pipeline (per crew)	1.675	19.370	18.399	0.082	2.721	0.983	8732.822
Pipeline (3 crews)	5.025	58.110	55.196	0.247	8.162	2.949	26198.467
Maximum Daily Emissions	**7.64**	**79.00**	**80.30**	**0.33**	**11.75**	**4.39**	NA
SCAQMD thresholds	**75**	**100**	**550**	**150**	**150**	**55**	NA

Note

Maximum daily emissions are calculated by combining the highest daily emissions of AWPF construction and the emissions from 3 pipeline segments construction.

Maximum Daily Emissions within VCAPCD (onsite and offsite)

	ROG	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2e
	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Pipeline (one crew)	1.681	19.118	18.516	0.082	2.727	0.982	8692.574

Note

Maximum daily emissions are calculated based on the emissions from one pipeline segments construction.

Maximum Daily Emissions within SCAQMD (onsite only)

	ROG	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$
	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
AWPF 2025	1.1851	10.328	11.4686	0.0292	0.4091	0.3498
AWPF 2026	2.1542	16.7629	20.2632	0.0425	0.651	0.6163
AWPF 2027	1.1459	8.8312	8.9589	0.0165	0.345	0.3272
Pipeline (one crew)	1.479	11.160	15.552	0.041	0.969	0.461
SCAQMD LST thresholds	**NA**	**147**	**644**	**NA**	**6**	**4**

AWPF Operational Emissions (all in SCAQMD)

Vehicle Emission Factors (EMFAC2017)

	ROG	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2e
	g/mile	g/mile	g/mile	g/mile	g/mile	g/mile	g/mile
Worker Commute	0.007	0.029	0.555	0.002	0.046	0.019	238.711
Heavy duty truck	0.019	2.375	0.200	0.011	0.117	0.055	1255.779

Note:

Vehicle emission factors were obtained from EMFAC2017:

Region: South Coast AQMD, 2028

Speed and model year: aggregated

Worker commute vehicles include auto and light duty trucks.

Haul trucks are assumed to be heavy duty truck

Vehicle Emissions

				Daily Emissions							Annual Emissions						
			Number of Days per Year	ROG	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2e	ROG	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2e
Vehicle Types	**Round Trips/day**	**miles/round trip**		lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day	ton/year	ton/year	ton/year	ton/year	ton/year	ton/year	metric ton/year
worker Commute	6	40	365	0.004	0.015	0.294	0.001	0.024	0.010	126.302	0.001	0.003	0.054	0.000	0.004	0.002	20.911
Haul Truck	1	100	365	0.004	0.524	0.044	0.003	0.026	0.012	276.847	0.001	0.096	0.008	0.000	0.005	0.002	50.525
Total				**0.008**	**0.539**	**0.338**	**0.004**	**0.050**	**0.022**	**403.150**	**0.001**	**0.098**	**0.062**	**0.001**	**0.009**	**0.004**	**71.436**

Note: AWPF operation would not be year round. Operation days of 365 days/year were used in the emission calculation to be conservative.

Emergency generator emission factors

Emergency Generator HP rating:	155							
Number of generators	2							
hours/day	1							
hours/year	50							
		ROG	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2e
Emission factors	g/hp-hr	0.19	4.17	3.7	0.006	0.128	0.128	568.30
Maximum Daily Emissions	lb/day	0.130	2.850	2.529	0.004	0.087	0.087	388.39
Annual GHG Emissions (metric tons/year)								**8.81**

Note:

Emission factors are obtained from CalEEMod User's Guide Table 3.4 and 3.5. Engine is assumed to be a Tier 2.

Maximum Daily Operation Emissions

		ROG	**NOx**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2e**
Daily Emissions	lb/day	0.138	3.389	2.867	0.008	0.138	0.110	791.538
SCAQMD CEQA Thresholds	**lb/day**	**55**	**55**	**550**	**150**	**150**	**55**	**NA**

Maximum daily emissions were estimated based on emissions from vehicle trips and the emergency engine testing/maintenance.

GHG Emissions Summary

AWPF Construction GHG Emissions(CalEEMod)

	MT CO2/year
AWPF 2025	**217.96**
AWPF 2026	**923.30**
AWPF 2027	**370.66**

Pipeline Construction GHG Emissions In Los Angeles County

	Pipeline Length ft	Construction Days	lb CO2e/day	MT CO2e/year
Source Water Alignment - 2.88 Miles	15,206.40	76	8732.82	**301.18**
Purified Water Alignment - 3.07 Miles	16,209.60	81	8732.82	**321.05**
Concentrate Alignment - 1.74 Miles	9,187.20	46	8732.82	**181.96**

Note: Construction days of each alignment were estimated based on the assumption that each 1000 ft of pipeline segment will take 5 days to complete.

Pipeline Construction GHG Emissions in Ventura county

	Pipeline Length ft	Construction Days	lb CO2e/day	MT CO2e/year
Concentrate Alignment - 11.45 Miles	60,456.00	302	8692.57	**1191.88**

Operation GHG Emissions (Direct Emissions)

	MT CO2e/Year
AWPF Vehicle Trips	**71.44**
AWPF Emergency Engines	**8.81**

GHG Emissions from Electricity Use (Indirect Emissions)

Power demand	MWh/year	MT CO2e/Year
CO2e Emissions	10753.07	**1916.88**

Note:

GHG emission factors:

	lb/MWh	GWP
CO2	390.98	1
CH4	0.033	25
N2O	0.004	298
CO2e	392.997	NA

Note:

Emission factors are CalEEMod default for SCE.

CO2e were calculated using the global warming potential (GWP): 100-year GWP from 40 CFR Appendix Table A-1 to Subpart A of Part 98 - Global Warming Potentials

Total Construction GHG Emissions

Construction GHG Emissions (MT CO2e)	3507.98
Amortized GHG Emissions (MT CO2e/year)	116.93
AWPF Operation Emissions (MT CO2e/year)	80.24
Electricity Use (MT CO2e/year)	1916.88
Total GHG Emissions (MT CO2e/year)	2114.06
SCAQMD GHG Emission thresholds	**10,000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Pure Water_AWPF Construction

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	130.50	1000sqft	3.00	130,500.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - project specific

Construction Phase - project specific

Off-road Equipment - project specific

Off-road Equipment - project specific

Off-road Equipment - project specific

Trips and VMT - project specific

Grading - project specific

Vehicle Trips - not calculating operational emissions with CalEEMod

Consumer Products - project specific

Area Coating -

Landscape Equipment - project specific

Water And Wastewater - not calculating operational emissions with CalEEMod

Solid Waste - Not calculating operational emissions with CalEEMod

Table Name	Column Name	Default Value	New Value
tblAreaCoating	ReapplicationRatePercent	10	0
tblConstructionPhase	NumDays	220.00	240.00

tblConstructionPhase	NumDays	220.00	240.00
tblConstructionPhase	NumDays	3.00	120.00
tblConsumerProducts	ROG_EF	1.98E-05	0
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	0
tblGrading	AcresOfGrading	60.00	3.00
tblGrading	MaterialExported	0.00	7,000.00
tblLandscapeEquipment	NumberSummerDays	250	0
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblSolidWaste	SolidWasteGenerationRate	161.82	0.00
tblTripsAndVMT	HaulingTripLength	20.00	100.00
tblTripsAndVMT	HaulingTripLength	20.00	100.00
tblTripsAndVMT	HaulingTripLength	20.00	100.00
tblTripsAndVMT	HaulingTripNumber	875.00	500.00
tblTripsAndVMT	VendorTripLength	6.90	0.00
tblTripsAndVMT	VendorTripLength	6.90	100.00
tblTripsAndVMT	VendorTripLength	6.90	100.00
tblTripsAndVMT	VendorTripNumber	21.00	10.00
tblTripsAndVMT	VendorTripNumber	21.00	4.00
tblTripsAndVMT	WorkerTripLength	14.70	40.00
tblTripsAndVMT	WorkerTripLength	14.70	40.00
tblTripsAndVMT	WorkerTripLength	14.70	40.00
tblTripsAndVMT	WorkerTripNumber	13.00	15.00
tblTripsAndVMT	WorkerTripNumber	55.00	65.00
tblTripsAndVMT	WorkerTripNumber	55.00	45.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TTP	28.00	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TTP	13.00	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TTP	59.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	0.00
tblVehicleTrips	ST_TR	6.42	0.00

tblVehicleTrips	SU_TR	5.09	0.00
tblVehicleTrips	WD_TR	3.93	0.00
tblWater	AerobicPercent	87.46	0.00
tblWater	AnaDigestCombDigestGasPercent	100.00	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00
tblWater	IndoorWaterUseRate	30,178,125.00	0.00
tblWater	SepticTankPercent	10.33	100.00

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					
2025	1.3055	12.6925	12.9445	0.0438	0.8531	0.3971	1.2502	0.2245	0.3660	0.5905	0.0000	4,400.6374	4,400.6374	0.9916	0.2015	4,485.4673
2026	2.6102	20.8910	25.1006	0.0803	2.9003	0.6901	3.5904	0.7897	0.6534	1.4430	0.0000	7,955.5460	7,955.5460	1.0776	0.3883	8,098.1933
2027	1.4282	10.5277	11.9179	0.0354	1.7377	0.3628	2.1005	0.4690	0.3441	0.8131	0.0000	3,449.6437	3,449.6437	0.3843	0.1600	3,506.9329
Maximum	**2.6102**	**20.8910**	**25.1006**	**0.0803**	**2.9003**	**0.6901**	**3.5904**	**0.7897**	**0.6534**	**1.4430**	**0.0000**	**7,955.5460**	**7,955.5460**	**1.0776**	**0.3883**	**8,098.1933**

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					
2025	1.3055	12.6925	12.9445	0.0438	0.8531	0.3971	1.2502	0.2245	0.3660	0.5905	0.0000	4,400.6374	4,400.6374	0.9916	0.2015	4,485.4673
2026	2.6102	20.8910	25.1006	0.0803	2.9003	0.6901	3.5904	0.7897	0.6534	1.4430	0.0000	7,955.5460	7,955.5460	1.0776	0.3883	8,098.1933
2027	1.4282	10.5277	11.9179	0.0354	1.7377	0.3628	2.1005	0.4690	0.3441	0.8131	0.0000	3,449.6437	3,449.6437	0.3843	0.1600	3,506.9329

Maximum	**2.6102**	**20.8910**	**25.1006**	**0.0803**	**2.9003**	**0.6901**	**3.5904**	**0.7897**	**0.6534**	**1.4430**	**0.0000**	**7,955.5460**	**7,955.5460**	**1.0776**	**0.3883**	**8,098.1933**

	ROG	NOx	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	8/5/2025	1/19/2026	5	120	
2	Building Construction	Building Construction	1/20/2026	12/21/2026	5	240	
3	MEP	Building Construction	12/22/2026	11/22/2027	5	240	

Acres of Grading (Site Preparation Phase): 3

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

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Off-Highway Trucks	1	8.00	402	0.38
Site Preparation	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	2	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Off-Highway Trucks	1	8.00	402	0.38
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
MEP	Cranes	1	8.00	231	0.29
MEP	Forklifts	2	8.00	89	0.20
MEP	Welders	3	8.00	46	0.45

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	5	15.00	0.00	500.00	40.00	0.00	100.00	LD_Mix	HDT_Mix	HHDT
Building Construction	10	65.00	10.00	0.00	40.00	100.00	100.00	LD_Mix	HDT_Mix	HHDT
MEP	6	45.00	4.00	0.00	40.00	100.00	100.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2025

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					0.0331	0.0000	0.0331	3.8600e-003	0.0000	3.8600e-003			0.0000			0.0000
Off-Road	1.1851	10.3280	11.4686	0.0292		0.3760	0.3760		0.3459	0.3459		2,826.0826	2,826.0826	0.9140		2,848.9329
Total	**1.1851**	**10.3280**	**11.4686**	**0.0292**	**0.0331**	**0.3760**	**0.4091**	**3.8600e-003**	**0.3459**	**0.3498**		**2,826.0826**	**2,826.0826**	**0.9140**		**2,848.9329**

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	0.0253	2.2982	0.4734	0.0111	0.3641	0.0189	0.3829	0.0998	0.0181	0.1178		1,222.3272	1,222.3272	0.0722	0.1944	1,282.0521
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0951	0.0662	1.0026	3.4800e-003	0.4560	2.2200e-003	0.4582	0.1209	2.0500e-003	0.1229		352.2277	352.2277	5.4300e-003	7.1100e-003	354.4823
Total	**0.1204**	**2.3644**	**1.4760**	**0.0146**	**0.8200**	**0.0211**	**0.8411**	**0.2207**	**0.0201**	**0.2408**		**1,574.5548**	**1,574.5548**	**0.0776**	**0.2015**	**1,636.5344**

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					0.0331	0.0000	0.0331	3.8600e-003	0.0000	3.8600e-003			0.0000			0.0000
Off-Road	1.1851	10.3280	11.4686	0.0292		0.3760	0.3760		0.3459	0.3459	0.0000	2,826.0826	2,826.0826	0.9140		2,848.9329
Total	**1.1851**	**10.3280**	**11.4686**	**0.0292**	**0.0331**	**0.3760**	**0.4091**	**3.8600e-003**	**0.3459**	**0.3498**	**0.0000**	**2,826.0826**	**2,826.0826**	**0.9140**		**2,848.9329**

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	0.0253	2.2982	0.4734	0.0111	0.3641	0.0189	0.3829	0.0998	0.0181	0.1178		1,222.3272	1,222.3272	0.0722	0.1944	1,282.0521
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0951	0.0662	1.0026	3.4800e-003	0.4560	2.2200e-003	0.4582	0.1209	2.0500e-003	0.1229		352.2277	352.2277	5.4300e-003	7.1100e-003	354.4823
Total	**0.1204**	**2.3644**	**1.4760**	**0.0146**	**0.8200**	**0.0211**	**0.8411**	**0.2207**	**0.0201**	**0.2408**		**1,574.5548**	**1,574.5548**	**0.0776**	**0.2015**	**1,636.5344**

3.2 Site Preparation - 2026

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					0.0331	0.0000	0.0331	3.8600e-003	0.0000	3.8600e-003			0.0000			0.0000
Off-Road	1.1851	10.3280	11.4686	0.0292		0.3760	0.3760		0.3459	0.3459		2,826.0826	2,826.0826	0.9140		2,848.9329
Total	**1.1851**	**10.3280**	**11.4686**	**0.0292**	**0.0331**	**0.3760**	**0.4091**	**3.8600e-003**	**0.3459**	**0.3498**		**2,826.0826**	**2,826.0826**	**0.9140**		**2,848.9329**

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	0.0249	2.2712	0.4805	0.0109	0.3641	0.0188	0.3829	0.0998	0.0180	0.1177		1,198.6167	1,198.6167	0.0725	0.1907	1,257.2450
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0902	0.0598	0.9393	3.3800e-003	0.4560	2.1100e-003	0.4581	0.1209	1.9400e-003	0.1228		341.4336	341.4336	4.9000e-003	6.6900e-003	343.5486
Total	**0.1152**	**2.3310**	**1.4198**	**0.0142**	**0.8200**	**0.0209**	**0.8409**	**0.2207**	**0.0199**	**0.2406**		**1,540.0503**	**1,540.0503**	**0.0774**	**0.1973**	**1,600.7936**

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					0.0331	0.0000	0.0331	3.8600e-003	0.0000	3.8600e-003			0.0000			0.0000
Off-Road	1.1851	10.3280	11.4686	0.0292		0.3760	0.3760		0.3459	0.3459	0.0000	2,826.0826	2,826.0826	0.9140		2,848.9329
Total	**1.1851**	**10.3280**	**11.4686**	**0.0292**	**0.0331**	**0.3760**	**0.4091**	**3.8600e-003**	**0.3459**	**0.3498**	**0.0000**	**2,826.0826**	**2,826.0826**	**0.9140**		**2,848.9329**

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	0.0249	2.2712	0.4805	0.0109	0.3641	0.0188	0.3829	0.0998	0.0180	0.1177		1,198.6167	1,198.6167	0.0725	0.1907	1,257.2450
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0902	0.0598	0.9393	3.3800e-003	0.4560	2.1100e-003	0.4581	0.1209	1.9400e-003	0.1228		341.4336	341.4336	4.9000e-003	6.6900e-003	343.5486

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Total	**0.1152**	**2.3310**	**1.4198**	**0.0142**	**0.8200**	**0.0209**	**0.8409**	**0.2207**	**0.0199**	**0.2406**		**1,540.0503**	**1,540.0503**	**0.0774**	**0.1973**	**1,600.7936**

3.3 Building Construction - 2026

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	2.1542	16.7629	20.2632	0.0425		0.6510	0.6510		0.6163	0.6163		3,984.1428	3,984.1428	0.9679		4,008.3405
Total	**2.1542**	**16.7629**	**20.2632**	**0.0425**		**0.6510**	**0.6510**		**0.6163**	**0.6163**		**3,984.1428**	**3,984.1428**	**0.9679**		**4,008.3405**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0650	3.8690	0.7672	0.0231	0.9244	0.0300	0.9544	0.2658	0.0287	0.2944		2,491.8575	2,491.8575	0.0885	0.3593	2,601.1422
Worker	0.3910	0.2592	4.0702	0.0146	1.9759	9.1300e-003	1.9850	0.5239	8.4000e-003	0.5323		1,479.5457	1,479.5457	0.0212	0.0290	1,488.7106
Total	**0.4560**	**4.1282**	**4.8374**	**0.0377**	**2.9003**	**0.0391**	**2.9394**	**0.7897**	**0.0371**	**0.8267**		**3,971.4032**	**3,971.4032**	**0.1097**	**0.3883**	**4,089.8528**

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	2.1542	16.7629	20.2632	0.0425		0.6510	0.6510		0.6163	0.6163	0.0000	3,984.1428	3,984.1428	0.9679		4,008.3405

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Total	**2.1542**	**16.7629**	**20.2632**	**0.0425**		**0.6510**	**0.6510**		**0.6163**	**0.6163**	**0.0000**	**3,984.1428**	**3,984.1428**	**0.9679**		**4,008.3405**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0650	3.8690	0.7672	0.0231	0.9244	0.0300	0.9544	0.2658	0.0287	0.2944		2,491.8575	2,491.8575	0.0885	0.3593	2,601.1422
Worker	0.3910	0.2592	4.0702	0.0146	1.9759	9.1300e-003	1.9850	0.5239	8.4000e-003	0.5323		1,479.5457	1,479.5457	0.0212	0.0290	1,488.7106
Total	**0.4560**	**4.1282**	**4.8374**	**0.0377**	**2.9003**	**0.0391**	**2.9394**	**0.7897**	**0.0371**	**0.8267**		**3,971.4032**	**3,971.4032**	**0.1097**	**0.3883**	**4,089.8528**

3.4 MEP - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1459	8.8312	8.9589	0.0165		0.3450	0.3450		0.3272	0.3272		1,477.3211	1,477.3211	0.3356		1,485.7119
Total	**1.1459**	**8.8312**	**8.9589**	**0.0165**		**0.3450**	**0.3450**		**0.3272**	**0.3272**		**1,477.3211**	**1,477.3211**	**0.3356**		**1,485.7119**

Unmitigated Construction Off-Site

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Vendor	0.0260	1.5476	0.3069	9.2300e-003	0.3698	0.0120	0.3818	0.1063	0.0115	0.1178		996.7430	996.7430	0.0354	0.1437	1,040.4569
Worker	0.2707	0.1794	2.8179	0.0101	1.3679	6.3200e-003	1.3743	0.3627	5.8200e-003	0.3685		1,024.3009	1,024.3009	0.0147	0.0201	1,030.6458
Total	**0.2967**	**1.7270**	**3.1247**	**0.0194**	**1.7377**	**0.0183**	**1.7560**	**0.4690**	**0.0173**	**0.4863**		**2,021.0439**	**2,021.0439**	**0.0501**	**0.1638**	**2,071.1027**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1459	8.8312	8.9589	0.0165		0.3450	0.3450		0.3272	0.3272	0.0000	1,477.3211	1,477.3211	0.3356		1,485.7119
Total	**1.1459**	**8.8312**	**8.9589**	**0.0165**		**0.3450**	**0.3450**		**0.3272**	**0.3272**	**0.0000**	**1,477.3211**	**1,477.3211**	**0.3356**		**1,485.7119**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0260	1.5476	0.3069	9.2300e-003	0.3698	0.0120	0.3818	0.1063	0.0115	0.1178		996.7430	996.7430	0.0354	0.1437	1,040.4569
Worker	0.2707	0.1794	2.8179	0.0101	1.3679	6.3200e-003	1.3743	0.3627	5.8200e-003	0.3685		1,024.3009	1,024.3009	0.0147	0.0201	1,030.6458
Total	**0.2967**	**1.7270**	**3.1247**	**0.0194**	**1.7377**	**0.0183**	**1.7560**	**0.4690**	**0.0173**	**0.4863**		**2,021.0439**	**2,021.0439**	**0.0501**	**0.1638**	**2,071.1027**

3.4 MEP - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	1.1459	8.8312	8.9589	0.0165		0.3450	0.3450		0.3272	0.3272		1,477.3211	1,477.3211	0.3356		1,485.7119
Total	**1.1459**	**8.8312**	**8.9589**	**0.0165**		**0.3450**	**0.3450**		**0.3272**	**0.3272**		**1,477.3211**	**1,477.3211**	**0.3356**		**1,485.7119**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0252	1.5333	0.3025	9.0400e-003	0.3698	0.0119	0.3817	0.1063	0.0114	0.1177		976.7979	976.7979	0.0354	0.1410	1,019.7025
Worker	0.2571	0.1633	2.6564	9.8500e-003	1.3679	5.9300e-003	1.3739	0.3627	5.4500e-003	0.3681		995.5247	995.5247	0.0133	0.0190	1,001.5185
Total	**0.2823**	**1.6966**	**2.9590**	**0.0189**	**1.7377**	**0.0179**	**1.7556**	**0.4690**	**0.0169**	**0.4859**		**1,972.3226**	**1,972.3226**	**0.0487**	**0.1600**	**2,021.2210**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1459	8.8312	8.9589	0.0165		0.3450	0.3450		0.3272	0.3272	0.0000	1,477.3211	1,477.3211	0.3356		1,485.7119
Total	**1.1459**	**8.8312**	**8.9589**	**0.0165**		**0.3450**	**0.3450**		**0.3272**	**0.3272**	**0.0000**	**1,477.3211**	**1,477.3211**	**0.3356**		**1,485.7119**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0252	1.5333	0.3025	9.0400e-003	0.3698	0.0119	0.3817	0.1063	0.0114	0.1177		976.7979	976.7979	0.0354	0.1410	1,019.7025
Worker	0.2571	0.1633	2.6564	9.8500e-003	1.3679	5.9300e-003	1.3739	0.3627	5.4500e-003	0.3681		995.5247	995.5247	0.0133	0.0190	1,001.5185
Total	**0.2823**	**1.6966**	**2.9590**	**0.0189**	**1.7377**	**0.0179**	**1.7556**	**0.4690**	**0.0169**	**0.4859**		**1,972.3226**	**1,972.3226**	**0.0487**	**0.1600**	**2,021.2210**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Pure Water_AWPF Construction

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	130.50	1000sqft	3.00	130,500.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - project specific

Construction Phase - project specific

Off-road Equipment - project specific

Off-road Equipment - project specific

Off-road Equipment - project specific

Trips and VMT - project specific

Grading - project specific

Vehicle Trips - not calculating operational emissions with CalEEMod

Consumer Products - project specific

Area Coating -

Landscape Equipment - project specific

Water And Wastewater - not calculating operational emissions with CalEEMod

Solid Waste - Not calculating operational emissions with CalEEMod

Table Name	Column Name	Default Value	New Value
tblAreaCoating	ReapplicationRatePercent	10	0
tblConstructionPhase	NumDays	220.00	240.00

tblConstructionPhase	NumDays	220.00	240.00
tblConstructionPhase	NumDays	3.00	120.00
tblConsumerProducts	ROG_EF	1.98E-05	0
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	0
tblGrading	AcresOfGrading	60.00	3.00
tblGrading	MaterialExported	0.00	7,000.00
tblLandscapeEquipment	NumberSummerDays	250	0
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblSolidWaste	SolidWasteGenerationRate	161.82	0.00
tblTripsAndVMT	HaulingTripLength	20.00	100.00
tblTripsAndVMT	HaulingTripLength	20.00	100.00
tblTripsAndVMT	HaulingTripLength	20.00	100.00
tblTripsAndVMT	HaulingTripNumber	875.00	500.00
tblTripsAndVMT	VendorTripLength	6.90	0.00
tblTripsAndVMT	VendorTripLength	6.90	100.00
tblTripsAndVMT	VendorTripLength	6.90	100.00
tblTripsAndVMT	VendorTripNumber	21.00	10.00
tblTripsAndVMT	VendorTripNumber	21.00	4.00
tblTripsAndVMT	WorkerTripLength	14.70	40.00
tblTripsAndVMT	WorkerTripLength	14.70	40.00
tblTripsAndVMT	WorkerTripLength	14.70	40.00
tblTripsAndVMT	WorkerTripNumber	13.00	15.00
tblTripsAndVMT	WorkerTripNumber	55.00	65.00
tblTripsAndVMT	WorkerTripNumber	55.00	45.00
tblVehicleTrips	CC_TL	8.40	0.00
tblVehicleTrips	CC_TTP	28.00	0.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CNW_TTP	13.00	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	CW_TTP	59.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	0.00
tblVehicleTrips	ST_TR	6.42	0.00

tblVehicleTrips	SU_TR	5.09	0.00
tblVehicleTrips	WD_TR	3.93	0.00
tblWater	AerobicPercent	87.46	0.00
tblWater	AnaDigestCombDigestGasPercent	100.00	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00
tblWater	IndoorWaterUseRate	30,178,125.00	0.00
tblWater	SepticTankPercent	10.33	100.00

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					
2025	0.0694	0.6807	0.6943	2.3400e-003	0.0451	0.0212	0.0663	0.0119	0.0196	0.0314	0.0000	213.8374	213.8374	0.0481	9.7800e-003	217.9565
2026	0.3225	2.6391	3.1613	0.0101	0.3560	0.0868	0.4429	0.0968	0.0822	0.1789	0.0000	907.0411	907.0411	0.1246	0.0441	923.2969
2027	0.1626	1.2242	1.3930	4.1200e-003	0.1980	0.0421	0.2401	0.0535	0.0399	0.0934	0.0000	364.6195	364.6195	0.0405	0.0169	370.6615
Maximum	**0.3225**	**2.6391**	**3.1613**	**0.0101**	**0.3560**	**0.0868**	**0.4429**	**0.0968**	**0.0822**	**0.1789**	**0.0000**	**907.0411**	**907.0411**	**0.1246**	**0.0441**	**923.2969**

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					
2025	0.0694	0.6807	0.6943	2.3400e-003	0.0451	0.0212	0.0663	0.0119	0.0196	0.0314	0.0000	213.8373	213.8373	0.0481	9.7800e-003	217.9564
2026	0.3225	2.6391	3.1613	0.0101	0.3560	0.0868	0.4429	0.0968	0.0822	0.1789	0.0000	907.0406	907.0406	0.1246	0.0441	923.2963
2027	0.1626	1.2242	1.3930	4.1200e-003	0.1980	0.0421	0.2401	0.0535	0.0399	0.0934	0.0000	364.6193	364.6193	0.0405	0.0169	370.6613

Maximum	0.3225	2.6391	3.1613	0.0101	0.3560	0.0868	0.4429	0.0968	0.0822	0.1789	0.0000	907.0406	907.0406	0.1246	0.0441	923.2963

	ROG	NOx	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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	8-5-2025	11-4-2025	0.4577	0.4577
2	11-5-2025	2-4-2026	0.5140	0.5140
3	2-5-2026	5-4-2026	0.7443	0.7443
4	5-5-2026	8-4-2026	0.7648	0.7648
5	8-5-2026	11-4-2026	0.7676	0.7676
6	11-5-2026	2-4-2027	0.5868	0.5868
7	2-5-2027	5-4-2027	0.3787	0.3787
8	5-5-2027	8-4-2027	0.3894	0.3894
9	8-5-2027	9-30-2027	0.2412	0.2412
		Highest	0.7676	0.7676

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	8/5/2025	1/19/2026	5	120	
2	Building Construction	Building Construction	1/20/2026	12/21/2026	5	240	
3	MEP	Building Construction	12/22/2026	11/22/2027	5	240	

Acres of Grading (Site Preparation Phase): 3

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

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Off-Highway Trucks	1	8.00	402	0.38
Site Preparation	Tractors/Loaders/Backhoes	3	8.00	97	0.37

Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	2	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Off-Highway Trucks	1	8.00	402	0.38
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
MEP	Cranes	1	8.00	231	0.29
MEP	Forklifts	2	8.00	89	0.20
MEP	Welders	3	8.00	46	0.45

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	5	15.00	0.00	500.00	40.00	0.00	100.00	LD_Mix	HDT_Mix	HHDT
Building Construction	10	65.00	10.00	0.00	40.00	100.00	100.00	LD_Mix	HDT_Mix	HHDT
MEP	6	45.00	4.00	0.00	40.00	100.00	100.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2025

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					1.9900e-003	0.0000	1.9900e-003	2.3000e-004	0.0000	2.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0634	0.5526	0.6136	1.5600e-003		0.0201	0.0201		0.0185	0.0185	0.0000	137.1622	137.1622	0.0444	0.0000	138.2712
Total	**0.0634**	**0.5526**	**0.6136**	**1.5600e-003**	**1.9900e-003**	**0.0201**	**0.0221**	**2.3000e-004**	**0.0185**	**0.0187**	**0.0000**	**137.1622**	**137.1622**	**0.0444**	**0.0000**	**138.2712**

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	1.3700e-003	0.1245	0.0253	5.9000e-004	0.0192	1.0100e-003	0.0202	5.2600e-003	9.7000e-004	6.2300e-003	0.0000	59.3167	59.3167	3.5000e-003	9.4300e-003	62.2151
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.6000e-003	3.6400e-003	0.0555	1.9000e-004	0.0239	1.2000e-004	0.0241	6.3600e-003	1.1000e-004	6.4700e-003	0.0000	17.3585	17.3585	2.7000e-004	3.5000e-004	17.4703
Total	**5.9700e-003**	**0.1281**	**0.0807**	**7.8000e-004**	**0.0431**	**1.1300e-003**	**0.0442**	**0.0116**	**1.0800e-003**	**0.0127**	**0.0000**	**76.6752**	**76.6752**	**3.7700e-003**	**9.7800e-003**	**79.6853**

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					1.9900e-003	0.0000	1.9900e-003	2.3000e-004	0.0000	2.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0634	0.5526	0.6136	1.5600e-003		0.0201	0.0201		0.0185	0.0185	0.0000	137.1620	137.1620	0.0444	0.0000	138.2710
Total	**0.0634**	**0.5526**	**0.6136**	**1.5600e-003**	**1.9900e-003**	**0.0201**	**0.0221**	**2.3000e-004**	**0.0185**	**0.0187**	**0.0000**	**137.1620**	**137.1620**	**0.0444**	**0.0000**	**138.2710**

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	1.3700e-003	0.1245	0.0253	5.9000e-004	0.0192	1.0100e-003	0.0202	5.2600e-003	9.7000e-004	6.2300e-003	0.0000	59.3167	59.3167	3.5000e-003	9.4300e-003	62.2151
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.6000e-003	3.6400e-003	0.0555	1.9000e-004	0.0239	1.2000e-004	0.0241	6.3600e-003	1.1000e-004	6.4700e-003	0.0000	17.3585	17.3585	2.7000e-004	3.5000e-004	17.4703
Total	**5.9700e-003**	**0.1281**	**0.0807**	**7.8000e-004**	**0.0431**	**1.1300e-003**	**0.0442**	**0.0116**	**1.0800e-003**	**0.0127**	**0.0000**	**76.6752**	**76.6752**	**3.7700e-003**	**9.7800e-003**	**79.6853**

3.2 Site Preparation - 2026

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					1.9900e-003	0.0000	1.9900e-003	2.3000e-004	0.0000	2.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.7000e-003	0.0671	0.0746	1.9000e-004		2.4400e-003	2.4400e-003		2.2500e-003	2.2500e-003	0.0000	16.6646	16.6646	5.3900e-003	0.0000	16.7993
Total	**7.7000e-003**	**0.0671**	**0.0746**	**1.9000e-004**	**1.9900e-003**	**2.4400e-003**	**4.4300e-003**	**2.3000e-004**	**2.2500e-003**	**2.4800e-003**	**0.0000**	**16.6646**	**16.6646**	**5.3900e-003**	**0.0000**	**16.7993**

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	1.6000e-004	0.0150	3.1200e-003	7.0000e-005	2.3300e-003	1.2000e-004	2.4500e-003	6.4000e-004	1.2000e-004	7.6000e-004	0.0000	7.0669	7.0669	4.3000e-004	1.1200e-003	7.4126
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3000e-004	4.0000e-004	6.3100e-003	2.0000e-005	2.9100e-003	1.0000e-005	2.9200e-003	7.7000e-004	1.0000e-005	7.8000e-004	0.0000	2.0443	2.0443	3.0000e-005	4.0000e-005	2.0570
Total	**6.9000e-004**	**0.0154**	**9.4300e-003**	**9.0000e-005**	**5.2400e-003**	**1.3000e-004**	**5.3700e-003**	**1.4100e-003**	**1.3000e-004**	**1.5400e-003**	**0.0000**	**9.1112**	**9.1112**	**4.6000e-004**	**1.1600e-003**	**9.4696**

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					1.9900e-003	0.0000	1.9900e-003	2.3000e-004	0.0000	2.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.7000e-003	0.0671	0.0746	1.9000e-004		2.4400e-003	2.4400e-003		2.2500e-003	2.2500e-003	0.0000	16.6645	16.6645	5.3900e-003	0.0000	16.7993
Total	**7.7000e-003**	**0.0671**	**0.0746**	**1.9000e-004**	**1.9900e-003**	**2.4400e-003**	**4.4300e-003**	**2.3000e-004**	**2.2500e-003**	**2.4800e-003**	**0.0000**	**16.6645**	**16.6645**	**5.3900e-003**	**0.0000**	**16.7993**

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	1.6000e-004	0.0150	3.1200e-003	7.0000e-005	2.3300e-003	1.2000e-004	2.4500e-003	6.4000e-004	1.2000e-004	7.6000e-004	0.0000	7.0669	7.0669	4.3000e-004	1.1200e-003	7.4126
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.3000e-004	4.0000e-004	6.3100e-003	2.0000e-005	2.9100e-003	1.0000e-005	2.9200e-003	7.7000e-004	1.0000e-005	7.8000e-004	0.0000	2.0443	2.0443	3.0000e-005	4.0000e-005	2.0570
Total	**6.9000e-004**	**0.0154**	**9.4300e-003**	**9.0000e-005**	**5.2400e-003**	**1.3000e-004**	**5.3700e-003**	**1.4100e-003**	**1.3000e-004**	**1.5400e-003**	**0.0000**	**9.1112**	**9.1112**	**4.6000e-004**	**1.1600e-003**	**9.4696**

3.3 Building Construction - 2026

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	0.2585	2.0116	2.4316	5.1000e-003		0.0781	0.0781		0.0740	0.0740	0.0000	433.7224	433.7224	0.1054	0.0000	436.3566
Total	**0.2585**	**2.0116**	**2.4316**	**5.1000e-003**		**0.0781**	**0.0781**		**0.0740**	**0.0740**	**0.0000**	**433.7224**	**433.7224**	**0.1054**	**0.0000**	**436.3566**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.6100e-003	0.4708	0.0919	2.7700e-003	0.1093	3.5900e-003	0.1128	0.0315	3.4400e-003	0.0349	0.0000	271.2470	271.2470	9.6300e-003	0.0391	283.1442
Worker	0.0423	0.0320	0.5052	1.7800e-003	0.2327	1.1000e-003	0.2338	0.0618	1.0100e-003	0.0628	0.0000	163.5444	163.5444	2.3300e-003	3.2200e-003	164.5630
Total	**0.0499**	**0.5027**	**0.5971**	**4.5500e-003**	**0.3420**	**4.6900e-003**	**0.3467**	**0.0933**	**4.4500e-003**	**0.0977**	**0.0000**	**434.7914**	**434.7914**	**0.0120**	**0.0423**	**447.7072**

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	0.2585	2.0115	2.4316	5.1000e-003		0.0781	0.0781		0.0740	0.0740	0.0000	433.7219	433.7219	0.1054	0.0000	436.3561
Total	**0.2585**	**2.0115**	**2.4316**	**5.1000e-003**		**0.0781**	**0.0781**		**0.0740**	**0.0740**	**0.0000**	**433.7219**	**433.7219**	**0.1054**	**0.0000**	**436.3561**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.6100e-003	0.4708	0.0919	2.7700e-003	0.1093	3.5900e-003	0.1128	0.0315	3.4400e-003	0.0349	0.0000	271.2470	271.2470	9.6300e-003	0.0391	283.1442
Worker	0.0423	0.0320	0.5052	1.7800e-003	0.2327	1.1000e-003	0.2338	0.0618	1.0100e-003	0.0628	0.0000	163.5444	163.5444	2.3300e-003	3.2200e-003	164.5630
Total	**0.0499**	**0.5027**	**0.5971**	**4.5500e-003**	**0.3420**	**4.6900e-003**	**0.3467**	**0.0933**	**4.4500e-003**	**0.0977**	**0.0000**	**434.7914**	**434.7914**	**0.0120**	**0.0423**	**447.7072**

3.4 MEP - 2026

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	4.5800e-003	0.0353	0.0358	7.0000e-005		1.3800e-003	1.3800e-003		1.3100e-003	1.3100e-003	0.0000	5.3608	5.3608	1.2200e-003	0.0000	5.3913
Total	**4.5800e-003**	**0.0353**	**0.0358**	**7.0000e-005**		**1.3800e-003**	**1.3800e-003**		**1.3100e-003**	**1.3100e-003**	**0.0000**	**5.3608**	**5.3608**	**1.2200e-003**	**0.0000**	**5.3913**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-004	6.2800e-003	1.2200e-003	4.0000e-005	1.4600e-003	5.0000e-005	1.5000e-003	4.2000e-004	5.0000e-005	4.7000e-004	0.0000	3.6166	3.6166	1.3000e-004	5.2000e-004	3.7753
Worker	9.8000e-004	7.4000e-004	0.0117	4.0000e-005	5.3700e-003	3.0000e-005	5.4000e-003	1.4300e-003	2.0000e-005	1.4500e-003	0.0000	3.7741	3.7741	5.0000e-005	7.0000e-005	3.7976
Total	**1.0800e-003**	**7.0200e-003**	**0.0129**	**8.0000e-005**	**6.8300e-003**	**8.0000e-005**	**6.9000e-003**	**1.8500e-003**	**7.0000e-005**	**1.9200e-003**	**0.0000**	**7.3907**	**7.3907**	**1.8000e-004**	**5.9000e-004**	**7.5729**

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	4.5800e-003	0.0353	0.0358	7.0000e-005		1.3800e-003	1.3800e-003		1.3100e-003	1.3100e-003	0.0000	5.3608	5.3608	1.2200e-003	0.0000	5.3913
Total	**4.5800e-003**	**0.0353**	**0.0358**	**7.0000e-005**		**1.3800e-003**	**1.3800e-003**		**1.3100e-003**	**1.3100e-003**	**0.0000**	**5.3608**	**5.3608**	**1.2200e-003**	**0.0000**	**5.3913**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-004	6.2800e-003	1.2200e-003	4.0000e-005	1.4600e-003	5.0000e-005	1.5000e-003	4.2000e-004	5.0000e-005	4.7000e-004	0.0000	3.6166	3.6166	1.3000e-004	5.2000e-004	3.7753

Worker	9.8000e-004	7.4000e-004	0.0117	4.0000e-005	5.3700e-003	3.0000e-005	5.4000e-003	1.4300e-003	2.0000e-005	1.4500e-003	0.0000	3.7741	3.7741	5.0000e-005	7.0000e-005	3.7976
Total	**1.0800e-003**	**7.0200e-003**	**0.0129**	**8.0000e-005**	**6.8300e-003**	**8.0000e-005**	**6.9000e-003**	**1.8500e-003**	**7.0000e-005**	**1.9200e-003**	**0.0000**	**7.3907**	**7.3907**	**1.8000e-004**	**5.9000e-004**	**7.5729**

3.4 MEP - 2027

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	0.1329	1.0244	1.0392	1.9100e-003		0.0400	0.0400		0.0380	0.0380	0.0000	155.4636	155.4636	0.0353	0.0000	156.3466
Total	**0.1329**	**1.0244**	**1.0392**	**1.9100e-003**		**0.0400**	**0.0400**		**0.0380**	**0.0380**	**0.0000**	**155.4636**	**155.4636**	**0.0353**	**0.0000**	**156.3466**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.8500e-003	0.1804	0.0350	1.0500e-003	0.0422	1.3800e-003	0.0436	0.0122	1.3200e-003	0.0135	0.0000	102.7833	102.7833	3.7200e-003	0.0148	107.2984
Worker	0.0268	0.0195	0.3187	1.1600e-003	0.1558	6.9000e-004	0.1564	0.0414	6.3000e-004	0.0420	0.0000	106.3726	106.3726	1.4200e-003	2.0400e-003	107.0165
Total	**0.0297**	**0.1998**	**0.3538**	**2.2100e-003**	**0.1980**	**2.0700e-003**	**0.2001**	**0.0535**	**1.9500e-003**	**0.0555**	**0.0000**	**209.1559**	**209.1559**	**5.1400e-003**	**0.0169**	**214.3149**

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	0.1329	1.0244	1.0392	1.9100e-003		0.0400	0.0400		0.0380	0.0380	0.0000	155.4634	155.4634	0.0353	0.0000	156.3464
Total	**0.1329**	**1.0244**	**1.0392**	**1.9100e-003**		**0.0400**	**0.0400**		**0.0380**	**0.0380**	**0.0000**	**155.4634**	**155.4634**	**0.0353**	**0.0000**	**156.3464**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.8500e-003	0.1804	0.0350	1.0500e-003	0.0422	1.3800e-003	0.0436	0.0122	1.3200e-003	0.0135	0.0000	102.7833	102.7833	3.7200e-003	0.0148	107.2984
Worker	0.0268	0.0195	0.3187	1.1600e-003	0.1558	6.9000e-004	0.1564	0.0414	6.3000e-004	0.0420	0.0000	106.3726	106.3726	1.4200e-003	2.0400e-003	107.0165
Total	**0.0297**	**0.1998**	**0.3538**	**2.2100e-003**	**0.1980**	**2.0700e-003**	**0.2001**	**0.0535**	**1.9500e-003**	**0.0555**	**0.0000**	**209.1559**	**209.1559**	**5.1400e-003**	**0.0169**	**214.3149**

Pure Water_pipeline Construction 1000 ft_SCAQMD - South Coast AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Pure Water_pipeline Construction 1000 ft_SCAQMD

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	100.00	1000sqft	2.30	100,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - project specific

Construction Phase - project specific

Off-road Equipment - project specific

Off-road Equipment - project specific

Trips and VMT - project specific

Grading - project specific

Vehicle Trips - not calculating operational emissions with CalEEMod

Consumer Products - not calculating operation emissions with CalEEMod

Area Coating - Not Calculating operational emissions with CalEEMod

Landscape Equipment - Not calculating operational emissions with CalEEMod

Energy Use - Not calculating operational emissions with CalEEMod

Water And Wastewater - not calculating operational emissions with CalEEMod

Solid Waste - Not calculating operational emissions with CalEEMod

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_EF_Residential_Exterior	50	0
tblAreaCoating	Area_EF_Residential_Interior	50	0

tblAreaCoating	Area_Nonresidential_Exterior	50000	0
tblAreaCoating	Area_Nonresidential_Interior	150000	0
tblAreaCoating	ReapplicationRatePercent	10	0
tblConstructionPhase	NumDays	3.00	5.00
tblConsumerProducts	ROG_EF	1.98E-05	0
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	0
tblConsumerProducts	ROG_EF_PesticidesFertilizers	5.152E-08	0
tblEnergyUse	LightingElect	2.99	0.00
tblEnergyUse	NT24E	3.83	0.00
tblEnergyUse	NT24NG	6.86	0.00
tblEnergyUse	T24E	1.45	0.00
tblEnergyUse	T24NG	13.90	0.00
tblGrading	AcresOfGrading	0.31	2.30
tblGrading	MaterialExported	0.00	1,486.00
tblGrading	MaterialImported	0.00	522.00
tblLandscapeEquipment	NumberSummerDays	250	0
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblSolidWaste	SolidWasteGenerationRate	124.00	0.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripNumber	251.00	167.00
tblTripsAndVMT	VendorTripLength	6.90	100.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripLength	14.70	40.00
tblTripsAndVMT	WorkerTripNumber	20.00	14.00
tblVehicleTrips	ST_TR	6.42	0.00
tblVehicleTrips	SU_TR	5.09	0.00
tblVehicleTrips	WD_TR	3.93	0.00
tblWater	IndoorWaterUseRate	23,125,000.00	0.00

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					

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
2025	1.6751	19.3701	18.3987	0.0823	2.2190	0.5017	2.7207	0.5190	0.4639	0.9829	0.0000	8,493.5828	8,493.5828	1.5196	0.6753	8,732.8222
Maximum	**1.6751**	**19.3701**	**18.3987**	**0.0823**	**2.2190**	**0.5017**	**2.7207**	**0.5190**	**0.4639**	**0.9829**	**0.0000**	**8,493.5828**	**8,493.5828**	**1.5196**	**0.6753**	**8,732.8222**

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					
2025	1.6751	19.3701	18.3987	0.0823	2.2190	0.5017	2.7207	0.5190	0.4639	0.9829	0.0000	8,493.5828	8,493.5828	1.5196	0.6753	8,732.8222
Maximum	**1.6751**	**19.3701**	**18.3987**	**0.0823**	**2.2190**	**0.5017**	**2.7207**	**0.5190**	**0.4639**	**0.9829**	**0.0000**	**8,493.5828**	**8,493.5828**	**1.5196**	**0.6753**	**8,732.8222**

	ROG	**NOx**	**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	Pipeline 1000 ft	Site Preparation	1/1/2025	1/7/2025	5	5	

Acres of Grading (Site Preparation Phase): 2.3

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

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Pipeline 1000 ft	Excavators	2	8.00	158	0.38
Pipeline 1000 ft	Graders	1	1.00	187	0.41
Pipeline 1000 ft	Off-Highway Trucks	1	8.00	402	0.38

Pipeline 1000 ft	Rubber Tired Loaders	2	8.00	203	0.36
Pipeline 1000 ft	Sweepers/Scrubbers	1	2.00	64	0.46
Pipeline 1000 ft	Tractors/Loaders/Backhoes	1	8.00	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
Pipeline 1000 ft	8	14.00	1.00	167.00	40.00	100.00	40.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Pipeline 1000 ft - 2025

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					0.5333	0.0000	0.5333	0.0596	0.0000	0.0596			0.0000			0.0000
Off-Road	1.4794	11.1597	15.5519	0.0407		0.4358	0.4358		0.4010	0.4010		3,935.2248	3,935.2248	1.2727		3,967.0431
Total	**1.4794**	**11.1597**	**15.5519**	**0.0407**	**0.5333**	**0.4358**	**0.9691**	**0.0596**	**0.4010**	**0.4605**		**3,935.2248**	**3,935.2248**	**1.2727**		**3,967.0431**

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	0.1003	7.7584	1.8331	0.0360	1.1677	0.0608	1.2285	0.3200	0.0582	0.3782		3,975.6684	3,975.6684	0.2330	0.6321	4,169.8639
Vendor	6.7300e-003	0.3903	0.0780	2.3500e-003	0.0924	3.0000e-003	0.0954	0.0266	2.8700e-003	0.0295		253.9438	253.9438	8.8200e-003	0.0366	265.0651
Worker	0.0888	0.0618	0.9358	3.2500e-003	0.4256	2.0700e-003	0.4277	0.1128	1.9100e-003	0.1147		328.7458	328.7458	5.0700e-003	6.6400e-003	330.8501
Total	**0.1958**	**8.2104**	**2.8469**	**0.0416**	**1.6857**	**0.0659**	**1.7516**	**0.4594**	**0.0630**	**0.5224**		**4,558.3580**	**4,558.3580**	**0.2469**	**0.6753**	**4,765.7791**

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					0.5333	0.0000	0.5333	0.0596	0.0000	0.0596			0.0000			0.0000
Off-Road	1.4794	11.1597	15.5519	0.0407		0.4358	0.4358		0.4010	0.4010	0.0000	3,935.2248	3,935.2248	1.2727		3,967.0431
Total	**1.4794**	**11.1597**	**15.5519**	**0.0407**	**0.5333**	**0.4358**	**0.9691**	**0.0596**	**0.4010**	**0.4605**	**0.0000**	**3,935.2248**	**3,935.2248**	**1.2727**		**3,967.0431**

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	0.1003	7.7584	1.8331	0.0360	1.1677	0.0608	1.2285	0.3200	0.0582	0.3782		3,975.6684	3,975.6684	0.2330	0.6321	4,169.8639
Vendor	6.7300e-003	0.3903	0.0780	2.3500e-003	0.0924	3.0000e-003	0.0954	0.0266	2.8700e-003	0.0295		253.9438	253.9438	8.8200e-003	0.0366	265.0651
Worker	0.0888	0.0618	0.9358	3.2500e-003	0.4256	2.0700e-003	0.4277	0.1128	1.9100e-003	0.1147		328.7458	328.7458	5.0700e-003	6.6400e-003	330.8501
Total	**0.1958**	**8.2104**	**2.8469**	**0.0416**	**1.6857**	**0.0659**	**1.7516**	**0.4594**	**0.0630**	**0.5224**		**4,558.3580**	**4,558.3580**	**0.2469**	**0.6753**	**4,765.7791**

Pure Water_Pipeline Construction_VCAPCD - Ventura County APCD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Pure Water_Pipeline Construction_VCAPCD

Ventura County APCD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	100.00	1000sqft	2.30	100,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2028
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - project specific

Construction Phase - project specific

Off-road Equipment - project specific

Off-road Equipment - project specific

Trips and VMT - project specific

Grading - project specific

Vehicle Trips - not calculating operational emissions with CalEEMod

Consumer Products - not calculating operation emissions with CalEEMod

Area Coating - Not Calculating operational emissions with CalEEMod

Landscape Equipment - Not calculating operational emissions with CalEEMod

Energy Use - Not calculating operational emissions with CalEEMod

Water And Wastewater - not calculating operational emissions with CalEEMod

Solid Waste - Not calculating operational emissions with CalEEMod

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	50000	0
tblAreaCoating	Area_Nonresidential_Interior	150000	0

tblAreaCoating	ReapplicationRatePercent	10	0
tblConstructionPhase	NumDays	3.00	5.00
tblConsumerProducts	ROG_EF	2.14E-05	0
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	0
tblConsumerProducts	ROG_EF_PesticidesFertilizers	5.152E-08	0
tblEnergyUse	LightingElect	2.99	0.00
tblEnergyUse	NT24E	3.83	0.00
tblEnergyUse	NT24NG	6.86	0.00
tblEnergyUse	T24E	1.45	0.00
tblEnergyUse	T24NG	13.90	0.00
tblGrading	AcresOfGrading	0.31	2.30
tblGrading	MaterialExported	0.00	1,486.00
tblGrading	MaterialImported	0.00	522.00
tblLandscapeEquipment	NumberSummerDays	180	0
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblSolidWaste	SolidWasteGenerationRate	124.00	0.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripNumber	251.00	167.00
tblTripsAndVMT	VendorTripLength	7.30	100.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripLength	10.80	40.00
tblTripsAndVMT	WorkerTripNumber	20.00	14.00
tblVehicleTrips	ST_TR	6.42	0.00
tblVehicleTrips	SU_TR	5.09	0.00
tblVehicleTrips	WD_TR	3.93	0.00
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00

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					
2025	1.6811	19.1181	18.5160	0.0815	2.2280	0.4995	2.7274	0.5199	0.4618	0.9817	0.0000	8,452.0764	8,452.0764	1.5882	0.6738	8,692.5739
Maximum	**1.6811**	**19.1181**	**18.5160**	**0.0815**	**2.2280**	**0.4995**	**2.7274**	**0.5199**	**0.4618**	**0.9817**	**0.0000**	**8,452.0764**	**8,452.0764**	**1.5882**	**0.6738**	**8,692.5739**

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					
2025	1.6811	19.1181	18.5160	0.0815	2.2280	0.4995	2.7274	0.5199	0.4618	0.9817	0.0000	8,452.0764	8,452.0764	1.5882	0.6738	8,692.5739
Maximum	**1.6811**	**19.1181**	**18.5160**	**0.0815**	**2.2280**	**0.4995**	**2.7274**	**0.5199**	**0.4618**	**0.9817**	**0.0000**	**8,452.0764**	**8,452.0764**	**1.5882**	**0.6738**	**8,692.5739**

	ROG	**NOx**	**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**

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	9.4000e-004	9.0000e-005	0.0102	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233
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	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	0.0000
Total	**9.4000e-004**	**9.0000e-005**	**0.0102**	**0.0000**	**0.0000**	**4.0000e-005**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**4.0000e-005**		**0.0219**	**0.0219**	**6.0000e-005**	**0.0000**	**0.0233**

Mitigated Operational

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Area	9.4000e-004	9.0000e-005	0.0102	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233
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	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	0.0000
Total	**9.4000e-004**	**9.0000e-005**	**0.0102**	**0.0000**	**0.0000**	**4.0000e-005**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**4.0000e-005**		**0.0219**	**0.0219**	**6.0000e-005**	**0.0000**	**0.0233**

	ROG	NOx	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	Pipeline 1000 ft	Site Preparation	1/1/2025	1/7/2025	5	5	

Acres of Grading (Site Preparation Phase): 2.3

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

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Pipeline 1000 ft	Excavators	2	8.00	158	0.38
Pipeline 1000 ft	Graders	1	1.00	187	0.41
Pipeline 1000 ft	Off-Highway Trucks	1	8.00	402	0.38
Pipeline 1000 ft	Rubber Tired Loaders	2	8.00	203	0.36
Pipeline 1000 ft	Sweepers/Scrubbers	1	2.00	64	0.46
Pipeline 1000 ft	Tractors/Loaders/Backhoes	1	8.00	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
Pipeline 1000 ft	8	14.00	1.00	167.00	40.00	100.00	40.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Pipeline 1000 ft - 2025

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					0.5443	0.0000	0.5443	0.0612	0.0000	0.0612			0.0000			0.0000
Off-Road	1.4794	11.1597	15.5519	0.0407		0.4358	0.4358		0.4010	0.4010		3,935.2248	3,935.2248	1.2727		3,967.0431
Total	**1.4794**	**11.1597**	**15.5519**	**0.0407**	**0.5443**	**0.4358**	**0.9801**	**0.0612**	**0.4010**	**0.4622**		**3,935.2248**	**3,935.2248**	**1.2727**		**3,967.0431**

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	0.0951	7.5085	1.9585	0.0353	1.1657	0.0587	1.2245	0.3193	0.0562	0.3755		3,946.9916	3,946.9916	0.2990	0.6298	4,142.1391
Vendor	5.8800e-003	0.3808	0.0799	2.2700e-003	0.0924	3.0100e-003	0.0954	0.0266	2.8800e-003	0.0294		247.6871	247.6871	0.0113	0.0369	258.9570
Worker	0.1008	0.0691	0.9257	3.1900e-003	0.4256	1.9300e-003	0.4275	0.1128	1.7700e-003	0.1146		322.1729	322.1729	5.1400e-003	7.1600e-003	324.4348
Total	**0.2017**	**7.9585**	**2.9642**	**0.0408**	**1.6837**	**0.0636**	**1.7473**	**0.4587**	**0.0608**	**0.5195**		**4,516.8517**	**4,516.8517**	**0.3154**	**0.6738**	**4,725.5308**

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					0.5443	0.0000	0.5443	0.0612	0.0000	0.0612			0.0000			0.0000
Off-Road	1.4794	11.1597	15.5519	0.0407		0.4358	0.4358		0.4010	0.4010	0.0000	3,935.2248	3,935.2248	1.2727		3,967.0431
Total	**1.4794**	**11.1597**	**15.5519**	**0.0407**	**0.5443**	**0.4358**	**0.9801**	**0.0612**	**0.4010**	**0.4622**	**0.0000**	**3,935.2248**	**3,935.2248**	**1.2727**		**3,967.0431**

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	0.0951	7.5085	1.9585	0.0353	1.1657	0.0587	1.2245	0.3193	0.0562	0.3755		3,946.9916	3,946.9916	0.2990	0.6298	4,142.1391
Vendor	5.8800e-003	0.3808	0.0799	2.2700e-003	0.0924	3.0100e-003	0.0954	0.0266	2.8800e-003	0.0294		247.6871	247.6871	0.0113	0.0369	258.9570
Worker	0.1008	0.0691	0.9257	3.1900e-003	0.4256	1.9300e-003	0.4275	0.1128	1.7700e-003	0.1146		322.1729	322.1729	5.1400e-003	7.1600e-003	324.4348
Total	**0.2017**	**7.9585**	**2.9642**	**0.0408**	**1.6837**	**0.0636**	**1.7473**	**0.4587**	**0.0608**	**0.5195**		**4,516.8517**	**4,516.8517**	**0.3154**	**0.6738**	**4,725.5308**

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	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	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate	Unmitigated	Mitigated

Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	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
General Heavy Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Heavy Industry	0.564931	0.058891	0.167885	0.120679	0.025398	0.007381	0.013024	0.006272	0.000657	0.000386	0.028170	0.000621	0.005705

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	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	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					
General Heavy Industry	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	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**	**0.0000**

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					
General Heavy Industry	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	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**	**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	9.4000e-004	9.0000e-005	0.0102	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233
Unmitigated	9.4000e-004	9.0000e-005	0.0102	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233

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	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

SubCategory	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Landscaping	9.4000e-004	9.0000e-005	0.0102	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233
Total	**9.4000e-004**	**9.0000e-005**	**0.0102**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0219**	**0.0219**	**6.0000e-005**		**0.0233**

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	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.4000e-004	9.0000e-005	0.0102	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233
Total	**9.4000e-004**	**9.0000e-005**	**0.0102**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0219**	**0.0219**	**6.0000e-005**		**0.0233**

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
Site Photographs

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Photograph 1: View of the Agoura Road AWPF site facing northeast.

Taken by: Ava Edens (Jacobs) *Date taken: January 13, 2022*

Photograph 2: View of the Agoura Road AWPF site facing northeast of water flowing through the site.

Taken by: Ava Edens (Jacobs) *Date taken: January 13, 2022*

Photograph 3: View of the Agoura Road AWPF site facing northeast towards Agoura Road.

Taken by: Ava Edens (Jacobs) *Date taken: January 13, 2022*

Photograph 4: View of the Agoura Road AWPF site facing northwest towards Agoura Road.

Taken by: Ava Edens (Jacobs) *Date taken: January 13, 2022*

Photograph 5: View of the northeastern portion of the Agoura Road AWPF site facing east.

Taken by: Ava Edens (Jacobs) *Date taken: January 13, 2022*

Photograph 6: View of the Agoura Road AWPF site facing northwest, showing water ponding adjacent to Agoura Road.

Taken by: Ava Edens (Jacobs) *Date taken: January 13, 2022*

Photograph 7: View of the Agoura Road AWPF site facing southwest.

Taken by: Ava Edens (Jacobs) *Date taken: January 14, 2022*

Photograph 8: View of the Agoura Road AWPF site facing southeast from Agoura Road.

Taken by: Ava Edens (Jacobs) *Date taken: January 14, 2022*

Photograph 9: View of the Agoura Road AWPF site facing southwest from Agoura Road.

Taken by: Ava Edens (Jacobs) *Date taken: January 14, 2022*

Photograph 10: View of the purified water pipeline corridor and Reservoir AWPF access road facing southwest from Triunfo Canyon Road.

Taken by: Ava Edens (Jacobs) *Date taken: January 14, 2022*

Photograph 11: View facing northeast of the trail along purified water pipeline corridor and the Reservoir AWPF access road. Branches show evidence of fire damage from the Woolsey Fire in 2018.

Taken by: Ava Edens (Jacobs) *Date taken: January 14, 2022*

Photograph 12: View facing northeast of the Westlake Vista Trail to the Reservoir AWPF Site.

Taken by: Ava Edens (Jacobs) *Date taken: January 14, 2022*

Photograph 13: View facing north of the creek near Triunfo Canyon Road, which originates near the Reservoir AWPF Site.

Taken by: Ava Edens (Jacobs) *Date taken: January 13, 2022*

Photograph 14: View of the Reservoir AWPF site facing southeast.

Taken by: Ava Edens (Jacobs) *Date taken: January 14, 2022*

Photograph 15: View of the Reservoir AWPF site facing northwest. Water shown ponding with algal growth.

Taken by: Ava Edens (Jacobs) *Date taken: January 14, 2022*

Photograph 16: View of the Reservoir AWPF site facing northwest. Water shown ponding.

Taken by: Ava Edens (Jacobs) *Date taken: January 14, 2022*

Appendix C
Fossil Records

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Appendix C
University of California Museum of Paleontology Fossil Locality Records
Paleontological Resources Assessment for the Las Virgenes-Triunfo Pure Water Project

Location ID	Location Name	County	State	Country	Continent	Period	Epoch	Formation	Collection
IP9348	Transverse Range	Ventura County	California	United States	North America	Quaternary	Holocene		I
IP9368	Ventura County	Ventura County	California	United States	North America	Quaternary	Holocene		I
IP9369	Sea Cliff terrace	Ventura County	California	United States	North America	Quaternary	Holocene		I
IP9372	Sea Cliff terrace	Ventura County	California	United States	North America	Quaternary	Holocene		I
IP9423	Sea Cliff terrace	Ventura County	California	United States	North America	Quaternary	Holocene		I
IP9427	Sea Cliff terrace	Ventura County	California	United States	North America	Quaternary	Holocene		I
IP9440	Sea Cliff terrace	Ventura County	California	United States	North America	Quaternary	Holocene		I
IP9527	Sea Cliff terrace	Ventura County	California	United States	North America	Quaternary	Holocene		I
IP9529	Sea Cliff terrace	Ventura County	California	United States	North America	Quaternary	Holocene		I
IP9530	Sea Cliff terrace	Ventura County	California	United States	North America	Quaternary	Holocene		I
D9052		Ventura County	California	United States	North America	Quaternary	Pleistocene		I
D9053		Ventura County	California	United States	North America	Quaternary	Pleistocene		I
D9614	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
D9615	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
D9616	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
D9617	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
D9618	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
D9619	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
D9620	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
D9621	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
D9622	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
D9623	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
D9624	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
D9625	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
D9626	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
D9627	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
D9628	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
D9629	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
D9630	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
D9631	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
D9906	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
D9918		Ventura County	California	United States	North America	Quaternary	Pleistocene		I
D9919		Ventura County	California	United States	North America	Quaternary	Pleistocene		I
E9800	Little Sycamore Canyon	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP2337		Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP6581	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP6586	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP6587	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP6588	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP6589		Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP6590	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP6591	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP6592	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP6593	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene	Pleistocene marine and marine terrace deposits	I
IP6594	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene	Pleistocene marine and marine terrace deposits	I
IP6595	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene	Pleistocene marine and marine terrace deposits	I
IP6596	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene	Pleistocene marine and marine terrace deposits	I
IP6598	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP6600	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene	Qtm	I
IP6882	Rancho Canach de San Miguelito	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP8321	Dume Terrace	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP9362	Punta Gorda	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP9363	Punta Gorda	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP9364	Punta Gorda	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP9365	Punta Gorda	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP9366	Punta Gorda	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP9367	Punta Gorda	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP9424	Ventura oil field area, Hill 761	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP9425	Ventura oil field area	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP9438	Madriano Ridge 1	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP10455	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP10456	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP10457	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP10458	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP10459	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I

Appendix C
University of California Museum of Paleontology Fossil Locality Records
Paleontological Resources Assessment for the Las Virgenes-Triunfo Pure Water Project

Location ID	Location Name	County	State	Country	Continent	Period	Epoch	Formation	Collection
IP10460	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP10461	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
IP10511	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene	Terrace Deposit	I
IP10512	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene	Terrace Deposit	I
IP10513	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene	Terrace Deposit	I
IP10514	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene	Terrace Deposit	I
IP10517	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene	Terrace Deposit	I
IP10518	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene	Terrace Deposit	I
IP10519	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene	Terrace Deposit	I
IP10520	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene	Terrace Deposit	I
IP10521	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene	Terrace Deposit	I
IP10522	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene	Terrace Deposit	I
IP10523	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene	Terrace Deposit	I
IP10815	San Nicolas Island	Ventura County	California	United States	North America	Quaternary	Pleistocene		I
V4107	San Nicolas Island General	Ventura County	California	United States	North America	Quaternary	Pleistocene		V
V5756	San Nicolas Island 1	Ventura County	California	United States	North America	Quaternary	Pleistocene		V
V5809	Pierpont Bay	Ventura County	California	United States	North America	Quaternary	Pleistocene		V
V65287	Ventura	Ventura County	California	United States	North America	Quaternary	Pleistocene		V
V78030	San Nicolas Island Kitchen Middens	Ventura County	California	United States	North America	Quaternary	Pleistocene		V
V92019	Simi Mammoth	Ventura County	California	United States	North America	Quaternary	Pleistocene		V
7071-		Ventura County	California	United States	North America	Quaternary,Tertiary	Pleistocene,Pliocene	Saugus	I
7072-		Ventura County	California	United States	North America	Quaternary,Tertiary	Pleistocene,Pliocene	Saugus	I
7078-		Ventura County	California	United States	North America	Tertiary,Quaternary	Pliocene,Pleistocene	Saugus	I
7079-		Ventura County	California	United States	North America	Quaternary	Pleistocene	Saugus	I
7080-	Wheeler Canyon	Ventura County	California	United States	North America	Quaternary,Tertiary	Pleistocene,Pliocene	Saugus	I
7082-	Fagan Canyon	Ventura County	California	United States	North America	Quaternary	Pleistocene	Saugus	I
7083-	Fagan Canyon	Ventura County	California	United States	North America	Quaternary	Pleistocene	Saugus	I
7084-	Las Posas Hill	Ventura County	California	United States	North America	Quaternary,Tertiary	Pleistocene,Pliocene	Saugus	I
7085-		Ventura County	California	United States	North America	Quaternary,Tertiary	Pleistocene,Pliocene	Saugus	I
7086-		Ventura County	California	United States	North America	Quaternary,Tertiary	Pleistocene,Pliocene	Saugus	I
7087-		Ventura County	California	United States	North America	Quaternary,Tertiary	Pleistocene,Pliocene	Saugus	I
7088-	Hall Canyon	Ventura County	California	United States	North America	Quaternary,Tertiary	Pleistocene,Pliocene	Saugus	I
7090-		Ventura County	California	United States	North America	Quaternary,Tertiary	Pleistocene,Pliocene	Saugus	I
7092-		Ventura County	California	United States	North America	Quaternary,Tertiary	Pleistocene,Pliocene	Saugus?	I
7095-	Santa Paula Canyon	Ventura County	California	United States	North America	Quaternary,Tertiary	Pleistocene,Pliocene	Saugus	I
7098-		Ventura County	California	United States	North America	Quaternary,Tertiary	Pleistocene,Pliocene	Saugus?	I
12108	Happy Camp Canyon	Ventura County	California	United States	North America	Tertiary,Quaternary	Pliocene,Pleistocene	Saugus	M
A107	Springville	Ventura County	California	United States	North America	Neogene	Pliocene	Saugus	I
A305		Ventura County	California	United States	North America	Tertiary,Quaternary	Pliocene,Pleistocene	Saugus	I
IP12071		Ventura County	California	United States	North America	Tertiary	Pliocene	Fernando/Saugus?	I
D3990	KA 2158: Dirt road cut in Arroyo Santa Rosa, SE of Moorpark	Ventura County	California	United States	North America	Tertiary	Miocene	Topanga	M
IP7417	Simi quad.	Ventura County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8164	West Flank of hill 1372	Ventura County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8165	West side of hill #1271	Ventura County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8166	Ventura County	Ventura County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8207	Ventura County	Ventura County	California	United States	North America	Tertiary	Miocene	Topanga ?	I
IP8453	Trancos Drive	Ventura County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8454	Arroyo Conejo	Ventura County	California	United States	North America	Neogene	Miocene	Topanga?	I
IP8455	Arroyo Conejo	Ventura County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8457	Rancho Conejo airport	Ventura County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8912	Moorpark Freeway	Ventura County	California	United States	North America	Tertiary	Miocene	Topanga	I
A608	Ventura River	Ventura County	California	United States	North America	Tertiary	Miocene	Modelo	I
A4259	Plum Canyon Road	Ventura County	California	United States	North America	Tertiary	Miocene	Modelo	I
B6380		Ventura County	California	United States	North America	Tertiary	Miocene	Modelo	I
D435	Point Mugu	Ventura County	California	United States	North America	Tertiary	Miocene	Modelo	I
D2333	Point Mugu	Ventura County	California	United States	North America	Tertiary	Miocene	Modelo	I
MF8630	Modelo Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Modelo	M
12007	Los Sauces Creek	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
12008	Los Sauces Creek	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
12017	Los Sauces Creek	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
12372	Los Sauces Creek	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
12373	Los Sauces Creek	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
12374	Los Sauces Creek	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
12857	Los Sauces Creek	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
A249	Wiley Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	I

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Paleontological Resources Assessment for the Las Virgenes-Triunfo Pure Water Project

Location ID	Location Name	County	State	Country	Continent	Period	Epoch	Formation	Collection
D4175	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4176	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4177	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4178	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4179	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4180	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4181	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4182	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4183	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4184	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4185	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4186	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4187	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4188	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4189	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4190	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4191	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4192	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4193	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4194	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4195	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4196	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4197	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4198	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4199	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4200	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4201	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4202	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4203	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4204	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4205	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4206	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4207	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4208	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4209	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4210	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4211	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4212	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4213	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4214	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D4215	Grimes Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
D5431	Mt. Pinos	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	I
IP8433	Munson Creek	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	I
IP8437	Godwin Canyon	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	I
MF7479	Canyon Segundo	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	M
V4846	Ojai brain cast	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	V
V79041	Balcom Canyon N	Ventura County	California	United States	North America	Tertiary	Miocene	Monterey	V
12667	Santa Monica Bay, cultures	Los Angeles County	California	United States	North America	Quaternary	Holocene		M
12676	Malibu cultures, Santa Monica Bay	Los Angeles County	California	United States	North America	Quaternary	Holocene		M
12677	Malaga Cove, Santa Monica Bay	Los Angeles County	California	United States	North America	Quaternary	Holocene		M
A3277	Near Avalon Bay, San Pedro Channel	Los Angeles County	California	United States	North America	Quaternary	Holocene		M
A3278	Off Santa Catalina Island, San Pedro Channel	Los Angeles County	California	United States	North America	Quaternary	Holocene		M
A3279	Off Santa Catalina Island, San Pedro Channel	Los Angeles County	California	United States	North America	Quaternary	Holocene		M
A3396	San Pedro Channel	Los Angeles County	California	United States	North America	Quaternary	Holocene		M
A3397	Avalon Bay, Off Santa Catalina Island	Los Angeles County	California	United States	North America	Quaternary	Holocene		M
A3439	San Pedro Channel	Los Angeles County	California	United States	North America	Quaternary	Holocene		M
IP9930	Terminal Island Coal Hopp	Los Angeles County	California	United States	North America	Quaternary	Holocene		I
IP9931	Terminal Island Coal Hopp	Los Angeles County	California	United States	North America	Quaternary	Holocene		I
IP9932	Terminal Island Coal Hopp	Los Angeles County	California	United States	North America	Quaternary	Holocene		I
IP9933	Terminal Island Coal Hopp	Los Angeles County	California	United States	North America	Quaternary	Holocene		I
MF3599	Cabrillo Beach	Los Angeles County	California	United States	North America	Quaternary	Holocene		M
MF3626	Santa Monica	Los Angeles County	California	United States	North America	Quaternary	Holocene		M
PA1274.01	RB-Cleveland Pond	Los Angeles County	California	United States	North America	Quaternary	Holocene		MP
PA1274.02	RB-Cleveland Pond	Los Angeles County	California	United States	North America	Quaternary	Holocene		MP
PA1274.03	RB-Cleveland Pond	Los Angeles County	California	United States	North America	Quaternary	Holocene		MP

Appendix C
University of California Museum of Paleontology Fossil Locality Records
Paleontological Resources Assessment for the Las Virgenes-Triunfo Pure Water Project

Location ID	Location Name	County	State	Country	Continent	Period	Epoch	Formation	Collection
PA1274.04	RB-Cleveland Pond	Los Angeles County	California	United States	North America	Quaternary	Holocene		MP
PA1274.05	RB-Cleveland Pond	Los Angeles County	California	United States	North America	Quaternary	Holocene		MP
PA1274.06	RB-Cleveland Pond	Los Angeles County	California	United States	North America	Quaternary	Holocene		MP
PA1274.07	RB-Cleveland Pond	Los Angeles County	California	United States	North America	Quaternary	Holocene		MP
PA1274.08	RB-Cleveland Pond	Los Angeles County	California	United States	North America	Quaternary	Holocene		MP
PA1274.09	RB-Cleveland Pond	Los Angeles County	California	United States	North America	Quaternary	Holocene		MP
PA1274.10	RB-Cleveland Pond	Los Angeles County	California	United States	North America	Quaternary	Holocene		MP
PA1274.11	RB-Cleveland Pond	Los Angeles County	California	United States	North America	Quaternary	Holocene		MP
PA1274.12	RB-Cleveland Pond	Los Angeles County	California	United States	North America	Quaternary	Holocene		MP
PA1274.13	RB-Cleveland Pond	Los Angeles County	California	United States	North America	Quaternary	Holocene		MP
PA1274.14	RB-Cleveland Pond	Los Angeles County	California	United States	North America	Quaternary	Holocene		MP
PA1274.15	RB-Cleveland Pond	Los Angeles County	California	United States	North America	Quaternary	Holocene		MP
PA1274.16	RB-Cleveland Pond	Los Angeles County	California	United States	North America	Quaternary	Holocene		MP
PA1274.17	RB-Cleveland Pond	Los Angeles County	California	United States	North America	Quaternary	Holocene		MP
PA1274.18	RB-Cleveland Pond	Los Angeles County	California	United States	North America	Quaternary	Holocene		MP
PA1274.19	RB-Cleveland Pond	Los Angeles County	California	United States	North America	Quaternary	Holocene		MP
PA1274.20	RB-Cleveland Pond	Los Angeles County	California	United States	North America	Quaternary	Holocene		MP
PA1274.21	RB-Cleveland Pond	Los Angeles County	California	United States	North America	Quaternary	Holocene		MP
PA1274.22	RB-Cleveland Pond	Los Angeles County	California	United States	North America	Quaternary	Holocene		MP
PA1274.23	RB-Cleveland Pond	Los Angeles County	California	United States	North America	Quaternary	Holocene		MP
PA1274.24	RB-Cleveland Pond	Los Angeles County	California	United States	North America	Quaternary	Holocene		MP
PA1274.25	RB-Cleveland Pond	Los Angeles County	California	United States	North America	Quaternary	Holocene		MP
PA1274.26	RB-Cleveland Pond	Los Angeles County	California	United States	North America	Quaternary	Holocene		MP
PA1274.27	RB-Cleveland Pond	Los Angeles County	California	United States	North America	Quaternary	Holocene		MP
PB98002	Metrorail Universal City Station	Los Angeles County	California	United States	North America	Quaternary	Holocene		P
PB98033	Metropolitan Water District Headquarters	Los Angeles County	California	United States	North America	Quaternary	Holocene	Younger alluvium	P
56	Rancho La Brea I	Los Angeles County	California	United States	North America	Quaternary	Pleistocene	Asphalt Pit	P
57	Rancho La Brea II	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		P
58	Rancho La Brea III	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		P
282	Bixby Slough I	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		P
2511-	Deadman Island	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
3660-		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
4029-		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
4032-	Dominguez Hill	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
4102-		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
4103-	Signal Hill	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
12038	Palos Verdes	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		M
12213	San Clemente Island	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		M
12698	Horse Creek terrace, San Clemente Island	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		M
-1058	Rancho La Brea 1	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		V
-1059	Rancho La Brea 2	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		V
-1060	Rancho La Brea 3	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		V
-1061	Rancho La Brea 4	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		V
-1377	Brick Yard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		V
-2050	Rancho La Brea 5	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		V
-2051	Rancho La Brea 6	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		V
-2052	Rancho La Brea 7	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		IV
-2053	Rancho La Brea 8	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		V
-3874	Rancho La Brea General	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		V
A210		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
A211		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
A212		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
A213		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
A214		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
A215		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
A216		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
A218		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
A219		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
A221		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
A222		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
A223		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
A226	Graham Bros. Quarry 1	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		IM
A227		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
A228		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
A229		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I

Appendix C
University of California Museum of Paleontology Fossil Locality Records
Paleontological Resources Assessment for the Las Virgenes-Triunfo Pure Water Project

Location ID	Location Name	County	State	Country	Continent	Period	Epoch	Formation	Collection
A1483	Signal Hill	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
A1484	San Pedro Bluffs	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
A1489	Deadman's Island	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
A1493	Crawfish Georges	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
A1507		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
A2542	Deadman's Island	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
A3421	Signal Hill	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		IV
A8470	Hilltop Quarry	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
A8481	Hilltop Quarry	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
B375		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
B1755		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
D1627	San Pedro Bluffs	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
D1628		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
D1630	Los Angeles County	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
D2079		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		M
D2894	San Clemente Island	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
D5425	Del Rey Hills	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
D9858	Rosemary	Los Angeles County	California	United States	North America	Quaternary	Pleistocene	Rancho La Brea	I
E6751	Gaffy St. Bridge	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E6752	San Pedro	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E6932	Harbor lot	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E6976	Harbor lot	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E6980	Harbor lot	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7042	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7082	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7103	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7147	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7183	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7229	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7280		Los Angeles County	California	United States	North America	Quaternary	Pleistocene	undifferentiated	I
E7284	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7291	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7293		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7301	Lunada Bay	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7302		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7303	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7315	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7318	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7319	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7320	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7321	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7333		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7385	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7412	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7438	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7458	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7459	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7460	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7476	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7477	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7478	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7481	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7482	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7483	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7485	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7486	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7487	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7489	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7490	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7491	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7492	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7493	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7494	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7495	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7496	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I

Appendix C
University of California Museum of Paleontology Fossil Locality Records
Paleontological Resources Assessment for the Las Virgenes-Triunfo Pure Water Project

Location ID	Location Name	County	State	Country	Continent	Period	Epoch	Formation	Collection
E7497	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7498	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7499	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7504	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7536		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7542	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7577	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7586	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7614	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7636	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7640	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7650	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7659	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7674	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7694	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7695	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7697	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7702	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7760	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7769	Potrero Canyon	Los Angeles County		United States	North America	Quaternary	Pleistocene		I
E7776	Cabrillo Beach	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7800		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7801	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7803	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7806	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7811	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7813		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7827	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7833	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7842	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7965	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E7968	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene	undifferentiated	I
E7993	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8034	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8072	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8212	Potrero Canyon	Los Angeles County		United States	North America	Quaternary	Pleistocene		I
E8231	Timm's Point	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8232	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8241	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8257	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8305	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8319		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8326		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8375	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8382	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8409	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8428	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8449	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8475	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8522	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8543	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8579	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8655	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8658	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8661	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8682	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8685	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8700	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8764	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8766	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8769	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8799	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8800	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8803	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8845	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I

Appendix C
University of California Museum of Paleontology Fossil Locality Records
Paleontological Resources Assessment for the Las Virgenes-Triunfo Pure Water Project

Location ID	Location Name	County	State	Country	Continent	Period	Epoch	Formation	Collection
E8849	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8851	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8859	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8872	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8873	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8874		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8875		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8876	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8881	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8882	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8883	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8886	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8890	San Pedro	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8897	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8908	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8909	Timm's Point	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8910		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8929	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8951	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8957	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E8976	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9001	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9002	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9003	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9023	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene	undifferentiated	I
E9036	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9049	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9057	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9067	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9069	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9071	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9217	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9223	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9224	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9225	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9226	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9233	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9301	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9311	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9317	Timm's Point	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9330	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9336	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9345	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9368	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9449	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9539	San Pedro	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9572	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9653	San Pedro	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9657	San Pedro	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9678	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9716	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9731		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9732	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9798	Harbor Lot/ Shipyard	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9801	Cabrillo Beach	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
E9830	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP2259	Palisades Recreation Center	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		IV
IP2343		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP5021	Potrero Canyon	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP6864	Hwy 101 Roadcut	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		IV
IP7008	Venice map	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP7009	Baldwin Hills	Los Angeles County	California	United States	North America	Quaternary	Pleistocene	Baldwin Hills	I
IP7010	La Cienega Blvd.	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP7011	Baldwin Hills	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP7012	Baldwin Hills	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I

Appendix C
University of California Museum of Paleontology Fossil Locality Records
Paleontological Resources Assessment for the Las Virgenes-Triunfo Pure Water Project

Location ID	Location Name	County	State	Country	Continent	Period	Epoch	Formation	Collection
IP7357	Santa Monica Mountains	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP8069	Point Dume quad.	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP8070	Point Dume quad.	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP8071	Triunfo Pass quad.	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP8072	Triunfo Pass quad.	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP8073	Point Dume quad.	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP8074	Point Dume quad.	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP8075	Triunfo Pass	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP8458	Sequit Point	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP8963	Los Angeles County	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP8964	Los Angeles County	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP8965	Los Angeles County	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP8966	Los Angeles County	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP8969	Los Angeles County	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP10760	Point Fermin	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP10761	3rd and Mesa Street	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP10762	1st and Mesa St.	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP10763	Wilmington-San Pedro Rd.	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		IV
IP10764	Gaffey Street	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP10765	Walteria	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP12026		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP12044		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP12155		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP12596		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP12633	Rancho La Brea	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP12813		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP12835		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP12983		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP12992		Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
IP16006	North Basin	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		I
MF3627	Timms Point	Los Angeles County	California	United States	North America	Tertiary	Pleistocene		M
PA606	Bixby Slough II	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		P
PA613	Century City	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		P
PB98003	Metrorail North Hollywood Station	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		P
PB98004	Metrorail North Hollywood Tunnel	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		P
PB99055	Van Nuys Reservoir	Los Angeles County	California	United States	North America	Quaternary	Pleistocene	Unnamed	P
V65109	Signal Hill	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		V
V69207	Signal Hill N	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		V
V69208	Athens On The Hill	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		V
V72102	San Jose Hills	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		V
V92101	Timm's Point Bleifus Collection	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		V
V92105	Harding and Maple Avenues	Los Angeles County	California	United States	North America	Quaternary	Pleistocene		V
A1166	Topango Canyon	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
B7853		Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
D437	Topanga Canyon	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
D5395	Topanga Canyon	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP1451		Los Angeles County	California	United States	North America	Tertiary	Miocene	Lower Topanga	I
IP1452		Los Angeles County	California	United States	North America	Tertiary	Miocene	Lower Topanga	I
IP1453	Santa Monica Mountains	Los Angeles County	California	United States	North America	Tertiary	Miocene	Lower Topanga	I
IP1454		Los Angeles County	California	United States	North America	Tertiary	Miocene	Lower Topanga	I
IP1455	Santa Monica Mountains	Los Angeles County	California	United States	North America	Tertiary	Miocene	Lower Topanga	I
IP1456		Los Angeles County	California	United States	North America	Tertiary	Miocene	Lower Topanga	I
IP1458	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Lower Topanga	I
IP2411	San Joaquin Hills	Los Angeles County	California	United States	North America	Neogene	Miocene?	Topanga	I
IP6700	Maria Canyon	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP6701	Maria Canyon	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP6709	Malibu Beach Quad.	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP6720	Malibu Beach Quad.	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga?	I
IP6721	Malibu Beach Quad.	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP6722	Malibu Beach Quad.	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP6723	Malibu Beach Quad.	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP6725	Malibu Beach Quad.	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP6726	Malibu Beach Quad.	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP6728	Piedro Gorda Canyon area	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP6729	Piedro Gorda Canyon area	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I

Appendix C
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Location ID	Location Name	County	State	Country	Continent	Period	Epoch	Formation	Collection
IP6730	Piedro Gorda Canyon area	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP6947	Santa Monica Mountains	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP7001	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP7427	Malibu Beach quad.	Los Angeles County	California	United States	North America	Tertiary	Miocene	Upper Topanga	I
IP7434	Malibu Beach quad.	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP7435	Topanga Quad	Los Angeles County	California	United States	North America	Neogene	Miocene	Topanga?	I
IP7465	Point Dume quad.	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP7468	Point Dume quad.	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP7469	Point Dume quad.	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP7470	Point Dume quad.	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP7471	Point Dume quad.	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP7472	Point Dume quad.	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP7474	Point Dume quad.	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP7586	Pt. Dume quad.	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP7587	Pt. Dume quad.	Los Angeles County	California	United States	North America	Tertiary	Miocene?	Topanga?	I
IP7588	Pt. Dume quad.	Los Angeles County	California	United States	North America	Tertiary	Miocene?	Topanga?	I
IP7666	Point Dume Quad	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP7710	Santa Monica Mountains	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP7818	Santa Monica Mountains	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga?	I
IP7819	Santa Monica Mountains	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8000		Los Angeles County	California	United States	North America	Neogene	Miocene	Topanga	I
IP8128	Pt. Dume quad.	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8136	Stokes Canyon	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8137	Old Topanga Canyon	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8160	Santa Monica Mountains	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8161	Santa Monica Mountains	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8162	Santa Monica Mountains	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8176	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8218	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8219	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8220	Old Topanga Canyon	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8221	Los Angeles County	Los Angeles County	California	United States	North America	Neogene	Miocene	Topanga	I
IP8254	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8255	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8256	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8257	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8258	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8259	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8273	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8274	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8275	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8276	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8277	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8278	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8279	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8280	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8281	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8351	Los Angeles County	Los Angeles County	California	United States	North America	Neogene	Miocene	Topanga	I
IP8352	Los Angeles County	Los Angeles County	California	United States	North America	Neogene	Miocene	Topanga	I
IP8353	Los Angeles County	Los Angeles County	California	United States	North America	Neogene	Miocene	Topanga	I
IP8355	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8396	Mulholland Highway	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8397	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8398	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8399	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8400	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8401	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene?	Topanga	I
IP8402	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8403	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8404	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8405	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8406	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8497	Dry Canyon	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8498	McCoy Canyon	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8499	McCoy Canyon	Los Angeles County	California	United States	North America	Neogene	Miocene	Topanga	I

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Paleontological Resources Assessment for the Las Virgenes-Triunfo Pure Water Project

Location ID	Location Name	County	State	Country	Continent	Period	Epoch	Formation	Collection
IP8500	Cold Canyon Road	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8501	Topanga Canyon	Los Angeles County	California	United States	North America	Neogene	Miocene	Topanga?	I
IP8637	Old Topanga Canyon Road	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8869	Lindero Canyon	Los Angeles County	California	United States	North America	Neogene	Miocene	Topanga	I
IP8871	Coldwater Canyon Road	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
IP8877	Trifuno Pass quad	Los Angeles County	California	United States	North America	Neogene	Miocene	Topanga	I
IP8891	Malibu Beach quad	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	I
PB99030	LA Metrorail Red Line Aqua Vista/Chiquita	Los Angeles County	California	United States	North America	Tertiary	Middle Miocene	Topanga	P
V4909	Ione Drive	Los Angeles County	California	United States	North America	Tertiary	Miocene	Topanga	V
292	Point Fermin	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	P
12875	Wilson Cove, San Clemente Island	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
12876	Wilson Cove, San Clemente Island	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
12877	Wilson Cove, San Clemente Island	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
12878	Wilson Cove, San Clemente Island	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
12879	Wilson Cove, San Clemente Island	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
12880	San Clemente Island	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
12881	San Clemente Island	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
12882	San Clemente Island	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
12883	San Clemente Island	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
12884	San Clemente Island	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
12885	Rose Tracking Station, San Clemente Island	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
12886	Rose Tracking Station, San Clemente Island	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
12902	NOTS Pier, San Clemente Island	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
A3457	Timms Point, San Pedro	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
A3458	Timms Point, San Pedro	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
A3459	Under W end of Timms Pt Causeway, San Pedro	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
A3460	San Pedro Hills	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
A3461	Point Fermin	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
A3462	Malaga Cove	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
A3463	Peck Park Canyon	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
A3464	Peck Park Canyon	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
A3465	Peck Park Canyon	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
A3466	W tributary of Peck Park Canyon	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
B4401	San Pedro	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
D3996	San Clemente Island	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
MF1477		Los Angeles County	California	United States	North America	Neogene	Miocene	Monterey	M
MF1509		Los Angeles County	California	United States	North America	Neogene	Miocene	Monterey	M
MF3597	Cabrillo Beach	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
MF3598	Cabrillo Beach	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
MF3600	Cabrillo Beach	Los Angeles County	California	United States	North America			Monterey	M
MF6743	Lower Reservation	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
MF7474	Peck Park	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
MF7710	San Pedro	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
MF7794	Peck Park	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	M
PA1223	COI Water Recycling Project (Phase IIB) - III	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	P
PA1224	COI Water Recycling Project (Phase IIB) - IV	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	P
PA1225	COI Water Recycling Project (Phase IIB) - V	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	P
PA1234	COI Water Recycling Project (Package 1B) - I	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	P
PA1235	COI Water Recycling Project (Package 1B) - II	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	P
PA1320	LACM Site 1267	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	P
PA1331	Buckley School III	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	P
PA1332	Buckley School IV	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	P
PA1333	Buckley School V	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	P
V3413	Lomita	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	V
V3525	Bairdstown	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	V
V6848	Palos Verdes Hills	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	V
V36118	Dacelite Quarry	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	V
V69176	Malaga Cove N	Los Angeles County	California	United States	North America	Tertiary	Miocene	Monterey	V
3570-	Dry Canyon	Los Angeles County	California	United States	North America	Neogene	Miocene	Modelo?	I
3894-	Dry Canyon Dam	Los Angeles County	California	United States	North America	Neogene	Miocene	Modelo	I
4036-		Los Angeles County	California	United States	North America	Neogene	Miocene	Modelo	I
4044-	Cahuenga Pass	Los Angeles County	California	United States	North America	Neogene	Miocene	Modelo	I
4049-	Nichols Canyon	Los Angeles County	California	United States	North America	Neogene	Miocene	Modelo	I
4050-	Sepulveda Canyon	Los Angeles County	California	United States	North America	Neogene	Miocene	Modelo	I
12044	Topanga Canyon	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M

Appendix C
University of California Museum of Paleontology Fossil Locality Records
Paleontological Resources Assessment for the Las Virgenes-Triunfo Pure Water Project

Location ID	Location Name	County	State	Country	Continent	Period	Epoch	Formation	Collection
12045	Topanga Canyon	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
12046	Topanga Canyon	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
12047	Topanga Canyon	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
12708	Dixie Canyon, Santa Monica Mtns	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
12887	Topanga Canyon Section	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
12888	Topanga Canyon Section	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
12889	Topanga Canyon Section	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
12890	Topanga Canyon Section	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
12891	Topanga Canyon Section	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
12892	Topanga Canyon Section	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
12893	Topanga Canyon Section	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
12894	Topanga Canyon Section	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
12895	Topanga Canyon Section	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
12896	Topanga Canyon Section	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
12897	Topanga Canyon Section	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
12898	Topanga Canyon Section	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
12899	Topanga Canyon Section	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
12900	Topanga Canyon Section	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
12901	Topanga Canyon Section	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
A4328		Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	I
A4330		Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	I
A4480	Humphreys Station	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
A4481		Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	I
D1656		Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	I
D1657		Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	I
D1658		Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	I
D1659	Topanga Canyon Road	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	I
D3985		Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
D3986		Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
D3987		Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
D3988		Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
D3989		Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
D7262		Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	I
D7263		Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	I
D7264		Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	I
D7265		Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	I
D7266		Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	I
D7267		Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	I
D7268		Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	I
D7269		Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	I
D7270		Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	I
D8261		Los Angeles County	California	United States	North America	Neogene	Miocene	Modelo?	I
D9561	Woodland Hills	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	I
IP8260	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	I
IP8261	Los Angeles County	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	I
IP12982		Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	I
MF1283		Los Angeles County	California	United States	North America	Neogene	Miocene	Modelo	M
MF3593	Beverly Glen Canyon	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
MF3594	Beverly Glen Canyon	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
MF3595	Beverly Glen Canyon	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
MF3596	Big Mountain	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
MF3628	Topanga Canyon Area	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
MF3629	Topanga Canyon Area	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
MF3630	Topanga Canyon Area	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
MF4105		Los Angeles County	California	United States	North America	Neogene	Miocene	Modelo	M
MF4128		Los Angeles County	California	United States	North America	Neogene	Miocene	Modelo	M
MF4496		Los Angeles County	California	United States	North America	Neogene	Miocene	Modelo	M
MF6738	Topanga Canyon	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
MF6739	Topanga Canyon 9.1	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
MF6773	Downtown L.A.	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
MF7689x	Santa Monica Mtns	Los Angeles County	California	United States	North America	Neogene	Miocene	Modelo	
MF8629	Girard	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
MF8631	Type Mohnian	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
MF8632	Type Mohnian	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
MF8633	Type Mohnian	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M

Appendix C
University of California Museum of Paleontology Fossil Locality Records
Paleontological Resources Assessment for the Las Virgenes-Triunfo Pure Water Project

Location ID	Location Name	County	State	Country	Continent	Period	Epoch	Formation	Collection
MF8634	Type Mohnian	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
MF8635	Dry Canyon Road	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	M
P3650	Modelo I:Mulholland Drive	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	P
PA231	Sepulveda Canyon Quarry	Los Angeles County	California	United States	North America	Tertiary	Late Miocene	Modelo Shale	P
PA1128	Modelo II:Ventura Blvd.	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	P
PA1129	Modelo III:Beverly Glen Blvd.	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	P
PA1130	Modelo IV:Mulholland Drive Summit	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	P
PA1347	Buckley School VI	Los Angeles County	California	United States	North America	Neogene	Miocene	Modelo	P
V3110	Featherstone Quarry	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	V
V3430	Calabasas	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	V
V3601	Sepulveda Canyon	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	V
V3636	Santa Monica	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	V
V4814	Reynier Canyon	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	V
V65441	Browns Canyon	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	V
V65449	Soledad Canyon General	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	V
V65450	Sepulveda Canyon General	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	V
V82048	Del Moreno Drive	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	V
V82049	Knoll Drive	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	V
V95102	Studio City	Los Angeles County	California	United States	North America	Tertiary	Miocene	Modelo	V
IP8874	Lauren Canyon Blvd	Los Angeles County	California	United States	North America	Neogene	Miocene	Conejo Volcanics	I

I = Invertebrate
M = Microfossil
P = Plant
V = Vertebrate

Appendix D
Paleontological Locality Report

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Natural History Museum
of Los Angeles County
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Los Angeles, CA 90007

tel 213.763.DINO
www.nhm.org

Research & Collections

e-mail: paleorecords@nhm.org

February 26, 2022

Jacobs
Attn: Levi Pratt

re: Paleontological resources for the Pure Water Project

Dear Levi:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for proposed development at the Pure Water project area as outlined on the portion of the Newbury Park, Thousand Oaks, and Calabasas USGS topographic quadrangles map that you sent via e-mail on February 15, 2022. We do not appear to have any fossil localities that lie directly within the proposed project area. We do have fossil localities nearby from the same sedimentary deposits that occur in the proposed project area, either at the surface or at depth.

The following table shows the closest known localities in the collection of the Natural History Museum of Los Angeles County (NHMLA).

Locality Number	Location	Formation	Taxa	Depth
LACM VP 1680	Conejo Valley; 1 mi NW of Newbury Park	Unknown formation (Pleistocene, silty clay member)	Mammoth (*Mammuthus*); horse family (Equidae)	14-15 feet bgs
LACM VP 7660	The Lakes at Thousand Oaks; SW corner of E. Thousand Oaks Blvd & S. Conejo School Rd.	Unknown Formation (surface float)	Mastodon (*Mammut americanum*)	Surface (stream bed)
LACM VP 3213	S of Ventura Freeway along S Westlake Blvd	Unknown formation (Pleistocene alluvial sediments)	Ground sloth (*Paramylodon*) and other vertebrates	Unknown
LACM VP 1142	Sherwood Lake cave, S of Sherwood Lake	Unknown formation (late Pleistocene)	Unidentified vertebrates	At surface, embedded in cave sediments
LACM VP 6949	Northbound side of Hwy. 23 approximately 1 mile south of Tierra Rejada Road offramp	Topanga Formation (coarse-grained sandstone with numerous fragments of underlying Conejo volcanics)	Shark (*Isurus planus*); Invertebrates (bivalves; echinoids; bryozoans; barnacles)	Unknown
LACM VP 7265	North of Madera Road, south of the Ronald	Topanga Formation (Grey orange fine	toothed whale (Odontoceti); Requiem shark (Carcharhinus,	Unknown

	Reagan Library, Simi Valley	grained well sorted sandstone)	Galeocerdo), weasel shark (*Hemipristis*), eagle ray (Myliobatidae), barracuda (Sphyraenidae)	
LACM VP 5883	northwest flank of the Los Posas Hills, just west of the Los Posas Country Club	Saugus Formation (marine facies)	Perissodactyla; bivalves	Unknown, collected during grading
LACM VP 6236-6240	Near intersection of Mine Rd and Tapo Canyon Rd, Santa Susana Mtns	Saugus Formation (coarse light yellow sand channel interbedded with light gray bioturbated siltstones)	Scoter (*Melanitta*), albatross (*Diomedea*), shearwater (*Puffinus*), auk (*Mancalla*),cormorant (Phalacrocorax); baleen whale (Balaenidae), rorquals (Balaenopteridae), eared seal (Otariidae); sea snake (Hydrophiisae), rock bass (*Paralabax*), sturgeon (Acipenser)	Unknown (collected during grading)
LACM IP 16927	On hill above Renee Dr. north of water tank; Agoura	Conejo Volcanics	Invertebrates (unspecified)	Unknown
LACM IP 17148	Western Simi Hills on top of a steep paved road above Summertime Lane, east of Stargaze Avenue, south of Tierra Rejada Road; Ventura County	Conejo Volcanics (sandy matrix surrounded by lava flows)	Oyster beds	Unknown
LACM VP 7987	The New Home Company Twenty Oaks development , NW of the intersection of W Wilbur Rd & N Moorpark Rd	Modelo Formation (silty mudstone; claystone & siltstone)	Shark *(Isurus*, Carcharhinus), ray-finned fish (Clupeidae, porgies (*Plectrites)*, herring (*Xyne*), bony fish (*Eclipes, Ganolytes*)	Unknown
LACM VP 6034	Ridge south of Thousand Oaks & west of Triunfo Corner (more specific information not available)	Modelo Formation	mackerel/tuna family (Scombridae)	Unknown
LACM VP 4965-4966	Just north of Thousand Oaks Blvd. at intersection with La Baya Drive on ridge just west of Windmill Canyon	Modelo Formation (punky diatomaceous shale)	Baleen whales (Cetotheriidae)	Surface
LACM VP 7924	Oak Park; in the elevated terrain just east of Lindero Canyon	Monterey Formation (yellow shale sandstone)	Fish (*Eclipes*, Clupeidae); unspecified plants	Unknown

VP, Vertebrate Paleontology; IP, Invertebrate Paleontology; bgs, below ground surface

This records search covers only the records of the NHMLA. It is not intended as a paleontological assessment of the project area for the purposes of CEQA or NEPA. Potentially fossil-bearing units are present in the project area, either at the surface or in the subsurface. As such, NHMLA recommends that a full paleontological assessment of the project area be conducted by a paleontologist meeting Bureau of Land Management or Society of Vertebrate Paleontology standards.

Sincerely,

Alyssa Bell

Alyssa Bell, Ph.D.
Natural History Museum of Los Angeles County

enclosure: invoice

Appendix E
CONFIDENTIAL Tribal Outreach Records

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