Valley Water

Clean Water • Healthy Environment • Flood Protection

Design Level Geotechnical Investigations for the Pacheco Reservoir Expansion Project

Draft Initial Study and Mitigated Negative Declaration

Project Number 91954002

June 2024

Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, California 95118-3614

Prepared by:

Valley Water

Valley Water Board of Directors

John L. Varela	District 1	Nai Hsueh, Chair	District 5
Barbara F. Keegan	District 2	Tony Estremera	District 6
Richard P. Santos, Vice-Chair	District 3	Rebecca Eisenberg	District 7
Jim Beall	District 4		

Table of Contents

Tables

Figures

Appendices

List of Acronyms

°C	degrees Celsius
°F	degrees Fahrenheit
µg/m^3	micrograms per cubic meter
AB	Assembly Bill
ABAG	Association of Bay Area Governments
ADL	aerially deposited lead
a.m.	ante meridiem (morning)
AMM	avoidance and minimization measure
APE	area of potential effects
AR	Agricultural Ranchlands
ATCM	Airborne Toxic Control Measure
ATV	all-terrain vehicle
BAAQMD	Bay Area Air Quality Management District
Bay Area	San Francisco Bay Area
BMP	best management practice
CAA	Clean Air Act
CAAQS	California ambient air quality standard
CAL FIRE	California Department of Forestry and Fire Protection
Cal OES	California Governor's Office of Emergency Services
Cal/OSHA	California Occupational Safety and Health Administration
CalEPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CC Basin Plan	Water Quality Control Plan for the Central Coast Basin
CCAP	Climate Change Action Plan
CCMA	Climate Change Mitigation and Adaptation
CCR	California Code of Regulations
CCRWQCB	Central Coast Regional Water Quality Control Board
CDC	Centers of Disease Control
CDFW	California Department of Fish and Wildlife
CDPH	California Department of Public Health
CEC	California Energy Commission

CEG	Certified Engineering Geologist
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFC	California Fire Code
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGC	California Government Code
CGS	California Geological Society
CH_4	methane
CHP	California Highway Patrol
CIWMA	California Integrated Waste Management Act
CWA	Clean Water Act
CMP	Congestion Management Program
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CNRA	California Natural Resources Agency
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CUPA	Certified Unified Program Agency
CV	Central Valley
CV Basin Plan	Water Quality Control Plan for the Sacramento and San Joaquin River Basin
D	delisted
dB	decibel
dBA	A-weighted decibel
DEIR	Draft Environmental Impact Report
DEM	digital elevation model
diesel PM	particulate matter exhaust from diesel engine
DS	downstream
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
E	Endangered
EIR	Environmental Impact Report

EOP	Emergency Operations Plan
EPA	U.S. Environmental Protection Agency
ERIS	Environmental Risk Information Services
ESA	Endangered Species Act
ESL	environmental screening level
FC	Federal Candidate
FEMA	Federal Emergency Management Agency
FGC	California Fish and Game Code
FHSZ	Fire Hazard Severity Zone
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FP	Fully Protected
FRAP	Fire and Resource Assessment Program
FTA	Federal Transit Administration
GBPO	General Basin Plan Objectives
GE	Geotechnical Engineer
General Plan	Santa Clara County General Plan
GHG	greenhouse gas
GIS	geographic information system
GPS	Global Positioning System
GRCD	Grassland Resource Conservation District
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
GUSD	Gilroy Unified School District
HMBP	Hazardous Materials Business Plan
Hot Spots Act	Air Toxics Hot Spots Information and Assessment Act of 1987
HQ	high quality
I-5	Interstate 5
IL4	Incremental Level 4
in/sec	inches per second
IPCC	Intergovernmental Panel on Climate Change
IS	Initial Study
ISA	initial site assessment
km	kilometer
kVA	kilovoltampere
lb/day	pounds per day

L_{dn}	day-night level
L_{eq}	Equivalent Continuous Sound Level
LiDAR	Light Detection and Ranging
L_{max}	Maximum Sound Level
LOS	level-of-service
LS	lake sediment
LT	long term
LUST	leaking underground storage tank
m	meter
M	Moment magnitude
MARC	Monterey Area Research Consortium
MBTA	Migratory Bird Treaty Act
MCL	maximum contaminant level
MCV	Manual of California Vegetation
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MLRA	Major Land Resource Area
mm	millimeter
MND	Mitigated Negative Declaration
mPa	micro-Pascal
mph	miles per hour
MRLC	Multi-Resolution Land Characteristics Consortium
MRZ	Mineral Resource Zones
msl	mean sea level
MT	metric ton
MTC	Metropolitan Transportation Commission
$MTCO_{2e}$	metric tons of carbon dioxide equivalent
N_{2O}	nitrous oxide
NAAQS	national ambient air quality standard
NAHC	Native American Heritage Commission
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
NI	no impact
NIP	non-native and invasive plant
NL	Not Listed
NMFS	National Marine Fisheries Service

NNIP	nonnative invasive plant
NO	nitric oxide
NO_2	nitrogen dioxide
NO_3	nitrate
NOAA	National Oceanic and Atmospheric Administration
NO_X	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NTU	Nephelometric Turbidity Unit
NWIC	Northwest Information Center
NWPR	Navigable Waters Protection Rule
OEHHA	Office of Environmental Health Hazard Assessment
OES	Office of Emergency Services
OHV	off-highway vehicle
OPR	Office of Planning and Research
OSHA	Occupational Safety and Health Administration
PeMS	Performance Measurement System
PG	Professional Geologist
PG&E	Pacific Gas and Electric Company
PM	particulate matter
p.m.	post meridiem (afternoon)
PM_{10}	respirable particulate matter with an aerodynamic diameter of 10 microns or less
$PM_{2.5}$	fine particulate matter with an aerodynamic diameter of 2.5 microns or less
PMF	Probable Maximum Flood
ppb	parts per billion
ppm	parts per million
PPV	peak particle velocity
PPWD	Pacheco Pass Water District
PREP	Pacheco Reservoir Expansion Project
PT	proposed Threatened
proposed Project	Design Level Geotechnical Investigations for the Pacheco Reservoir Expansion Project
PV Water	Pajaro Valley Water Management Agency
RCRA	Resources Conservation and Recovery Act
re	referenced at

REC	recognized environmental condition
Reclamation	U.S. Department of the Interior, Bureau of Reclamation
Recovery Plan	South-Central California Steelhead Recovery Plan
RMS	root-mean-square
ROG	reactive organic gas
ROW	Right-of-Way
RSL	risk-based screening level
RWQCB	Regional Water Quality Control Board
Santa Clara OES	Santa Clara County Office of Emergency Services
SB	Senate Bill
SBCWD	San Benito County Water District
SCCDEH	Santa Clara County Department of Environmental Health
SCCSO	Santa Clara County Sheriff's Office
SCU	Santa Clara Unit
SCVHA	Santa Clara Valley Habitat Agency
SFBAAB	San Francisco Bay Area Air Basin
SFBRWQCB	San Francisco Bay Regional Water Quality Control Board
SFPUC	San Francisco Public Utilities Commission
SGMA	Sustainable Groundwater Management Act
SHPO	State Historic Preservation Officer
SMARA	Surface Mining and Reclamation Act
SNMP	Salt and Nutrient Management Plan
SO_2	sulfur dioxide
SOI	Species of Interest
SO_x	oxides of sulfur
SR	sensitive receptor
SR-152	State Route 152
SR-156	State Route 156
SRA	State Responsibility Area
SSC	CDFW Species of Special Concern
ST	short term
State Parks	California Department of Parks and Recreation
STLC	Soluble Limit Threshold Concentration
SPT	Standard Penetration Test
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board

T	Threatened
TAC	toxic air contaminant
TDS	total dissolved solids
TEM	transmission electron microscopy
TMDL	total maximum daily load
TP	test pit
TTLC	Total Threshold Limit Concentrations
UB	upstream boring
US	upstream
US-101	U.S. Route 101
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
Valley	Santa Clara Valley
Valley Habitat Plan	Santa Clara Valley Habitat Plan
Valley Water	Santa Clara Valley Water District
VdB	vibration decibel
veh/h	vehicles per hour
VHP	Valley Habitat Plan (designator for AMMs)
VMT	vehicle miles traveled
VTA	Santa Clara Valley Transportation Authority
VWP	vibrating wire piezometers

Key Terminology

Avoidance and Minimization Measures:

Avoidance and minimization measures (AMMs) are measures to prevent, avoid, or minimize potentially adverse effects on resources (e.g., cultural, biological, water) associated with construction and other activities. Valley Water typically incorporates specific AMMs in cases when modifications are made to one of the standard best management practices (BMPs) from the Valley Water BMP Handbook (discussed below) or for the application of AMMs or BMPs from a responsible or trustee agency.

Beneficial Impact:

A project impact is considered beneficial if it would result in the enhancement or improvement of an existing physical condition in the environment. No mitigation is required when an impact is determined to be beneficial.

Best Management Practices:

Best management practices are measures typically derived from standardized Valley Water operating procedures (Valley Water 2014, Revision G). These practices have been identified as methods, activities, procedures, or other management practices for the avoidance or minimization of potential adverse environmental effects. They have been designed for routine incorporation into project designs and represent the "state of the art" impact prevention practices

Less-than-significant Impact:

A less-than-significant impact is indicated in the Initial Study checklist where the impact does not reach the standard of significance set for that factor and the project would therefore cause no substantial change in the environment (no mitigation needed).

Less-than-significant Impact with Mitigation:

A less-than-significant Impact with mitigation is indicated in the Initial Study checklist where the impact is determined to exceed the applicable significance criteria but for which feasible mitigation measure(s) are available to reduce the impact to a level of less-than-significant.

Mitigation Measures:

Mitigation includes: (a) avoiding the impact altogether by not taking a certain action or parts of an action; (b) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (c) rectifying the impact by repairing, rehabilitating, or restoring the impacted environment; (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and (e) compensating for the impact by replacing or providing substitute resources or environments.[1]

1 Authority cited: Sections 21083 and 21087, Public Resources Code; Reference: Sections 21002, 21002.1, 21081, and 21100(c), Public Resources Code.

No Impact:

No impact is indicated in the Initial Study where, based on the environmental setting, the stated environmental factor does not apply to the proposed project.

Potentially Significant Impact:

A potentially significant impact is indicated in the Initial Study where the project impact may cause a substantial adverse change in the environment, but for which (1) no feasible mitigation is available to reduce the impact to a less-than-significant level, or (2) feasible mitigation has been identified but the residual impact remains significant after mitigation is applied.

Significance Criteria:

A set of criteria used by the lead agency to determine whether an impact would be considered significant. Valley Water relied upon the significance criteria set forth in the CEQA Guidelines and criteria based on the regulatory standards of local, state, and federal agencies.

Section 1 Introduction

The Santa Clara Valley Water District (Valley Water), acting as the California Environmental Quality Act (CEQA) Lead Agency, prepared this draft Initial Study and Mitigated Negative Declaration (IS/MND) document to provide the public, responsible agencies and trustee agencies with information about the potential environmental effects of conducting Design Level Geotechnical Investigations for the Pacheco Reservoir Expansion Project (proposed Project).

1.1 Organization of this Document

This Draft IS/MND document is organized to assist the reader in understanding the potential impacts that the proposed Project may have on the environment and to fulfill CEQA (Public Resources Code Section 21000 *et seq*.). Section 1 indicates the purpose under CEQA, sets forth the public participation process, and summarizes applicable state and federal regulatory requirements. Section 2 describes the location and features of the proposed Project, and Section 3 describes the overall environmental setting. Section 4 evaluates the potential impacts through the application of the CEQA Initial Study Checklist questions to implementation of the proposed Project. Section 5 lists the contributors, and Section 6 supplies the references used in preparation of the IS/MND.

1.2 Purpose of the Mitigated Negative Declaration

Valley Water prepared this Draft IS/MND consistent with CEQA, the CEQA Guidelines (Title 14, California Code of Regulations 15000 *et seq*.), and Valley Water's procedures for implementation of CEQA (Environmental Management System - Environmental Planning Q520D01). CEQA requires that public agencies such as Valley Water identify the significant adverse impacts and beneficial environmental effects of their actions. Beneficial effects should be encouraged and expanded where possible, and adverse impacts should be avoided or minimized, or mitigated in cases where avoidance and minimization are not possible.

In addition to acting as the CEQA Lead Agency for its projects, Valley Water's mission includes objectives to conduct its activities in an environmentally sensitive manner as a steward of Santa Clara Valley watersheds. Valley Water strives to preserve the natural qualities, scenic beauty, and recreational uses of Santa Clara Valley's waterways by using methods that reflect an ongoing commitment to conserving the environment.

1.3 Decision to Prepare a Mitigated Negative Declaration for this Proposed Project

Section 4 of this Draft IS/MND identifies potentially significant effects of implementing the proposed Project on Biological Resources, Hazards and Hazardous Materials, Noise, Transportation, and Wildfire Resources. Mitigation measures have been identified for the proposed Project to reduce such effects to less-than-significant levels, and Valley Water has committed to implementing such measures. Therefore, the proposed MND is consistent with CEQA Guidelines §15070, which indicate that an MND is appropriate when:

The Project Initial Study identifies potentially significant effects, but:

- Revisions to the proposed Project have been made that would avoid or reduce the effects to a point where clearly no significant effects would occur,

  and

- There is no substantial evidence, in light of the whole record before the agency, that the proposed Project, as revised, may have a significant effect on the environment.

1.4 Public Review Process

This Draft IS/MND will be circulated to local and state agencies, interested organizations, and individuals who may wish to review and provide comments on the project description, the proposed mitigation measures, or other aspects of the report. Publication of the Draft IS/MND will commence the minimum 30-day public review period, in accordance with CEQA Guidelines §15105(b), beginning on June 17, 2024, and ending on July 19, 2024.

This Draft IS/MND and supporting documents are available for review at:

Santa Clara Valley Water District Headquarters Building	**San Jose Public Library located at: Dr. Martin Luther King, Jr. Library**	**Gilroy Public Library**
5700 Almaden Expressway	150 E. San Fernando Street	350 W. 6th Street
San Jose, CA 95118	San Jose, CA 95112	Gilroy, CA 95020

The Draft IS/MND is posted on the Valley Water website at **http://www.valleywater.org/PublicReviewDocuments.aspx** and available via written request from Valley Water.

Written and/or email comments or questions regarding the Draft IS/MND should be submitted no later than **July 19, 2024**, to the following name and address:

Todd Sexauer
Senior Environmental Planner
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118-3614
Phone: (408) 630-3149
e-mail: tsexauer@valleywater.org

This Draft IS/MND along with any comments will be considered by Valley Water prior to a decision on the proposed Project.

1.5 Interagency Collaboration and Regulatory Review

The CEQA review process is intended to provide both trustee and responsible agencies with an opportunity to provide input into the proposed Project. Trustee agencies are state agencies that have authority by law for the protection of natural resources held in trust for the public. Responsible agencies are those that have some responsibility or authority for carrying out or approving a project; in many instances, these public agencies must make a discretionary decision to issue a local permit or provide right-of-way, funding, or resources that are critical to the project's proceeding. In this instance, the California Department of Fish and Wildlife (CDFW), Central Coast Regional Water Quality Control Board (CCRWQCB), U.S. Army Corps of Engineers (USACE), Santa Clara Valley Habitat Agency (SCVHA), Valley Water, and the California Department of Transportation - District 4 (Caltrans) are considered responsible agencies. Valley Water will work with CDFW, CCRWQCB, USACE, SCVHA, and Caltrans to ensure that the proposed Project meets applicable policies and requirements. Valley Water will acquire applicable environmental permits and adhere to all general and specific conditions of applicable environmental permits (Section 404 Nationwide Permit, Section 401 Water Quality Certification, Section 1602 Lake and Streambed Alteration Agreement, Well Ordinance Permits, and compliance with the Santa Clara Valley Habitat Plan; Valley Habitat Plan).

The IS/MND is intended to assist permitting agencies to carry out their responsibilities for permit review or approval authority over various aspects of the proposed Project. The proposed Project would require Project-specific permitting and/or review, as summarized in Table 1-1.

Table 1-1: Summary of Applicable Regulatory Requirements	
Agency	**Permit/Review Required**
California Department of Fish and Wildlife - Region 3	Fish and Game Code Section 1602 Lake and Streambed Alteration Agreement
Regional Water Quality Control Board – Central Coast	Clean Water Act Section 401 Water Quality Certification
U.S. Army Corps of Engineers - San Francisco District	Clean Water Act Section 404 Nationwide Permit 6 Survey Activities (Non-reporting)
California Department of Transportation - District 4	Caltrans Encroachment Permit
Santa Clara Valley Habitat Agency	Santa Clara Valley Habitat Plan Compliance
Santa Clara Valley Water District	Well Ordinance Drilling Permits
Source: Valley Water, 2024	

Section 2 Project Description

2.1 Background

The proposed Pacheco Reservoir Expansion Project (PREP) would be a multi-agency effort to provide water supply reliability, improve habitat for South Central Coast Steelhead, and other benefits. Valley Water is currently evaluating PREP as part of a separate CEQA analysis.[2] Once recirculated, the Draft Environmental Impact Report (DEIR) will evaluate an upstream location for the potential dam site on North Fork Pacheco Creek. PREP would include expanding the storage capacity of the existing Pacheco Reservoir from 5,500 acre-feet to approximately 140,000 acre-feet through construction of a new dam, conveyance facilities, and appurtenant infrastructure, and the long-term operations of the expanded reservoir and appurtenant facilities. As a multi-purpose project, PREP would increase emergency storage/emergency water supply, improve water supply reliability, increase South Central California Coast steelhead habitat suitability, increase Level 4 (IL4) refuge water supplies, and reduce impaired water quality deliveries from San Luis Reservoir.

To inform the future PREP design and planning processes, Valley Water is planning to undertake the proposed Project to provide geotechnical and geologic data for the design of the upstream dam site for PREP as well as for other associated facilities, such as a temporary interchange at State Route 152 (SR-152) to facilitate truck traffic during construction. If, and when implemented, the proposed Project would then provide engineers with design information necessary to address comments submitted on the PREP DEIR as well as refine designs to reflect the new understanding of geotechnical conditions. In addition, it would support the development and analysis of physical process models necessary to assess impacts associated with PREP, refine designs in a manner to avoid or minimize impacts, and support the development of mitigation measures and subsequent monitoring efforts. The proposed Project location is shown in Figure 2-1.

[2] Valley Water expects to recirculate a Draft Environmental Impact Report for PREP in Summer 2025.

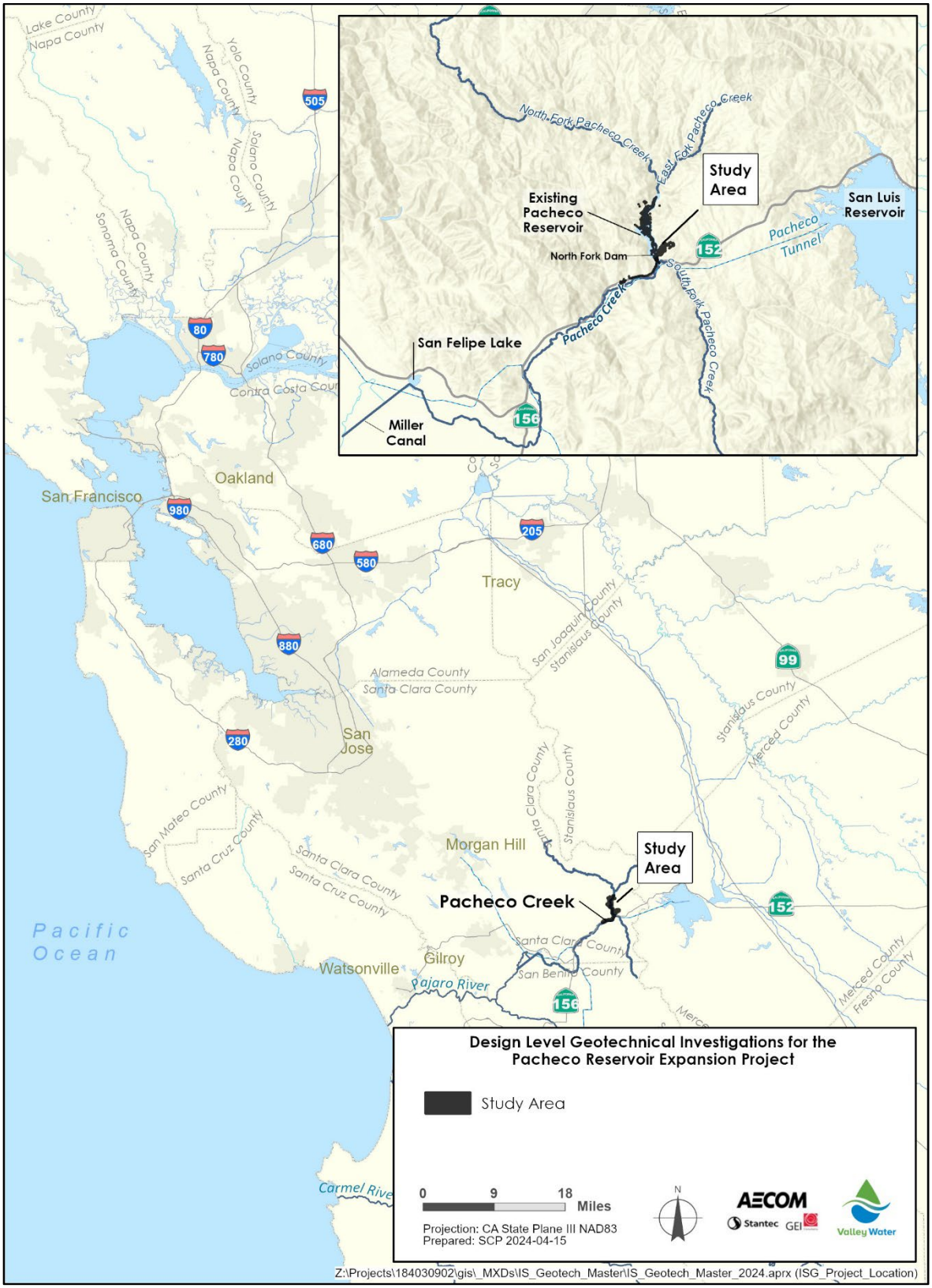


Figure 2-1: Project Location Map

2.2 Project Goals and Objectives

The proposed Project's goals and objectives are to:

- Provide a more complete understanding of the depth to, and properties of, the underlying bedrock within and close to the footprint of the proposed PREP upstream dam location, including exploration for possible bedrock faults within the dam foundation.
- Provide additional data within potential borrow sites necessary to quantify the volume and material characterization (via sample collection for laboratory testing) of materials adequate for use in construction of an earthfill dam.
- Provide additional data on the thickness, gradation and other properties of alluvial materials currently deposited in the existing Pacheco Reservoir upstream of North Fork Dam in support of sediment management during construction and ongoing design of the North Fork Pacheco Creek channel restoration reach.
- Identify the location and depths of existing landslide deposits at the proposed upstream dam site, spillway location and at selected locations within the inundation area of the proposed reservoir.
- Evaluate geotechnical conditions along the alignment of the proposed conveyance pipeline and pump station that would connect the expanded reservoir with the existing Pacheco Conduit.
- Investigate foundation conditions for an improved site access road and a new bridge planned to be constructed several hundred feet south of the existing North Fork Dam.
- Investigate foundation and embankment conditions associated with a temporary overpass over SR-152 near the existing Kaiser-Aetna Road intersection.
- Provide additional data on the quantity, location and character (e.g., gradation and chemical constituents) of alluvial sediments stored behind North Fork Dam necessary to refine the design of the North Fork Pacheco Creek restoration reach included in the description of PREP in the 2021 Draft Environmental Impact Report.
- Provide additional data on the character of alluvial sediments stored in Pacheco Reservoir that would inform the development and use of modeling tools (e.g., sediment transport model, water quality model) necessary to refine channel restoration design, analyze PREP-related impacts, and support development of PREP-specific mitigation and monitoring elements.

2.3 Project Scope of Work

The proposed Project includes various types of surface and subsurface geotechnical investigations intended to meet the objectives described in Section 2.2. The locations of the proposed work activity areas are illustrated on Figure 2-2a through Figure 2-2e. Valley Water used a wide array of data available from existing field surveys and investigations to overlay resource data (e.g., biological, aquatic/wetlands, cultural/tribal cultural) with geotechnical data to establish the initial

work activity areas. Subsequently, engineering designs and detailed topographical data were used to ensure that all activity areas associated with both surface and subsurface geotechnical investigations avoided all known sensitive resources. In the case of activity areas associated with existing access routes and staging areas, these activity areas were reduced in width or area to the extent possible to allow for critical vehicles (e.g., drill rig, excavator). This was done by using the comprehensive geographic information system (GIS) developed for PREP including geological, biological, wetlands and cultural resource spatial data to overlay proposed activity areas to assess proximity of these activity areas to sensitive resources (e.g., cultural resources/tribal cultural resources, sensitive natural communities). Where an activity area boundary intersected with a known sensitive resource, the work activity area was relocated to buffer biological resources, sensitive natural communities, and aquatic/wetland resources by at least 50 feet and archaeological resources by at least 150 feet with the exception of two borings that have reduced buffers located near recorded archaeological sites. A brief description of each type of proposed investigation is provided in the following sections.

2.3.1 Surface Geophysical Surveys

Two types of linear surface geophysical investigations would be performed within the proposed Project study area: 1) seismic refraction and 2) electrical resistivity. The location of these two types is illustrated on Figure 2-2a through Figure 2-2e. Additional information on each of these investigations is provided in Table 2-1 and the discussions that follow. These surface geophysical surveys are considered noninvasive or minimally invasive.

Electrical Resistivity Imaging

One electrical resistivity survey would be performed across the valley bottom within the upstream portion of the proposed dam. This line (UER-01 on Figure 2-2b) would be approximately 1,520 feet long and would provide data on the continuity or possible disruption of near surface alluvium and other soil deposits in an area where previous geological investigations indicated potentially active bedrock faults. No vegetation would be removed during these investigations.

Electrical resistivity is a geophysical method used to determine the electrical properties of the subsurface materials. At the site, multiple multi-channel cables (approximately 1/2-inch diameter cable that is typically 300 feet long and connected as needed to maximum length) are placed on the ground with no disturbance to existing vegetation. At established distances (e.g., every 25 feet), 1/2-inch diameter stainless-steel electrodes would be connected to the cables and driven approximately 4 to 6 inches into the ground with a hand-held sledgehammer in order to receive the electrical current. An electrical current is induced at various locations using a portable, battery-powered current generator. The current generator is typically connected at both the end points and mid points) along the line for approximately 5 to 10 minutes at each induction point location, and the current detected by each electrode is compared to the induced current. The inducted electrical current varies between 10 milliamps to about 500 milliamps at approximately 400 volts of direct current. Once acceptable data is recorded, all equipment would be removed.

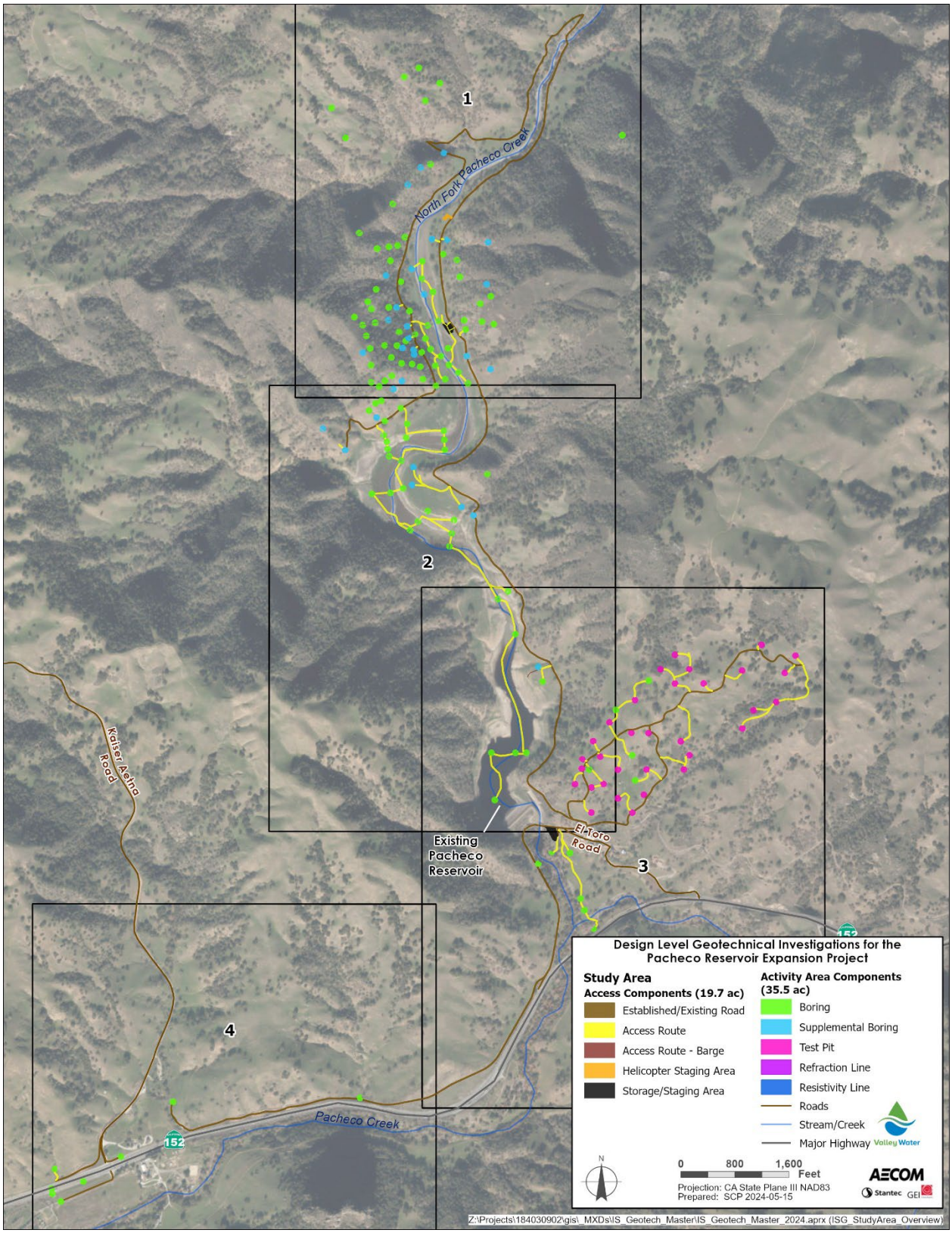


Figure 2-2a: Project Study Area Map (Index)

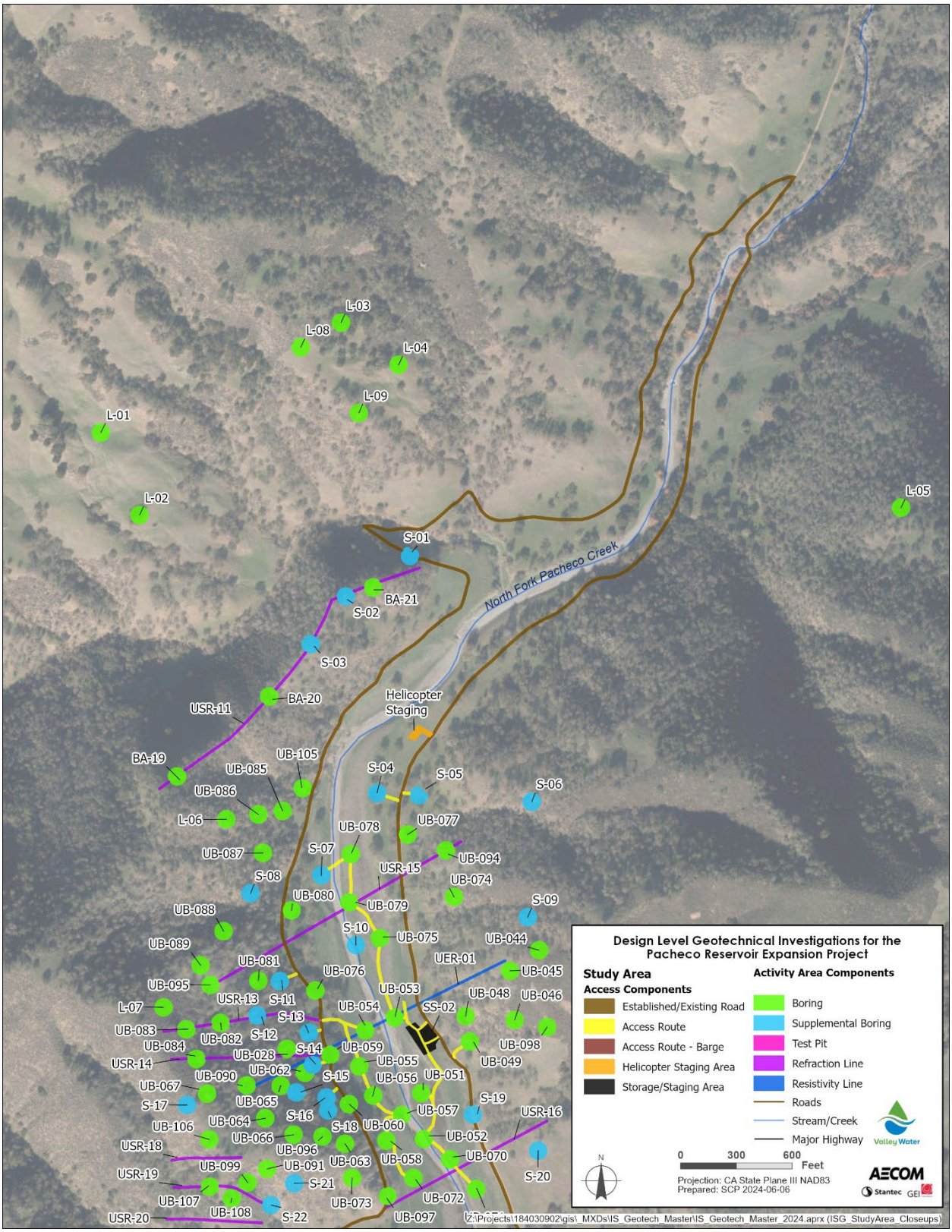


Figure 2-2b: Project Study Area Map (Plate 1)

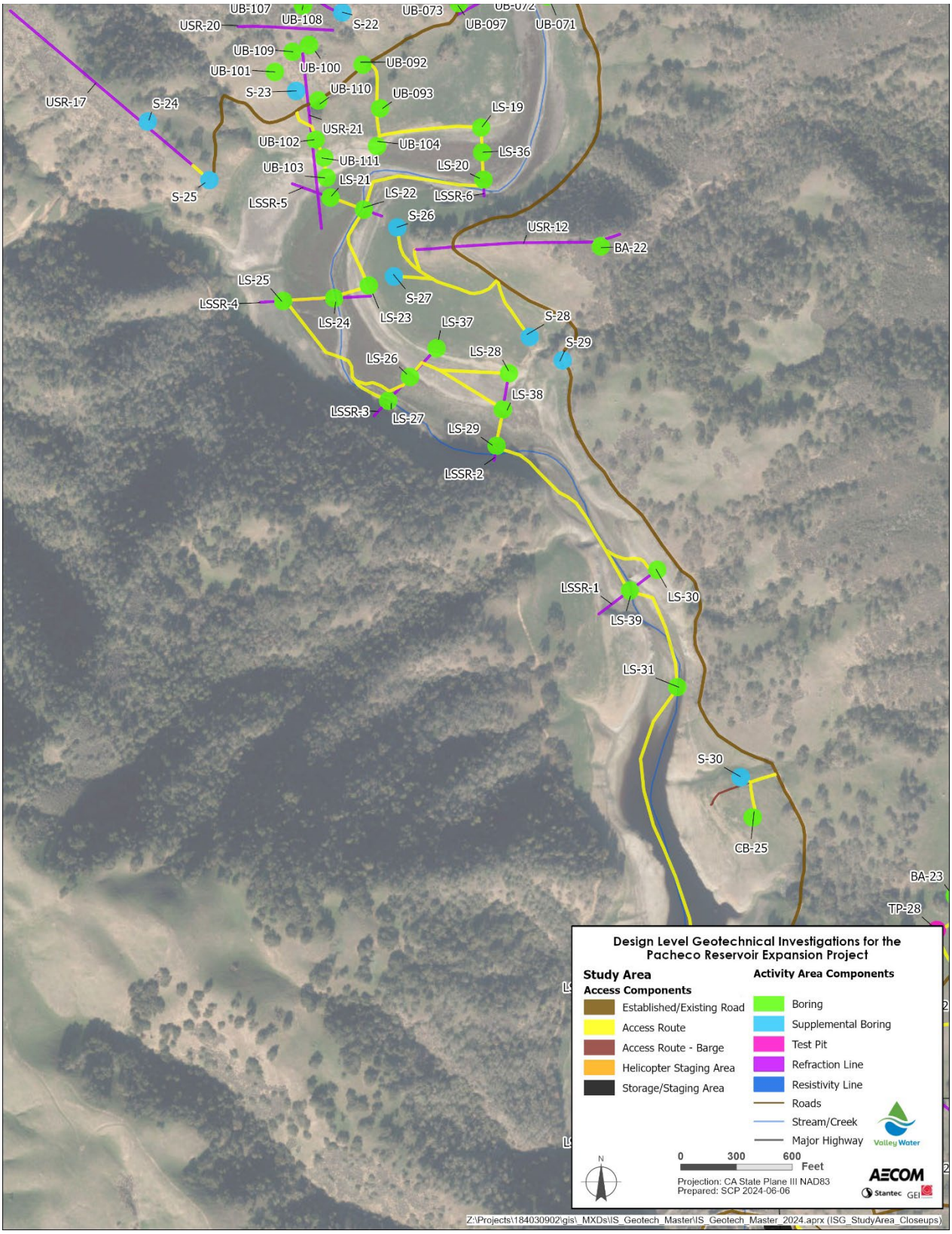


Figure 2-2c: Project Study Area Map (Plate 2)

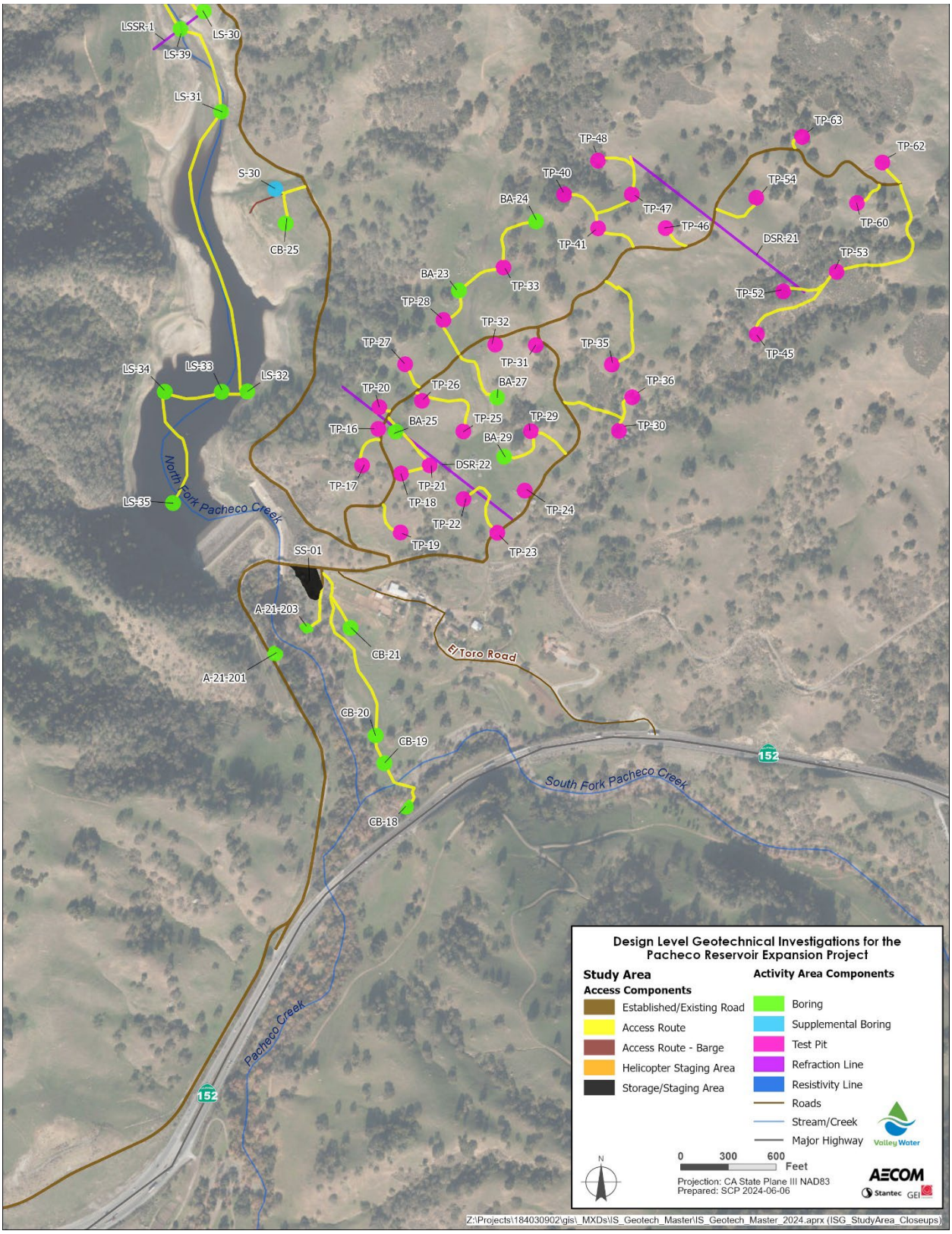


Figure 2-2d: Project Study Area Map (Plate 3)

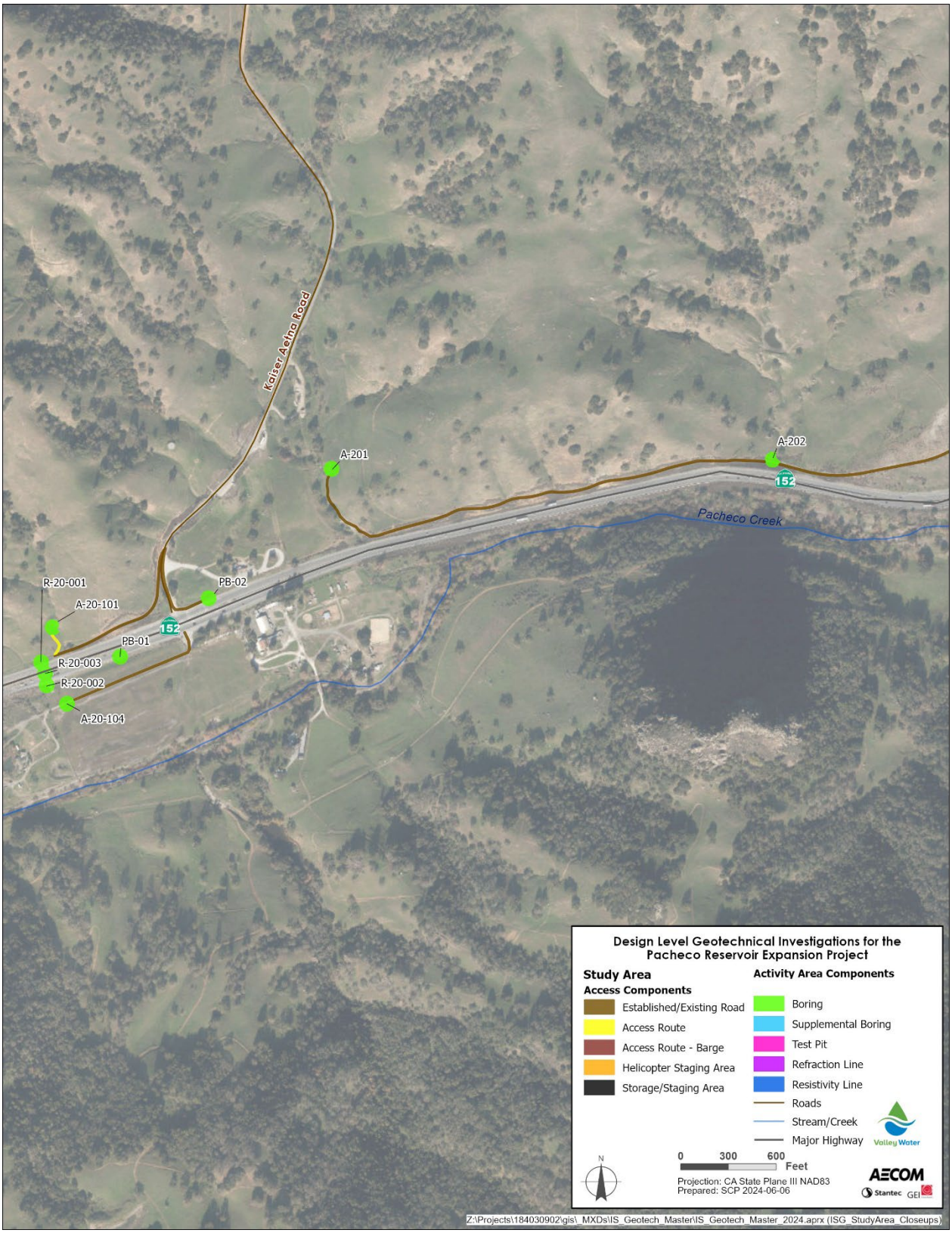


Figure 2-2e: Project Study Area Map (Plate 4)

Table 2-1: Surface Geophysical Survey Summary

Survey Name	Location	Survey Type	Property Owner	Latitude Start[1] (Wgs84)	Longitude Start[1] (Wgs84)	Latitude End[1] (Wgs84)	Longitude End[1] (Wgs84)	Survey Length[1] (Ft) Project Feature	Goal
USR-11	Shell borrow area	Seismic refraction	Jin and PPWD	37.077439	-121.294285	37.073860	-121.300032	2,207 shell borrow area	Borrow material properties/ thickness of overburden
USR-12	Shell borrow area	Seismic refraction	Jin and PPWD	37.064470	-121.292754	37.064218	-121.296537	1,113 shell borrow area	Borrow material properties/ thickness of overburden
USR-13	Dam Site, right abutment	Seismic refraction	Jin	37.070452	-121.297052	37.070269	-121.299915	848 right abutment dam foundation	Depth/thickness of landslide
USR-14	Dam Site, right abutment	Seismic refraction	Jin	37.069946	-121.296841	37.069859	-121.299769	855 right abutment dam foundation	Depth/thickness of landslide
USR-15	Dam Site, upstream toe	Seismic refraction	Jin and PPWD	37.073114	-121.294459	37.071003	-121.298937	1,516 dam foundation, upstream shell	Dam foundation depth/ thickness of overburden
USR-16	Dam Site, downstream toe	Seismic refraction	Jin and PPWD	37.068991	-121.292836	37.067680	-121.295816	992 dam foundation, downstream shell	Dam foundation depth/ thickness of overburden
USR-17	Shell borrow area	Seismic refraction	Jin	37.065433	-121.300639	37.067695	-121.304031	1,288 shell borrow area	Borrow material properties/ thickness of overburden
USR-18	Spillway	Seismic refraction	Jin	37.068412	-121.298469	37.068364	-121.299749	375 spillway	Spillway foundation depth
USR-19	Spillway	Seismic refraction	Jin	37.067707	-121.297957	37.067960	-121.299709	535 spillway	Spillway foundation depth
USR-20	Spillway	Seismic refraction	Jin	37.067449	-121.298079	37.067491	-121.299829	511 spillway	Spillway foundation depth
USR-21	Spillway	Seismic refraction	Jin and PPWD	37.067098	-121.298632	37.064521	-121.298258	945 spillway	Spillway foundation depth

Table 2-1: Surface Geophysical Survey Summary

Survey Name	Location	Survey Type	Property Owner	Latitude Start[1] (Wgs84)	Longitude Start[1] (Wgs84)	Latitude End[1] (Wgs84)	Longitude End[1] (Wgs84)	Survey Length[1] (Ft) Project Feature	Goal
UER-01	Dam foundation, core	Electrical resistivity	Jin and PPWD	37.071358	-121.293630	37.069462	-121.298273	1,521 dam foundation, near axis	Identify possible faults within dam foundation
DSR-21	Core borrow area	Seismic refraction	Jin	37.054772	-121.279041	37.057073	-121.282801	1,380 core borrow area	Borrow material properties/ thickness of overburden
DSR-22	Core borrow area	Seismic refraction	Jin	37.050815	-121.285289	37.053065	-121.288953	1,347 core borrow area	Borrow material properties/ thickness of overburden
LSSR-1	Existing reservoir bottom	Seismic Refraction	PPWD	37.059535	-121.291984	37.058860	-121.293081	404 Restoration channel	Thickness of lake sediment and alluvium
LSSR-2	Existing reservoir bottom	Seismic Refraction	PPWD	37.062422	-121.294774	37.061118	-121.295036	481 Restoration channel	Thickness of lake sediment and alluvium
LSSR-3	Existing reservoir bottom	Seismic Refraction	PPWD	37.062784	-121.296094	37.061759	-121.297256	504 Restoration channel	Thickness of lake sediment and alluvium
LSSR-4	Existing reservoir bottom	Seismic Refraction	PPWD	37.063528	-121.297335	37.063422	-121.299375	596 Restoration channel	Thickness of lake sediment and alluvium
LSSR-5	Existing reservoir bottom	Seismic Refraction	PPWD	37.064710	-121.297147	37.065176	-121.298802	601 Restoration channel	Thickness of lake sediment and alluvium
LSSR-6	Existing reservoir bottom	Seismic Refraction	PPWD	37.065021	-121.295262	37.066082	-121.295332	387 Restoration channel	Thickness of lake sediment and alluvium

Notes:
1. All coordinates and lengths are approximate until the surveys have been completed.
Jin = PPWD = Pacheco Pass Water District

Seismic Refraction Investigations

Nineteen seismic-refraction lines totaling approximately 16,890 linear feet are proposed at multiple locations; within the dam foundation, along the ridgelines of the upstream and downstream borrow areas, across the landslides on the right abutment at the upstream dam site, and across lake sediments occurring within the bottom of the existing Pacheco Reservoir (labeled USR-11 through USR-21, DSR-21 and DSR-22, and LSSR-1 through LSSR-6, respectively in Table 2-1 and presented on Figure 2-2a through Figure 2-2e. No vegetation would be removed during these investigations.

For each line, an approximately ½-inch diameter cable with seismic receivers attached to metal stakes (geophones; approximately 6 inches in length) would be placed by hand on the ground and attached to a portable receiver/data recorder. The geophone stakes would be pushed/driven into or placed on the ground along the line. A sledgehammer would be used to strike a metal plate on the ground surface one or more times to send an energy pulse out to the geophones. This provides data related to thickness of soil and deeply weathered rock beneath the geophone locations. Once acceptable data is recorded, all equipment would be removed. A handheld sledgehammer would be used in place of an all-terrain vehicle (ATV) mounted sledgehammer in areas containing sensitive resources. An ATV-mounted sledgehammer would only be used when working in areas accessible using existing established access routes.

2.3.2 Subsurface Geotechnical Investigations

Two types of proposed subsurface geotechnical investigation methods are proposed within the proposed Project study area: 1) exploratory test pits and 2) exploratory borings. All but three of the exploration locations have a defined "activity area" that has been established to include a 100-foot diameter work activity area, which is intended to provide adequate workspace in a manner that would avoid and protect sensitive resources. All work associated with the subsurface exploration would be contained within the work activity areas, though overall ground disturbance would be significantly less (up to approximately 4 square feet for exploratory borings and an approximate average of 400 square feet for exploratory test pits). At select boring locations, permanent subsurface monitoring equipment called piezometers would be installed to better understand changes in subsurface groundwater depth. In addition, inclinometers would be installed at four boring locations at suspected landslides to detect subsurface movement in soil and/or rock over time. Erodibility testing would also occur at 11 of the proposed 21 lake sediment (LS) boring sites to assist in the determination of sediment resistance to scour. The piezometer and inclinometer equipment is discussed in the subsequent section. As mentioned above, three of these exploratory sites would need to have a truncated workspace from within the 100-foot diameter activity area to avoid known sensitive resources. All construction personnel and equipment would stay within the truncated workspace during proposed Project activities (including while entering and exiting) and would not encroach into any known sensitive resource areas.

All subsurface geotechnical investigations would require use of heavy equipment (e.g., excavators, drill rigs) and, at a number of boring activity areas, a helicopter. In order to minimize greenhouses gas emissions, the following Project features will be implemented as part of the proposed Project:

- All vehicles and heavy equipment (e.g., excavators, drill rigs) will meet all federal and state requirements for emissions.
- As applicable, idling time for vehicles and heavy equipment will be minimized and Project tailgate meetings will be used to inform Project personnel of this requirement.
- Diesel-powered vehicles and equipment will use California Air Resources Board approved renewable diesel fuel, as available.
- Field personnel will be encouraged by Valley Water and/or its contractor(s) to use carpools and/or shuttles to minimize the number of vehicles necessary to transport personnel and equipment to the proposed Project study area.
- Transportation of fuels necessary to power and maintain equipment (e.g., diesel, Avgas, hydraulic fluids) would likely occur on a daily basis if the proposed Project were to be implemented. These products are considered to be hazardous materials. Operators of diesel-powered vehicles and equipment will use California Air Resources Board-approved renewable diesel fuel as and when it is locally available and cost-effective.

The rural and largely undeveloped nature of the proposed Project study area suggests that subsurface utilities at the proposed activity areas are unlikely. Regardless, prior to implementation Valley Water would clear the test pit and boring locations by contacting the Underground Services Alert. In addition, activity areas would be reviewed with the property owners (Edmund Jin and Pacheco Pass Water District) and Caltrans prior to implementation. Any exploratory boring anticipated to have a depth of 45 feet or more into native material would require a Valley Water well ordinance drilling permit.

Exploratory Test Pits

A total of 32 test pits (TP) (i.e., 0.29 acres total disturbed area) are proposed as part of the proposed Project to explore a potential borrow area for dam core zone material for the design and construction of PREP. To the extent possible, the proposed location of each test pit was located to avoid areas associated with or containing trees and/or shrubs. The geologist or engineer would use handheld GPS equipment to locate each test pit. Proposed excavator access routes to test pit locations would be inspected by qualified biologists to confirm a lack of protected or threatened species along the proposed route. The project geologist/engineer would use biodegradable spray paint to designate the cleared access route to the approved activity area. Each test pit would be excavated to a depth and length determined by field conditions but would generally be about 10 to 20 feet long, 3 feet wide (i.e., test pit excavations would be rectangular in shape), and ranging between 5 and 20 feet deep. Where deeper than 4.5 feet, the test pit would be logged from the surface consistent with federal and state safety requirements. Each test pit would be excavated, logged, and backfilled over the course of several hours.

The locations of all the proposed test pits are shown on Figure 2-2d. Exploratory test pit information is summarized in Table 2-2. The general excavation and logging procedures proposed for test pits are outlined below and will include at a minimum:

- Delineate boundary of activity area in the field in manner adequate to ensure all field activities are confined to the activity area.
- An experienced geologist or geotechnical engineer will direct the operator to carefully excavate and stockpile topsoil separately from the remaining subsoils for surface placement following the backfilling of each test pit.
- Carefully excavate the test pit and deposit the excavated materials in an appropriate location away from the excavation wall within the specific activity area established for each test pit.
- Watch as the excavation proceeds for any buried materials, especially materials that may pose a safety hazard.
- An experienced geologist or geotechnical engineer will record/log one side wall of the test pit excavation and observe the excavated materials as the excavation progresses.
- Although unlikely, based on previous experience on the site, if a test pit wall caves in, bench or lay back the pit wall sufficiently to prevent additional caving.
- Collect bulk samples from the excavated spoils of test pits in the core borrow area.
- Photograph the test pit wall that was described/logged.
- Backfill test pits in moisture conditioned lifts compacting replaced materials with the excavator's bucket or excavator-mounted sheep's foot roller to ensure that all excavated materials are replaced in the hole. Properly replace the stockpiled topsoil once all subsurface soils have been replaced and properly compacted to meet the pre-existing grade/conditions.

Table 2-2: Exploratory Test Pit Summary Table									
Test Pit Name	Location	Property Owner	Latitude[1] (Wgs84)	Longitude[1] (Wgs84)	Surface Elevation[1] (Ft)	Test Pit Depth[1] (Ft)	Tree Trimming or Removal	Excavation[2]	Goal
TP-16	Core borrow area	Jin	37.052349	-121.288181	657	5 – 20	No	Yes	Core material borrow study
TP-17	Core borrow area	Jin	37.051717	-121.288522	619	5 – 20	No	Yes	Core material borrow study
TP-18	Core borrow area	Jin	37.051583	-121.287683	618	5 – 20	No	Yes	Core material borrow study
TP-19	Core borrow area	Jin	37.050567	-121.287683	517	5 – 20	No	Yes	Core material borrow study
TP-20	Core borrow area	Jin	37.052721	-121.288162	661	5 – 20	No	Yes	Core material borrow study
TP-21	Core borrow area	Jin	37.051729	-121.287069	598	5 – 20	No	Yes	Core material borrow study
TP-22	Core borrow area	Jin	37.051153	-121.286334	562	5 – 20	No	Yes	Core material borrow study
TP-23	Core borrow area	Jin	37.050576	-121.285600	556	5 – 20	No	Yes	Core material borrow study
TP-24	Core borrow area	Jin	37.051307	-121.285019	618	5 – 20	No	Yes	Core material borrow study
TP-25	Core borrow area	Jin	37.052318	-121.286349	602	5 – 20	No	Yes	Core material borrow study
TP-26	Core borrow area	Jin	37.052839	-121.287247	671	5 – 20	No	Yes	Core material borrow study
TP-27	Core borrow area	Jin	37.053466	-121.287614	685	5 – 20	No	Yes	Core material borrow study
TP-28	Core borrow area	Jin	37.054235	-121.286797	721	5 – 20	No	Yes	Core material borrow study
TP-29	Core borrow area	Jin	37.052330	-121.284896	662	5 – 20	No	Yes	Core material borrow study
TP-30	Core borrow area	Jin	37.052350	-121.283002	731	5 – 20	No	Yes	Core material borrow study
TP-31	Core borrow area	Jin	37.053815	-121.284805	777	5 – 20	No	Yes	Core material borrow study
TP-32	Core borrow area	Jin	37.053818	-121.285679	720	5 – 20	No	Yes	Core material borrow study
TP-33	Core borrow area	Jin	37.055149	-121.285515	775	5 – 20	No	Yes	Core material borrow study

Table 2-2: Exploratory Test Pit Summary Table

Test Pit Name	Location	Property Owner	Latitude[1] (Wgs84)	Longitude[1] (Wgs84)	Surface Elevation[1] (Ft)	Test Pit Depth[1] (Ft)	Tree Trimming or Removal	Excavation[2]	Goal
TP-35	Core borrow area	Jin	37.053491	-121.283167	830	5 – 20	No	Yes	Core material borrow study
TP-36	Core borrow area	Jin	37.052931	-121.282722	785	5 – 20	No	Yes	Core material borrow study
TP-40	Core borrow area	Jin	37.056414	-121.284221	877	5 – 20	No	Yes	Core material borrow study
TP-41	Core borrow area	Jin	37.055837	-121.283487	953	5 – 20	No	Yes	Core material borrow study
TP-45	Core borrow area	Jin	37.054035	-121.280052	967	5 – 20	No	Yes	Core material borrow study
TP-46	Core borrow area	Jin	37.055849	-121.282033	1022	5 – 20	No	Yes	Core material borrow study
TP-47	Core borrow area	Jin	37.056426	-121.282768	978	5 – 20	No	Yes	Core material borrow study
TP-48	Core borrow area	Jin	37.057003	-121.283502	959	5 – 20	No	Yes	Core material borrow study
TP-52	Core borrow area	Jin	37.054777	-121.279491	1033	5 – 20	No	Yes	Core material borrow study
TP-53	Core borrow area	Jin	37.055122	-121.278345	1241	5 – 20	No	Yes	Core material borrow study
TP-54	Core borrow area	Jin	37.056386	-121.280089	1071	5 – 20	No	Yes	Core material borrow study
TP-60	Core borrow area	Jin	37.056309	-121.277920	1260	5 – 20	No	Yes	Core material borrow study
TP-62	Core borrow area	Jin	37.057011	-121.277381	1340	5 – 20	No	Yes	Core material borrow study
TP-63	Core borrow area	Jin	37.057440	-121.279112	1222	5 – 20	No	Yes	Core material borrow study

Notes:
1. All elevations, coordinates, and depths are approximate until the test pits have been completed.
2. Each test pit requires excavation with hydraulic excavator.

Exploratory Borings

To assist with the design and construction of PREP, 149 exploratory borings (to include 119 initial borings and 30 supplemental borings) are proposed to obtain essential information on subsurface geologic and geotechnical conditions (see Figure 2-2a through Figure 2-2e). Each boring activity is estimated to disturb about four square feet, for a total of 0.01 acres within the proposed Project study area. The geologist or engineer would use handheld GPS equipment to locate each activity area and the actual boring location. Proposed drilling equipment access routes to boring locations would be inspected by qualified biologists to confirm a lack of protected or threatened species along the proposed route. The project geologist/engineer would use biodegradable spray paint to designate the cleared access route and the boundary of the approved activity area. The required access routes for boring locations off existing roads that are not planned for helicopter mobilization are shown on Figure 2-2a through Figure 2-2e.

The borings would be drilled within and close to the footprint of the proposed dam, spillway, and outlet tunnel, at core zone material and shell zone material borrow areas, on landslides upstream of the proposed dam site, along the conveyance pipeline alignment and pump station footprint, along the proposed access/frontage road alignment, in lake sediments occurring within the bottom of the existing Pacheco Reservoir, at the proposed bridge crossing adjacent to North Fork Pacheco Creek, and at the proposed overpass structure location within the SR-152 right-of-way.

As many as four types of drilling methods would be used to advance the borings to include: HQ-3 rock core drilling, hollow stem auger drilling, auger/rotary wash drilling, and possibly vibracore barge borings if the reservoir is not drained. Multiple methods may be used to advance a single boring (e.g., hollow stem auger in dry portion of soil, rotary wash in saturated portion of soil, and HQ-3 rock coring in rock).

The proposed borings would be no larger than 6 inches in diameter and samples removed during drilling would be saved and stored onsite for review and laboratory testing. Boring locations have been preferentially located on existing dirt roads or previously disturbed areas where possible. Additional information on the proposed boring activity areas is provided in Table 2-3 and illustrated on Figure 2-2a through Figure 2-2e.

An additional 30 supplemental borings have been placed at specific locations within the proposed Project area, as illustrated on Figure 2-2a through Figure 2-2e. If implemented, the location of these specific borings may be shifted within the work activity area depending upon the results of initial boring efforts, the need to address subsurface data gaps (e.g., evidence of geological discontinuities in material type, depth to bedrock, etc.), and to address comments from regulatory agencies. In the event that one or more supplemental borings would require adjustments extending beyond the 100-foot diameter work activity area boundary, a reevaluation of each of those sites and approval by Valley Water prior to implementing any activity beyond the specific activity area boundary would be required.

Table 2-3: Exploratory Boring Summary

Boring Name	Location[1]	Boring Type	Property Owner	Latitude[2] (Wgs84)	Longitude[2] (Wgs84)	Surface Elev[2] (Ft)	Boring Depth[2] (Ft)	Boring Inclination (Degrees)	Piezometer[7]/ Inclinometer	In Situ Testing[3]	Equipment[6] Access	Tree Trimming and/or Removal[5]	Hand Contouring[4]	Goal
UB-28	US dam site	Core	Jin	37.070027	-121.297641	558	150	90	-	H, T	Helicopter	No	Yes	Landslide/ foundation
UB-44	US dam site	Core	Jin	37.071518	-121.293003	805	60	90	-	H, T	Helicopter	No	Yes	Landslide/ foundation
UB-45	US dam site	Core	Jin	37.071209	-121.293534	731	300	90	-	H, T	Helicopter	No	Yes	Foundation
UB-46	US dam site	Core	Jin	37.070482	-121.293444	674	100	90	-	-	Helicopter	No	Yes	Foundation
UB-48	US dam site	Core	Jin	37.070533	-121.294348	566	150	90	-	H	Helicopter	No	Yes	Foundation
UB-49	US dam site	Core	Jin	37.070158	-121.294268	515	150	90	-	H	Trailer/ Track/Truck	No	No	Foundation
UB-51	US dam site	Core	PPWD	37.069389	-121.295157	453	100	90	-	-	Trailer/ Track/Truck	No	No	Foundation
UB-52	US dam site	Core	PPWD	37.068710	-121.295101	445	75	90	-	-	Trailer/ Track/Truck	No	No	Foundation
UB-53	US dam site	Core	PPWD	37.070502	-121.295657	454	270	45°@ S63°W	-	H, T	Trailer/ Track/Truck	No	No	Foundation
UB-54	US dam site	Core	PPWD	37.070309	-121.296199	454	200	45°@ S63°W	-	H, T	Trailer/ Track/Truck	No	No	Foundation
UB-55	US dam site	Core	PPWD	37.069778	-121.296301	469	200	45°@ S63°W	-	H, T	Trailer/ Track/Truck	No	No	Foundation
UB-56	US dam site	Core	PPWD	37.069347	-121.296042	469	100	90	-	H	Trailer/ Track/Truck	No	No	Foundation
UB-57	US dam site	Core	PPWD	37.069063	-121.295512	445	100	90	-	-	Trailer/ Track/Truck	No	No	Foundation
UB-58	US dam site	Core	PPWD	37.068684	-121.295793	468	75	90	-	-	Trailer/ Track/Truck	No	No	Foundation
UB-59	US dam site	Core	PPWD	37.069946	-121.296841	490	150	90	-	H	Trailer/ Track/Truck	No	No	Landslide/ foundation

Table 2-3: Exploratory Boring Summary

Boring Name	Location[1]	Boring Type	Property Owner	Latitude[2] (Wgs84)	Longitude[2] (Wgs84)	Surface Elev[2] (Ft)	Boring Depth[2] (Ft)	Boring Inclination (Degrees)	Piezometer[7]/ Inclinometer	In Situ Testing[3]	Equipment[6] Access	Tree Trimming and/or Removal[5]	Hand Contouring[4]	Goal
UB-60	US dam site	Core	Jin	37.069218	-121.296487	495	130	90	-	H	Trailer/ Track/Truck	No	No	Landslide/ foundation
UB-62	US dam site	Core	Jin	37.069675	-121.297303	551	150	90	-	H, T	Helicopter	Remove	Yes	Landslide/ foundation
UB-63	US dam site	Core	Jin	37.068631	-121.296554	595	75	90	-	-	Helicopter	No	Yes	Foundation
UB-64	US dam site	Core	Jin	37.068998	-121.298030	713	300	90	-	H, T	Helicopter	No	Yes	Tunnel/ foundation
UB-65	US dam site	Core	Jin	37.069481	-121.297749	627	100	45°@ S63°W	-	T	Helicopter	Remove Trim	Yes	Landslide/ foundation
UB-66	US dam site	Core	Jin	37.068758	-121.297504	716	70	90	-	T	Helicopter	No	Yes	Foundation
UB-67	US dam site	Core	Jin	37.069354	-121.299107	785	50	90	-	T	Helicopter	No	Yes	Landslide/ foundation
UB-70	US dam site	Core	PPWD	37.068412	-121.294615	443	75	90	-	-	Trailer/ Track/Truck	No	No	Foundation
UB-71	US dam site	Core	PPWD	37.067976	-121.294128	453	75	90	-	-	Trailer/ Track/Truck	No	No	Foundation
UB-72	US dam site	Core	PPWD	37.068134	-121.295287	465	75	90	-	-	Trailer/ Track/Truck	No	No	Foundation
UB-73	US dam site	Core	Jin	37.068126	-121.296418	611	75	90	-	-	Helicopter	No	Yes	Foundation
UB-74	US dam site	Core	Jin	37.072297	-121.294581	586	125	90	-	H, T	Helicopter	No	Yes	Landslide/ foundation
UB-75	US dam site	Core	PPWD	37.071677	-121.295943	454	150	90	-	H	Trailer/ Track/Truck	No	No	Foundation
UB-76	US dam site	Core	Jin	37.070893	-121.297125	487	150	90	-	H	Trailer/ Track/Truck	No	No	Landslide/ foundation
UB-77	US dam site	Core	PPWD	37.073213	-121.295449	489	100	90	-	-	Trailer/ Track/Truck	No	No	Foundation

Table 2-3: Exploratory Boring Summary

Boring Name	Location[1]	Boring Type	Property Owner	Latitude[2] (Wgs84)	Longitude[2] (Wgs84)	Surface Elev[2] (Ft)	Boring Depth[2] (Ft)	Boring Inclination (Degrees)	Piezometer[7]/ Inclinometer	In Situ Testing[3]	Equipment[6] Access	Tree Trimming and/or Removal[5]	Hand Contouring[4]	Goal
UB-78	US dam site	Core	PPWD	37.072913	-121.296492	460	100	90	-	H	Trailer/ Track/Truck	No	No	Foundation
UB-79	US dam site	Core	PPWD	37.072203	-121.296514	454	125	90	-	H	Trailer/ Track/Truck	No	No	Foundation
UB-80	US dam site	Core	Jin	37.072076	-121.297578	489	125	90	-	-	Trailer/ Track/Truck	No	No	Foundation
UB-81	US dam site	Core	Jin	37.071031	-121.298179	566	125	90	-	-	Helicopter	Remove	Yes	Foundation
UB-82	US dam site	Core	Jin	37.070402	-121.298870	666	230	90	-	H, T	Helicopter	Remove, Trim	Yes	Tunnel
UB-83	US dam site	Core	Jin	37.070304	-121.299499	795	50	90	-	-	Helicopter	No	Yes	Landslide/ foundation
UB-84	US dam site	Core	Jin	37.069866	-121.299310	786	50	90	-	-	Helicopter	No	Yes	Landslide/ foundation
UB-85	US dam site	Core	Jin	37.073546	-121.297757	522	50	90	-	H	Trailer/ Track/Truck	Remove, Trim	No	Tunnel
UB-86	US dam site	Core	Jin	37.073491	-121.298204	613	175	90	-	H, T	Helicopter	No	Yes	Tunnel
UB-87	US dam site	Core	Jin	37.072922	-121.298114	551	230	90	-	H, T	Helicopter	No	Yes	Tunnel
UB-88	US dam site	Core	Jin	37.071760	-121.298827	621	100	90	-	H, T	Helicopter	Remove, Trim	Yes	Tunnel
UB-89	US dam site	Core	Jin	37.071252	-121.299246	748	315	90	-	H, T	Helicopter	No	Yes	Outlet control shaft
UB-90	US dam site	Core	Jin	37.069481	-121.298376	673	250	90	-	H, T	Helicopter	Remove	Yes	Tunnel
UB-91	US dam site	Core	Jin	37.068249	-121.297986	749	200	90	-	T	Helicopter	No	Yes	Tunnel
UB-92	US dam site	Core	Jin	37.066944	-121.297524	508	105	90	-	H, T	Trailer/ Track/Truck	No	No	Tunnel
UB-93	US dam site	Core	PPWD	37.066300	-121.297195	472	60	90	-	H	Trailer/ Track/Truck	No	No	Tunnel

Table 2-3: Exploratory Boring Summary

Boring Name	Location[1]	Boring Type	Property Owner	Latitude[2] (Wgs84)	Longitude[2] (Wgs84)	Surface Elev[2] (Ft)	Boring Depth[2] (Ft)	Boring Inclination (Degrees)	Piezometer[7]/ Inclinometer	In Situ Testing[3]	Equipment[6] Access	Tree Trimming and/or Removal[5]	Hand Contouring[4]	Goal
UB-94	US dam site	Core	PPWD	37.072983	-121.294738	573	50	90	-	H	Trailer/ Track/Truck	No	No	Tunnel
UB-95	US dam site	Core	Jin	37.070963	-121.299061	713	50	90	-	H	Trailer/ Track/Truck	No	No	Tunnel
UB-96	US dam site	Core	Jin	37.068734	-121.296970	655	100	90	-	T	Helicopter	No	Yes	Possible outlet control shaft
UB-97	US dam site	Core	Jin	37.067858	-121.295754	498	375	90	-	H, T	Helicopter	No	Yes	Possible tunnel
UB-98	US dam site	Core	Jin	37.070382	-121.292843	703	80	90	-	H, T	Helicopter	No	Yes	Possible tunnel
UB-99	US dam site	Core	Jin	37.068043	-121.298343	723	100	90	-	T	Helicopter	No	Yes	Spillway
UB-100	US dam site	Core	Jin	37.067227	-121.298515	660	120	90	-	T	Helicopter	No	Yes	Spillway
UB-101	US dam site	Core	Jin	37.066826	-121.299143	631	100	90	-	T	Helicopter	No	Yes	Spillway
UB-102	US dam site	Core	PPWD	37.065831	-121.298380	463	100	90	-	T	Trailer/ Track/Truck	No	No	Spillway
UB-103	US dam site	Core	PPWD	37.065273	-121.298172	442	100	90	-	-	Trailer/ Track/Truck	No	No	Spillway
UB-104	US dam site	Core	PPWD	37.065742	-121.297244	450	100	90	-	T	Trailer/ Track/Truck	No	No	Bifurcation structure
UB-105	US dam site	Core	Jin	37.073886	-121.297391	493	100	90	-	T	Trailer/ Track/Truck	No	No	Tunnel approach
UB-106	US dam site	Core	Jin	37.068677	-121.299060	797	100	90	-	T	Helicopter	No	Yes	Spillway
UB-107	US dam site	Core	Jin	37.067978	-121.299041	749	100	90	-	T	Helicopter	No	Yes	Spillway
UB-108	US dam site	Core	Jin	37.067809	-121.298634	737	100	90	-	T	Helicopter	No	Yes	Spillway
UB-109	US dam site	Core	Jin	37.067126	-121.298817	676	100	90	-	T	Helicopter	No	Yes	Spillway
UB-110	US dam site	Core	Jin	37.066409	-121.298337	502	100	90	-	T	Truck	No	No	Spillway

Table 2-3: Exploratory Boring Summary

Boring Name	Location[1]	Boring Type	Property Owner	Latitude[2] (Wgs84)	Longitude[2] (Wgs84)	Surface Elev[2] (Ft)	Boring Depth[2] (Ft)	Boring Inclination (Degrees)	Piezometer[7]/ Inclinometer	In Situ Testing[3]	Equipment[6] Access	Tree Trimming and/or Removal[5]	Hand Contouring[4]	Goal
UB-111	US dam site	Core	PPWD	37.065565	-121.298220	443	100	90	Piezo	T	Trailer/ Track/Truck	No	No	Spillway
BA-19	US borrow	Core	Jin	37.074045	-121.299708	851	200	90	-	T, P	Helicopter	No	Yes	Shell borrow
BA-20	US borrow	Core	Jin	37.075238	-121.298023	714	200	90	Piezo	T, P	Helicopter	No	Yes	Shell borrow
BA-21	US borrow	Core	Jin	37.076862	-121.296124	633	175	90	-	T, P	Helicopter	No	Yes	Shell borrow
BA-22	DS borrow	Core	Jin	37.064291	-121.293103	683	275	55°@ S90°W	Piezo	T, P	Helicopter	No	Yes	Shell borrow
BA-23	Core borrow	Core	Jin	37.054743	-121.286469	740	50	90	Piezo	P	Trailer/ Track/Truck	No	No	Core borrow
BA-24	Core borrow	Core	Jin	37.055947	-121.284825	830	50	90	-	P	Trailer/ Track/Truck	No	No	Core borrow
BA-25	Core borrow	Core	Jin	37.052306	-121.287803	670	50	90	Piezo	P	Trailer/ Track/Truck	No	No	Core borrow
BA-27	Core borrow	Core	Jin	37.052906	-121.285630	651	50	90	-	P	Trailer/ Track/Truck	No	No	Core borrow
BA-29	Core borrow	Core	Jin	37.051886	-121.285466	603	50	90	-	P	Trailer/ Track/Truck	No	No	Core borrow
L-01	US reservoir rim	Core	Jin	37.079121	-121.301172	901	105	90	Piezo	T	Helicopter	No	Yes	Reservoir rim landslide
L-02	US reservoir rim	Core	Jin	37.077906	-121.300443	761	110	90	Piezo, Inclino	T	Helicopter	No	Yes	Reservoir rim landslide
L-03	US reservoir rim	Core	Jin	37.080777	-121.296757	889	90	90	Piezo	T	Helicopter	No	Yes	Reservoir rim landslide
L-04	US reservoir rim	Core	Jin	37.080162	-121.295687	760	125	90	Piezo, Inclino	T	Helicopter	No	Yes	Reservoir rim landslide
L-05	US reservoir rim	Core	Jin	37.078109	-121.286396	948	210	90	Piezo	T	Helicopter	No	Yes	Reservoir rim landslide
L-06	US reservoir rim	Core	Jin	37.073417	-121.298795	741	80	90	Piezo	T	Helicopter	No	Yes	Reservoir rim landslide

Table 2-3: Exploratory Boring Summary

Boring Name	Location[1]	Boring Type	Property Owner	Latitude[2] (Wgs84)	Longitude[2] (Wgs84)	Surface Elev[2] (Ft)	Boring Depth[2] (Ft)	Boring Inclination (Degrees)	Piezometer[7]/ Inclinometer	In Situ Testing[3]	Equipment[6] Access	Tree Trimming and/or Removal[5]	Hand Contouring[4]	Goal
L-07	US reservoir rim	Core	Jin	37.070624	-121.299924	880	80	90	Piezo	T	Helicopter	No	Yes	Reservoir rim landslide
L-08	US reservoir rim	Core	Jin	37.080409	-121.297496	923	90	90	Piezo, Inclino	T	Helicopter	No	Yes	Reservoir rim landslide
L-09	Us reservoir rim	Core	Jin	37.079443	-121.296415	774	125	90	Piezo, Inclino	T	Helicopter	No	Yes	Reservoir rim landslide
CB-18	Tunnel boring, midpoint	R.W./ Core	Jin	37.045844	-121.287518	388	55	90	-	-	Trailer/ Track/Truck	No	No	Microtunnel
CB-19	Tunnel boring, north end	R.W./ Core	Jin	37.046588	-121.287988	387	45	90	-	-	Trailer/ Track/Truck	No	No	Microtunnel
CB-20	Trenchless shaft	R.W./ Core	Jin	37.047066	-121.288176	388	55	90	-	-	Trailer/ Track/Truck	No	No	Shaft foundation
CB-21	Pipeline	R.W./ Core	PPWD	37.048915	-121.288744	404	50	90	-	-	Trailer/ Track/Truck	No	No	Pipeline foundation
CB-25	Pump station	R.W./ Core	PPWD	37.055876	-121.290211	456	45	90	-	-	Trailer/ Track/Truck	No	No	Pump station foundation
A-201	Access/ frontage road	HSA	Jin	37.038659	-121.308785	385	30	90	-	-	Truck	No	No	Deep culvert crossing/ foundation
A-202	Access/ frontage road	HSA	Jin	37.038885	-121.299295	371	30	90	-	-	Truck	No	No	Deep culvert crossing/ foundation
A-20-101	Access/ frontage road	HSA	Jin	37.035883	-121.314750	375	50	90	-	-	Trailer/ Track	No	No	Evaluate access/ frontage road subgrade, cut wall

Table 2-3: Exploratory Boring Summary

Boring Name	Location[1]	Boring Type	Property Owner	Latitude[2] (Wgs84)	Longitude[2] (Wgs84)	Surface Elev[2] (Ft)	Boring Depth[2] (Ft)	Boring Inclination (Degrees)	Piezometer[7]/ Inclinometer	In Situ Testing[3]	Equipment[6] Access	Tree Trimming and/or Removal[5]	Hand Contouring[4]	Goal
A-20-104	Interchange	HSA	Zhou	37.034569	-121.314432	348	40	90	-	-	Truck	No	No	Interchange approach
A-21-201	Access road bridge, west abutment	R.W./ Core	Jin	37.048464	-121.290356	417	80	90	-	-	Truck	No	No	Access road bridge foundation
A-21-203	Access road bridge, east abutment	R.W./ Core	Jin	37.048859	-121.289712	414	80	90	-	-	Truck	No	No	Access road bridge foundation
PB-01	SR-152 pavement	HSA	Caltrans	37.035389	-121.313299	356	5	90	-	-	Truck	No	No	Pavement subgrade
PB-02	SR-152 pavement	HSA	Caltrans	37.036409	-121.311406	350	5	90	-	-	Truck	No	No	Pavement subgrade
R-20-001	SR-152 overpass	R.W. /Core	Caltrans	37.035279	-121.314995	356	80	90	-	-	Truck	No	No	Interchange foundation
R-20-002	SR-152 overpass	R.W./ Core	Caltrans	37.034884	-121.314873	355	80	90	-	-	Truck	No	No	Interchange foundation
R-20-003	SR-152 overpass	R.W./ Core	Caltrans	37.035091	-121.314910	355	80	90	-	-	Truck	No	No	Interchange foundation
LS-19	Channel restoration area	HSA	PPWD	37.066029	-121.295329	452	44*	90	Piezo	J	Track/ Truck/Barge **	No	No	Evaluate site conditions for channel restoration
LS-20	Channel restoration area	HSA	PPWD	37.065262	-121.295278	443	44*	90	-	J	Track/ Truck/Barge **	No	No	Evaluate site conditions for channel restoration
LS-21	Channel restoration area	HSA	PPWD	37.064977	-121.298096	437	44*	90	-	J	Track/ Truck/Barge **	No	No	Evaluate site conditions for channel restoration

Table 2-3: Exploratory Boring Summary

Boring Name	Location[1]	Boring Type	Property Owner	Latitude[2] (Wgs84)	Longitude[2] (Wgs84)	Surface Elev[2] (Ft)	Boring Depth[2] (Ft)	Boring Inclination (Degrees)	Piezometer[7]/ Inclinometer	In Situ Testing[3]	Equipment[6] Access	Tree Trimming and/or Removal[5]	Hand Contouring[4]	Goal
LS-22	Channel restoration area	HSA	PPWD	37.064803	-121.297477	434	44*	90	-	J	Track/ Truck/Barge **	No	No	Evaluate site conditions for channel restoration
LS-23	Channel restoration area	HSA	PPWD	37.063682	-121.297377	450	44*	90	Piezo	J	Track/ Truck/Barge **	No	No	Evaluate site conditions for channel restoration
LS-24	Channel restoration area	HSA	PPWD	37.063492	-121.298012	431	44*	90	Piezo	J	Track/ Truck/Barge **	No	No	Evaluate site conditions for channel restoration
LS-25	Channel restoration area	HSA	PPWD	37.063444	-121.298953	441	44*	90	Piezo	J	Track/ Truck/Barge **	No	No	Evaluate site conditions for channel restoration
LS-26	Channel restoration area	HSA	PPWD	37.062337	-121.296600	429	44*	90	-	J	Track/ Truck/Barge **	No	No	Evaluate site conditions for channel restoration
LS-27	Channel restoration area	HSA	PPWD	37.061985	-121.297000	427	44*	90	-	J	Track/ Truck/Barge **	No	No	Evaluate site condition for channel restoration
LS-28	Channel restoration area	HSA	PPWD	37.062403	-121.294778	446	44*	90	Piezo	J	Track/ Truck/Barge **	No	No	Evaluate site conditions for channel restoration
LS-29	Channel restoration area	HSA	PPWD	37.061333	-121.294993	425	44*	90	-	J	Track/ Truck/Barge **	No	No	Evaluate site conditions for channel restoration

Table 2-3: Exploratory Boring Summary

Boring Name	Location[1]	Boring Type	Property Owner	Latitude[2] (Wgs84)	Longitude[2] (Wgs84)	Surface Elev[2] (Ft)	Boring Depth[2] (Ft)	Boring Inclination (Degrees)	Piezometer[7]/ Inclinometer	In Situ Testing[3]	Equipment[6] Access	Tree Trimming and/or Removal[5]	Hand Contouring[4]	Goal
LS-30	Channel restoration area	HSA	PPWD	37.059520	-121.292012	445	44*	90	Piezo	J	Track/Truck/ Barge**	No	No	Evaluate site conditions for channel restoration
LS-31	Channel restoration area	HSA	PPWD	37.057792	-121.291622	416	44*	90	Piezo	J	Track/Truck/ Barge**	No	No	Evaluate site conditions for channel restoration
LS-32	Channel restoration area	HSA	PPWD	37.052974	-121.291009	417	44*	90	Piezo	J	Track/Truck/ Barge**	No	No	Evaluate site conditions for channel restoration
LS-33	Channel restoration area	HSA	PPWD	37.052966	-121.291557	406	44*	90	Piezo	J	Track/Truck/ Barge**	No	No	Evaluate site conditions for channel restoration
LS-34	Channel restoration area	HSA	PPWD	37.052957	-121.292781	406	44*	90	Piezo	J	Track/Truck/ Barge**	No	No	Evaluate site conditions for channel restoration
LS-35	Channel restoration area	HSA	PPWD	37.051042	-121.292584	401	44*	90	Piezo	J	Track/Truck/ Barge**	No	No	Evaluate site conditions for channel restoration
LS-36	Channel restoration area	HSA	PPWD	37.065663	-121.295305	440	44*	90	-	J	Track/Truck/ Barge**	No	No	Evaluate site conditions for channel restoration
LS-37	Channel restoration area	HSA	PPWD	37.062765	-121.296116	453	44*	90	-	J	Track/Truck/ Barge**	No	No	Evaluate site conditions for channel restoration

Table 2-3: Exploratory Boring Summary

Boring Name	Location[1]	Boring Type	Property Owner	Latitude[2] (Wgs84)	Longitude[2] (Wgs84)	Surface Elev[2] (Ft)	Boring Depth[2] (Ft)	Boring Inclination (Degrees)	Piezometer[7]/ Inclinometer	In Situ Testing[3]	Equipment[6] Access	Tree Trimming and/or Removal[5]	Hand Contouring[4]	Goal
LS-38	Channel restoration area	HSA	PPWD	37.061869	-121.294885	428	44*	90	-	J	Track/Truck /Barge**	No	No	Evaluate site conditions for channel restoration
LS-39	Channel restoration area	HSA	PPWD	37.059211	-121.292511	418	44*	90	-	J	Track/ Truck/Barge **	No	No	Evaluate site conditions for channel restoration
S-01	Borrow area	Core	Jin	37.077332	-121.295450	505	40	90	-	-	Trailer/ Track/Truck	No	No	Shell borrow
S-02	Borrow area	Core	Jin	37.076727	-121.296625	660	180	90	-	-	Helicopter	No	Yes	Shell borrow
S-03	Borrow area	Core	Jin	37.076016	-121.297265	708	190	90	-	-	Helicopter	No	Yes	Shell borrow
S-04	US dam site	Core	PPWD	37.073821	-121.296014	476	40	90	-	H	Trailer/ Track/Truck	No	No	Alternative Tunnel
S-05	US dam site	Core	Jin	37.073798	-121.295244	493	60	90	-	H	Trailer/ Track/Truck	No	No	Alternative Tunnel
S-06	US dam site	Core	Jin	37.073713	-121.293163	674	240	90	-	H	Helicopter	No	Yes	Alternative Tunnel
S-07	US dam site	Core	PPWD	37.072601	-121.297032	459	110	90	-	-	Trailer/ Track/Truck	No	No	Dam foundation
S-08	US dam site	Core	Jin	37.072323	-121.298337	605	135	90	-	H	Helicopter	No	Yes	Tunnel
S-09	US dam site	Core	Jin	37.072006	-121.293217	752	315	90	-	H	Helicopter	No	Yes	Alternative Tunnel
S-10	US dam site	Core	PPWD	37.071571	-121.296384	451	130	90	-	-	Trailer/ Track/Truck	No	No	Dam foundation
S-11	US dam site	Core	Jin	37.071028	-121.297781	510	125	90	-	-	Helicopter	No	Yes	Dam foundation
S-12	US dam site	Core	Jin	37.070517	-121.298195	620	125	90	-	-	Helicopter	Trim	Yes	Dam foundation

Table 2-3: Exploratory Boring Summary

Boring Name	Location[1]	Boring Type	Property Owner	Latitude[2] (Wgs84)	Longitude[2] (Wgs84)	Surface Elev[2] (Ft)	Boring Depth[2] (Ft)	Boring Inclination (Degrees)	Piezometer[7]/ Inclinometer	In Situ Testing[3]	Equipment[6] Access	Tree Trimming and/or Removal[5]	Hand Contouring[4]	Goal
S-13	US dam site	Core	Jin	37.070269	-121.297239	520	125	90	-	T	Helicopter	No	Yes	Dam foundation
S-14	US dam site	Core	Jin	37.069797	-121.297164	509	150	90	-	H, T	Helicopter	Remove	Yes	Dam foundation
S-15	US dam site	Core	Jin	37.069384	-121.297462	615	140	90	-	H, T	Helicopter	Remove, Trim	Yes	Dam foundation
S-16	US dam site	Core	Jin	37.069312	-121.296902	552	140	90	-	T	Helicopter	Remove	Yes	Dam foundation
S-17	US dam site	Core	Jin	37.069184	-121.299474	848	60	90	-	-	Helicopter	No	Yes	Spillway
S-18	US dam site	Core	Jin	37.069122	-121.296871	575	120	90	-	T	Helicopter	Remove, Trim	Yes	Shell borrow
S-19	Pipeline	R.W./ Core	PPWD	37.069077	-121.294198	483	75	90	-	-	Trailer/ Track/Truck	No	No	Pipeline
S-20	US dam site	R.W./ Core	Jin	37.068552	-121.292990	559	120	90	-	H	Helicopter	No	Yes	Alternative Tunnel
S-21	US dam site	Core	Jin	37.068040	-121.297486	690	110	90	-	H	Helicopter	No	Yes	Alternative Tunnel
S-22	US dam site	Core	Jin	37.067714	-121.297908	594	110	90	-	H, T	Helicopter	No	Yes	Tunnel
S-23	US dam site	Core	Jin	37.066548	-121.298747	533	60	90	-	-	Helicopter	No	Yes	Spillway
S-24	Borrow area	Core	Jin	37.066076	-121.301479	666	140	90	-	-	Helicopter	No	Yes	Shell borrow
S-25	Borrow area	Core	Jin	37.065220	-121.300333	533	50	90	-	-	Trailer/ Track/Truck	No	No	Shell borrow
S-26	Pipeline	R.W./ Core	PPWD	37.064543	-121.296859	458	80	90	-	-	Trailer/ Track/Truck	No	No	Pipeline foundation
S-27	Pipeline	R.W./ Core	PPWD	37.063820	-121.296913	459	80	90	-	-	Trailer/ Track/Truck	No	No	Pipeline foundation
S-28	Pipeline	R.W./ Core	PPWD	37.062944	-121.294400	467	70	90	-	-	Trailer/ Track/Truck	No	No	Pipeline foundation

Table 2-3: Exploratory Boring Summary

Boring Name	Location[1]	Boring Type	Property Owner	Latitude[2] (Wgs84)	Longitude[2] (Wgs84)	Surface Elev[2] (Ft)	Boring Depth[2] (Ft)	Boring Inclination (Degrees)	Piezometer[7]/ Inclinometer	In Situ Testing[3]	Equipment[6] Access	Tree Trimming and/or Removal[5]	Hand Contouring[4]	Goal
S-29	Pipeline	R.W./ Core	PPWD	37.062602	-121.293787	484	70	90	-	-	Trailer/ Track/Truck	No	No	Pipeline foundation
S-30	Pump station	R.W./ Core	PPWD	37.056466	-121.290438	465	45	90	-	-	Trailer/ Track/Truck	No	No	Pump station foundation

Notes:
1. DS = downstream, US = upstream
2. All elevations, coordinates, and depths are approximate until the borings have been completed.
3. H = hydraulic conductivity, T = televiewer, P = P-wave seismic velocity survey, J = jet testing would occur at 11 out of the 21 SL sites based on field conditions at the time of testing (e.g., water table, sediment size)
4. Only minimal hand contouring would be required to create level drill platform or to create level footing for drill outrigger.
5. See Attachment A which includes tree impacts summaries.
6. While up to 5 drill rigs may be operating concurrently, there would only be one drill rig active at each activity area.
7. Should a barge-based drill rig be needed for in-reservoir LS borings with proposed piezometers, then some (such as those proposed at borings LS-24 through LS-25, LS-28 and LS-30 through LS-35) or all of the 11 piezometers not be installed.

* or auger refusal on bedrock
**Truck/track access is the preferred access method for LS borings. Small barge with vibracore rig would be utilized if surface conditions and/or water levels require.

Exploratory Boring Access and Ground Disturbance

Most borings would be drilled using portable drill rigs that would either be towed into place on trailers or would be flown into place via helicopter in steeper terrain. Some borings would be drilled with a track-mounted all-terrain or truck mounted drill rig with an average width of about 10 feet. The borings located on the existing site access road for the new construction access road and for the conveyance pipeline can be drilled with a truck-mounted or all-terrain track-mounted drill rig. Borings drilled downstream of North Fork Dam for the conveyance pipeline, and within the inundation area of the existing reservoir rim to sample the lake sediments and install piezometers, would be drilled with an all-terrain track-mounted drill rig. Borings within the reservoir (if inundated) would be drilled with a barge-based drill rig. Figure 2-3 illustrates examples of truck-mounted, all-terrain track-mounted, helicopter-portable rigs, and barge-based rigs specified for use in the proposed geotechnical investigations.

A total of 64 (46 initial and 18 supplemental) helicopter-mobilized borings would require limited hand contouring with picks and shovels and clearing of brush and trimming or cutting of trees to allow the placement of the temporary drilling platforms, approximately 15 feet x 15 feet in plan dimension. The area subject to initial surface disturbance associated with helicopter borings totals 0.18 acres.[3] The hand contouring at each drilling platform location would result in minor temporary ground disturbance of approximately 1/2 cubic yard of soil and would be completed with shovels and/or rakes. In most instances, vegetation removal would consist of herbaceous vegetation and shrubs. At some locations, up to five percent of the activity area may be subject to shrub trimming to provide a safe working area. Shrub trimming/cutting would occur using hand-held tools. All efforts would be made to cut or trim shrubs in a manner that would not compromise the vitality of the shrub or result in removal of the entire plant. Approximately 8 tree limbs would require trimming, approximately 11 trees would require removal, and 1 dead tree snag for access at 7 of the initial boring locations. Approximately 6 tree limbs would require trimming, and 14 trees would require removal for access if the following 5 of 30 supplemental boring locations are drilled (S-12, S-14, S-15, S-16, and S-18). Tree species proposed for removal include blue oaks, foothill pines, California bay laurels, California buckeyes, and coast live oaks (see Appendix A). In addition, up to 3 additional trees may be identified for trimming and up to 5 additional trees may be identified for removal in response to unforeseen circumstances requiring their trimming or removal for access. These additional trees would be located at work activity areas identified within Appendix A, where required trimming and removal is identified. In total up to 30 trees would be removed and up to 17 trees would be trimmed to accommodate geotechnical investigation activities. All trimming of limbs 6 inches and greater would be performed by an arborist certified by the International Society of Arboriculture to ensure overall tree health would not be compromised.

[4] All 20 Conditions presented in Chapter 6 of the Valley Habitat Plan were reviewed. Those discussed below were deemed applicable for the scope, scale and geographical aspects of the proposed Project.

Disturbed areas would be returned to their original grade immediately after exploration is complete and reseeded with an approved native seed mix just prior to the start of the rainy season for maximum likelihood of germination and growth.

Helicopter-Access Borings

A helicopter using a retractable Kevlar line would transport materials necessary for constructing the temporary drilling platforms, drilling equipment, supplies, and drilling water. Typically, it would take 9 to 12 helicopter trips to transport platform materials and equipment back and forth initially from the northern staging area to an activity site. A similar number of helicopter trips would be needed for removal and transport from one activity site to a subsequent activity site. (i.e., equipment and supplies are flown from one activity site to the next activity site without returning them to the staging area.)

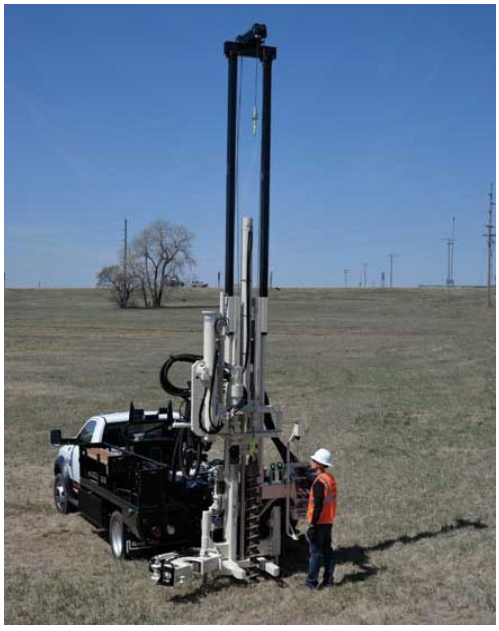
All drilling equipment would be delivered to and removed from the specified activity areas using a helicopter with the range and payload necessary to accommodate the specified loads (i.e., medium lift). All helicopter payload operations (sling loads) would be staged from the proposed northern staging/storage area located northeast of Pacheco Reservoir adjacent to an existing unpaved access road (see Figure 2-2b). The northern staging/storage area would be used to stage materials and equipment for helicopter pickup and delivery in support of the 64 proposed boring activity areas relying on helicopter access (see Table 2-3). The proposed northern staging/storage area has been located to avoid encroaching below the ordinary high-water mark, and to ensure that all sensitive resources have been avoided. It should also be noted that no fuels, solvents, drilling additives, petroleum products, or sacks of concrete would be stored below the full pool line (472 feet above mean sea level; msl). In addition, pipe, drill bits and other tools and equipment used to operate and maintain drilling operations would be staged and stored at the northern staging/storage area. These loads would include fuel for drilling operations (i.e., gasoline, diesel) sacks of concrete and drilling additives, lumber, containers for water, and drilling fluid. Five-gallon steel, double-walled fuel containers approved for helicopter transport would be filled from service trucks parked on the existing unpaved access road located above the full pool line upslope from the northern staging/storage area, transported a short distance and placed in a large, galvanized steel tank and packed for transport to a drill site. All activities related to fuel loading and transport would be restricted to the east side of the northern staging/storage area or on existing access roads located above the full pool line. No fuel would be left at the northern staging/storage area unattended, and all fuel containers would be removed from this area on a daily basis.

Helicopter fueling and minor maintenance activities would take place several times a day at the designated helicopter staging area (see Figure 2-2b) between flights to maximize load capacity. In addition, fuel would be transported to the site on a daily basis for the helicopter using a large pickup truck specially designed for transport and delivery of approximately 300 gallons of fuel. This truck would also carry tools and equipment that may be necessary for on-site maintenance and safety inspections. The helicopter would return to a commercial airfield within Santa Clara, San Benito or Merced counties at the end of each workday.

Helicopter-portable Drill Rig on Temporary Platform

All-terrain Track Mounted Drill Rig

Barge-based Vibracore Drill Set Up



Truck Mounted Drill Rig

Figure 2-3: Drill Rigs Specified for Use for the Proposed Design Level Geotechnical Investigations

In Reservoir Borings

When water levels are low and field conditions allow, the borings (e.g., lake sediment (LS), UB) would be drilled with a track-mounted drill rig. Dependent on field conditions (i.e., water levels, surface moisture) of activity areas below the full pool line of the existing Pacheco Reservoir (472 feet above msl), a vibracore drill rig on an appropriately sized pontoon barge may be used to acquire subsurface samples for some or all of the LS) borings. This vessel would be launched and hauled out at an acceptable location along the east shoreline of Pacheco Reservoir (see Figure 2-2b).

Drilling Methods

All drilling equipment, supplies, and materials would be transported to the existing southern staging/storage area located southwest of the North Fork Dam on Pacheco Pass Water District property or to the northern staging/storage area between the existing access road east of Pacheco Reservoir. The general geotechnical drilling procedures are outlined below:

Boring locations would be confirmed using a handheld GPS device capable of sub-meter accuracy.

Delineate boundary of activity area in the field in manner adequate to ensure all field activities are confined to the activity area.

Steel pipe casing may be extended down from the ground surface to contain all circulated drill fluid (primarily water and ground up rock with small amount of environmentally safe polymer to aid in clearing drill cuttings). Drilling fluids would be pumped into a closed system settling tank to prevent spills. Spill kits would be available for use by field personnel if a spill occurs.

HQ-3 core drilling equipment with a diamond bit would be used to advance the borings in the dam and spillway foundations, outlet tunnel and tunnel portals, shell zone borrow areas, landslides, and possibly the rock portions of the conveyance pipeline, pump station, and bridge foundation, and the freeway highway overpass structure foundation.

Rock coring would be continuous using a 5-foot-long core barrel. Each rock core run would be photographed and placed in a labelled wooden core box. A photo information sheet would be included in the photo to indicate the boring number, date, and sample depth. Sufficiently weak or saturated cores would be wrapped in plastic.

Hollow stem auger soil drilling methods (a dry drilling method involving the use of augers that have a central open-pipe portion that allows the insertion of a sampler without having to withdraw the augers from the bottom of the bore hole) would be implemented and drive samples collected within the upper portion of the conveyance pipeline, pump station, access road and bridge, pavement borings, and restoration area (lake sediment) borings. These borings may be converted to core borings below the depth penetrated with hollow stem augers. Drive samples collected using a 2.5-inch-diameter (inside diameter) modified California sampler would be stored in brass tubes with plastic caps. Drive samples collected with the Standard Penetration Test (SPT) sampler would be stored in sealed plastic bags.

All borings would be logged by an experienced geologist or geotechnical engineer as the boring progresses. Information on boring logs would include material characteristics (i.e., rock type, strength, degree of weathering, fracturing, color, grain size, etc.), locations of geologic contacts, run times, groundwater level, drill rig behavior, drill fluid loss into the borehole, and any other relevant data. Boring logs and cores would be reviewed by a California Professional Geologist (PG) or California licensed Geotechnical Engineer (GE).

Rock core samples would be carefully placed sequentially in the core box that would be labeled with drilling date, the boring number, core run numbers, sample depths, and zones of no recovery. Core boxes would be stored temporarily on site in locked shipping containers and later would be moved to Valley Water's off-site storage facility. Selected portions of the core samples would be wrapped with plastic to help preserve for potential future testing.

At completion of operations, the remaining drill fluids (drill water and soil/rock cuttings) would be pumped into a storage tank or 55-gallon drums and disposed at an approved off-site disposal facility.

In Situ Jet Testing

Prior to conducting lake sediment borings within the existing reservoir once the reservoir is drained, in situ jet testing of sediment erodibility and critical shear stress would be performed using a Mini-Jet Test Device at 11 of the 21 LS activity areas. Prior to initiating boring at these sites, the test team would hand dig (post-hole digger and shovel) a hole immediately adjacent to the hole the drill bit would later occupy. This hole would be 2 feet square to a maximum depth of 2 feet. Water would then be pumped from a pair of jets; one on either side of the hole. The pump would be run by a portable gas-powered generator. Water in the hole would be contained with no surface runoff. While attempts would be made to pump test water from the hole after the test is complete, the nature of the alluvial sediments subject to in situ jet testing would result in some amount of percolation of water from the bottom of the hole. Any water pumped from the hole would be placed in a container for later disposal off site. Approximately 5 gallons of potable water would be used at each test location. Testing would occur at 3 depths as the hole is dug; at or near the surface, at a depth of one foot, and a depth of two feet. Each hole would be backfilled with excavated material prior to boring. In the event that these sites are drilled using a barge due to inundation, in situ jet testing would not occur. Sediments collected from boring operations would be sent to a laboratory off site for similar testing in a controlled environment.

Piezometer Installation and Monitoring

Two types of instrumentation would be installed in select borings including piezometers and slope inclinometers. In order to observe stable, long-term groundwater levels, 14 to 25 vibrating wire piezometers (VWPs) are proposed for a subset of boreholes. One VWP would be installed in a borehole at a depth associated with the proposed spillway foundation (Boring UB-111), nine would be installed in boreholes drilled within mapped landslide features (Borings L-1 through L-9), four would be installed in boreholes associated with proposed borrow areas (Borings BA-20, BA-22, BA-23, and BA-25), and 11 would be installed in boreholes associated with lake sediments and/or the proposed channel restoration reaches (Borings LS-19, LS-23 through LS-25, LS-28, LS-30 through LS-35). These 11 piezometers would be installed when water levels are low and field conditions allow with an all-terrain track-mounted drill rig. Should a barge-based drill rig be needed

for some or all 21 LS borings, then some or all of the 11 piezometers would not be installed when a barge-based drill rig is used. The above-mentioned borehole locations are also identified in Table 2-3.

The VWPs would typically be installed near the bottom of the borehole in a sand-filled canvas bag or directly within the grout backfill and would be grouted in place in accordance with Valley Water permitting requirements. VWPs installed in lake sediment/restoration borings (LS borings) would be affixed to a sacrificial primary inner PVC pipe. A secondary inner PVC pipe would encircle the primary inner PVC pipe and extend two to three feet below the depth of historic alluvium as interpreted from cores by an on-site geologist. The VWP readout wires would be routed through a plug in the bottom of the primary inner PVC pipe and up above the current ground elevation. The secondary inner PVC pipe would also be plugged on bottom to prevent grout entrance. The readout wires would be connected to a watertight data logger, which would be encased within a watertight case. The case would be enclosed within a wellhead with a sealable, watertight cap. An outer protective casing would be placed on the outside boundary of the borehole extending from the residual sediment down to two to three ft above the historic alluvium. This casing would provide additional protection for the borehole, space in the wellhead to hold the datalogger case, and an additional protective covering of the piezometer so the contractor can more easily identify it during residual reservoir sediment removal. Bollards or rocks would be placed on the upstream side of the wellhead to protect it from debris and material that may be mobilized when the reservoir is inundated.

The VWPs installed within borings drilled above the existing reservoir high water line (spillway, landslide, and borrow areas; UB, L, and BA borings) would be connected to electronic data loggers attached to steel above-ground protective covers; the dataloggers would be programmed to record data once per day. VWPs installed in lake sediment/restoration borings (LS borings) would be measured at least quarterly and possibly more often during the rainy season to evaluate seasonal fluctuation. In the event that one or more LS boring sites are conducted with a barge-based drilling rig, no instrumentation would be placed at those sites.

Inclinometer Installation and Monitoring

Following completion of the borings at four specific locations associated with two large landslide features upstream of the proposed dam foundation, slope inclinometers would be installed with the VWPs attached to the outside of the inclinometer casing and encased in cement grout, as described above (L-2, L-4, L-8, and L-9) as depicted in Table 2-3.

Plastic inclinometer casing would be installed in the boring using multiple sections of casing placed to preferred depth with a stick up above the surface (~3 feet) that allows for installation of a protective cover. To counter buoyancy of the casing, water would be added to casing during installation. A permanent electronic in-place inclinometer (IPI) connected to an external data logger would be placed inside the casing. The inclinometers would extend to the bottom of each bore hole and placed to provide data at a minimum of 10 feet below the depth of the landslide feature as interpreted by a certified engineering geologist or licensed geotechnical engineer.

The inclinometers are intended to accurately define the base of possible landslide movement and record future slope movements. IPI readings would be recorded daily on the data loggers and would be downloaded for analysis and interpretation on a reoccurring basis. Subsurface Utility Identification

Underground Services Alert would locate and identify any subsurface utilities located at the proposed exploration locations, and test pits. Exploration locations would be reviewed with the landowners prior to the start of excavation. For borings in excess of 45-feet deep a Valley Water well ordinance drilling permit would be obtained.

2.3.3 Site Documentation

Both pre-activity and post activity photographs are proposed to document conditions before the completion of test pits and boring locations, and after they are returned to their original grade. Photographs would generally be taken from the same location and direction within each activity area.

2.3.4 Investigation Equipment, Required Personnel and Site Access

The proposed Project would require approximately 1 to 5 crews working at any one time, resulting in approximately 5 to 20 workers and/or monitoring staff being at the proposed Project study area at any one time. Access to the proposed activity areas would include use of vehicles via existing public and private roadways, ranch roads and in some instances overland access routes through grasslands and woodlands. Overland routes would be as direct as possible, while avoiding sensitive resources.

Where vegetation disturbance is required and cannot be avoided, vegetation within an activity area may be trimmed or removed using handheld power equipment. Excavation or grubbing of vegetation would not occur outside of an activity area.

Equipment, vehicles and materials would be temporarily staged at designated staging/storage locations to include SS-1 (PPWD storage area), SS-2 (northern staging/storage area), and the temporary helicopter landing zone (see Figures 2-2b and 2-2d). Equipment use would be planned to optimize onsite staging and reduce offsite traffic and travel. Workers in remote areas would be provided necessary onsite amenities (e.g., waste and sanitary facilities). Carpooling would be encouraged. Crew vehicles would access the proposed Project study area six days a week over the duration of the proposed Project. Flaggers, cones and other measures would be used to control the flow of traffic near active roadways where necessary. Landowners would be notified consistent with their respective access agreements. Table 2-4 provides the estimated type of equipment, the number of each type of equipment and the hours per day of anticipated use.

2.3.5 Project Schedule

The surface and subsurface geotechnical investigations previously described are expected to take approximately 8 working months through 2025 to complete, depending upon drill rig, crew and helicopter availability. Proposed field activities are expected to begin in the summer of 2024 (e.g., August depending on timing of proposed Project approval, access, field conditions and availability

of field investigation crews) and be completed by December 2025. Three drill rigs are anticipated to be working for most of the schedule. Up to two additional drill rigs and crews may be added if they are available.

With the exception of two exploratory borings (R-20-001, R-20-003) drilled within Caltrans right-of-way (ROW), work would be conducted between the hours of 7 a.m. and 6 p.m., Monday through Friday and 9 a.m. to 4 p.m. on Saturday. Landowner access may restrict these timeframes at certain locations. For the boring north of the west-bound lane of SR-152, boring R-20-001, work would occur during nighttime hours. This would require a closure of one west-bound lane from approximately 8 p.m. to 4 a.m. for up to 3 to 4 nights. For the boring associated with the east-bound lane of SR-152, boring R-20-003, a lane closure would be required between 10 p.m. and 7 a.m. for up to 3 to 4 nights. A total of up to 6 to 8 nights of work is anticipated for these two borings. Additional nighttime lighting would be required at these two locations for the safety of drill crews and motorists. Nighttime lighting would be used to light up the work area within the right-of-way of SR-152 according to Caltrans standards. Night lighting is only proposed during nighttime drilling within SR-152. Anticipated timeframe and estimated number of field days for the geotechnical investigation are outlined in Table 2-5.

The surface and subsurface geotechnical investigations described would take place only during dry weather conditions with dry site conditions during the dry season. The dry season is generally described as April 1 to November 15 but may be compressed due to wet weather, work delays to avoid sensitive biological resources, and persisting wet site conditions. Valley Water would review weather conditions, weather forecasting, biological observations, and site conditions to determine when geotechnical field work on site would be allowed to occur. If it is determined by Valley Water that the reservoir would not be drawn down and dry during the dry season when work is scheduled to occur, a decision would be made to implement barge borings in order to complete the borings during the scheduled work period. In addition, regulatory agency permit conditions would also apply within jurisdictional areas.

Table 2-4: Proposed Project Equipment and Duration of Use

Equipment	Estimated Maximum Pieces	# Of Days	Hours of Use Per Day
Drill rig mobilization and demobilization from Spokane Washington (950 miles)	2 Truck/Trailer	6 days round trip	8 per day
Drill rig mobilization and demobilization from west Sacramento, California *135)	2 Truck/Trailer	1 day round trip	4 per day
Drill rig (drill rigs may be mounted on trucks or large utility trailers)*.	3-5	Base 366 rig days supplemental 120 rig days	8 for weekdays, 6 for Saturdays (includes hours for truck mounted drill or truck pulling drill rig on trailer)
Excavator	1	16 days	8 for weekdays, 6 for Saturdays

Table 2-4: Proposed Project Equipment and Duration of Use

Equipment	Estimated Maximum Pieces	# Of Days	Hours of Use Per Day
Pump	2	260 pump days	4 for weekdays, 3 for Saturdays
Water truck (2000 gallon)**	1	140 truck days	6 for weekdays, 2 for Saturdays (60 iles/day)
Barge and support boat***	1 of Each	15 days each	8 for weekdays, 6 for Saturdays
Chainsaw(s)	1-3	3 saw days	6
Helicopter (Bell Jet Ranger or equivalent)	1	Base 92 days sup 36 days	4 onsite plus 50 miles round trip to Hollister airport
Helicopter fuel truck (f650)	1	Base 92 days Sup 36 days	50 miles round trip to Hollister airport
Crew transport vehicles	12	2,000 vehicle days	2 (50 miles round trip/day)
ATV (Polaris 500 4 stroke)	2	100 vehicle days	1

Notes:
* While up to 5 drill rigs may be operating concurrently, there would only be one drill rig active at each activity area.
** All water used for investigations would be provided from off-site commercial or municipal sources.
*** If necessary, based on water levels; this would reduce the amount of track-based drilling days by 15 days.

Table 2-5: Anticipated Timeframe and Estimated Number of Field Days for the Geotechnical Investigations

Investigation Type[1]	Anticipated Timeframe[2,4]	Estimated Number of Field Days[3]
Investigation within Pacheco Pass Water District Property		
Rock core drilling: Trailer/truck rig (22 borings)	Aug – Nov 2024, May – Aug 2025	~116 rig days
Auger/rotary wash drilling: All terrain rig or barge based vibracore rig, within existing reservoir area if accessible, barge mounted drill rig if not (23 borings)	Aug – Nov 2024, May – Aug 2025	~20 days
Supplemental borings: Trailer/truck rig (9 borings)	Oct – Nov 2024, May – July 2025	~30 days
Surface Geophysical Surveys (included with Jin Property)	Aug – Nov 2024	~20 days
Investigation within Jin Property		
Rock Core Drilling: Trailer/All Terrain/Truck rig (16 borings) Helicopter mobilized rig (46 borings)	Aug – Nov 2024, May – July 2025	~215 rig days
Auger/Rotary Wash Drilling: Truck rig (6 borings)	Aug – Nov 2024	~6 days
Supplemental borings: Trailer/all-terrain/truck rig (3 borings). Helicopter mobilized rig (18 borings)	Aug – Nov 2024, May – Nov 2025	~90 days
Test Pits (32 test pits)	Aug – Oct 2024	~16 days
Surface Geophysical Surveys (included with PPWD Property)	Aug – Nov 2024	~20 days

Table 2-5: Anticipated Timeframe and Estimated Number of Field Days for the Geotechnical Investigations		
Investigation Type[1]	**Anticipated Timeframe**[2,4]	**Estimated Number of Field Days**[3]
Investigation within Caltrans and Zhou Property		
Auger/Rotary Wash Drilling: truck rig: (6 Borings)	Aug – Sept 2024	~ 10 days
Reseeding of Disturbed Areas		
Hand broadcasting of approved native seed mix	Oct – Nov 2024, Oct – Nov 2025	~ 5 days

Notes:
1. In situ testing and piezometer and inclinometer construction are included where performed.
2. The anticipated timeframes listed are approximate estimates for scheduling purposes and are not fixed. It is possible that conditions beyond Valley Water's control such as weather, wildfires, equipment breakdown, delay, and availability could lead to completion dates outside of those listed.
3. Assumptions: Two helicopter rigs and one trailer/track/truck rig would be concurrently used. If fewer rigs are available, then the duration of affected tasks would be longer. One truck or all terrain rig would be used for the conveyance pipeline, access road, bridge, and highway overpass and pavement borings.
4. Work could be extended into 2025 resulting from circumstances occurring beyond the control of Valley Water.

2.4 Best Management Practices

Best management practices (BMPs) are practices that prevent, avoid, or minimize potentially adverse effects associated with construction and other activities. Valley Water routinely incorporates a wide range of BMPs into project design, as described in detail in its Best Management Practices Handbook (Valley Water 2014, Revision G). The proposed Project would include many of Valley Water's standard BMPs, as summarized in Table 2-6. Table 2-6 is intended to give an overview, focusing on the BMPs most relevant to the proposed Project; additional measures from the BMP Handbook may also apply. Additional environmental measures developed to mitigate specific impacts associated with proposed Project implementation and not avoidable through standard construction BMPs are identified in Section 4 of this IS/MND.

All BMPs for proposed Project implementation activities would be incorporated into the geotechnical investigation work plans, and all geotechnical contractors employed on the proposed Project would be required to adhere to them.

Table 2-6: Best Management Practices Incorporated into the Proposed Project	
BMP Number/Name	**Description**
Air Quality	
AQ-1: Use Dust Control Measures	The following dust control measures based on Bay Area Air Quality Management District BMPs (BAAQMD) would be implemented: • All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered as needed; • All haul trucks transporting soil, sand, or other loose material off-site shall be covered;

Table 2-6: Best Management Practices Incorporated into the Proposed Project	
BMP Number/Name	**Description**
	• All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited; • Water used to wash the various exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, etc.) will not be allowed to enter waterways; • All vehicle speeds on unpaved roads shall be limited to 15 mph; • All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used; • Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California Airborne Toxic Control Measure Title 13, Section 2485 of California Code of Regulations), and this requirement shall be clearly communicated to construction workers (such as verbiage in contracts and clear signage at all access points); • All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications, and all equipment shall be checked by a certified visible emissions evaluator; • Correct tire inflation shall be maintained in accordance with manufacturer's specifications on wheeled equipment and vehicles to prevent excessive rolling resistance; and • Post a publicly visible sign with a telephone number and contact person at the lead agency to address dust complaints; any complaints shall be responded to and take corrective action within 48 hours. In addition, a BAAQMD telephone number with any applicable regulations will be included.
Biological Resources	
BI-5: Avoid Impacts to Nesting Migratory Birds	Nesting birds are protected by state and federal laws. Valley water will protect nesting birds and their nests from abandonment, loss, damage, or destruction. Nesting bird surveys will be performed by a qualified biologist prior to any activity that could result in the abandonment, loss, damage, or destruction of birds, bird nests, or nesting migratory birds. Inactive bird nests may be removed with the exception of raptor nests. Birds, nests with eggs, or nests with hatchlings will be left undisturbed.
BI-6: Avoid Impacts to Nesting Migratory Birds from Pending Construction	Nesting exclusion devices may be installed to prevent potential establishment or occurrence of nests in areas where construction activities would occur. All nesting exclusion devices will be maintained throughout the nesting season or until completion of work in an area makes the devices unnecessary. All exclusion devices will be removed and disposed of when work in the area is complete.
BI-8: Choose Local Ecotypes of Native Plants and Appropriate Erosion-Control Seed Mixes	Whenever native species are prescribed for installation, the following steps will be taken by a qualified biologist or vegetation specialist: • Evaluate whether the plant species currently grows wild in Santa Clara County; and, • If so, the qualified biologist or vegetation specialist will determine if any need to be local natives, i.e., grown from propagules collected in the same or adjacent watershed, ad as close to the project site as feasible. • Also, consult a qualified biologist or vegetation specialist to determine which seeding option is ecologically appropriate and effective, • For areas that are disturbed, an erosion control seed mix may be used consistent with the SCVWD Guidelines and Standards for Land Use Near Streams, Design Guide 5, 'Temporary Erosion Control Options.' • In areas with remnant native plants, the qualified biologist or vegetation specialist may choose an abiotic application instead, such as an erosion control blanket or seedless hydro-mulch and tackifier to facilitate passive revegetation of local native species.

Table 2-6: Best Management Practices Incorporated into the Proposed Project	
BMP Number/Name	**Description**
	• Temporary earthen access roads may be seeded when site and horticultural conditions are suitable. • If gravel or wood mulch has been used to prevent soil compaction, this material may be left in place [if ecologically appropriate] instead of seeding. • Seed selection shall be ecologically appropriate as determined by a qualified biologist, per Guidelines and Standards for Land Use Near Streams, Design Guide 2: Use of Local Native Species.
BI-10: Avoid Animal Entry and Entrapment	All pipes, hoses, or similar structures less than 12 inches diameter will be closed or covered to prevent animal entry. All construction pipes, culverts, or similar structures, greater than 2-inches diameter, stored at a construction site overnight, will be inspected thoroughly for wildlife by a qualified biologist or properly trained construction personnel before the pipe is buried, capped, used, or moved. If inspection indicates presence of sensitive or state- or federally-listed species inside stored materials or equipment, work on those materials will cease until a qualified biologist determines the appropriate course of action. To prevent entrapment of animals, all excavations, steep-walled holes or trenches more than 6-inches deep will be secured against animal entry at the close of each day. Any of the following measures may be employed, depending on the size of the hole and method feasibility: • Hole to be securely covered (no gaps) with plywood, or similar materials, at the close of each working day, or any time the opening will be left unattended for more than one hour; or • In the absence of covers, the excavation will be provided with escape ramps constructed of earth or untreated wood, sloped no steeper than 2:1, and located no farther than 15 feet apart; or In situations where escape ramps are infeasible, the hole or trench will be surrounded by filter fabric fencing or a similar barrier with the bottom edge buried to prevent entry.
BI-11: Minimize Predator-Attraction	Remove trash daily from the worksite to avoid attracting potential predators to the site.
Hazards and Hazardous Materials	
HM-7: Restrict Vehicle and Equipment Cleaning to Appropriate Locations	Vehicles and equipment may be washed only at approved areas. No washing of vehicles or equipment will occur at job sites.
HM-8: Ensure Proper Vehicle and Equipment Fueling and Maintenance	• No fueling or servicing will be done in a waterway or immediate flood plain, unless equipment stationed in these locations is not readily relocated (i.e., pumps, generators). • For stationary equipment that must be fueled or serviced on-site, containment will be provided in such a manner that any accidental spill will not be able to come in direct contact with soil, surface water, or the storm drainage system. • All fueling or servicing done at the job site will provide containment to the degree that any spill will be unable to enter any waterway or damage riparian vegetation. • All vehicles and equipment will be kept clean. Excessive build-up of oil and grease will be prevented. • All equipment used in the creek channel will be inspected for leaks each day prior to initiation of work. Maintenance, repairs, or other necessary actions will be taken to prevent or repair leaks, prior to use. • If emergency repairs are required in the field, only those repairs necessary to move equipment to a more secure location will be done in a channel or flood plain.

Table 2-6: Best Management Practices Incorporated into the Proposed Project	
BMP Number/Name	**Description**
HM-9: Ensure Proper Hazardous Materials Management	• Measures will be implemented to ensure that hazardous materials are properly handled, and the quality of water resources is protected by all reasonable means. • Prior to entering the work site, all field personnel will know how to respond when toxic materials are discovered. • Contact of chemicals with precipitation will be minimized by storing chemicals in watertight containers with appropriate secondary containment to prevent any spillage or leakage. • Petroleum products, chemicals, cement, fuels, lubricants, and non-storm drainage water or water contaminated with the aforementioned materials will not contact soil and not be allowed to enter surface waters or the storm drainage system. • All toxic materials, including waste disposal containers, will be covered when they are not in use, and located as far away as possible from a direct connection to the storm drainage system or surface water. • Quantities of toxic materials, such as equipment fuels and lubricants, will be stored with secondary containment that is capable of containing 110% of the primary container(s). • The discharge of any hazardous or non-hazardous waste as defined in division 2, subdivision 1, chapter 2 of the California code of regulations will be conducted in accordance with applicable state and federal regulations. • In the event of any hazardous material emergencies or spills, personnel will call the chemical emergencies/spills hotline at 1-800-510-5151.
HM-10: Utilize Spill Prevention Measures	Prevent the accidental release of chemicals, fuels, lubricants, and non-storm drainage water following these measures: • Field personnel will be appropriately trained in spill prevention, hazardous material control, and clean-up of accidental spills; • Equipment and materials for cleanup of spills will be available on site, and spills and leaks will be cleaned up immediately and disposed of according to applicable regulatory requirements. • Field personnel will ensure that hazardous materials are properly handled, and natural resources are protected by all reasonable means; • Spill prevention kits will always be in close proximity when using hazardous materials (e.g., at crew trucks and other logical locations), and all field personnel will be advised of these locations; and, • The work site will be routinely inspected to verify that spill prevention and response measures are properly implemented and maintained.
HM-12: Incorporate Fire Prevention Measures	• All earthmoving and portable equipment with internal combustion engines will be equipped with spark arrestors. • During the high fire danger period (April 1–December 1), work crews will have appropriate fire suppression equipment available at the work site. • An extinguisher shall be available at the project site at all times when welding or other repair activities that can generate sparks (such as metal grinding) is occurring. • Smoking shall be prohibited except in designated staging areas and at least 20 feet from any combustible chemicals or vegetation.
Hydrology and Water Quality	
WQ-4: Limit Impacts from Staging and Stockpiling Materials	• To protect on-site vegetation and water quality, staging areas should occur on access roads, surface streets, or other disturbed areas that are already compacted and only support ruderal vegetation. Similarly, all equipment and materials (e.g., road rock and project spoil) will be contained within the existing service roads, paved roads, or other pre-determined staging areas.

Table 2-6: Best Management Practices Incorporated into the Proposed Project	
BMP Number/Name	**Description**
	• Building materials and other project-related materials, including chemicals and sediment, will not be stockpiled or stored where they could spill into water bodies or storm drains. • No runoff from the staging areas may be allowed to enter water ways, including the creek channel or storm drains, without being subjected to adequate filtration (e.g., vegetated buffer, swale, hay wattles or bales, silt screens). • The discharge of decant water to water ways from any on-site temporary sediment stockpile or storage areas is prohibited. • During the wet season, no stockpiled soils will remain exposed, unless surrounded by properly installed and maintained silt fencing or other means of erosion control. During the dry season; exposed, dry stockpiles will be watered, enclosed, covered, or sprayed with non-toxic soil stabilizers.
WQ-9: Use Seeding for Erosion Control, Weed Suppression, and Site Improvement	• Disturbed areas shall be seeded with native seed as soon as is appropriate after activities are complete. An erosion control seed mix will be applied to exposed soils down to the ordinary high-water mark. • The seed mix should consist of California native grasses, (for example hordeum Brachyantherum; elymus glaucus; and annual Vulpia microstachys) or annual, sterile hybrid seed mix (e.g., regreen™, a wheat x wheatgrass hybrid). • Temporary earthen access roads may be seeded when site and horticultural conditions are suitable, or have other appropriate
WQ-11: Maintain Clean Conditions at Work Sites	• The work site, areas adjacent to the work site, and access roads will be maintained in an orderly condition, free and clear from debris and discarded materials on a daily basis. Personnel will not sweep, grade, or flush surplus materials, rubbish, debris, or dust into storm drains or waterways. • For activities that last more than one day, materials or equipment left on the site overnight will be stored as inconspicuously as possible and will be neatly arranged. Any materials and equipment left on the site overnight will be stored to avoid erosion, leaks, or other potential impacts to water quality. • Upon completion of work, all building materials, debris, unused materials, concrete forms, and other construction-related materials will be removed from the work site.
WQ-12: Manage Well or Exploratory Boring Materials	All materials or waters generated during drilling, well or exploratory boring construction, well development, pump testing, or other activities associated with wells or exploratory borings, will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statutes regulating such. In no case will these materials and/or waters be allowed to enter, or potentially enter, on- or off-site storm sewers, dry wells, or waterways. Such materials/waters must not be allowed to move off the property where the work is being completed.
WQ-13: Protect Groundwater from Contaminates Via Wells or Exploratory Borings	Any substances or materials that may degrade groundwater quality will not be allowed to enter any well or boring. Lubricants used on drill bits, drill pipe, or tremie pipe will not be comprised of oily or greasy substances or other materials that may degrade groundwater quality. Well openings or entrances will be sealed or secured in such a way as to prevent the introduction of contaminants.
WQ-14: Backfill Completed Exploratory Borings	All borings should be backfilled within 24 hours of termination of testing. Borings will not be left in such a condition as to allow for the introduction of surface waters or foreign materials into them. Borings will be secured such that they do not endanger public health. All borings must be properly destroyed by backfilling with acceptable sealing materials. Acceptable sealing materials are: • 27 sack neat cement (four 94-pound bags/55-gallon drum), • 10 sack cement sand grout, or • Hydrated high solids 20 percent bentonite slurry.

Table 2-6: Best Management Practices Incorporated into the Proposed Project	
BMP Number/Name	**Description**
	• No soil cuttings may be used for backfilling boreholes. No bentonite chips or pellets may be used to backfill borings. Free fall of sealing material will not be allowed if greater than 30 feet or if more than 3 feet of standing water exists in borehole. A tremie pipe must be used to place the cement sealing material if exploratory boring is over 30 feet deep or if more than 3 feet of standing water exists in borehole. Exploratory borings located in geologic setting zone 4 (bedrock) may be backfilled with borehole cuttings from total depth of the boring up to a depth of 50 feet from the surface grade. The top 50 feet of the borehole must be backfilled with above-described sealing materials.
WQ-15: Prevent Water Pollution	Oily, greasy, or sediment laden substances or other material that originate from the project operations and may degrade the quality of surface water or adversely affect aquatic life, fish, or wildlife will not be allowed to enter, or be placed where they may later enter, any waterway. The project will not increase the turbidity of any watercourse flowing past the construction site by taking all necessary precautions to limit the increase in turbidity as follows: • Where natural turbidity is between 0 and 50 Nephelometric Turbidity Units (NTU), increases will not exceed 5 percent; • Where natural turbidity is greater than 50 NTU, increases will not exceed 10 percent; • Where the receiving water body is a dry creek bed or storm drain, waters in excess of 50 NTU will not be discharged from the project. Water turbidity changes will be monitored. The discharge water measurements will be made at the point where the discharge water exits the water control system for tidal sites and 100 feet downstream of the discharge point for non-tidal sites. Natural watercourse turbidity measurements will be made in the receiving water 100 feet upstream of the discharge site. Natural watercourse turbidity measurements will be made prior to initiation of project discharges, preferably at least 2 days prior to commencement of operations.
WQ-16: Prevent Stormwater Pollution	To prevent stormwater pollution, the applicable measures from the following list will be implemented: • Soils exposed due to project activities will be seeded and stabilized using hydroseeding, straw placement, mulching, and/or erosion control fabric. These measures will be implemented such that the site is stabilized, and water quality protected prior to significant rainfall. In creeks, the channel bed and areas below the ordinary high-water mark are exempt from this bmp. • The preference for erosion control fabrics will be to consist of natural fibers; however, steeper slopes and areas that are highly erodible may require more structured erosion control methods. No non-porous fabric will be used as part of a permanent erosion control approach. Plastic sheeting may be used to temporarily protect a slope from runoff, but only if there are no indications that special-status species would be impacted by the application. • Erosion control measures will be installed according to manufacturer's specifications. • To prevent stormwater pollution, the appropriate measures from, but not limited to, the following list will be implemented: • Silt fences • Straw bale barriers • Brush or rock filters • Storm drain inlet protection • Sediment traps or sediment basins • Erosion control blankets and/or mats • Soil stabilization (i.e., tackified straw with seed, jute or geotextile blankets, etc.) • Straw mulch

Table 2-6: Best Management Practices Incorporated into the Proposed Project	
BMP Number/Name	**Description**
	• All temporary construction-related erosion control methods shall be removed at the completion of the project (e.g., silt fences). • Surface barrier applications installed as a method of animal conflict management, such as chain link fencing, woven geotextiles, and other similar materials, will be installed no longer than 300 feet, with at least an equal amount of open area prior to another linear installation.
WQ-17: Manage Sanitary and Septic Waste	Temporary sanitary facilities will be located on jobs that last multiple days, in compliance with California Division of Occupational Safety and Health (CAL/OSHA) Regulation 8 California Code of Regulations 1526. All temporary sanitary facilities will be located where overflow or spillage will not enter a watercourse directly (overbank) or indirectly (through a storm drain).
Traffic And Transportation	
TR-1: Incorporate Public Safety Measures	Fences, barriers, lights, flagging, guards, and signs will be installed as determined appropriate by the public agency having jurisdiction, to give adequate warning to the public of the construction and of any dangerous condition to be encountered as a result thereof.
Source: Valley Water 2014	

2.5 Avoidance and Minimization Measures

Avoidance and minimization measures (AMMs) are measures to prevent, avoid, or minimize potentially adverse effects on resources (e.g., cultural, biological, water) associated with construction and other activities. Valley Water typically incorporates specific AMMs in cases when modifications are made to one of the standard BMPs from the Valley Water BMP Handbook, or for the application of AMMs or BMPs from a responsible or trustee agency. Table 2-7 includes the AMMs that are most relevant to the proposed Project. In many instances, there are similarities between BMPs and AMMs. In those instances, Valley Water would apply whichever is more conservative or restrictive.

All AMMs for proposed Project implementation activities would be incorporated into the geotechnical investigation work plans, and all geotechnical contractors employed on the proposed Project would be required to adhere to them.

Additional environmental measures developed to mitigate specific impacts associated with proposed Project implementation and not avoidable through standard construction BMPs or AMMs are identified in Section 4 of this IS/MND.

Table 2-7: Avoidance and Minimization Measures Incorporated into the Proposed Project	
AMM Number/Name	**Description**
Cultural Resources/Tribal Cultural Resources	
CU-1: Accidental Discovery of Archaeological Artifacts, Tribal Cultural	If historical or precontact archaeological artifacts, or tribal cultural resources, are accidentally discovered during construction, work in affected areas will be stopped until proper protocols are met. Work at the location of the find will halt immediately within 150 feet of the find. A "no work" zone shall be established utilizing appropriate flagging to delineate the boundary of this zone. A Consulting Archaeologist will visit the discovery site as soon as practicable for identification and evaluation pursuant to Section 21083.2

Table 2-7: Avoidance and Minimization Measures Incorporated into the Proposed Project

AMM Number/Name	Description
Resources, or Burial Finds	of the Public Resources Code and Section 15126.4 of the California Code of Regulations. In addition, the Amah Mutsun Tribal Band will be notified of the find and consulted regarding the significance. If the Consulting Archaeologist in consultation with the Amah Mutsun Tribal Band determines that the artifact is not significant, construction may resume. If the Consulting Archaeologist in consultation with the Amah Mutsun Tribal Band determines that the artifact or resource is significant, the Consulting Archaeologist in consultation with the Amah Mutsun Tribal Band, will detail avoidance procedures. If burial finds are accidentally discovered during construction, work in affected areas will be stopped. Upon discovering any human skeletal remains, the County Coroner, Consulting Archaeologist, and Amah Mutsun Tribal Band will be immediately notified, and the field crew supervisor shall take immediate steps to secure and protect such remains from vandalism during periods when work crews are absent. No further excavation or disturbance within 150 feet of the site or any nearby area reasonably suspected to overlie adjacent remains may be made except as authorized by the County Coroner, and the California Native American Heritage Commission.
CU-2: Accidental Discovery of Archaeological Artifacts, Tribal Cultural Resources, or Burial Finds	Valley Water would provide pre-activity cultural resources identification and sensitivity training to all geotechnical personnel active on the Project within the Project area during drilling and excavation activities throughout the duration of the investigations. The training would be conducted in person, via a video or PowerPoint presentation, or via an informational brochure to be viewed by all geotechnical personnel involved in ground disturbing activities prior to working on the Project within the Project area. The training would be developed and conducted in coordination with a qualified archaeologist meeting the U.S. Secretary of Interior standards for professional archaeologists and a representative or representatives from the Amah Mutsun Tribal Band or other culturally affiliated Native American tribe(s) who have participated in consultations with Valley Water. The program would include relevant information regarding sensitive cultural resources (including human remains and burials), applicable regulations, protocols for avoidance, and consequences of violating state laws and regulations. The pre-activity cultural resources identification and sensitivity training would also describe appropriate avoidance and minimization measures for resources that have the potential to be located within the Project area, and would outline what to do and whom to contact if any cultural resources, artifacts, or human remains, are encountered. The training would also underscore the requirement for confidentiality and culturally appropriate treatment of any finds of significance to Native Americans.
Santa Clara Valley Habitat Plan	
VHP-1:	Minimize the potential impacts on covered species most likely to be affected by changes in hydrology and water quality.
VHP-2:	Reduce stream pollution by removing pollutants from surface runoff before the polluted surface runoff reaches local streams.
VHP-3:	Maintain the current hydrograph and, to the extent possible, restore the hydrograph to more closely resemble predevelopment conditions.
VHP-6:	Activities in the active (i.e., flowing) channel will be avoided. If activities must be conducted in the active channel, avoidance and minimization measures identified in this table will be applied.
VHP-7:	Personnel shall prevent the accidental release of chemicals, fuels, lubricants, and non-storm drainage water into channels.
VHP-8:	Spill prevention kits shall always be in close proximity when using hazardous materials (e.g., crew trucks and other logical locations).
VHP-9:	Personnel shall implement measures to ensure that hazardous materials are properly handled and the quality of water resources is protected by all reasonable means when removing sediments from the streams.
VHP-11:	Vehicles shall be washed only at approved areas. No washing of vehicles shall occur at job sites.

Table 2-7: Avoidance and Minimization Measures Incorporated into the Proposed Project	
AMM Number/Name	**Description**
VHP-12:	No equipment servicing shall be done in the stream channel or immediate flood plain, unless equipment stationed in these locations cannot be readily relocated (i.e., pumps, generators).
VHP-13:	Personnel shall use the appropriate equipment for the job that minimizes disturbance to the stream bottom. Appropriately tired vehicles, either tracked or wheeled, shall be used depending on the situation.
VH -14:	If high levels of groundwater in a work area are encountered, the water is pumped out of the work site. If necessary to protect water quality, the water shall be directed into specifically constructed infiltration basins, into holding ponds, or onto areas with vegetation to remove sediment prior to the water re-entering a creek.
VHP-16:	When work in a flowing stream is unavoidable, the entire streamflow shall be diverted around the work area by a barrier, except where it has been determined by a qualified biologist that the least environmentally disruptive approach is to work in a flowing stream. Where feasible, water diversion techniques shall allow stream flows to gravity flow around or through the work site.
VHP-21:	To the extent that stream bed design changes are not part of the project, the stream bed will be returned to as close to pre-project condition as appropriate.
VHP-26:	Any sediment removed from a project site shall be stored and transported in a manner that minimizes water quality impacts.
VHP-29:	Existing native vegetation shall be retained by removing only as much vegetation as necessary to accommodate the trail clearing width. Maintenance roads should be used to avoid effects on riparian corridors.
VHP-39:	Minimize alterations to existing contours and slopes, including grading the minimum area necessary.
VHP-40:	Maintain native shrubs, trees and groundcover whenever possible and revegetate disturbed areas with local native or non-invasive plants.
VHP-49:	The project or activity must be designed to avoid the removal of riparian vegetation, if feasible. If the removal of riparian vegetation is necessary, the amount shall be minimized to the amount necessary to accomplish the required activity and comply with public health and safety directives.
VHP-58:	Existing access routes and levee roads shall be used if available to minimize impacts of new construction in special status species habitats and riparian zones.
VHP-61:	Minimize ground disturbance to the smallest area feasible.
VHP-62:	Use existing roads for access and disturbed area for staging as site constraints allow. Off-road travel will avoid sensitive communities such as wetlands and known occurrences of covered plants.
VHP-63:	Prepare and implement sediment erosion control plans.
VHP-65:	Control exposed soil by stabilizing slopes (e.g., with erosion control blankets) and protecting channels (e.g., using silt fences or straw wattles).
VHP-66:	Control sediment runoff using sandbag barriers or straw wattles.
VHP-67:	No stockpiling or placement of erodible materials in waterways or along areas of natural stormwater flow where materials could be washed into waterways.
VHP-68:	Stabilize stockpiled soil with geotextile or plastic covers.
VHP-69:	Maintain construction activities within a defined project area to reduce the amount of disturbed area.
VHP-71:	Preserve existing vegetation to the extent possible.
VHP-72:	Equipment storage, fueling and staging areas will be sited on disturbed areas or non-sensitive habitat outside of a stream channel.
VHP-73:	Avoid wet season construction.
VHP-74:	Stabilize site ingress/egress locations.

Table 2-7: Avoidance and Minimization Measures Incorporated into the Proposed Project	
AMM Number/Name	**Description**
VHP-75:	Dispose of all construction waste in designated areas and prevent stormwater from flowing onto or off of these areas.
VHP-76:	Prevent spills and clean up spilled materials.
VHP-78:	In-stream projects occurring while the stream is flowing must use appropriate measures to protect water quality, native fish and covered wildlife species at the project site and downstream of the project site.
VHP-83:	Sediments will be stored and transported in a manner that minimizes water quality impacts. If soil is stockpiled, no runoff will be allowed to flow back to the channel.
VHP-84:	Appropriate erosion control measures (e.g., fiber rolls, filter fences, vegetative buffer strips) will be used on site to reduce siltation and runoff of contaminants into wetlands, ponds, streams, or riparian vegetation. Fiber rolls used for erosion control will be certified as free of noxious weed seed. Filter fences and mesh will be of material that will not entrap reptiles and amphibians. Erosion control measures will be placed between the outer edge of the buffer and the project site.
VHP-85:	Seed mixtures applied for erosion control will not contain invasive nonnative species and will be composed of native species or sterile nonnative species. If sterile nonnative species are used for temporary erosion control, native seed mixtures must be used in subsequent treatments to provide long-term erosion control and slow colonization by invasive nonnatives.
VHP-86:	Topsoil removed during soil excavation will be preserved and used as topsoil during revegetation when it is necessary to conserve the natural seed bank and aid in revegetation of the site.
VHP-87:	Vehicles operated within and adjacent to streams will be checked and maintained daily to prevent leaks of materials that, if introduced to the water, could be deleterious to aquatic life.
VHP-88:	Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas.
VHP-89:	The potential for traffic impacts on terrestrial animal species will be minimized by adopting traffic speed limits.
VHP-90:	All trash will be removed from the site daily to avoid attracting potential predators to the site. Personnel will clean the work site before leaving each day by removing all litter and construction-related materials.
VHP-92:	To minimize the spread of pathogens all staff working in aquatic systems (i.e., streams, ponds, and wetlands)— including site monitors, construction crews, and surveyors—will adhere to the most current guidance for equipment decontamination provided by the Wildlife Agencies at the time of activity implementation. Guidance may require that all materials that come in contact with water or potentially contaminated sediments, including boot and tire treads, be cleaned of all organic matter and scrubbed with an appropriate cleansing solution, and that disposable gloves be worn and changed between handling equipment or animals. Care should be taken so that all traces of the disinfectant are removed before entering the next aquatic habitat.
VHP-93:	When accessing upland areas adjacent to riparian areas or streams, access routes on slopes of greater than 20% should generally be avoided. Subsequent to access, any sloped area should be examined for evidence of instability and either revegetated or filled as necessary to prevent future landslide or erosion.
VHP-94:	Personnel shall use existing access ramps and roads if available. If temporary access points are necessary, they shall be constructed in a manner that minimizes impacts to streams.
VHP-95:	To prevent inadvertent entrapment of animals during excavation, all excavated, steep-walled holes or trenches more than 2-feet deep will be covered at the close of each working day by plywood or similar materials or provided with one or more escape ramps constructed of earth fill or wooden planks.
VHP-96:	Isolate the construction area from flowing water until project materials are installed and erosion protection is in place.
VHP-97:	Erosion control measures shall be in place at all times during construction. Do not start construction until all temporary control devices (straw bales, silt fences, etc.) are in place downstream of project site.
VHP-98:	When needed, utilize in-stream grade control structures to control channel scour, sediment routing, and headwall cutting.

Table 2-7: Avoidance and Minimization Measures Incorporated into the Proposed Project	
AMM Number/Name	**Description**
VHP-100:	Potential contaminating materials must be stored in covered storage areas or secondary containment that is impervious to leaks and spills.
VHP-101:	Runoff pathways shall be free of trash containers or trash storage areas. Trash storage areas shall be screened or walled.
VHP-102:	Immediately after project completion and before close of seasonal work window, stabilize all exposed soil with mulch, seeding, and/or placement of erosion control blankets.

2.6 Santa Clara Valley Habitat Plan – Applicable Conditions

The Santa Clara Valley Habitat Plan (Valley Habitat Plan) is a multi-species, joint Habitat Conservation Plan and Natural Communities Conservation Plan that covers much of Santa Clara County. The Valley Habitat Plan accounts for the amount of impacts or "take" a project may have on a covered animal species by determining the amount of impacts on habitats that have potential to support the covered species. The Valley Habitat Plan conditions on covered activities presented in this section are applicable to the proposed Project[4] with respect to the following resource sections; Biological Resources, Geology and Soils, Hazards and Hazardous Materials, and Hydrology and Water Quality. The full text of applicable conditions[5] is provided as Appendix B. In addition to these conditions, Table 2-7 provides a list of avoidance and minimization measures incorporated into the proposed Project necessary to comply with the Valley Habitat Plan.

The following applicable conditions are summarized below.

Condition 1. Avoid Direct Impacts on Legally Protected Plant and Wildlife Species. This condition applies to all projects covered under the Valley Habitat Plan and helps to protect species for which environmental permits cannot be granted: Contra Costa goldfields, bald eagle, American peregrine falcon, southern bald eagle, white-tailed kite, California condor, and Ring-tailed cat (= ringtail); also requires compliance with the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act.

Condition 3. Maintain Hydrologic Conditions and Protect Water Quality. This condition applies to all projects covered by the Valley Habitat Plan and helps protect watershed health, primarily through reducing stormwater discharge and pollutant runoff from project sites. Work with the Valley Habitat Plan lead to determine if NPDES compliance is sufficient for the project or if additional measures are required.

Condition 4. Avoidance and Minimization for In-Stream Projects. This condition applies to projects that involve instream work (e.g., flood protection, bridge rehabilitation, dam repair) and

[4] All 20 Conditions presented in Chapter 6 of the Valley Habitat Plan were reviewed. Those discussed below were deemed applicable for the scope, scale and geographical aspects of the proposed Project.
[5] Many of the conditions and measures are similar to the best management practices presented in Section 2.4. The most conservative of the conditions presented in Sections 2.4 and 2.5 would take precedence.

helps to minimize sediment/pollutant discharge into waterways, disturbance of earth and riparian vegetation, and alteration of the hydrologic and hydraulic characteristics of water bodies.

Condition 5. Avoidance and Minimization Measures for In Stream Operations and Maintenance. This condition applies to projects that involve operations and maintenance work within and immediately adjacent to the stream channel (e.g., sediment removal, bank stabilization, vegetation management) and helps minimize sediment/pollutant discharge into waterways and disturbance of riparian vegetation.

Condition 11. Stream and Riparian Setbacks. This condition applies to projects that overlap a stream or stream setback—requirements differ based on project's location in relation to the urban service area. This condition helps minimize impacts on streams by specifying setbacks and buffer zones.

Condition 12. Wetland and Pond Avoidance and Minimization. This condition applies to projects that are covered under the Valley Habitat Plan and helps to minimize impacts on wetlands and ponds and avoid impacts on high quality wetlands and ponds by prescribing vegetated stormwater filtration features, proper disposal of cleaning materials, and other requirements.

Condition 14. Valley Oak and Blue Oak Woodland Avoidance and Minimization. This condition applies to projects that are covered under the Valley Habitat Plan and helps to minimize and avoid valley and blue oak woodland by specifying buffer zones, pruning regulations, and other requirements.

Condition 15. Western Burrowing Owl. This condition applies to projects that are located within any grassland, oak woodland, or agricultural land cover type and within Wildlife Survey Area, or where burrowing owl nesting or breeding habitat has been documented by survey. This condition helps protect western burrowing owls by prescribing preconstruction surveys, construction buffer zones, biological monitoring, and other requirements.

Condition 16. Least Bell's Vireo. This condition applies to projects that are located within any riparian forest and scrub land cover type and within Wildlife Survey Area and helps protect least Bell's vireos by prescribing preconstruction surveys, construction buffer zones, biological monitoring, and other requirements.

Condition 17. Tricolored Blackbird. This condition applies to projects that are located within 250 feet of any riparian, coastal and valley freshwater marsh and helps to protect tricolored blackbirds by prescribing preconstruction surveys, construction buffer zones, biological monitoring, and other requirements.

Condition 18. San Joaquin Kit Fox. This condition applies to projects that are located within any grassland, oak woodland, or agricultural land cover type and within Wildlife Survey Area and helps protect San Joaquin kit foxes by prescribing preconstruction surveys, construction buffer zones, biological monitoring, and other requirements.

Condition 19. Plant Salvage when Impacts are Unavoidable. This condition applies to projects that cannot avoid impacts on covered plants and includes a notification provision to the Habitat Agency that allows them the option to salvage covered plants whenever avoidance of impacts is not feasible.

Condition 20. Avoid and Minimize Impacts to Covered Plant Occurrences. This condition applies to projects that are located in areas where covered plant species are likely to occur and within a covered plant survey area; this condition helps protect covered plant species by requiring plant surveys, specific avoidance and minimization practices (e.g., using seclusion fencing), and monitoring.

Following a review of the aquatic avoidance and minimization measures listed in *Table 6-2 of the SCVHP*, 52 specific measures have been determined to be applicable to the proposed Project and incorporated into the description of the proposed Project.

Section 3 Environmental Setting

This section provides an overview of the environmental setting for the proposed Project. Specific details of the individual environmental settings for each of the environmental resource categories are further described in their applicable subsections in Section 4 of this Draft IS/MND.

3.1 Proposed Project Location

The proposed Project is located within, adjacent to, and in the vicinity of the existing Pacheco Reservoir and along State Route 152 (SR-152) from Kaiser-Aetna Road to the site entrance located approximately one mile east of Kaiser-Aetna Road on the north side of SR-152. Pacheco Reservoir is located along North Fork Pacheco Creek and behind North Fork Dam (near 37.05022, -121.291754), roughly equidistant between the cities of Gilroy and Los Banos. The existing reservoir is located approximately one-half mile north of SR-152 in eastern Santa Clara County, California (Figure 3-1 to Figure 3-3).

3.2 Land Uses in the Project Vicinity

Land uses in the proposed Project vicinity include the existing 5,500-acre-foot Pacheco Reservoir and associated North Fork Dam owned by the Pacheco Pass Water District, which is surrounded by private ranchlands used primarily for cattle grazing. Other land uses in the general vicinity of the proposed Project study area include regional parklands, which include the Henry W. Coe State Park (California Department of Parks and Recreation; State Parks), Pacheco State Park (State Parks), and Upper Cottonwood Creek Wildlife Area (CDFW). The proposed Project study area also includes a segment of SR-152 and its associated right-of-way under the jurisdiction of Caltrans and a produce stand located at Bell Station (Bell Station Farmers Market).

3.3 Physical Environment

The proposed Project is located in a rural setting containing few developed areas. Natural ecological communities are present within and in the greater vicinity of the proposed Project study area. Developed areas include SR-152, the North Fork Dam and spillway, the associated Pacheco Reservoir, ranching infrastructure (corrals, fences, ranch houses, etc.) and unpaved ranch roads, residences, and the Bell Station Farmers Market. The private lands surrounding the existing Pacheco Reservoir are classified as grazing land (i.e., Ranchlands as defined in Section 4). In addition, much of the area's private lands are subject to Williamson Act contracts designed to preserve agricultural lands. The natural ecological communities within and surrounding the proposed Project study area include such communities as California annual grassland, blue oak woodland, coast live oak woodland, valley oak woodland, California bay forest, California

sycamore woodland, Goodding's willow-red willow riparian woodland, California bay forest, foothill pine woodland, California buckeye groves, California sagebrush scrub, holly leaf cherry-toyon-greenbark ceanothus chaparral, reservoir (open water/seasonally dry lake bed), seasonal wetlands, and riparian wetlands. Figure 3-1 to Figure 3-3 show existing views of the proposed Project study area.

Figure 3-1: Photo Showing Existing Views of Project Study Area; Upstream View Illustrating Pacheco Reservoir and Access Route

Figure 3-2: Photo Showing Existing Views of Project Study Area and Pacheco Reservoir Drawdown; Looking South

**Figure 3-3: Photo Showing Existing Views of Project Study Area;
Looking Northwest Across Pacheco Reservoir**

Section 4 Environmental Evaluation

Initial Study Checklist

In accordance with *Appendix G of the CEQA Guidelines*, Valley Water has evaluated the proposed Project's potential environmental effects using the enclosed environmental checklist form. What follows is a summary of the proposed Project and a discussion of potential environmental resources effects by environmental resources categories.

Environmental Checklist Form	
1. Project Title	Design Level Geotechnical Investigations for the Pacheco Reservoir Expansion Project
2. Lead Agency Name and Address	Santa Clara Valley Water District (Valley Water) 5750 Almaden Expressway San Jose CA 95118
3. Contact Person and Phone Number	Todd Sexauer, Senior Environmental Planner (408) 630-3149
4. Project Location	The proposed project is located within, adjacent to, and in the vicinity of the existing Pacheco Reservoir, and along State Route 152 (SR-152) from Kaiser-Aetna Road to the site entrance located approximately one mile east of Kaiser-Aetna Road on the north side of SR-152.
5. Project Sponsor's Name and Address	Santa Clara Valley Water District 5750 Almaden Expressway San Jose CA 95118
6. General Plan Designation	Ranchlands and Roadside Services
7. Zoning	Agricultural Ranchland and Roadside Services
8. Description of the Project	Conduct Design Level Geotechnical Investigations (geotechnical borings, test pits, electrical resistivity surveys, and seismic refraction surveys) in support of the Pacheco Reservoir Expansion Project design.
9. Surrounding Land Uses and Setting	The surrounding land uses are dominated by Ranchlands and Regional Park lands.
10. Other public agencies whose approval is required	• California Department of Fish and Wildlife – Section 1602 Lake and Streambed Alteration Agreement • Regional Water Quality Control Board – Section 401 Water Quality Certification • U.S. Army Corps of Engineers – Section 404 Nationwide Permit 6 (Survey Activities) • California Department of Transportation (District 4) – Encroachment Permit • Santa Clara Valley Habitat Agency – Compliance Package Approval
11. Have California Native American tribes traditionally and culturally affiliated with	The Muwekma Ohlone Tribe and the Tamien Nation were notified of the proposed Project by Valley Water via Email and the U.S. Postal Service on October 26, 2023, pursuant to Public Resources Code Section 21080.3.1. No request for consultation was received by Valley Water from either the Muwekma Ohlone Tribe or the Tamien Nation by November 25, 2023, pursuant to Public Resources Code Section 21080.3.1. In

Environmental Checklist Form	
requested consultation pursuant to Public Resources Code Section 21080.3.1	consultation on October 26, 2023, due to their history of consulting with Valley Water on the Pacheco Reservoir Expansion Project. Since no response we received, Valley Water reached out again to the Amah Mutsun via Email on January 24, 2024, via text message on January 29, 2024, and again via Email on February 21, 2024. The Amah Mutsun Tribal Band responded in a comment letter dated March 21, 2024, requesting an informal consultation. Valley Water sent a response letter to the Amah Mutsun Land Trust and Amah Mutsun Tribal Band on April 16, 2024, and held a virtual meeting with the Amah Mutsun Tribal Band on April 24, 2024. The details of this consultation, which has concluded, are addressed in Section 4.18 of this IS/MND.

Environmental Factors Potentially Affected

As summarized in the following table and discussed in the following pages, the proposed Project, including the incorporation of best management practices (BMPs) and avoidance and minimization measures (AMMs), as described in Section 2, could still have significant effects on Biological Resources, Hazards and Hazardous Materials, Noise, Transportation, and Wildfire Resources, which would require mitigation. For those impacts, the analysis identifies mitigation measures that would avoid and/or reduce potentially significant impacts to less-than-significant levels, consistent with *CEQA Guidelines* §15070. With the incorporation of these identified mitigation measures, any impacts associated with the proposed Project would be reduced to less than significant levels and Valley Water concludes that an Environmental Impact Report is not required to be prepared. Subsection 4.21, Mandatory Findings of Significance, at the end of this Section 4, provides a quick summary of BMPs, AMMs, and prescribed mitigation measures for the implementation of the proposed Project.

Environmental Resources with Mitigation Evaluated in this IS/MND					
☐	Aesthetics	☐	Agriculture and Forestry Resources	☐	Air Quality
☒	Biological Resources	☐	Cultural Resources	☐	Energy
☐	Geology and Soils	☐	Greenhouse Gas Emissions	☒	Hazards and Hazardous Materials
☐	Hydrology and Water Quality	☐	Land Use and Planning	☐	Mineral Resources
☒	Noise	☐	Population and Housing	☐	Public Services
☐	Recreation	☒	Transportation	☐	Tribal Cultural Resources
☐	Utilities and Service Systems	☒	Wildfire	☒	Mandatory Findings of Significance

Determination

On the basis of this initial evaluation:

I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.	☐
I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.	☒
I find that the proposed project MAY have a significant effect on the environment and an ENVIRONMENTAL IMPACT REPORT is required.	☐
I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT (EIR) is required, but it must analyze only the effects that remain to be addressed.	☐
I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.	☐

DocuSigned by:
Todd Sexauer
0CCC82B9F210489...

Signature

6/12/2024

Date

Todd Sexauer
Senior Environnemental Planner
Santa Clara Valley Water District

4.1 Aesthetics

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c. In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

4.1.1 Environmental Setting

Existing Visual Character

The proposed Project study area for aesthetics is located within the central portion of California's Diablo Range, primarily in the upper Pacheco Creek watershed between the cities of Gilroy and Santa Nella. The landscape is characterized visually by a vast network of rugged ridgelines separated by sharp slopes angling downward into ravines, where some intermittent streams drain into the existing Pacheco Reservoir. The proposed Project study area is moderately forested, primarily by oak woodlands, along with chapparal scrub, grasslands, and riparian vegetation associated with intermittent streams.

Development throughout the proposed Project study area is minimal and either concentrated along the State Route 152 (SR-152) corridor or in locations where it is not prominently visible from public roads. Large private land holdings, mostly ranchlands, are located within and adjacent to the proposed Project study area, and fences, livestock pens, and similar equipment are occasionally visible in views along both SR-152 and Kaiser-Aetna Road. With the exception of a single parcel of state park land just north of the Kaiser-Aetna Road intersection with SR-152, Henry W. Coe State Park is located approximately 3.5 miles northwest of the proposed Project study area. Most other developments in the proposed Project study area, aside from North Fork Dam and Pacheco Reservoir, are along SR-152, which is generally aligned with the proposed Project

study area's southern extent. Land uses there include rural residences and ranches, and limited roadside services (i.e., Bell Station Farmers Market).

A high degree of natural harmony is visible in views of the proposed Project study area. Outside of the Kaiser-Aetna Road and SR-152 corridors, landscapes appear largely intact and human developments or other interventions are generally minimal, if visible at all. As a result of the concentration of built features within the roadway corridors, there is generally a high degree of organization of built features in the proposed Project study area as well. Where visible, these features appear at a consistent scale and are subordinate to the broader natural landscape. Aside from a fleeting view of the existing North Fork Dam and other structures from SR-152 and of associated infrastructure in limited views elsewhere, built environment features as they currently exist are not broadly visible in any public views.

4.1.2 Regulatory Setting

Federal Laws, Regulations, and Policies

There are no federal laws, regulations, plans, or policies pertaining to aesthetics that are applicable to the proposed Project.

State Laws, Regulations, and Policies

State scenic highways are routes that have been officially designated as such by California Department of Transportation (Caltrans) (Caltrans 2023). "Scenic resources" in the context of state scenic highways are the natural and built features that contribute to the scenic value of the roadway corridor and that are identified in the Caltrans Corridor Protection Program, which enables official designation as a state scenic highway. An eligible state highway becomes officially designated through a process in which the local governing body applies to Caltrans for scenic highway approval, adopts a Corridor Protection Program, and receives notification that the highway has been Officially Designated a state scenic highway by the Caltrans Director (Caltrans 2023).

The segment of SR-152 located within Santa Clara County that passes by the proposed Project study area is listed as an eligible state scenic highway but is not officially designated as such (Caltrans 2023). For this segment of SR-152, no application for scenic highway approval has been made, and no Corridor Protection Program has been developed. The nearest officially designated state scenic highway to the proposed Project study area is a segment of SR-152 within Merced County from the Merced County line with Santa Clara County to Interstate 5. This officially designated segment of SR-152 is located outside of the proposed Project study area.

Regional and Local Laws, Regulations, and Policies

The Santa Clara County General Plan (General Plan), 1995–2010 (Santa Clara County 1994) lists strategies and policies related to scenic resources in its Parks and Recreation and Resource Conservation chapters. See Table 4.1-1. for a list of applicable General Plan policies and strategies.

In addition, its Regional Parks and Scenic Highways Map Element (Santa Clara County 2008) has been updated. Existing parks and trails identified in the General Plan, which are located in the proposed Project vicinity, are considered scenic resources. Parks and trails described as "proposed" in the Regional Parks and Scenic Highways Map would also be considered scenic resources if they existed; however, no formal plans for such parks have been proposed.

Table 4.1-1: Santa Clara County General Plan Scenic Policies and Strategies

Parks and Recreation	
Strategy #2: Protect Scenic Highway Corridors	
Policy No.	**Policy**
C-PR 37	The natural scenery along many of Santa Clara County's highways should be protected from land uses and other activities which would diminish its aesthetic beauty.
C-PR 39	The visual integrity of the scenic gateways to the South County (Pacheco Pass, Hecker Pass, U.S. Route 101 south of Gilroy, and a Coyote greenbelt area north of Morgan Hill) should be protected.
Resource Conservation	
Strategy #2: Minimize Development Impacts on Significant Scenic Resources	
C-RC 57	The scenic and aesthetic qualities of both the natural and built environments should be preserved and enhanced for their importance to the overall quality of life for Santa Clara County.
C-RC 60	Hillsides, ridgelines, scenic transportation corridors, major county entryways, and other areas designated as being of special scenic significance should receive additional consideration and protections due to their prominence, visibility, or symbolic value.
C-RC 61	Public and private development and infrastructure located in areas of special scenic significance should not create major, lasting adverse visual impacts.

Source: County of Santa Clara, 1994.

4.1.3 Discussion

a. Less than Significant Impact. Scenic vistas refer to expansive, elevated, sustained, and/or long-distance views that afford unobstructed visibility of a noticeably vivid landscape or a landscape of distinct visual quality, character, or interest. Vista views of areas of high visual quality are often designated as scenic or vista viewpoints and identified as such along roadways or trails.

According to the General Plan and the California Scenic Highway Program, no scenic vistas have been specifically identified within or near the proposed Project study area within Santa Clara County. However, Parks and Recreation Policy No. C-PR 39 states, "The visual integrity of the scenic gateways to the South County (Pacheco Pass, Hecker Pass, U.S. Route 101 (US-101) south of Gilroy, and a Coyote greenbelt area north of Morgan Hill) should be protected." Although not specifically stated in Policy C-PR 39, Pacheco Pass could be considered a scenic vista because it is called out as a scenic gateway.

Within the proposed Project study area in Santa Clara County, only a small number of geotechnical borings would occur within a public viewshed along the SR-152 corridor. Approximately 12 geotechnical borings would occur within or near the SR-152 corridor and

would be visible to viewers traveling on SR-152 only during drilling when the equipment is in place (see Figures 2-3d and 2-3e in Section 2). Impacts associated with the proposed geotechnical borings visible along the SR-152 corridor within the proposed Project study area would be temporary in nature consisting of borings that would be immediately backfilled upon completion. Any impacts to scenic vistas from implementation of the proposed Project would be less than significant due to their temporary nature and small impact footprint.

b. Less than Significant Impact. There are no designated state scenic highways within the proposed Project study area that would be affected by the proposed Project. As discussed above, the nearest segment of SR-152 that is officially designated as a state scenic highway is several miles east of the proposed Project Study area.

An estimated 8 tree limbs, 11 trees, and 1 standing dead tree snag would require removal to accommodate equipment access to 7 of the initial boring locations within the proposed Project study area. Approximately 6 tree limbs would require trimming, and 14 trees would require removal for access if the following 5 of 30 supplemental boring locations are drilled (S-12, S-14, S-15, S-16, and S-18). In addition, up to 3 additional trees may be identified for trimming and up to 5 additional trees may be identified for removal in response to unforeseen circumstances requiring their trimming or removal for access. None of the trees proposed for removal would be visible from SR-152 or other viewpoints. Figure 4.1-1 shows the 12 locations of the trees proposed for trimming and removal within the proposed Project study area. Figure 4.1-1 also shows the areas within and near the proposed Project study area that would be visible to viewers traveling along SR-152 within the proposed Project study area. None of the trees to be removed (up to 30) or trimmed (up to 17) including those at the 7 planned borings and 5 supplemental borings would be visible from SR-152 or other public viewpoints.

The General Plan includes strategies and policies to protect the visual quality of public views as part of Scenic Resources within the Resource Conservation Chapter. To preserve and enhance the scenic values of both natural and built environments, Strategy #2 provides direction to Minimize Development Impacts on Significant Scenic Resources. The proposed Project would be consistent with the policies that are applicable. Considerations have been made for Pacheco Pass east of the proposed Project study area, which includes an eligible state scenic highway and is a major county entryway (Policy C-RC 60); geotechnical investigations proposed within an area of special scenic significance, namely SR-152, would not create major, lasting adverse visual impacts (Policy C-RC 61) because they would be temporary activities. In addition, there would be no substantial damage to the natural scenery along SR-152 from the proposed Project that would diminish its aesthetic beauty (Policy C-PR 37); the visual integrity of scenic gateways to the South County, which includes Pacheco Pass, would not be adversely affected (Policy C-PR 39).

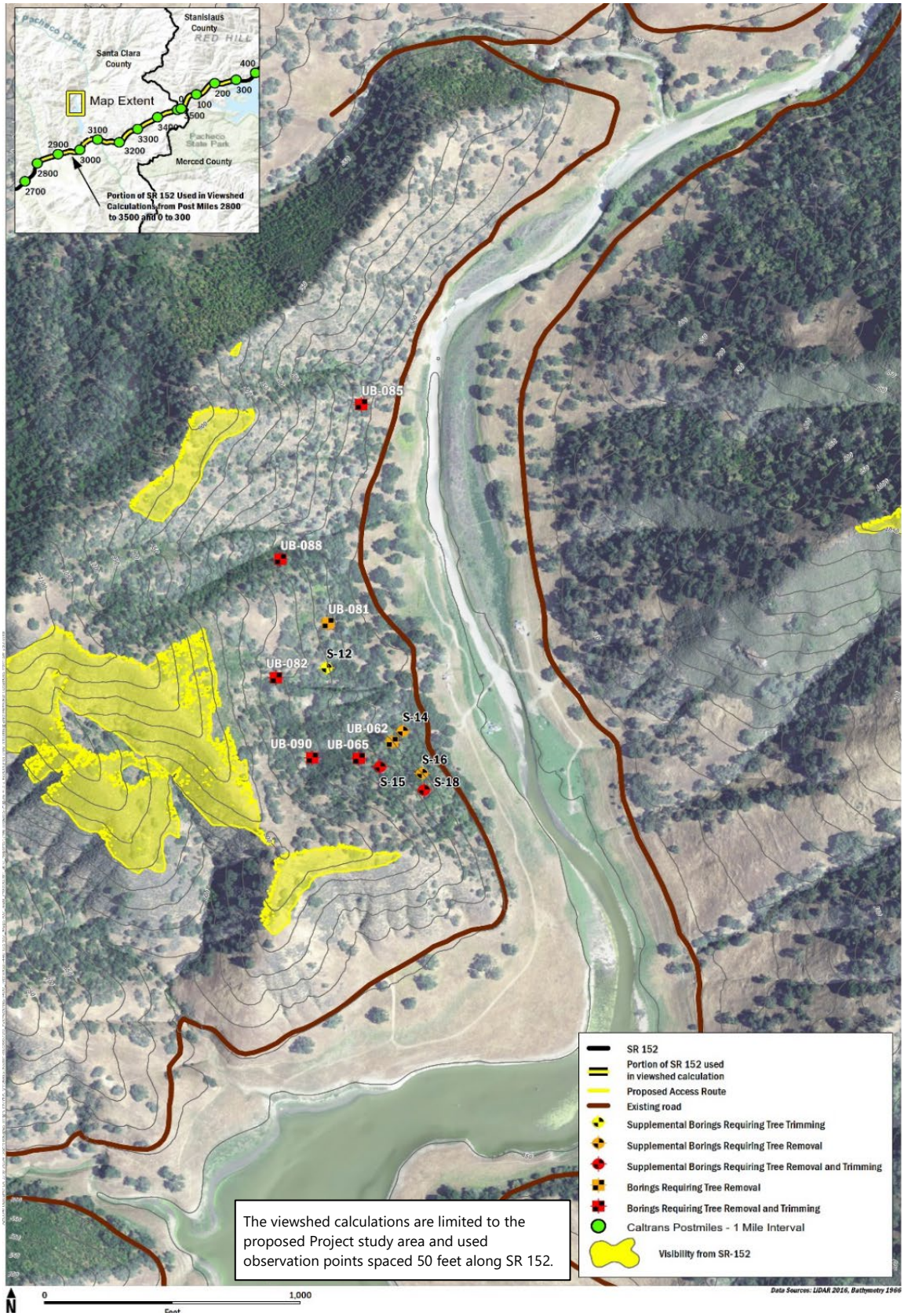


Figure 4.1-1: Visibility of Tree Trimming and Removal Locations from SR-152

Under the proposed Project, all proposed geotechnical investigations would occur within Santa Clara County. None of the proposed geotechnical investigations occurring within Santa Clara County would be visible from the designated scenic highway segments of SR-152 located within Merced County, which is located several miles east of the proposed Project study area. Any impacts would be temporary in nature with a small footprint, and the geotechnical investigations would not impact trees, rock outcroppings, or historic buildings within or adjacent to the officially designated state scenic highway. Therefore, any impacts would be less than significant.

c. Less Than Significant Impact. The proposed Project proposes geotechnical investigations in support of the Pacheco Reservoir Expansion Project design in a nonurbanized area. Approximately 12 geotechnical borings would occur within or near the SR-152 corridor (see Figures 2-2d and 2-2e). In addition, impacts associated with the proposed geotechnical investigations, consisting of borings and test pits that would be immediately backfilled upon completion, would be temporary in nature. None of the trees or tree limbs that could be removed would be visible from SR-152 or other public viewsheds (see Figure 4.1-1). Also see the discussion under "a" above. Therefore, any impacts to the existing visual character of the proposed Project area would be less than significant. Because the proposed Project would not substantially degrade the existing visual character or quality of public views of the site and its surroundings, these impacts would be considered less than significant.

d. Less than Significant Impact. With the exception of two bore locations within the right-of-way of SR-152 (R-20 001, R-20 003), the proposed Project would not include work that would require a new source of light or involve any reflective equipment that would produce a significant source of glare in the area. The proposed nighttime work at the two bore locations (R-20 001, R-20 003) within the SR-152 right-of-way would occur between the hours of 8 p.m. and 4 a.m. and 10 p.m. and 7 a.m., respectively, for a period of up to 3 to 4 nights at each location. All remaining work would be conducted between the hours of 7 a.m. and 6 p.m., Monday through Friday, and between 9 a.m. and 4 p.m. on Saturday. Because the proposed nighttime lighting associated with the two borings within the SR-152 right-of-way would be temporary, only occurring over a period of up to 3 to 4 nights at each location, and focused only on the work area, the proposed Project would not create a new substantial source of light or glare that would adversely affect day or nighttime views. Therefore, the impact would be less than significant.

4.1.4 Best Management Practices

No BMPs are applicable.

4.1.5 Avoidance and Minimization Measures

No AMMs are applicable.

4.1.6 Mitigation Measures

No mitigation measures are required.

4.2 Agriculture and Forestry Resources

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

4.2.1 Environmental Setting

Agricultural Resources

Santa Clara County encompasses over 835,000 acres with nearly half identified as agricultural land by the California Department of Conservation, Division of Land Resource Protection. Approximately one-quarter of that land is under Williamson Act contracts. Most of the proposed Project study area is zoned Agricultural Ranchlands as part of a Rural Base District. Santa Clara Valley is typically divided into two geographic regions: North Valley and South Valley. The remainder of the proposed Project study area is associated with existing infrastructure (e.g., SR-152). The North Valley is heavily urbanized while a majority of Santa Clara County's cultivated

agricultural land is in the South Valley (Santa Clara County 1994). Agricultural activities range from vegetable crops, fruit and nut crops, field crops, nursey crops, seed crops, livestock, and poultry (Santa Clara County 2022). Water supply to support agricultural activities is sourced through groundwater, local and imported surface water (i.e., Central Valley Project and State Water Project), and recycled water (Valley Water 2020).

The categories of Prime Farmland, Farmland of Statewide Importance, and Unique Farmland comprise "agricultural land" for environmental review purposes under CEQA, as defined by California Public Resources Code §21060.1. According to the Santa Clara County Important Farmland 2020 mapping (California Department of Conservation 2023a), the proposed Project study area is dominated by grazing land, and no Prime Farmland, Farmland of Statewide Importance, or Unique Farmland is mapped within the proposed Project study area (see Figure 4.2-1).

Prime Farmland is land with the best combination of physical and chemical features able to sustain long-term agricultural production. This farmland has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Additionally, land must have been used at some point in time for irrigated agricultural production during the four years prior to the mapping date.

Farmland of Statewide Importance is land similar to Prime Farmland, but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some point over the previous four years prior to the mapping date.

Unique Farmland is land of lesser quality soils used for the production of the state's leading agricultural crops. This farmland is usually irrigated but may include non-irrigated orchards or vineyards found in some climatic zones of California. Additionally, land must have been cropped at some point over the previous four years prior to the mapping date.

Grazing Land, defined as land that contains existing vegetation suitable for the grazing of livestock during some portion of the year, is prevalent in Santa Clara County. While grazing land is considered agricultural land, it is not considered Prime, Unique, or Farmland of Statewide Importance.

Other Land is land not included in any other mapping category. Common examples include low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry, or aquaculture facilities; strip mines and borrow pits; and water bodies smaller than forty acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land.

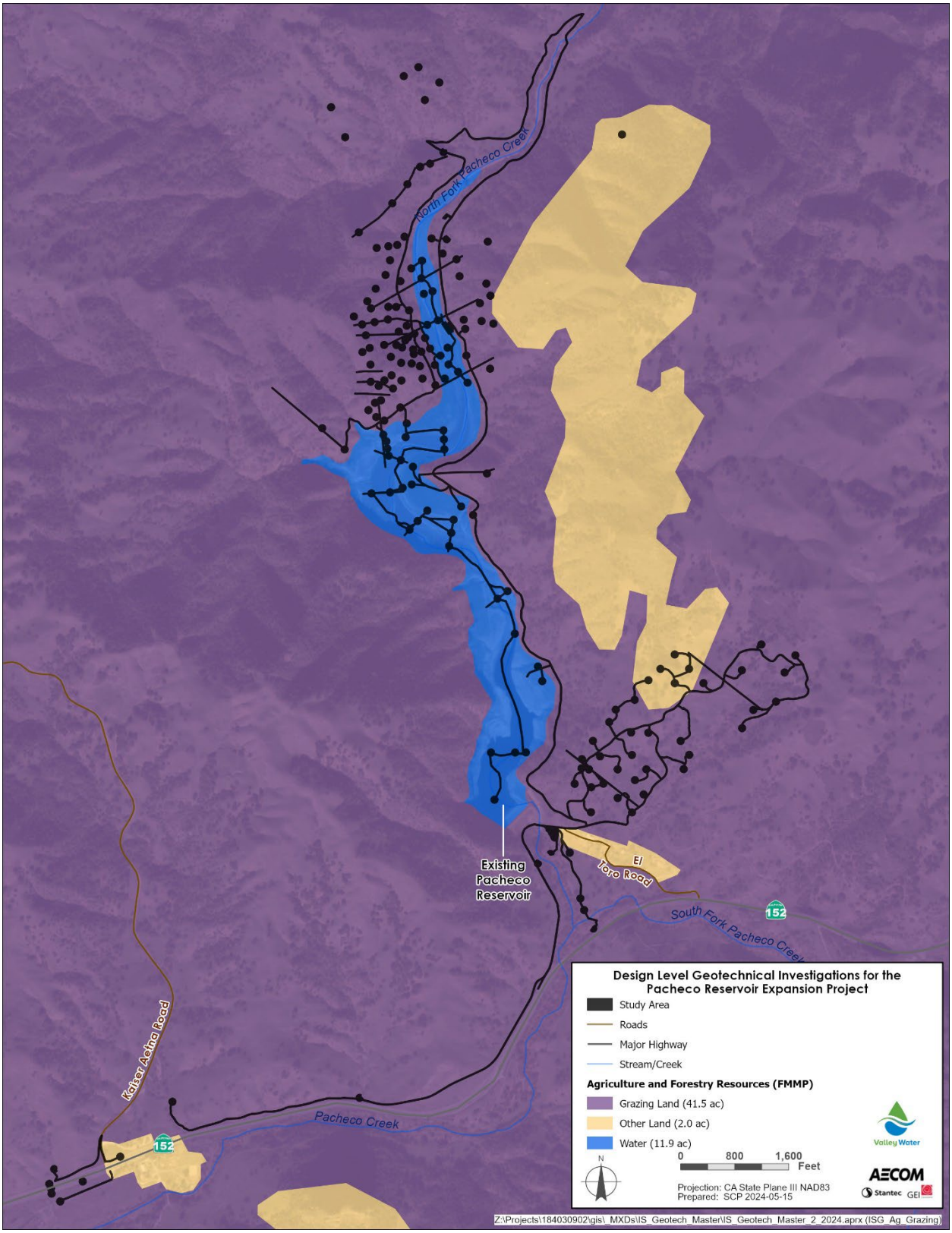


Figure 4.2-1: Farmland Mapping Within the Proposed Project Study Area

4.2.2 Regulatory Setting

Federal Laws, Regulations and Policies

There are no known federal laws, regulations, or policies that govern agriculture resources in the proposed Project study area that are applicable to the proposed Project.

State Laws, Regulations, and Policies

California Important Farmland Inventory System and Farmland Mapping and Monitoring Program

The Department of Conservation's Office of Land Conservation maintains a statewide inventory of farmlands, which are mapped by the Department's Division of Land Resource Protection as part of the Farmland Mapping and Monitoring Program. The Farmland Mapping and Monitoring Program was established by the state in 1982 to continue the Important Farmland mapping efforts begun in 1975 by the U.S. Soil Conservation Service (now called the Natural Resources Conservation Service). The intent of the U.S. Soil Conservation Service was to produce agricultural-resource maps based on soil quality and land use across the nation. As part of the nationwide effort to map agricultural land uses, the U.S. Soil Conservation Service/Natural Resources Conservation Service developed a series of definitions known as Land Inventory and Monitoring criteria. These criteria classify the land's suitability for agricultural production. Suitability includes both the physical and chemical characteristics of soils and the actual land use.

The designations for Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance are defined together under the terms "agricultural land" in CEQA (Public Resources Code §21060.1) and *Appendix G of the CEQA Guidelines*.

Williamson Act Contracts

The California Land Conservation Act of 1965, also known as the Williamson Act, aims to preserve the maximum amount of agricultural land necessary to the conservation of the state's economic resources by having local governments enter into contracts with private landowners. Lands subject to Williamson Act contracts are illustrated in Figure 4.2-2. The total acreage of Williamson Act contracts within Santa Clara County is 230,993. Within the proposed Project study area, Santa Clara County has less than 50 acres of land under Williamson Act contracts. As illustrated in Figure 4.2-2, most lands under Williamson Act contracts within the proposed Project study area are located within the North Fork Pacheco Creek watershed. Lands with Williamson Act contracts are not found within the existing Pacheco Pass Water District property encompassing North Fork Dam and Pacheco Reservoir; these are publicly owned lands that are no longer used for grazing or other agricultural purposes.

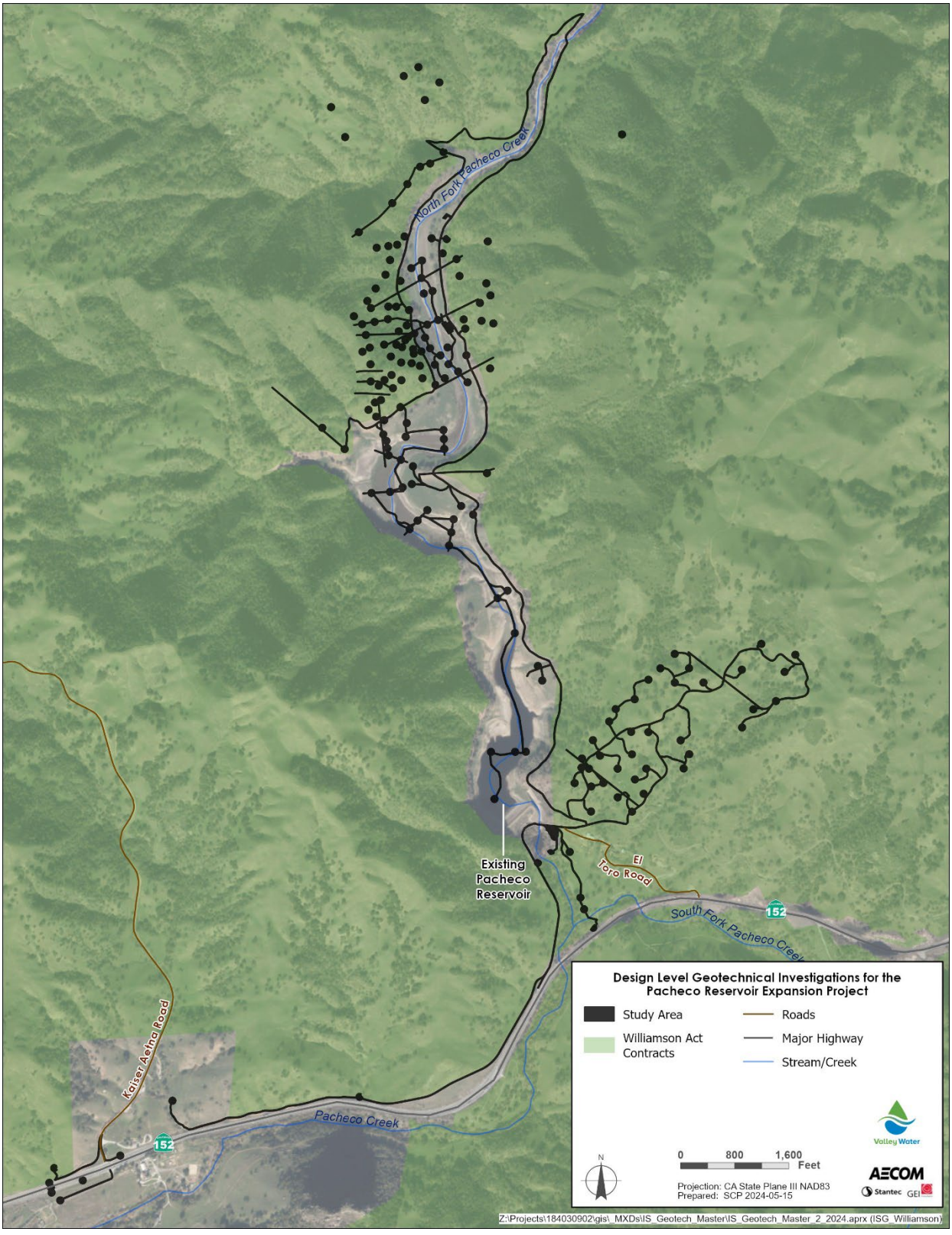


Figure 4.2-2: Williamson Act Contract Lands Within the Proposed Project Study Area

Regional and Local Laws, Regulations, and Policies

Santa Clara County General Plan

The Agriculture and Agricultural Resources section of the General Plan (1994) identifies strategies and policies to manage agriculture and forestry resources in the County. Specific policies in the section applicable to the proposed Project include:

Policy C-RC 37: Agriculture should be encouraged, and agricultural lands retained for their vital contributions to the overall economy, quality of life, and for their functional importance to Santa Clara County: (a) local food production capability; (b) productive use land not intended for urban development; and (c) protection of public health and safety.

Policy C-RC 40: Long term land use stability and dependability to preserve agriculture shall be maintained and enhanced by the following general means: (a) limiting the loss of valuable farmland from unnecessary and/or premature urban expansion and development; (b) regulating non-agricultural uses in agricultural areas, and their intensity and impacts on adjacent lands; (c) maintaining agriculturally-viable parcel sizes; and (d) minimizing conflicts between adjacent agricultural and non-agricultural land uses, through such means as right-to-farm legislation and mediation of nuisance claims.

Forestry Resources

The following classifications related to forest land, timberland, or timberland zoned Timberland Production were used to determine if any of these lands occur within or adjacent to the proposed Project study area described in Section 2.

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

Public Resources Code §4526 defines timberland as land, other than land owned by the federal government and land designated by the board as experimental forest land, which is available for, and capable of, growing a crop of trees of any commercial species used to produce lumber and other forest products, including Christmas trees. Commercial species shall be determined by the board on a district basis after consultation with the district committees and others.

California Government Code §51104(g) defines timberland zoned Timberland Production as an area which has been zoned pursuant to Section 51112 or 51113 and is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses, as defined in subdivision (h).

No lands subject to these forestry resource classifications occur within or adjacent to the proposed Project study area. Following consultation with the California Department of Forestry and Fire Protection (CAL FIRE), it was confirmed that no land is classified as forest land, timberland, or timberland zone within the proposed Project study area (CAL FIRE, Personal Communication 2021).

4.2.3 Discussion

In determining whether impacts to agricultural resources are significant environmental effects, Valley Water has relied on the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as a model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, Valley Water has relied on information compiled by the CAL FIRE regarding the state's inventory of forest land, including the Forest and Range Assessment Project, the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.

a. No Impact. The proposed Project study area contains primarily Grazing Land (Figure 4.2-1). No Prime Farmland, Unique Farmland, or Farmland of Statewide Importance is located within or in the vicinity of the proposed Project study area. Therefore, no conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance would occur, resulting in no impact from implementation of the proposed Project.

b. No Impact. According to the Santa Clara County Williamson Act Contract Map 2022 (California Department of Conservation 2023b), the entire proposed Project study area is under Williamson Act contracts except for the Pacheco Pass Water District property (i.e., Pacheco Reservoir and North Fork Dam), land within the Caltrans right-of-way, and the area at Bell Station at SR-152. The proposed Project study area is mapped primarily as Ranchlands. The proposed geotechnical investigations would be temporary in nature and not conflict with the Agricultural Ranchland zoning or the existing Williamson Act contracts. As a result, the proposed Project would have no impact on land zoned for agricultural use or land under a Williamson Act contract.

c. No Impact. The proposed Project study area is located on lands dominated by Ranchlands within the unincorporated Santa Clara County. No forest land as defined in Public Resources Code §4526 or timberland as zoned by Government Code §51104(g) is located within the proposed Project study area. Therefore, no impact would occur to forest land or timberland.

d. No Impact. No forest land occurs within the proposed Project study area or in the immediate vicinity. Although the site contains various species of tree cover requiring some removal and pruning for equipment access (see Appendix A), these species of trees are not considered to be commercial species under the California Forest Practices Rules and would not be considered forest land (CAL FIRE 2023). Therefore, no loss of forest land or conversion of forest land would occur. No impact to forest land would result from proposed Project implementation.

e. No Impact. See discussions under "a," "c," and "d." The proposed Project would implement geotechnical investigations that are temporary in nature and would not result in the conversion of farmland to non-agricultural use or the conversion of forest land to non-forest use. Therefore, no impact would occur to agricultural or forestry resources.

4.2.4 Best Management Practices

No BMPs are applicable.

4.2.5 Avoidance and Minimization Measures

No AMMs are applicable.

4.2.6 Mitigation Measures

No mitigation measures are required.

4.3 Air Quality

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c. Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

4.3.1 Environmental Setting

The proposed Project study area is located within the boundaries the San Francisco Bay Area Air Basin (SFBAAB). The SFBAAB includes Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara Counties; the western portion of Solano County; and the southern portion of Sonoma County.

The ambient concentrations of air pollutant emissions are determined by the number of emissions released by the sources of air pollutants and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and sunlight. Existing air quality conditions in the proposed Project study area are determined by such natural factors as topography, meteorology, and climate, in addition to the emissions released by existing air pollutants sources, as discussed separately in the following sections.

Climate, Meteorology, and Topography

San Francisco Bay Area Air Basin

Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants. The climate of the SFBAAB is determined largely by a high-pressure system that is often present over the eastern Pacific Ocean. High-pressure systems are characterized by an upper layer of dry air that warms as it descends, restricting the mobility of cooler marine-influenced air near the ground surface, resulting in subsidence inversions. During summer and fall, locally generated emissions can, under the restraining influences of topography and subsidence

inversions, cause conditions that are conducive to the formation of photochemical pollutants, such as ozone and secondary particulates (e.g., nitrates and sulfates).

Eleven climatological subregions are located within the SFBAAB, including the Santa Clara Valley, the closest defined subregion to the west of the proposed Project study area. Sparsely populated areas, such as that of the landscape surrounding the proposed Project study area, are excluded from subregional designations; therefore, the following discussion describes the meteorological conditions of the Santa Clara Valley subregion. The Santa Clara Valley is bounded by San Francisco Bay to the north and by mountains to the east, south, and west. Temperatures are warm on summer days and cool on summer nights, and winter temperatures are mild. At the northern end of the valley, mean maximum temperatures are in the low-80s during the summer and high 50s in the winter; mean minimum temperatures range from the high 50s in the summer to the low 40s in the winter (degrees Fahrenheit [°F]). Further inland, where the moderating effect of the San Francisco Bay is not as strong, temperature extremes are greater. Winds in the valley are greatly influenced by the terrain, resulting in a prevailing flow that roughly parallels the valley's northwest-southeast axis. A north-northwesterly sea breeze flows through the valley during the afternoon and early evening, and a light south-southeasterly drainage flow occurs during the late evening and early morning. In the summer, the southern end of the valley sometimes becomes a "convergence zone," when air flowing from Monterey Bay gets channeled northward into the southern end of the valley and meets with the prevailing north-northwesterly winds. Wind speeds are greatest in the spring and summer and weakest in the fall and winter. Nighttime and early morning hours frequently have calm winds in all seasons, while summer afternoons and evenings are quite breezy. Strong winds are rare, associated mostly with the occasional winter storm.

Criteria Air Pollutants

Concentrations of emissions from criteria air pollutants are used to indicate the quality of the ambient air. A brief description of key criteria air pollutants in the SFBAAB and their health effects is provided in the following sections. Criteria air pollutants include ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter with an aerodynamic diameter of 10 micrometers or less (PM_{10}), respirable particulate matter with an aerodynamic diameter of 2.5 micrometers or less ($PM_{2.5}$), and lead. However, for the purposes of this analysis, criteria air pollutants of primary concern due to their nonattainment status include ozone (and ozone precursors) and particulate matter. Santa Clara County's attainment status under the California ambient air quality standards (CAAQS) and national ambient air quality standards (NAAQS) is shown in Table 4.3-1.

Table 4.3-1: Attainment Status Designations for Santa Clara County		
Pollutant	**NAAQS**	**CAAQS**
Ozone	Attainment (1-hour)[1]	Nonattainment (1-hour) Classification[2]
	Nonattainment (8-hour)[3] Classification – Marginal	Nonattainment (8-hour)
	Nonattainment (8-hour)[3] Classification – Marginal	Nonattainment (24-hour)
Respirable particulate matter (PM_{10})	Attainment (24-hour)	Nonattainment (24-hour)
	Attainment (24-hour)	Nonattainment (Annual)
Fine particulate matter ($PM_{2.5}$)	Attainment (24-hour)	(No State Standard for 24-Hour)
	Attainment (Annual)	Nonattainment (Annual)
Carbon monoxide (CO)	Attainment (Maintenance) (1-hour)	Attainment (1-hour)
	Attainment (Maintenance) (8-hour)	Attainment (8-hour)
Nitrogen dioxide (NO_2)	Attainment (Maintenance) (1-hour)	Attainment (1-hour)
	Attainment (Maintenance) (Annual)	Attainment (Annual)
Sulfur dioxide (SO_2)[4]	Attainment (1-Hour)	Attainment (1-hour)
	Attainment (3-month rolling avg.)	Attainment (24-hour)
Lead (Particulate)	Attainment (3-month rolling avg.)	Attainment (30-day average)

Notes:

NAAQS = national ambient air quality standards; CAAQS = California ambient air quality standards

1. Air Quality meets federal 1-hour Ozone standard (77 FR 64036). EPA revoked this standard, but some associated requirements still apply.
2. Per Health and Safety Code Section §40921.5(c), the classification is based on 1989–1991 data, and therefore does not change.
3. 2015 Standard.
4. 2010 Standard.

Source: EPA 2023a; CARB 2022.

Ozone

Ozone is a photochemical oxidant (a substance whose oxygen combines chemically with another substance in the presence of sunlight) and the primary component of smog. Ozone is not directly emitted into the air but is formed through complex chemical reactions between precursor emissions of reactive organic compounds (ROG) and oxides of nitrogen (NO_X) in the presence of sunlight. ROG are volatile organic compounds (VOCs) that are photochemically reactive. For the purposes of CEQA analyses, ROG and VOCs are terms used interchangeably and represent the same group of emissions. ROG emissions result primarily from incomplete combustion and the evaporation of chemical solvents and fuels. NO_X are a group of gaseous compounds of nitrogen and oxygen that result from the combustion of fuels. Emissions of the ozone precursors ROG and NO_X have decreased over the past several years because of more stringent motor vehicle standards and cleaner burning fuels. Emissions of ROG and NO_X decreased from 2000 to 2010 and are projected to continue decreasing from 2010 to 2035 (CARB 2013).

Acute health effects of ozone exposure include increased respiratory and pulmonary resistance, cough, pain, shortness of breath, and lung inflammation. Chronic health effects include permeability of respiratory epithelia and possibility of permanent lung impairment (EPA 2023b).

Nitrogen Dioxide

NO_2 is a brownish, highly reactive gas that is present in all urban environments. The major human-made sources of NO_2 are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO_2. The combined emissions of NO and NO_2 are referred to as NO_X and are reported as equivalent NO_2. Because NO_2 is formed and depleted by reactions associated with photochemical smog (ozone), the NO_2 concentration in a geographical area may not be representative of the local sources of NO_X emissions (EPA 2023b).

Acute health effects of exposure to NO_X includes coughing, difficulty breathing, vomiting, headache, eye irritation, chemical pneumonitis, or pulmonary edema, breathing abnormalities, cough, cyanosis, chest pain, rapid heartbeat, and death. Chronic health effects include chronic bronchitis and decreased lung function (EPA 2023b).

Particulate Matter

PM_{10} consists of particulate matter emitted directly into the air, such as fugitive dust, soot, smoke from mobile and stationary sources, construction operations, fires and natural windblown dust, and particulate matter formed in the atmosphere by reaction of gaseous precursors (CARB 2013).

PM_{10} pollution can result in damage to vegetation and is often responsible for much of the haze regarded as smog. In addition, controlled human exposure studies have shown that exposure to elevated levels of PM_{10} causes adverse health effects, especially related to the inhibition of lung functions and an increase in respiratory and cardiovascular afflictions, as well as cancer risks. PM_{10} causes a greater health risk than larger particles because fine particles are too small for the natural filtering process of the human body and can more easily penetrate the defenses of the human respiratory system. Individuals with pre-existing respiratory or cardiovascular disease are especially susceptible to the adverse effects of PM_{10} exposure, as are asthmatic children and the elderly. Children exposed to high concentrations of PM_{10} for prolonged periods exhibit decreased immune function as well. Additionally, associations between long-term exposure to PM_{10} and adverse cognitive effects, such as faster cognitive decline, including memory and attention span loss, are being further examined by health researchers.

Because $PM_{2.5}$ is smaller than PM_{10}, it can more deeply penetrate the human body through inhalation, allowing many chemicals harmful to human health to be carried to internal organs. Long-term exposure to these particulates can increase the chance of chronic respiratory disease and cause lung damage and irregular heartbeat. Short-term exposure can aggravate respiratory illnesses such as bronchitis and asthma and cause heart attacks and arrhythmias in people with heart disease. Additionally, an estimated 9,000 people die prematurely each year in California as a result of $PM_{2.5}$ exposure (CARB 2013). A safe threshold for $PM_{2.5}$ has not been established and research indicates that health effects exist at low concentrations.

Toxic Air Contaminants

Toxic air contaminants (TACs) are a defined set of airborne pollutants that may pose a present or potential hazard to human health. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations.

A wide range of sources, from industrial plants to motor vehicles, emit TACs. The health effects associated with TACs are quite diverse and generally are assessed locally, rather than regionally. TACs can cause long-term health effects, such as cancer, birth defects, neurological damage, asthma, bronchitis, or genetic damage, or short-term acute effects, such as eye watering, respiratory irritation (a cough), running nose, throat pain, and headaches.

For evaluation purposes, TACs are separated into carcinogens and noncarcinogens based on the nature of the physiological effects associated with exposure to the pollutant. Carcinogens are assumed to have no safe threshold below which health impacts would not occur. This contrasts with criteria air pollutants, for which acceptable levels of exposure can be determined and for which the ambient standards have been established (Table 4.3-2). Cancer risk from TACs is expressed as excess cancer cases per 1 million exposed individuals, typically over a lifetime of exposure.

The U.S. Environmental Protection Agency (EPA) regulates hazardous air pollutants through its National Emission Standards for Hazardous Air Pollutants. The standards for a particular source category require the maximum degree of emission reduction that EPA determines to be achievable, known as the Maximum Achievable Control Technology standards. These standards are authorized by Section 112 of the 1970, federal Clean Air Act and the regulations are published in 40 CFR Parts 61 and 63.

Sensitive Receptors

A small number of existing sensitive receptors are located near the proposed Project study area. Two residences are located along El Toro Road, southeast of the existing dam, and two rural residences are located south of SR-152, near the intersection with Kaiser-Aetna Road. Additionally, a roadside farmers market (a commercial property) east of the intersection between SR-152 and Kaiser-Aetna Road is treated as a sensitive receptor in this analysis. Refer to Section 4.13-1 through 4.13-4 for identification of each receptor and proximity to proposed activity areas.

Table 4.3-2: National and California Ambient Air Quality Standards

Pollutant	Averaging Time	CAAQS[a,b]	NAAQS[c] Primary[b,d]	NAAQS[c] Secondary[b,e]
Ozone	1-hour	0.09 ppm (180 µg/m^3)	–e	Same as primary standard
	8-hour	0.070 ppm (137 µg/m^3)	0.070 ppm (147 µg/m^3)	Same as primary standard
Carbon monoxide (CO)	1-hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	Same as primary standard
	8-hour	9 ppm[f] (10 mg/m^3)	9 ppm (10 mg/m^3)	Same as primary standard
Nitrogen dioxide (NO_2)	Annual arithmetic mean	0.030 ppm (57 µg/m^3)	53 ppb (100 µg/m^3)	Same as primary standard
	1-hour	0.18 ppm (339 µg/m^3)	100 ppb (188 µg/m^3)	—
	24-hour	0.04 ppm (105 µg/m^3)	—	—
Sulfur dioxide (SO_2)	3-hour	—	—	0.5 ppm (1300 µg/m^3)
	1-hour	0.25 ppm (655 µg/m^3)	75 ppb (196 µg/m^3)	—
Respirable particulate matter (PM_{10})	Annual arithmetic mean	20 µg/m^3	—	Same as primary standard
	24-hour	50 µg/m^3	150 µg/m^3	Same as primary standard
Fine particulate matter ($PM_{2.5}$)	Annual arithmetic mean	12 µg/m^3	12.0 µg/m^3	15.0 µg/m^3
	24-hour	—	35 µg/m^3	Same as primary standard
Lead[f]	Calendar quarter	—	1.5 µg/m^3	Same as primary standard
	30-Day average	1.5 µg/m^3	—	—
	Rolling 3-Month Average	–	0.15 µg/m^3	Same as primary standard
Hydrogen sulfide	1-hour	0.03 ppm (42 µg/m^3)	No national Standards	No national Standards
Sulfates	24-hour	25 µg/m^3	No national Standards	No national Standards
Vinyl chloride[f]	24-hour	0.01 ppm (26 µg/m^3)	No national Standards	No national Standards
Visibility-reducing particulate matter	8-hour	Extinction of 0.23 per km	No national Standards	No national Standards

Notes: CAAQS = California ambient air quality standards; NAAQS = national ambient air quality standards; µg/m^3 = micrograms per cubic meter; km = kilometers; ppb = parts per billion; ppm = parts per million.

a. California standards for ozone, carbon monoxide, SO_2 (1- and 24-hour), NO_2, particulate matter, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

b. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25 degrees Celsius (°C) and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

c. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over three years, is equal to or less than the standard. The PM10 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. The PM2.5 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. Environmental Protection Agency for further clarification and current federal policies.

d. National primary standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

e. National secondary standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

f. The California Air Resources Board has identified lead and vinyl chloride as toxic air contaminants with no threshold of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

Sources: CARB 2016

4.3.2 Regulatory Setting

Air quality in the proposed Project study area is regulated through the efforts of various federal, State, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, planning, policy-making, education, and a variety of programs. The agencies responsible for improving the air quality within the air basins are discussed in the following subsections.

Federal Laws, Regulations, and Policies

The EPA has been charged with implementing national air quality programs. EPA's air quality mandates draw primarily from the Clean Air Act, which was enacted in 1970. The most recent major amendments were made by Congress in 1990. EPA's air quality efforts address both criteria air pollutants and hazardous air pollutants.

Criteria Air Pollutants

The Clean Air Act required EPA to establish NAAQS for 6 common air pollutants found all over the United States referred to as criteria air pollutants and precursors. EPA has established primary and secondary NAAQS for the following criteria air pollutants: ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead. Regulatory updates to the NAAQS have occurred since 2016. The most recent standards for NAAQS and the CAAQS are summarized in Table 4.3-2. Notably, the EPA updated the 8-hour ozone NAAQS in 2015 to 0.070 parts per million (ppm) (EPA 2022). The primary standards protect public health and the secondary standards protect public welfare.

State Laws, Regulations, and Policies

California Air Resources Board

The California Air Resources Board (CARB) is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act. The California Clean Air Act, which was adopted in 1988, required CARB to establish CAAQS (see Table 4.3-2).

Criteria Air Pollutants

CARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above-mentioned federally regulated criteria air pollutants. In most cases the CAAQS are more stringent than the NAAQS. Differences in the standards are generally explained by the health effects studies considered during the standard-setting process and the interpretation of the studies. In addition, the CAAQS incorporate a margin of safety to protect sensitive individuals.

The California Clean Air Act requires that all local air districts in the state endeavor to attain and maintain the CAAQS by the earliest date practical. The California Clean Air Act specifies that local air districts should focus particular attention on reducing the emissions from transportation and

area-wide emission sources. The California Clean Air Act also provides air districts with the authority to regulate indirect sources, such as vehicle movement and residential, commercial, and industrial development.

Toxic Air Contaminants

TACs in California are regulated primarily through the Tanner Air Toxics Act (AB 1807, Chapter 1047, Statutes of 1983) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588, Chapter 1252, Statutes of 1987). AB 1807 sets forth a formal procedure for CARB to designate substances as TACs. Research, public participation, and scientific peer review are required before CARB can designate a substance as a TAC. To date, CARB has identified more than 21 TACs and adopted EPA's list of hazardous air pollutants as TACs. Most recently in 1998, particulate matter exhaust from diesel engines (diesel PM) was added to CARB's list of TACs.

After a TAC is identified, CARB then adopts an airborne toxics control measure for sources that emit that particular TAC. If a safe threshold exists for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If no safe threshold exists, the measure must incorporate best available control technology for toxics to minimize emissions.

The Hot Spots Act requires that existing facilities that emit toxic substances above a specified level prepare an inventory of toxic emissions, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures.

CARB has adopted diesel exhaust control measures and more stringent emissions standards for various transportation-related mobile sources of emissions, including transit buses, and off-road diesel equipment (e.g., tractors, generators). Over time, the replacement of older vehicles will result in a vehicle fleet that produces substantially lower levels of TACs than under current conditions. Mobile-source emissions of TACs (e.g., benzene, 1-3-butadiene, diesel PM) have been reduced significantly over the last decade and will be reduced further in California through a progression of regulatory measures (e.g., Low Emission Vehicle/Clean Fuels and Phase II reformulated gasoline regulations) and control technologies. With the implementation of CARB's Risk Reduction Plan and other regulatory programs, it is estimated that emissions of diesel PM will be less than half of those in 2010 by 2035 (CARB n.d). Adopted regulations are also expected to continue to reduce formaldehyde emissions emitted by cars and light-duty trucks. As emissions are reduced, it is expected that risks associated with exposure to the emissions will also be reduced.

Regional and Local Laws, Regulations, and Policies

Bay Area Air Quality Management District

The Bay Area Air Quality Management District (BAAQMD) maintains and manages air quality conditions in the SFBAAB, including Santa Clara County, through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The clean air strategy of BAAQMD includes the preparation of plans and programs for the attainment of the NAAQS and CAAQS, adoption and enforcement of rules and regulations, and issuance of permits for stationary sources. BAAQMD also inspects stationary

sources, responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements other programs and regulations required by the Clean Air Act and California Clean Air Act.

The California Clean Air Act requires that all local air districts in the state endeavor to achieve and maintain the CAAQS in their region by the earliest practical date. The California Clean Air Act specifies that local air districts should focus attention on reducing the emissions from transportation and area-wide emission sources and provides districts with the authority to regulate indirect sources. To achieve the CAAQS, BAAQMD prepares and updates air quality plans on a regular basis. The air quality plans published by BAAQMD and other local air districts in the state are incorporated into California's State Implementation Plan Strategy and meet Clean Air Act requirements.

BAAQMD also sets thresholds of significance for the purpose of evaluating air quality impacts under CEQA. BAAQMD's air quality thresholds of significance are tied to achieving or maintaining attainment designations with the NAAQS and CAAQS. BAAQMD's project level thresholds, which are scientifically substantiated, are numerical concentrations of criteria air pollutants considered to be protective of human health. Projects that do not exceed thresholds would not contribute to the nonattainment of the CAAQS and subsequently the NAAQS or result in increases in health-related impacts associated with increases in criteria air pollutants or ozone precursors. The most recently adopted thresholds of significance are contained in the 2022 CEQA Thresholds and Guidelines Update (CEQA Guide), used in this analysis and explained further below (BAAQMD 2022). Specifically, and based on the *CEQA Appendix G* questions and adopted BAAQMD thresholds, a Project would result in a significant air quality impact if it would:

- cause daily average equipment-generated criteria air pollutant or precursor emissions to exceed 54 pounds per day (lb/day) for ROG and NO_X, 82 lb/day for PM_{10} exhaust, and 54 lb/day for $PM_{2.5}$ exhaust, or substantially contribute to emission concentrations (e.g., PM_{10}, $PM_{2.5}$) that exceed applicable NAAQS or CAAQS;
- cause daily average long-term criteria air pollutant or precursor emissions to exceed 54 lb/day or 10 tons per year (tons/year) of ROG and NO_X, 82 lb/day or 15 tons/year for PM_{10} exhaust, and 54 lb/day or 10 tons/year for $PM_{2.5}$ exhaust, or substantially contribute to emission concentrations (e.g., PM_{10}, $PM_{2.5}$) that exceed the applicable NAAQS or CAAQS;
- not implement BAAQMD's Basic Construction Mitigation Measures for dust emissions (e.g., PM_{10} and $PM_{2.5}$);
- result in long-term operational local mobile-source CO emissions that would violate or contribute substantially to concentrations that exceed the 1-hour CAAQS of 20 parts per million (ppm) or the 8-hour CAAQS of 9 ppm;
- expose sensitive receptors to a substantial incremental increase in TAC emissions that exceed 10 in one million for carcinogenic risk (i.e., the risk of contracting cancer) and/or a noncarcinogenic hazard index of 1.0 or greater and/or a chronic or acute hazard index of 1; or

- result in other emissions (such as those leading to odors) adversely affecting a substantial number of people (i.e., five confirmed complaints per year averaged over 3 years).

Under BAAQMD's methodology, a determination of consistency with the 2017 Clean Air Plan should demonstrate that a project:

- Supports the primary goals of the 2017 Clean Air Plan,
- Includes applicable control measures from the 2017 Clean Air Plan, and
- Would not disrupt or hinder implementation of any control measures in the 2017 Clean Air Plan.

2017 Clean Air Plan: Spare the Air, Cool the Climate

The most recently adopted air quality plan for the SFBAAB is the 2017 Clean Air Plan, Spare the Air, Cool the Climate (2017 Clean Air Plan). To fulfill State ozone planning requirements, the 2017 control strategy includes all feasible measures to reduce emissions of ozone precursors (ROG and NO_X) and reduce the transport of ozone and its precursors to neighboring air basins. In addition, the 2017 Clean Air Plan builds upon and enhances BAAQMD's efforts to reduce emissions of fine particulate matter (i.e., $PM_{2.5}$) and TACs. The 2017 Clean Air Plan does not include control measures that apply directly to individual development projects. Instead, the control strategy includes measures related to stationary sources, transportation, energy, buildings, agriculture, natural and working lands, waste management, water, and super-greenhouse gas pollutants (BAAQMD 2017).

The 2017 Clean Air Plan focuses on two paramount goals (BAAQMD 2017):

- Protect air quality and health at the regional and local scale by attaining all state and national air quality standards and eliminating disparities among Bay Area communities in cancer health risk from TACs;
- and protect the climate by reducing Bay Area greenhouse gas (GHG) emissions to 40 percent below 1990 levels by 2030, and 80 percent below 1990 levels by 2050.

County of Santa Clara

Santa Clara County General Plan

The General Plan, 1995-2010, was first adopted in 1994 and was updated in 2015 to include the Health and Environmental Justice Update, which includes the Health Element of the General Plan. The Health Element includes several strategies and accompanying policies relating to air quality. The strategies and policies applicable to the proposed Project include the following:

Strategy #1: Strive for air quality improvement through regional and local land use, transportation, and air quality planning.

- Policy HE-G.1 Air quality environmental review. Continue to utilize and comply with the Air District's project- and plan-level thresholds of significance for air pollutants and greenhouse gas emissions.

- Policy HE-G.3 Fleet upgrades. Promote Air District mobile source measures to reduce emissions by accelerating the replacement of older, dirtier vehicles and equipment, and by expanding the use of zero emission and plug-in vehicles.
- Policy HE-G.4 Off-road sources. Encourage mobile source emission reduction from off-road equipment such as construction, farming, lawn and garden, and recreational vehicles by retrofitting, retiring and replacing equipment and by using alternate fuel vehicles.

4.3.3 Discussion

a. No Impact. The Clean Air Act requires air districts to create a Clean Air Plan that describes how the jurisdiction will meet air quality standards. These plans must be updated periodically. As stated above, the most recently adopted air quality plan for the SFBAAB is the 2017 Clean Air Plan. To fulfill state ozone planning requirements, the 2017 control strategy includes all feasible measures to reduce emissions of ozone precursors (ROG and NOx) and reduce the transport of ozone and its precursors to neighboring air basins. In addition, the 2017 Clean Air Plan builds upon and enhances BAAQMD's efforts to reduce emissions of $PM_{2.5}$ and TACs. The 2017 Clean Air Plan does not include control measures that apply directly to individual development projects. Instead, the control strategy includes measures related to stationary sources, transportation, energy, buildings, agriculture, natural and working lands, waste management, water, and super-greenhouse gas pollutants (BAAQMD 2017).

A project that would not support the 2017 Clean Air Plan's goals would not be considered consistent with the plan. On an individual project basis, consistency with BAAQMD's quantitative thresholds is interpreted as demonstrating support for the 2017 Clean Air Plan's goals. As shown in the discussion under impact criterion "b" below, the proposed Project would not result in exceedances of BAAQMD's thresholds for criteria air pollutants and thus would not conflict with the 2017 Clean Air Plan's goal to attain air quality standards. Further, the project does not result in new land use development that would increase regional emissions sources (e.g., vehicular exhaust, area wide source). Because the proposed Project only involves activities associated with geotechnical investigations, some of which require the use of vehicles and heavy equipment for short periods of time over the course of approximately six months, no operational impact analysis is required. As a result, the proposed Project would not conflict with the adopted Clean Air Plan. Therefore, there would be no impact.

b. Less than significant Impact. The use of vehicles and excavation and drilling equipment, and a medium lift helicopter to conduct the surface and subsurface geotechnical investigations in support the Pacheco Reservoir Expansion Project design and planning processes would generate emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$. Project activities include the use of off-road equipment (e.g., drill rigs, excavator), in-water equipment (e.g., boat, barge), a helicopter, other associated equipment (e.g., pumps, generators), worker transport/commute (e.g., all-terrain vehicles, passenger vehicles), and ground-disturbing activities/vegetation clearing (i.e., chainsaws). Upon completion of the geotechnical investigation activities over an approximate six-month period, the proposed Project would not include any operational activities; thus, this

analysis focusses on short-term emissions of criteria air pollutants and ozone precursors associated with equipment operation during geotechnical investigations.

To estimate project-generated emissions, anticipated daily use rates, equipment horsepower, and daily anticipated mileage were used as modeling inputs. Activity use data was applied to calculate exhaust emissions from off-road equipment using emissions factors from *CalMod Appendix G* for each pollutant (i.e., ROG, NOx, PM exhaust, CO_2). Mobile source emissions were derived using emissions factors from CARB's Emissions Estimator Model (EMFAC) 2021 outputs for the project area (i.e., San Francisco Bay Area). Total emissions were then divided by the number of anticipated workdays (i.e., 120 days), derived based on the anticipated total duration of 20 work weeks and 6 days per week of investigation activities, to obtain average daily emissions, for comparison to BAAQMD's average daily mass emissions thresholds. It should be noted that up to 156 days could be required; however, for a more conservative estimate of average daily emissions, the shortest possible duration was used. For a detailed summary of model inputs, emissions factors, and emissions modeling, refer to Appendix C. Table 4.3-3 details the emissions that would result from investigation activities of the proposed Project.

Table 4.3-3: Equipment Operation Related Emissions of Criteria Air Pollutants

Emission Source	Average Daily Emissions (lbs/day)			
	ROG	NO_x	PM_{10} (exhaust)	$PM_{2.5}$ (exhaust)
Heavy Equipment (excavator)	1	9	<1	<1
Mobile Sources	<1	<1	<1	<1
Other (helicopter, barge)	9	35	<1	<1
Total	**10**	**46**	**1**	**<1**
Thresholds of Significance	54	54	82	54
Exceed?	No	No	No	No

As shown in Table 4.3-3 average daily emissions for all modeled criteria air pollutants and ozone precursors would not exceed established BAAQMD's thresholds of significance; therefore, proposed Project-generated emissions of ROG, NOx, and exhaust particulate matter would not result in a substantial contribution to the nonattainment status of the region. Regarding fugitive dust emissions, ground-disturbing activities such as drilling and boring, as well as the movement of vehicles on unpaved roads, could contribute particulate matter into the local atmosphere. No material off-hauling would occur, the only soil that would be hauled off-site would be soil and rock samples, both of which would be contained and covered. The BAAQMD has not established a quantitative threshold for fugitive dust emissions; instead, the BAAQMD states that projects that incorporate BMPs for fugitive dust control during short-term construction (i.e., geotechnical investigation activities) would have a less than significant impact related to fugitive dust emissions. The proposed Project includes implementation of

these BMPs as part of compliance with Valley Water's AQ-1 BMP, which requires implementation of BAAQMD's dust control measures (See Section 4.3 and Table 4.3-2 for details). Therefore, fugitive dust emissions associated with use of vehicles, heavy equipment and a helicopter would also not exceed BAAQMD's pollutant thresholds or result in a substantial contribution to the nonattainment status of the region. Geotechnical investigation activities would not result in a cumulatively considerable net increase of any criteria pollutant for which the region that includes the proposed Project study area is in non-attainment. This impact would be less than significant.

c. Less than Significant Impact. Increased concentrations of CO and TACs can result in health-related impacts to sensitive receptors. Substantial CO concentrations occur at intersections with high hourly volumes and extended periods of queuing (BAAQMD 2022). Sources of geotechnical investigation activity-related TACs potentially affecting sensitive receptors include off-road diesel-powered equipment and associated diesel PM emissions. As discussed above, the proposed Project does not include any operational activities; thus, this analysis focusses on diesel PM (i.e., $PM_{2.5}$ exhaust) emissions from short-term investigation activities, the primary TAC of concern. When evaluating TAC concentrations and associated health risks, the primary factors influencing risk exposure include duration of exposure and proximity of sources to receivers, as health risk increases with increased exposure duration and pollutant concentrations reduce with increasing distance from the source.

While BAAQMD provides screening criteria for the purpose of evaluating operational stationary and mobile TAC sources of emissions, BAAQMD does not provide guidance on when short-term emissions (such as those that would be generated by the proposed Project) should be quantified. In lieu of guidance from BAAQMD for short-term TAC emissions, in accordance with guidance from the Office of Environmental Health Hazard Assessment (OEHHA), it is not recommended to assess health risks quantitatively from sources with exposure of two months or less (OEHHA 2015). The anticipated duration of all investigation activities would be from 120 days to 156 (depending on crew and equipment availability), or approximately six months. However, considering that there are 181 specific activity areas subject to investigations using heavy equipment (32 test pits and 149 exploratory borings) where activity would occur and conservatively assuming that three drill rigs would be operating simultaneously (up to 5 drill rigs could be working, depending on availability, which could reduce the overall duration [i.e., less than 26 weeks or 6 months] for the propose Project), activity that could generate diesel PM would only occur for half a day (approximately five hours [181 sites / 120 days * 1.5 sites/day / 3 crews/day=5 hours per site per day) at each individual activity area. At that rate, no individual offsite residential receptor would be exposed to increased TAC emissions for more than several hours. Further, Project-generated emissions of diesel PM, as shown in Table 4.3-3, are substantially below adopted BAAQMD thresholds. The nearest residential sensitive receptor to a proposed Project activity area (A-20-104) is located approximately 385 feet away. Considering the relatively low levels of diesel PM emissions that would be generated by investigations, the relatively short duration of diesel PM-emitting equipment operation at any one activity area, and the highly dispersive properties of diesel PM, activity -related TAC emissions would not expose sensitive receptors

to an incremental increase in cancer risk that exceed BAAQMD thresholds of significance. Thus, activity-related TAC emissions would not expose sensitive receptors to an incremental increase in cancer risk that exceeds BAAQMD's threshold of 10 in 1 million for carcinogenic risk. Therefore, this impact would be less than significant.

d. Less than Significant Impact. The occurrence and severity of odor impacts depends on numerous factors, including: the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of the affected receptors. While offensive odors rarely cause any physical harm, they can still be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and regulatory agencies.

The predominant source of power for heavy equipment is diesel engines; helicopters used to support certain activities are fueled by Jet A fuel. The generation of these odor emissions would vary greatly on a day-to-day basis depending on the type of investigation activity. The odors would be limited to the investigation period and would be temporary (i.e., typically less than a day at each activity area over a period of 156 days). The proposed Project does not include an operational phase and operational odors are therefore not considered in this analysis. Because odors associated with proposed Project activities would occur intermittently throughout the geotechnical investigation efforts over a six-month period, the proposed Project would not generate objectionable odors affecting a substantial number of people, and impacts would be less than significant.

4.3.4 Best Management Practices

The following BMP described in Table 2-6 is applicable to air quality:

AQ-1: Use Dust Control Measures.

4.3.5 Avoidance and Minimization Measures

No AMMs are applicable.

4.3.6 Mitigation Measures

No mitigation measures are required.

4.4 Biological Resources

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
c. Have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan?	☐	☐	☐	☒

An evaluation of potential impacts to sensitive biological resources within the proposed Project study area is based on the biological conditions within the proposed Project study area detailed in Appendix D, Biological Resources, which includes the following:

- Attachment 1 – Biological Resources Assessment Report
    - Exhibit 1A – USFWS, CNDDB, and CNPS Database Results
    - Exhibit 1B – Botanical Special Status Species Assessment
    - Exhibit 1C – California Red-legged Frog Site Assessment
    - Exhibit 1D – California Tiger Salamander Site Assessment
    - Exhibit 1E – Other Special-Status Species
- Attachment 2 – Terrestrial Habitat Mapping
    - Exhibit 2A – Vegetation Communities and Other Habitat Map Figures
    - Exhibit 2B – Vegetation Alliances and Associations and Other Land Cover Types in the proposed Project study area by Project Component
- Attachment 3 – Aquatic Resources Delineation
    - Exhibit 3A – Wetland Determination Data Forms
    - Exhibit 3B – Plant List
    - Exhibit 3C – Soils Maps and Table
    - Exhibit 3D – Delineation Map – Waters of United States
    - Exhibit 3E – Delineation Map – Waters of State
    - Exhibit 3F – Photos
- Attachment 4 – 2023 Eagle Survey Results Technical Memorandum
    - Exhibit 4A – Figures
    - Exhibit 4B – Workplan for Nesting Bald and Golden Eagle Surveys
    - Exhibit 4C – 2023 Nesting Bald and Golden Eagle Survey Memorandums

4.4.1 Environmental Setting

The environmental setting as it relates to biological resources includes descriptions of biotic conditions, including sensitive biological resources (e.g., special-status species and their habitats, aquatic resources subject to agency jurisdiction) that have potential to occur in the proposed Project study area. The proposed Project study area encompasses approximately 55 acres and includes all proposed activity areas associated with the proposed Project as described in Section 2 (e.g., access routes, borings, test pits). In addition to detailed information on biological resources provided in Appendix D, the environmental setting for this section also provides a general discussion of relevant abiotic and physical characteristics as they relate to biological resources,

such as geographic locations/landmarks, geologic features, climate, topography, hydrology, and land use conditions that are present in and near the proposed Project study area.

Physical Setting

The proposed Project study area is located within the Diablo Range portion of the Coast Ranges Geomorphic Province and is characterized by northwest-trending mountain ranges and valleys bordered on the west by the Pacific Ocean and on the east by the Great Valley Geomorphic Province. Other than Pacheco Reservoir and isolated stock ponds, there are no perennial water features. The existing North Fork Dam and shoreline of Pacheco Reservoir create a sharp visual contrast to the surrounding hills and valleys. Land use in and surrounding the proposed Project study area consists of private and publicly owned properties (e.g., Henry W. Coe State Park) comprised of a rural and pastoral landscape of open space, consisting of a few private ranches and residences. Predominant vegetation communities include oak woodlands, grassland, and chaparral communities. The land surrounding North Fork Dam and Pacheco Reservoir is privately owned and primarily used for ranching and grazing.

The proposed Project study area occurs primarily within the Pacheco Pass portion of the Diablo Range. Elevations range from a high of nearly 960 feet above mean sea level (msl) in the upper portions of the proposed Project study area to a low of approximately 370 feet above msl near SR-152. The proposed Project study area is characterized by rugged topography with steep, mostly northeast- and southwest-facing slopes.

Summers in Santa Clara County are generally rainless and range from warm to hot, with cool winters. The average annual precipitation is approximately 19 inches. Most of the precipitation falls in the winter, during October through April (NOAA Regional Climate Centers 2023).

Biological Setting

The biological setting provides an overview of the vegetation communities, aquatic resources, and other biological resources identified in the proposed Project study area during field investigations performed for the proposed Project and Valley Water's PREP planning and design efforts. The sensitive biological resources identified and analyzed in this section are based on a combination of desktop queries and interpretation of the proposed Project study area and subsequent field surveys to verify the desktop evaluation findings.

Desktop resources used for the preparation of this section were obtained from the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) (CDFW 2023a), California Native Plant Society (CNPS) Electronic Inventory (CNPS 2023), and U.S. Fish and Wildlife Service (USFWS) list of federally threatened and endangered species known to occur in the proposed Project study area (USFWS 2023a); relevant biological literature and scientific/scholarly journal articles were also reviewed. Following the desktop evaluations, biological field surveys such as vegetation mapping, aquatic resources, delineations, botanical surveys, and special-status species habitat assessments were conducted between 2019 and 2023 within the proposed Project study area and the surrounding PREP study area. Survey dates,

method, and detailed results for each of the biological field surveys are described in detail in Appendix D.

Vegetative Communities and Other Land Cover Types

As shown in Attachment 2, Terrestrial Habitat Mapping, in Appendix D, 31 vegetation communities have been characterized to the alliance or association level, and 4 other land cover types have been identified in the 55-acre proposed Project study area. Thirteen of the vegetation communities, which account for 4.8 acres of the proposed Project study area, are categorized as sensitive natural communities by CDFW. The other 18 vegetation communities, which account for 35.3 acres of the proposed Project study area, are not considered sensitive. Five vegetation communities or other land cover types not currently described in the Manual of California Vegetation (Sawyer et al 2009) were documented in the proposed Project study area. Of these five vegetation communities or other land cover types, four are not considered to be sensitive natural communities because they are dominated by non-native/invasive species, are non-vegetated, or are urban areas.

Each of the vegetation communities and other land cover types mapped within the proposed Project study area are listed in Attachment 2, Terrestrial Habitat Mapping, in Appendix D along with figures illustrating their locations and tables detailing their respective acreages within the overall proposed Project study area and within each Project component.

Aquatic Resources

A delineation of aquatic resources was conducted using a combination of desktop review and interpretation of existing data and fieldwork conducted in 2019, 2020, and 2023. Detailed delineation methods and survey dates are included in Attachment 3, Aquatic Resources Delineation, in Appendix D.

A total of 12.858 acres of potentially jurisdictional waters of the State of California are located within the 55-acre proposed Project study area. Of this, 9.350 acres are considered potentially jurisdictional waters of the United States. The proposed Project study area contains 9.841 acres of other waters, consisting of 0.065 acre of intermittent streams, 0.118 acre of ephemeral streams, 6.467 acres of reservoir, and 3.191 acres of reservoir shoreline. All other waters of the state are under the jurisdiction of both the State Water Resources Control Board (SWRCB) and CDFW.

Approximately 3 acres of wetland features are present consisting of 3.017 acres of seasonal wetland (Table 4.4-1). All wetlands are under the jurisdiction of U.S. Army Corps of Engineers (USACE), SWRCB, and CDFW, with the exception of 0.165 acre of seasonal wetlands, which are upslope of the full-pool elevation of the reservoir and are only under the jurisdiction of the SWRCB. Seasonal wetlands that are USACE-jurisdictional are within the existing reservoir and are dominated by cocklebur (*Xanthium strumarium*) and vary in extent each year based on the amount of water in the reservoir and how long the reservoir holds water through the year. Each aquatic resource type is described in Attachment 3, Aquatic Resources Delineation, in Appendix D.

Table 4.4-1 Aquatic Resources in the Proposed Project Study Area		
	Waters of the State (portion also considered Waters of the U.S.)[1]	
Resource Type (Map Code)	Area (acres)	Length (feet)
Other (Non-Wetland) Waters		
Riverine Intermittent Streams (RVI)	0.065 (0.031)	151 (70)
Riverine Ephemeral Streams (RVE)	0.118 (0.000)	1,997 (0)
Lake and Reservoirs (RES)	6.467 (6.467)	-
Reservoir Shoreline[2]	3.191 (0.000)	
Subtotal Other Waters	**9.841 (6.498)**	**2,148 (70)**
Wetlands		
Seasonal Wetland (SWD)[3]	3.017 (2.852)	-
Subtotal Wetlands	**3.017 (2.852)**	**-**
Total Aquatic Resources in Study Area	**12.858 (9.350)**	**2,148 (70)**

[1] Acreages in parentheses are considered jurisdictional to both the United States and the state (SWRCB and CDFW)

[2] Reservoir shoreline consists of areas above the ordinary high-water mark of the existing reservoir and the full-pool elevation of 472 feet above mean sea level. This acreage does not include other wetlands/other water types.

[3] Due to being located above the full-pool line of the reservoir, a 0.165-acre subset of the total seasonal wetland acreage is only SWRCB-jurisdictional.

Special-Status Species

For the purposes of this analysis, special-status species are defined as follows:

- Species listed or proposed for listing as threatened or endangered under the Federal Endangered Species Act (ESA) (50 CFR 17.12 [listed plants], 50 CFR 17.11 [listed animals]) and various notices in the Federal Register (FR) (proposed species)
- Species that are candidates for possible future listing as threatened or endangered under the ESA (61 FR 40 7596–7613)
- Species listed or proposed for listing as threatened or endangered under the California Endangered Species Act (CESA) (14 CCR Section 670.5)
- Species that meet the definitions of rare or endangered under CEQA (State *CEQA Guidelines*, §15380)
- Plants listed as rare or endangered under the California Native Plant Protection Act (California Fish and Game Code [FGC] Section 1900 *et seq*.)
- Plants assigned to one of the following California Rare Plant Ranks by the California CNPS and collaborators:
    - 1A – Presumed extirpated in California and either rare or extinct elsewhere
    - 1B – Rare, threatened, or endangered in California and elsewhere
    - 2A – Presumed extirpated in California, but more common elsewhere

    - 2B – Rare, threatened, or endangered in California, but more common elsewhere
    - 3 – Plants about which more information is needed
    - 4 – Plants of limited distribution
- Animal species, subspecies, or distinct populations designated as Species of Special Concern (SSC) by the CDFW, as identified in its "Special Animals List"
- Animals designated as Fully Protected species in California (FGC Sections 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians])

Special-status plant and wildlife species that may occur in the proposed Project study area were determined, in part, by reviewing natural resource agency databases, literature, and other relevant sources. The following information sources were reviewed:

- *Pacheco Peak, California* U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle
- Aerial photographs of the study area and vicinity
- USFWS list of endangered and threatened species that may occur in the vicinity of the study area (USFWS 2023a) (Exhibit 1A of Attachment 1, Biological Resources Assessment Report, in Appendix D)
- USFWS Critical Habitat Mapper (USFWS 2023b)
- CNDDB plant and wildlife records (CDFW 2023a) (Exhibit 1A of Attachment 1, Biological Resources Assessment Report, in Appendix D) and the CNPS Online Inventory of Rare and Endangered Plants (CNPS 2023) records for the *Pacheco Peak, California* USGS 7.5-minute topographic quadrangle and the surrounding quadrangles immediately adjacent (i.e., reviewed 8 quadrangles total) (Exhibit 1A of Attachment 1, Biological Resources Assessment Report, in Appendix D)
- California Wildlife Habitat Relationships System (CDFW 2014)
- Species and land cover descriptions identified in the Santa Clara Valley Habitat Plan (Valley Habitat Plan) (SCVHA 2012)
- Information from *The Jepson Manual: Vascular Plants of California* (Baldwin et. al. 2012) including applicable errata and supplements (Jepson Flora Project 2023)

Regionally occurring special-status species were identified based on a review of pertinent literature, the USFWS species list, CNDDB, CNPS database records, and current field survey efforts. The status of each special-status species was verified using the following:

- State and Federally Listed Endangered, Threatened and Rare Plants of California (CDFW 2023b)
- Special Vascular Plants, Bryophytes, and Lichens List (CDFW 2023c)
- Special Animals List (CDFW 2023d)
- State and Federally Listed Endangered and Threatened Animals of California (CDFW 2023e)

For each species, habitat requirements were assessed and compared to the habitats in the proposed Project study area to determine if potential habitat for the species is present. Based on the desktop and pertinent literature review, 43 special-status plant species and 41 special-status wildlife species were analyzed for their potential to occur within the proposed Project study area. Out of the 43 special-status plant species, 25 species were determined to have potential to occur based on the vegetation communities identified in the proposed Project study area as noted in Attachment 1, Biological Resources Assessment Report, in Appendix D. Out of the 41 special-status wildlife species, 37 species were determined to have potential to occur based on the vegetation communities/habitat present in the proposed Project study area (Appendix D).

Special-Status Plants

As described in Exhibit 1B, Botanical Special-Status Species Assessment, to Attachment 1, Biological Resources Assessment Report, in Appendix D, protocol-level plant surveys were conducted in the proposed Project study area from 2020–2023 with a focus on the 25 special-status plant species determined to have potential to occur on site. Of these 25 species, 2 are known to occur within the proposed Project study area based on the results of the surveys, Hall's bush-mallow (M*alacothamnus arcuatus* var. *elmeri [syn. M. hallii*]) and woodland woolythreads (*Monolopia gracilens*). Descriptions of these 2 species are provided in Exhibit 1B.

Special-Status Wildlife

As described in Attachment 1, Biological Resources Assessment Report, in Appendix D, 37 special-status wildlife species were determined to have potential or were known to occur within the proposed Project study area. Due to their habitat requirements and potential to be impacted by the proposed Project, habitat assessments specific to the California red-legged frog (*Rana draytonii*) and the California tiger salamander (*Ambystoma californiense)* were conducted, as described in Exhibit 1C, California Red-legged Frog Site Assessment, and Exhibit 1D, California Tiger Salamander Site Assessment, respectively, in Attachment 1, Biological Resources Assessment Report, in Appendix D. Nesting eagles were assessed, as described in Attachment 4, 2023 Eagle Survey Results Technical Memorandum, of Appendix D. Exhibit 1E, Other Special-Status Species, in Attachment 1, Biological Resources Assessment Report, in Appendix D provides a list of special-status species (excluding fish) that have a potential to occur within the proposed Project study area. Potential to occur for these species was based on pedestrian surveys, along with the results from the Terrestrial Habitat Mapping and Aquatic Resources Delineation, attachments 2 and 3, respectively, in Appendix D. Information associated with species with potential to occur in the proposed Project study area (except for California red-legged frog, California tiger salamander, and eagles) is found in Exhibit 1E, Other Special-Status Species, in Attachment 1, Biological Resources Assessment Report, in Appendix D.

4.4.2 Regulatory Setting

Biological resources in the proposed Project study area are protected by numerous federal and state regulations, including the ESA, Migratory Bird Treaty Act (MBTA), Clean Water Act (CWA), Bald and Golden Eagle Protection Act, CESA, and California Native Plant Protection Act.

Federal Laws, Regulations, and Policies

Clean Water Act, Sections 404 and 401

The objective of the CWA of 1977, as amended, is to maintain and restore the chemical, physical, and biological integrity of the nation's waters. Discharge of dredged or fill material into waters of the United States, including wetlands, is regulated under Section 404 of the CWA by USACE. The USACE authorizes the discharge of dredge or fill materials into jurisdictional waterbodies through the issuance of a permit. Applicants for Section 404 permits are also required to obtain Water Quality Certification through the State (SWRCB) or Regional Water Quality Control Board (RWQCB) in California) under Section 401 of the CWA.

Waters of the United States

Waters of the United States, as defined in the CWA Sections 404 and 401, consist of wetlands and "other waters" regulated by the USACE and, for California, the SWRCB and the RWQCBs. On September 8, 2023, the U.S. Environmental Protection Agency and the USACE issued a rule to conform to the regulatory definition of Waters of the United States as defined in the May 25, 2023, United States Supreme Court decision in *Sackett v. Environmental Protection Agency (2023) 598 U.S. 651 (Sackett)*, which replaces all previous guidance regarding features considered waters of the United States, (i.e., wetlands and "other waters" subject to jurisdiction under the CWA). The most notable changes or redefinitions described under the *Sackett* rule from previous guidance documents is that ephemeral features (e.g., streams, ditches, swales) are no longer considered waters of the United States, and that the CWA only covers relatively permanent, standing, or continuously flowing bodies of waters that are typically referred to as streams, oceans, rivers, and lakes. In addition, under the Sackett decision, to be considered a water of the United States, wetlands must have "a continuous surface connection to bodies that are considered waters of the United States (i.e., relatively permanent bodies of water connected to a Traditional Navigable Water) so that they are "indistinguishable" from those waters.

The proposed Project has the potential to result in the dredge or discharge of materials into waters of the United States and permitting under Sections 404 and 401 of the CWA would be required.

Federal Endangered Species Act

The ESA of 1973 was established to protect and recover imperiled species and the ecosystems upon which they depend. The USFWS and the National Marine Fisheries Service (NMFS) administer the act. In the proposed Project study area, the USFWS has jurisdiction over wildlife species; there are no species subject to NMFS jurisdiction within the proposed Project study area.

ESA Section 7 states that all federal agencies must ensure that their actions do not jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat. Consultation with USFWS or NMFS under Section 7 can be initiated only by federal agency project-related activities and may result in an incidental take statement that authorizes activities that may result in take but would not jeopardize the continued existence of a listed species or adversely modify critical habitat.

For projects where there is no federal lead agency or a federal nexus that would require Section 7 consultation with the USFWS, project proponents (i.e., non-federal entities and agencies) may obtain a Section 10 incidental take permit when there is the potential for "take" of a federally listed species. Section 10 (a)(1)(B) allows issuance of permits for take that is incidental to otherwise lawful project-related activities completed as part of non-federal project. Take is defined under the ESA as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct. Incidental take permits require preparation of a habitat conservation plan. In addition, scientific monitoring, research, and enhancement activities that may result in take may receive scientific research and/or an enhancement permit under ESA Section 10(a)(1)(A).

For threatened species, the ESA does not automatically prohibit take, but instead authorizes regulations deemed necessary for species conservation [ESA Section 4(d)]. As such, Section 4(d) regulations may include the take prohibitions of ESA Section 9.

Under Section 4(f) of the ESA, both NMFS and USFWS are required to publish a recovery plan for each species it lists as threatened or endangered. These plans must have objective and measurable criteria that would help the species be removed from the ESA list, a description of site-specific management actions necessary for the species recovery and estimates of time and cost to carry out the recommended recovery measures. Recovery plans are advisory and have no legal effect.

Critical Habitat

The ESA requires the federal government (i.e., USFWS) to designate critical habitat for any species it lists as endangered or threatened. Critical habitat is identified by the presence of physical or biological features, previously termed primary constituent elements, that are essential to the conservation of a federally listed species upon which designated or proposed critical habitat for the species is based. Physical and biological features may include but are not limited to space for growth of individuals and populations; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and habitats that are protected from disturbance or are representative of the species' historic geographic and ecological distribution.

Critical habitat occurs for the California red-legged frog throughout the proposed Project study area.

Migratory Bird Treaty Act

The MBTA of 1918 enacts the provisions of treaties between the United States, Great Britain, Mexico, Japan, and the Soviet Union and authorizes the U.S. Secretary of the Interior to protect and regulate the taking of migratory birds. This treaty makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed under the act, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations.

The proposed Project would comply with applicable provisions of the MBTA.

Bald and Golden Eagle Protection Act

In addition to the MBTA, the Bald and Golden Eagle Protection Act, as amended in 1990, prohibits the take, possession, and transport of the parts, nests, or eggs of the species without prior

authorization. Take is defined in the Bald and Golden Eagle Protection Act as to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, or disturb. An incidental take permit from the USFWS must be obtained for new activities/projects that are located near eagle nests, roosting sites, and foraging areas and have potential to result in take of the species.

If it is determined the proposed Project would result in take of bald eagles or golden eagles, an incidental take permit from the USFWS would be required.

Executive Orders

Federal agencies are guided by Presidential Executive Orders established to protect the environment. Relevant Executive Orders include:

- **Executive Order 11990 (Wetlands):** For projects that could affect wetlands, federal agencies are required to demonstrate that no practical alternative exists to avoid the wetland(s) and that all practical avoidance, mitigation, and/or preservation measures have been incorporated into the project to minimize impacts on wetlands. Federal agencies are also required to provide an opportunity for early public review of any plans or proposals for new construction in wetlands.
- **Executive Order 13112 (Invasive Species):** Federal agencies are required to prevent the introduction of invasive species and not authorize actions that could cause or promote the introduction or spread of invasive species. Federal agencies need to identify feasible and prudent measures to minimize the risk of harm caused by invasive species.
- **Executive Order 13186 (Migratory Birds):** Federal agencies are required to evaluate the effects of their actions on migratory birds, with emphasis on species of concern, and to minimize the take of migratory birds through development of procedures for evaluating such take and conservation efforts in coordination with the USFWS. This Executive Order further implements the MBTA and requires coordination between the USFWS and federal agencies.

State Laws, Regulations, and Policies

California Endangered Species Act

The CESA under Section 2081 subdivision (b) of the FGC prohibits "take" of state-listed species and protects native species of fishes, amphibians, reptiles, birds, mammals, invertebrates, and plants, and their habitats, that are threatened with extinction or experiencing a significant decline which, if not halted, would lead to a threatened or endangered designation. Take is defined in Section 86 of the FGC as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA authorizes the CDFW to issue incidental take permits for state-listed species when specific criteria are met.

An incidental take permit from CDFW would be required if it is determined the proposed Project would result in take of state-listed species.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act authorizes the SWRCB to oversee water quality policy and establishes nine RWQCBs to protect and enhance water quality at the regional and local levels. In addition to preparing water quality control plans to designate beneficial uses of water bodies in each region, the RWQCBs issue waste discharge requirements for activities that result in pollutant or nuisance discharges that may affect surface or groundwater, including waters of the State (e.g., isolated wetlands) not subject to USACE jurisdiction (see SWRCB 2020).

Waters of the State

Waters of the State are defined under the Porter-Cologne Water Quality Control Act and are further described for wetlands in the SWRCB's *Implementation Guidance for the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* (SWRCB 2020). SWRCB uses similar definitions as those described in the CWA to define wetlands and "other waters" and are further described as follows:

- **Wetlands:** Wetlands are considered waters of the State when features meet the three-parameters/criteria used by the USACE (i.e., prevalence of hydrophytic vegetation, hydric soils, and hydrology). The state definition differs for wetlands in cases where features are naturally devoid of vegetation (i.e., features with less than five percent cover) where the hydric substrate indicators (i.e., hydric soils and hydrology) can act as a substitute for a dominance of hydrophytic vegetation. Under the state definition, isolated wetlands are also considered waters of the State (i.e., non-adjacent features are jurisdictional).
- **Other Waters:** Similar to the waters of the United States definition, all "other water" features must have an ordinary high-water mark; however, unlike the waters of the United States, the state definition extends the jurisdiction to include ephemeral and isolated other water features.

Fish and Game Code

The FGC provides several provisions for the protection of water features and the state's plant, fish, and wildlife resources, including the following relevant sections:

- **Sections 1600-1616 (Lake and Streambed Alteration):** CDFW is responsible for the protection and conservation of fish and wildlife resources in California. Under Section 1602, CDFW has the authority to issue lake or streambed alteration agreements for construction activities that substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by the CDFW as providing resources for fish or wildlife.
- **Sections 1900-1913 (Native Plant Protection Act):** The Native Plant Protection Act prohibits the taking, possessing, or sale within the State of any plants that the CDFW has determined are rare, threatened, or endangered. The CDFW has the authority to enforce the provisions of this act and authorize measures to salvage native plants that may otherwise be affected by proposed Project activities, if deemed appropriate.

- **Sections 3500-3516 (Game Birds and Birds of Prey):** The CDFW protects game birds, birds of prey, migratory birds, and fully protected birds from take or possession, except as otherwise provided by the code (e.g., incidental take under CESA).
- **Sections 3511, 4700, 5050, and 5515 (Fully Protected Species):** California statutes accord a "fully protected" status to specifically identified birds, mammals, reptiles, amphibians, and fish. The FGC was recently updated as part of SB-147 to allow for the take of fully protected species for certain projects.

The proposed Project would require permits/authorizations from CDFW for impacts on features subject to FGC Section 1602.

Regional and Local Laws, Regulations, and Policies

County of Santa Clara

Santa Clara County General Plan

Part 3 of *Book B* of the General Plan provides strategies and policies for rural unincorporated areas of Santa Clara County. The Resource Conservation Chapter provides specific direction related to habitat and biodiversity. Under this section of the General Plan, the applicable polices to this section of the IS are discussed below.

Policies Specific to Riparian and Freshwater Habitats

Policy R-RC-31: Natural streams, riparian areas, and freshwater marshes shall be left in their natural state providing for percolation and water quality, fisheries, wildlife habitat, aesthetic relief, and educational or recreational uses that are environmentally compatible. Streams which may still provide spawning areas for anadromous fish species should be protected from pollution and development impacts which would degrade the quality of the stream environment.

Policy R-RC 32: Riparian and freshwater habitats shall be protected through the following general means:

a. setback of development from the top of the bank;
b. regulation of tree and vegetation removal;
c. use of herbicides, pesticides, and fertilizers by public agencies.

Policy R-RC 33: Public projects shall be designed to avoid damage to freshwater and stream environments.

Policy R-RC 373: Lands near creeks, streams, and freshwater marshes shall be considered to be in a protected buffer area, consisting of the following:

a. 150 feet from the top bank on both sides where the creek or stream is predominantly in its natural state;
b. 100 feet from the top bank on both sides of the waterway where the creek or stream has had major alterations; and

c. In the case that neither (1) nor (2) are applicable, an area sufficient to protect the stream environment from adverse impacts of adjacent development, including impacts upon habitat, from sedimentation, biochemical, thermal and aesthetic impacts.

Santa Clara County Tree Preservation and Removal Ordinance

The County of Santa Clara Tree Preservation and Removal Ordinance (County Code, Section C16.1 to C16.17) requires a tree removal permit for "protected trees." Section C16-3 of the code describes the criteria for a "protected tree." Valley Water may be exempt from compliance with the County tree ordinance and other County tree regulations under *Hall v. Taft* (1956) 47 Cal. 2d 177,189 (which holds that water districts are exempt from municipal police power regulation). Regardless, as discussed below, none of the trees to be removed are protected under the County Code.

Santa Clara Valley Habitat Agency

Santa Clara Valley Habitat Plan

Six local partners including the County of Santa Clara, Santa Clara Valley Transportation Authority, Valley Water, and the cities of San José, Gilroy, and Morgan Hill prepared and adopted the Valley Habitat Plan (SCVHA 2012), which is a multi-species, joint habitat conservation plan and natural communities' conservation plan that covers much of Santa Clara County. The Valley Habitat Plan was developed in association with CDFW and USFWS and has a 50-year permit term. The Santa Clara Valley Habitat Agency (SCVHA) leads the implementation of the Valley Habitat Plan, which addresses 18 covered plant and animal species as well as natural communities in the Valley Habitat Plan area. The Valley Habitat Plan accounts for the amount of impacts or "take" a project may have on a covered animal species by determining the amount of impacts on land cover types and streams (i.e., Valley Habitat Plan modeled habitat) that have potential to support the covered species. There are also limits on the number of populations of a covered plant species and the number of acres of natural communities that a project can affect. Many of the land cover types that have potential to support covered species are also considered sensitive natural communities by CDFW (e.g., Central California sycamore alluvial woodlands). The 18 covered species include 9 plants and nine animals.

The proposed Project study area is within the boundaries of the Valley Habitat Plan (SCVHA 2012). Although the proposed PREP is not covered by the Valley Habitat Plan, the SCVHA has confirmed that, the proposed Project, which consists of preliminary site investigations (i.e., geotechnical investigations) and is a separate project from the PREP with independent utility, is a covered activity in the Valley Habitat Plan (Gerry Haas, SCVHA, Pers Comm 2024). Therefore, the proposed Project is covered under Section 10 of the ESA through the Valley Habitat Plan and includes implementation of all applicable measures and conditions from the Valley Habitat Plan.

4.4.3 Discussion

a. Less Than Significant Impact with Mitigation Incorporated

Special-Status Plants

As described in Exhibit 1B, Botanical Special Status Species Assessment, to Attachment 1, Biological Resources Assessment Report, in Appendix D, two special-status plant species (Hall's bush-mallow and woodland woolythreads) were observed within the proposed Project study area during protocol-level plant surveys. The proposed Project has potential to result in indirect impacts on these plant species, other regionally occurring native species, and the 25 special-status plant species with potential to occur within the proposed Project study area from the spread and introduction of non-native invasive plant (NNIP) species into the proposed Project study area during Project activities. The spread or introduction of NNIP species would degrade the quality of habitat and limit the resources available for the regionally occurring native plant species, including special-status plant species. Contaminated soil on equipment could spread the plant pathogen, *Phytophthora,* within the vicinity of special-status plant populations, indirectly resulting in long-term stand degradation and plant mortality. Vehicle or equipment spills and leaks could also degrade habitat for special-status plant species, resulting in indirect mortality. However, with incorporation of all applicable BMPs into the proposed Project (listed in Section 4.4.4), the potential impact from equipment spill and leaks on special-status plants would be less than significant. Incorporation of applicable avoidance and minimization measures (AMMs) would also reduce potential impacts to special-status plants. For example, VHP-85: Seed mixtures applied for erosion control would not contain invasive species. If sterile non-native species are used for erosion control, native seed mixtures would be used in subsequent treatments to provide long-term erosion control and inhibit colonization by invasive non-native species or non-native species.

As part of the proposed Project, the following BMPs, which are described in Table 2-6 of Section 2 are incorporated into the proposed Project and would reduce the potential for impacts on special-status plants:

- BI-8: Choose Local Ecotypes of Native Plants and Appropriate Erosion-Control Seed Mixes
- HM-7: Restrict Vehicle and Equipment Cleaning to Appropriate Locations
- HM-8: Ensure Proper Vehicle and Equipment Fueling and Maintenance
- HM-9: Ensure Proper Hazardous Materials Management
- HM-10: Utilize Spill Prevention Measures
- HM-12: Incorporate Fire Prevention Measures
- WQ-4: Limit Impacts from Staging and Stockpiling Materials
- WQ-9: Use Seeding for Erosion Control, Weed Suppression, and Site Improvement

In addition to the referenced BMP and the AMMs listed in Table 2-7, two specific Conditions of the Valley Habitat Plan (as further discussed in Appendix B) would reduce the potential for impacts on special-status plants. Conditions 19 and 20, as listed in Chapter 2 and further described in Appendix B, would be applied as applicable, including measures listed in Table 2-7. These measures include VHP-8, VHP-11, VHP-39, VHP-40, VHP-49, VHP-58, VHP-61, VHP-62, VHP-69, VHP-71, VHP-73, VHP-76, VHP-85, VHP-86, VHP-87, VHP-92, and VHP-100. Collectively, these measures minimize the extent of ground disturbance, potential for equipment leaks and spills, potential for the spread of invasive plant species, and potential for the spread of plant pathogens that could result in impacts on special-status plant species.

Based on the surveys detailed in Exhibit 1B, Botanical Special Status Species Assessment, to Attachment 1, Biological Resources Assessment Report, in Appendix D, the extent of the occurrences of the two special-status plant species in the proposed Project study area have been mapped and would be avoided. Therefore, the proposed Project would not result in direct impacts on these species. Potentially significant indirect impacts and applicable mitigation measures for each special-status plant species either known or having potential to occur in the proposed Project study area as described in Table 4.4-2. In addition, with the following mitigation measures to include MM BIO-1a; MM BIO-2a, b, c, d, and e; MM BIO-3; and MM BIO-7, which are further defined in Table 4.4-5 at the end of this section, all impacts to special-status plant species would be reduced to less than significant levels.

Table 4.4-2: Special Status Plant Species and Sensitive Natural Communities

Vegetation Resource	Potentially Significant Project Impacts	Applicable Mitigation Measures
Special-status plant species	Indirect impacts from habitat degradation through NNIPs introduction. Indirect mortality from exposure to Phytophthora on contaminated equipment or vehicles.	• MM BIO-1a: Pre-Activity Biological Surveys • MM BIO-2a, b, c, d, e: Worker Environmental Awareness Training, Pathogen Prevention and Aquatic Invasive Species (AIS), Pre-Activity Biological Check, Avoidance of Sensitive Biological Resources, and Biological Monitoring • MM BIO-3: Vehicle and Equipment Decontamination for Plant Pathogen and Weed Prevention • MM BIO-7: Site Rehabilitation
Sensitive natural communities	Indirect impacts from plant competition through NNIPs introduction. Indirect mortality of native plants from exposure to Phytophthora on contaminated equipment or vehicles.	• MM BIO-1a, b: Pre-Activity Biological Surveys, Purple Needlegrass Grassland • MM BIO-2a, b, c, d, e: Worker Environmental Awareness Training, Pathogen Prevention and Aquatic Invasive Species (AIS), Pre-Activity Biological Check, Avoidance of Sensitive Biological Resources, and Biological Monitoring • MM BIO-3: Vehicle and Equipment Decontamination for Plant Pathogen and Weed Prevention • MM BIO-7: Site Rehabilitation

Special-Status Wildlife

As shown in Table 4.4-3, 37 special-status wildlife are either known to occur or have potential to occur within the proposed Project study area. Slow-moving wildlife species (e.g., reptiles and amphibians) have potential for direct mortality or injury from vehicle or equipment strikes during ingress and egress to the proposed Project work areas along access roads or in staging areas. For species that use underground burrows (e.g., burrowing owl) or are ground-nesting (e.g., northern harrier), traveling equipment and vehicles could directly crush or entomb individuals. For birds and mammals that use trees and shrubs for nesting, roosting, or denning, vegetation trimming activities could result in direct mortality of adults and young. Visual and audible presence of humans; equipment; and vehicles, including helicopters, during geotechnical investigation activities could displace wildlife, leading to reduced fitness. In addition, these activities could also cause nest abandonment and the mortality of fertile eggs or hatched young in bird nests.

Indirect impacts on terrestrial wildlife resulting from geotechnical investigation activities include habitat degradation related potential soil disturbance and subsequent introduction of NNIPs and contamination from equipment refueling or leaks. For wildlife species that use aquatic environments, additional indirect impacts on aquatic habitat could include the introduction of invasive aquatic organisms that reduce habitat quality or pathogens, such as chytrid fungus that could result in reduced individual fitness or mortality. Due to the nature of the geotechnical investigation activities compared to the extent and connectivity of wildlife habitat within and around the proposed Project study area, impacts to species' habitats will be discrete and limited in extent with minimal impacts on species' populations. The following BMPs have been incorporated into the proposed Project to avoid or reduce potential impacts on special-status wildlife species (see Table 2-6 for details):

- **BI-5:** Avoid Impacts to Nesting Migratory Birds
- **BI-6:** Avoid Impacts to Nesting Migratory Birds from Pending Construction
- **BI-10:** Avoid Animal Entry and Entrapment
- **BI-11:** Minimize Predator-Attraction
- **HM-7:** Restrict Vehicle and Equipment Cleaning to Appropriate Locations
- **HM-8:** Ensure Proper Vehicle and Equipment Fueling and Maintenance
- **HM-9:** Ensure Proper Hazardous Materials Management
- **HM-10:** Utilize Spill Prevention Measures
- **HM-12:** Incorporate Fire Prevention Measures
- **WQ-4:** Limit Impacts from Staging and Stockpiling Materials
- **WQ-15:** Prevent Water Pollution
- **WQ-17:** Manage Sanitary and Septic Waste

In addition to the referenced BMP and the AMMs listed in Table 2-7, 13 specific Conditions of the Valley Habitat Plan (as further discussed in Appendix B) would reduce the potential for impacts on California red-legged frog and other special-status wildlife species and their habitat. Specifically, Conditions 1, 3, 4, 5, 11, 12, and 14 are all intended to reduce impacts to habitat for special-status wildlife species that occur within the proposed Project study area. Conditions 15, 16, 17, and 18 of the Valley Habitat Plan specific to special-status wildlife species that have the potential to occur within the proposed Project study area, as described in Appendix B would be applied as applicable, including the AMMs listed in Table 2-7. Specifically, under Condition 16, which applies to least Bell's vireo, riparian habitats within 250 feet of the proposed Project study area were assessed for the presence of potential nesting habitat, defined as early successional riparian scrub with a dense understory. The riparian areas within and adjacent to the proposed Project study area are comprised of mature riparian habitat, suitable nesting habitat for least Bell's vireo is absent, and nesting surveys specific to this species are not required. Similarly, as part of Condition 17, riparian habitats within 250 feet of the proposed Project study area were assessed for the potential to support tricolored blackbird nesting habitat, which due to a lack of flooded, thorny, or spiny vegetation was determined to not contain suitable nesting substrates for tricolored blackbird, therefore nesting surveys specific to this species are not required. In contrast, portions of the proposed Project study area are within areas mapped as potential denning habitat for San Joaquin kit fox by the Valley Habitat Plan's on-line mapping tool. As a result, and as part of Condition 18, these areas will be surveyed for the presence of burrows of sufficient size to be utilized for denning. These burrows would then be monitored for species presence in accordance with the Condition, and any occupied burrows would be fully avoided. To varying degrees, all of the AMMs presented in Table 2-7 are applicable to various activities described in Section 2. While many of the BMPS are similar to these AMMs, a number of them are more specific with respect to both plant and wildlife species that have the potential to occur. These AMMs include VHP-8, VHP-11, VHP-39, VHP-40, VHP-49, VHP-58, VHP-61, VHP-69, VHP-71, VHP-72, VHP-73, VHP-76, VHP-84, VHP-85, VHP-86, VHP-87, VHP-88, VHP-89, VHP-90, VHP-92, VHP-95, and VHP-100. Collectively, these AMMs minimize the extent of ground disturbance, potential for equipment leaks and spills, potential for the spread of invasive plant species, and potential for the spread of pathogens, and potential for vehicular strikes that could results in impacts on special-status wildlife.

Potentially significant impacts and applicable mitigation measures for each special-status wildlife species either known or having potential to occur in the proposed Project area are described in Table 4.4-3. With the incorporation of the mitigation measures MM BIO-1a and d; MM BIO-2a, b, c, d, and e; MM BIO-3; MM BIO-4; MM BIO-5; MM BIO-6; and MM BIO-7, which are further identified in Table 4.4-5 at the end of this section, all significant impacts to special-status wildlife species would be reduced to less than significant levels.

Table 4.4-3 Special-Status Wildlife Species and Other Species of Interest		
Common Name Scientific Name/ Listing Status[1](Fed/State)	**Potentially Significant Project Impacts**	**Applicable Mitigation Measures**
Special-Status Wildlife Species[1]		
Invertebrates		
Monarch butterfly (*Danaus plexippus plexippus*)/ (FC/–) Crotch's bumble bee (*Bombus crotchii*)/(–/CE)	• Direct mortality from equipment and vehicles • Host plant (milkweed [Asclepias spp.]) direct impacts from equipment and vehicle damage. Monarch butterfly specific • Direct mortality during vegetation removal or crushing burrows or other refugia containing nests or individuals Crotch's bumble bee-specific • Indirect impacts from habitat degradation through NNIPs introduction in foraging habitat • Indirect impacts from habitat degradation through soil excavation, grading, soil removal	• MM BIO-1a, d: Pre-activity Biological Surveys, Special-status Animal Species • MM BIO-2a, c, d, e: Worker Environmental Awareness Training, Pre-Activity Biological Check, Avoidance of Sensitive Biological Resources, and Biological Monitoring • MM BIO-3: Vehicle and Equipment Decontamination for Plant Pathogen and Weed Prevention • MM BIO-6: Biological Site Inspections and Summary Report • MM BIO-7: Site Rehabilitation
Amphibians		
California tiger salamander (*Ambystoma californiense*)/(T/T) Foothill yellow-legged frog (*Rana boylii*)/(T/E) California red-legged frog (*Rana draytonii*)/(T/SSC) Critical habitat	• Direct mortality from equipment and vehicles while individuals are moving overland or from crushing or excavating burrows containing individuals • Indirect mortality from exposure to chytrid fungus on contaminated equipment or vehicles • Displacement of individuals due to presence of people and equipment within suitable habitat • Temporary reduction in available upland habitat because of geotechnical investigation disturbances	• MM BIO-1a, d: Pre-activity Biological Surveys, Special-status Animal Species • MM BIO-2a, b, c, d, -e: Worker Environmental Awareness Training, Pre-Activity Biological Check, Avoidance of Sensitive Biological Resources, Pathogen Prevention, and Biological Monitoring • MM BIO-3: Vehicle and Equipment Decontamination for Plant Pathogen and Weed Prevention • MM BIO-4: Aquatic Invasive Species (AIS) Decontamination • MM BIO-6: Biological Site Inspections and Summary Report • MM BIO-7: Site Rehabilitation
Reptiles		
Northwestern pond turtle (*Actinemys marmorata*)/(PT/SSC) Silvery legless lizard	• Direct mortality from equipment and vehicles while individuals are moving overland or from	• MM BIO-1a, d: Pre-activity Biological Surveys, Special-status Animal Species

Table 4.4-3 Special-Status Wildlife Species and other Species of Interest		
Common Name Scientific Name/ Listing Status[1](Fed/State)	**Potentially Significant Project Impacts**	**Applicable Mitigation Measures**
(*Aniella pulchra pulchra)*/ (–/SSC) San Joaquin coachwhip *(Masticophis flagellum ruddocki*)/(–/SSC) Coast horned lizard (*Phrynosoma blainvillii*)/ (–/SSC)	crushing or excavating underground nests/burrows • Indirect mortality from exposure to Emte fungus on contaminated equipment or vehicles. *Northwestern pond turtle-specific* • Displacement of individuals due to presence of equipment within suitable habitat • Temporary reduction in available habitat because of geotechnical investigation disturbances	• MM BIO-2a, b, c, d, e: Worker Environmental Awareness Training, Pre-Activity Biological Check, Avoidance of Sensitive Biological Resources, Pathogen Prevention, and Biological Monitoring • MM BIO-3: Vehicle and Equipment Decontamination for Plant Pathogen and Weed Prevention • MM BIO-4: Aquatic Invasive Species (AIS) Decontamination • MM BIO-6: Biological Site Inspections and Summary Report • MM BIO-7: Site Rehabilitation
Birds (Foraging Habitat in Proposed Project Study Area)		
Tricolored blackbird (*Agelaius tricolor*)/(–/T) Western burrowing owl (*Athene cunicularia*)/(–/SSC) Vaux's swift (*Chaetura vauxi*)/(–/SSC while nesting-only[2]) Olive-sided flycatcher (*Contopus cooperi*)/(–/SSC while nesting-only[2]) American peregrine falcon (*Falco peregrinus anatum*)/ (–/SOI) California condor (*Gymnogyps californianus*)/ (E/E, FP) Least Bell's vireo (*Vireo bellii pusillus*)/(E/E)	• Displacement of individuals due to presence of people and equipment within suitable habitat resulting in lowered fitness • Temporary reduction in habitat because of geotechnical investigation disturbances • Direct mortality of individuals from equipment and vehicles or from crushing burrows. *Burrowing owl-specific*	• MM BIO-2a, c, d, e: Worker Environmental Awareness Training, Pre-Activity Biological Check, Avoidance of Sensitive Biological Resources, and Biological Monitoring • MM BIO-6: Biological Site Inspections and Summary Report • MM BIO-7: Site Rehabilitation
Birds (Nesting and Foraging Habitat in Proposed Project Study Area)[3]		
Grasshopper sparrow (*Ammodramus savannarum*)/ (–/SSC) Golden eagle (*Aquila chrysaetos*)/(–/FP) Long-eared owl	• Loss of fertile eggs or mortality of young from nest abandonment due to presence of people or equipment within suitable habitat • Direct mortality of individuals from equipment and vehicles or	• MM BIO-1a, c, d: Pre-activity Biological Surveys, Nesting Bird Surveys, Special-status Animal Species • MM BIO-2a, c, d, e: Worker Environmental Awareness Training, Pre-Activity Biological

Table 4.4-3 Special-Status Wildlife Species and other Species of Interest		
Common Name Scientific Name/ Listing Status[1](Fed/State)	**Potentially Significant Project Impacts**	**Applicable Mitigation Measures**
(*Asio otus*)/(–/SSC) Swainson's hawk (*Buteo swainsoni*)/(–/T) Northern harrier (*Circus cyaneus*)/(–/SSC) White-tailed kite (*Elanus leucurus*)/(–/FP) Bald eagle (H*aliaeetus leucocephalus*)/ (–/E) Yellow-breasted chat (*Icteria virens*)/(–/SSC) Loggerhead shrike (*Lanius ludovicianus*)/ (–/SSC) Purple martin (*Progne subis*)/(–/SSC) Yellow warbler (*Setophaga petechia*)/(–/SSC)	from crushing nests on the ground. *Grasshopper sparrow and northern harrier-specific* • Nest destruction during vegetation trimming or clearing activities • Displacement of individuals due to presence of people and equipment within suitable habitat resulting in lowered fitness • Temporary reduction in habitat because of geotechnical investigation disturbances	Check, Avoidance of Sensitive Biological Resources, and Biological Monitoring • MM BIO-5: Nesting Golden Eagle and Bald Eagle Surveys and Avoidance of Active Eagle Nests (*Bald eagle and golden eagle-specific*) • MM BIO-6: Biological Site Inspections and Summary Report • MM BIO-7: Site Rehabilitation
Mammals (Bats)		
Pallid bat (*Antrozous pallidus*)/ (–/SSC) Townsend's bat *(Corynorhinus townsendii)*/ (–/SSC) Western mastiff bat *(Eumops perotis californicus)*/ (–/SSC) Western red bat *(Lasiurus frantzii [blossevillii])*/(–/SSC)	• Mortality of adults and young from roost destruction during vegetation trimming or clearing activities • Displacement of individuals due to presence of people and equipment within suitable habitat resulting in lowered fitness • Temporary reduction in habitat because of geotechnical investigation disturbances	• MM BIO-1a, d: Pre-activity Biological Surveys, Special-status Animal Species • MM BIO-2a, c, d, e: Worker Environmental Awareness Training, Pre-Activity Biological Check, Avoidance of Sensitive Biological Resources, and Biological Monitoring MM BIO-6: Biological Site Inspections and Summary Report • MM BIO-7: Site Rehabilitation
Mammals (Other)		
Ringtail (*Bassariscus astutus*)/(–/FP) Dusky-footed woodrat (*Neotoma fuscipes annectens*)/(–/SSC)	• Mortality of adults and young from natal den destruction during vegetation trimming or clearing activities. *Ringtail-specific* • Mortality of adults and young from nest destruction during	• MM BIO-1a, d: Pre-activity Biological Surveys, Special-status Animal Species • MM BIO-2a, c, d, e: Worker Environmental Awareness Training, Pre-Activity Biological Check, Avoidance of Sensitive

Table 4.4-3 Special-Status Wildlife Species and other Species of Interest		
Common Name Scientific Name/ Listing Status[1](Fed/State)	**Potentially Significant Project Impacts**	**Applicable Mitigation Measures**
Mountain lion (*Pumas concolor*)/(–/CT) American badger *(Taxidea taxus*)/(–/SSC) San Joaquin kit fox (*Vulpes macrotis mutica*)/(E/T)	vegetation trimming or clearing activities. *Dusky-footed woodrat-specific* • Direct mortality of individuals from equipment and vehicles or from crushing burrows containing dens. • Displacement of individuals due to presence of people and equipment within suitable habitat resulting in lowered fitness • Temporary reduction in habitat because of geotechnical investigation disturbances	Biological Resources, and Biological Monitoring MM BIO-6: Biological Site Inspections and Summary Report • MM BIO-7: Site Rehabilitation
Other Species of Interest[1]		
Mammals (Other)		
Tule Elk (*Cervus canadensis nannodes*)/ (–/SOI–)	• Direct mortality of individuals from equipment and vehicles or from crushing burrows containing dens. • Displacement of individuals due to presence of people and equipment within suitable habitat resulting in lowered fitness • Temporary reduction in habitat because of geotechnical investigation disturbances	• MM BIO-1a, d: Pre-activity Biological Surveys, Special-status Animal Species • MM BIO-2a, c, d, e: Worker Environmental Awareness Training, Pre-Activity Biological Check, Avoidance of Sensitive Biological Resources, and Biological Monitoring MM BIO-6: Biological Site Inspections and Summary Report • MM BIO-7: Site Rehabilitation

Notes:

1. Status Codes: Federal and State Codes: D = Delisted, E = Endangered; T = Threatened; PT= Proposed Threatened; CT= Candidate Threatened; CE= Candidate Endangered; FP = Fully Protected; FC= Federal Candidate; SSC= CDFW Species of Special Concern; SOI=Species of Interest (no formal listing status); NL-Not Listed
2. Species only are considered CDFW Species of Special Concern while nesting, while foraging-only species do not have a formal listing status but can be considered Species of Interest.
3. Applicable mitigation measures also reduce potential impacts on bird species without a formal listing status (e.g., red-tailed hawk [*Buteo jamaicensis*]).

b. Less Than Significant Impact with Mitigation Incorporated. As shown in Table 3-1 of Attachment 2, Terrestrial Habitat Mapping, in Appendix D, 13 of the 35 mapped vegetation communities/land cover types, which account for 4.8 acres of the proposed Project study area, are categorized as sensitive natural communities (Table 4.4-4). Two of these sensitive natural communities (California sycamore woodlands and Goodding's willow red-willow riparian woodlands) are also classified as riparian habitats and total 0.127 acre.

Although approximately 2 acres of sensitive natural communities are mapped within the Existing Access Roads activity area type, these features consist of either paved or bare earth roads, are regularly traveled by ranch vehicles, and only support occasional patches of non-native annual grasses. Therefore, geotechnical investigation activities within the 2 acres comprising these areas would not result in impacts on sensitive natural communities.

Table 4.4-4: Sensitive Natural Community Impacts

Sensitive Natural Community (Alliance, Association)	Geotechnical Investigation Activity	Acreage within Work Area[2]	Potential Ground Disturbance[1]	
			Square Feet	Acres
California Buckeye Grove *Aesculus californica*	Established/Existing Road[3]	0.049	-	-
California Sagebrush Scrub *Artemisia californica – Diplacus aurantiacus*	Helicopter Boring (2 total)	0.193	450	0.010
	Refraction Line	0.025	-	-
Gooding's Willow – Red Willow Riparian Woodland *Salix laevigata/Salix lasiolepis*	Established/Existing Road[3]	0.057	-	-
Holly Leaf Cherry – Toyon – Greenbark Ceanothus Chaparral *Prunus ilicifolia* ssp. *ilicifolia – Fraxinus dipetala*	Helicopter Boring (1 total)	0.022	225	0.005
	Refraction Line	<0.001	-	-
Holly Leaf Cherry – Toyon – Greenbark Ceanothus Chaparral *Prunus ilicifolia* ssp. *ilicifolia*	Helicopter Boring (3 total)	0.020	675	0.015
	Established/Existing Road[3]	0.128	-	-
	Refraction Line	0.067	-	-
	Helicopter Supplemental Boring (1 total)	0.008	225	0.005
	Supplemental Boring (1 total)	0.169	4	<0.001
Needle grass – Melic Grass Grassland *Stipa pulchra – Avena* spp. – *Bromus* spp.	Access Route	0.129	-	-
	Established/Existing Road[3]	0.354	-	-
	Refraction Line	0.137	-	-
	Test Pit (12 total)	0.743	6,000	0.138
Needle grass – Melic Grass Grassland *Stipa pulchra* – Melica californica – Annual grass	Boring (1 total)	0.059	4	<0.001
	Helicopter Boring (1 total)	0.006	225	0.005
	Established/Existing Road[3]	0.041	-	-
	Refraction Line	0.014	-	-
Needle grass – melic grass grassland No Association	Established/Existing Road[3]	0.007	-	-
California Sycamore Woodlands *Platanus racemosa – Quercus agrifolia*	Established/Existing Road[3]	0.012	-	-

Table 4.4-4: Sensitive Natural Community Impacts

Sensitive Natural Community (Alliance, Association)	Geotechnical Investigation Activity	Acreage within Work Area[2]	Potential Ground Disturbance[1]	
			Square Feet	Acres
California Sycamore Woodlands *Platanus racemosa*	Access Route	0.014	-	-
	Established/Existing Road[3]	0.043	-	-
Coast Live Oak Woodland *Quercus agrifolia/Adenostoma fasciculatum* – (*Salvia mellifera*)	Access Route	<<0.000	-	-
	Refraction Line	0.057	-	-
Valley Oak Woodland *Quercus lobata* – *Quercus agrifolia*/grass	Access Route	0.008	-	-
	Established/Existing Road[3]	0.179	-	-
	Refraction Line	0.047	-	-
	Test Pit (3 total)	0.153	1,500	0.034
Valley Oak Woodland *Quercus lobata*/grass	Access Route	0.172	-	-
	Boring (5 total)	0.2.96	20	<0.001
	Established/Existing Road[3]	1.115	-	-
	Helicopter Staging Area	0.002	-	-
	Refraction Line	0.080	-	-
	Storage/Staging Area	0.049	-	-
	Supplemental Boring (2 total)	0.307	8	<0.001
	Test Pit (2)	0.016	1,000	0.023
Total		**4.773**	**10,336**	**0.235**

[1] Values represent maximum potential ground disturbance – sensitive communities will be avoided to the maximum extent practicable. In areas with trees, no ground disturbance will occur within the dripline of trees.

[2] These values equal the extent of sensitive natural communities within work areas and therefore the maximum amount of potential disturbance, which will be avoided to the maximum extent practicable. Types of disturbances include vehicle access, crew access, and shrub trimming.

[3] Established/existing roads consist of bare/compacted vehicle tracks that comprise ranch roads in the proposed Project study area. Use of these areas will not result in disturbance.

To accommodate geotechnical investigations, areas supporting sensitive natural communities may be subject to temporary ground disturbance (approximately 0.24 acres total ground disturbance) associated with test pits, borings, supplemental borings, and contouring with hand tools to accommodate drilling platforms. This acreage was calculated based on whether a sensitive natural community was mapped within the 100-foot diameter work area around each boring and test pit location. When present, the full extent of potential ground disturbance in that work area was allocated to that sensitive natural community. However, the actual acreage of total ground disturbance within sensitive natural communities will be less than this amount because work within these areas will be minimized to the maximum extent practical. Additional impacts within work areas could include shrub trimming to accommodate access to and within work areas as well as trampling of herbaceous vegetation due to vehicle and equipment ingress/egress.

As noted in Attachment 2, Terrestrial Habitat Mapping, in Appendix D, the only herbaceous sensitive natural community in the proposed Project study area is the Needle Grass – Melic Grass Alliance and is particularly susceptible to impacts associated with ground disturbance. In addition, individual plants within all sensitive natural communities could become damaged from equipment and vehicle ingress/egress along access roads and in the vicinity of test pit and boring locations. Vehicles could spread Phytophthora plant pathogens within sensitive natural communities, leading to individual plant mortality and a reduction in the overall health and extent of vegetation in the vicinity of work activities, particularly in areas downslope from work areas. In addition, areas of soil disturbance would be vulnerable to establishment of NNIPs either through introduction from contaminated vehicles/equipment or from dormant seeds in the soil seedbank. In conjunction with the applicable BMPs, AMMs will be incorporated into the proposed Project; these include minimizing removal of existing vegetation, maintaining native vegetation and revegetation with local native plants, and designing the proposed Project to avoid removal of riparian vegetation will minimize or avoid significant impacts to varying degrees.

As described in the Project Description, access at seven of the initial boring locations would require that approximately 8 tree limbs be trimmed and that approximately 11 trees and 1 dead tree snag be removed. Additionally, if the following 5 of 30 supplemental boring locations are drilled (S-12, S-14, S-15, S-16, and S-18), approximately 6 tree limbs would require trimming, and 14 trees would require removal for access. Tree species proposed for removal include blue oaks, foothill pines, California bay laurels, California buckeyes, and coast live oaks (see Appendix A). In addition, unforeseen circumstances may require trimming of up to 3 additional trees and removal of up to 5 additional trees. Thus, this analysis conservatively assumes that up to 30 trees would be removed and up to 17 trees would be trimmed to accommodate geotechnical investigation activities. None of these trees are within sensitive natural communities. All of these trees would be located within established work activity areas identified in Appendix A. Shrub trimming/cutting would occur using hand-held tools, and efforts would be made to cut or trim shrubs in a manner that would not compromise the vitality of the shrub or result in removal of the entire plant. Following temporary ground-disturbing activities, areas of disturbed and bare soil would be returned to original grade and seeded with a native and regionally appropriate erosion control mix approved by Valley Water.

As part of the proposed Project, the following BMPs, which are further described in Table 2-6 of Section 2, are applicable and have been incorporated into the proposed Project to avoid or reduce potential impacts on sensitive natural communities:

- **BI-8:** Choose Local Ecotypes of Native Plants and Appropriate Erosion-Control Seed Mixes
- **HM-7:** Restrict Vehicle and Equipment Cleaning to Appropriate Locations
- **HM-8:** Ensure Proper Vehicle and Equipment Fueling and Maintenance
- **HM-9:** Ensure Proper Hazardous Materials Management
- **HM-10:** Utilize Spill Prevention Measures
- **HM-12:** Incorporate Fire Prevention Measures

- **WQ-4:** Limit Impacts from Staging and Stockpiling Materials
- **WQ-9:** Use Seeding for Erosion Control, Weed Suppression, and Site Improvement

In addition to the referenced BMP and the AMMs listed in Table 2-7, 5 specific Conditions of the Valley Habitat Plan (as further discussed in Appendix B) would reduce the potential for impacts to sensitive natural communities. Conditions 3, 4, 5, 11, and 12 are all intended to reduce impacts to wetlands and riparian areas that occur within the proposed Project study area, as described in Appendix D, and would be implemented as applicable. These include the following AMMs described in Table 2-7: VHP-1, VHP-11, VHP-29, VHP-39, VHP-40, VHP-49, VHP-58, VHP-61, VHP-63, VHP-65, VHP-68, VHP-69, VHP-71, VHP-72, VHP-73, VHP-85, VHP-86, VHP-88, VHP-93, VHP-94, VHP-87, and VHP-102. Collectively, these AMMs minimize the extent of ground disturbance, potential for equipment leaks and spills, potential for the spread of invasive plant species, and potential for the spread of plant pathogens that could result in impacts on sensitive natural communities and riparian areas.

Potentially significant impacts and applicable mitigation measures for each special-status plant species either known or having potential to occur in the proposed Project study area, in addition to significant impacts to sensitive natural communities, are described in Table 4.4-2. With the incorporation of mitigation measures MM BIO-1a and b, MM BIO-2a, b, c, d, and e, MM BIO-3, and MM BIO-7, which are further identified in Table 4.4-5, all potentially significant impacts to riparian habitat and sensitive natural communities would be reduced to less than significant levels.

c. Less than Significant Impact. As described in Attachment 3, Aquatic Resources Delineation, in Appendix D, 12.858 acres of potentially jurisdictional aquatic resources of the state are present in the 55-acre proposed Project study area (Table 4.4-1), which include 3.017 acres of wetlands. Of the total 12.858 acres of aquatic resources in the proposed Project study area, 9.350 acres are potential waters of the United States and are under USACE jurisdiction. All wetlands are under the jurisdiction of the USACE, SWRCB, and CDFW, with the exception of 0.165 acres of seasonal wetlands, which are outside the full-pool elevation of the reservoir and are only under the jurisdiction of the SWRCB.

Within these aquatic resources, a total of 48 borings (41 primary and 7 supplemental borings) would be drilled below the full-pool elevation of the reservoir, which supports seasonal wetlands when the reservoir is drawn-down. Each individual boring would have a total disturbance area of 4 square feet (based on a boring diameter of 6 inches). Borings could be accomplished with one or a combination of up to four methods: rock core drilling, hollow stem auger drilling, auger/rotary wash drilling, and possibly vibracore barge borings if the Pacheco Reservoir is not drawn down. Each boring method type would result in the same area of temporary disturbance, for a total of 0.004 acre of temporary impacts to aquatic resources within SWRCB and CDFW jurisdiction, of this 0.003 acre of temporary impacts from 36 of the 50 borings would be below the ordinary high-water mark of the reservoir in areas under USACE jurisdiction. With the exception of the borings/supplemental borings, no other geotechnical investigation work areas would result in disturbances to wetlands or other aquatic resources regulated by the SWRCB, CDFW, or the USACE.

Following subsurface analysis, each boring would be backfilled and returned to its original grade. At up to 11 boring locations within the boundary of the existing reservoir, piezometers would be installed for long durations (more than 1 year) to monitor surface and subsurface water levels, even when the boring holes are inundated. Following data collection, piezometers and associated casings would be removed, and the boring holes would be backfilled to original grade.[6]

Unless Pacheco Reservoir contains water at the time of geotechnical analysis, which would then consist of vibracore borings from a barge, geotechnical investigation activities would take place when the seasonal wetlands are dry to minimize potential impacts, including impact to water quality. In addition, due to the small footprint of each boring, drilling conducted during the dry-season or from a barge in the reservoir if water is still present, geotechnical activities would not result in significant impacts on federally or state-regulated wetlands. To protect water quality, the following BMPs are incorporated into the proposed Project, as described in Table 2-6 of Section 2:

- **HM-7:** Restrict Vehicle and Equipment Cleaning to Appropriate Locations
- **HM-8:** Ensure Proper Vehicle and Equipment Fueling and Maintenance
- **HM-9:** Ensure Proper Hazardous Materials Management
- **HM-10:** Utilize Spill Prevention Measures
- **WQ-9:** Use Seeding for Erosion Control, Weed Suppression, and Site Improvement
- **WQ-11:** Maintain Clean Conditions at Work Sites
- **WQ-12:** Manage Well or Exploratory Boring Materials
- **WQ-13:** Protect Groundwater from Contaminates Via Wells or Exploratory Borings
- **WQ-14:** Backfill Completed Exploratory Borings
- **WQ-15:** Prevent Water Pollution
- **WQ-16:** Prevent Stormwater Pollution
- **WQ-17:** Manage Sanitary and Septic Waste

In addition to the referenced BMPs, 10 Conditions from the Valley Habitat Plan are incorporated into the proposed Project as AMMs and are listed in Chapter 2 and further described in Appendix B; these AMMs are applicable to wetlands and riparian areas would further reduce or avoid include impacts by restricting vehicles to designated activity areas, including pre-approved access routes; stabilizing stockpiled materials, including stockpiled top soil; and avoiding wet season activities. All 48 AMMs listed in Table 2-7 are applicable to

[6] In the event piezometers located within the reservoir are inundated, they would be removed after at least two years of data has been collected and the casings would be abandoned in place after backfilling to meet Valley Water requirements.

protect, avoid, or minimize impacts to wetlands and riparian areas through protecting water quality and minimizing disturbances within aquatic resources.

In addition, the following mitigation measures would be implemented to further reduce the potential for impacts on state- and federally regulated waters, including wetlands (through direct removal, filling, hydrological interruption, or other means) to a less than significant level.

MM BIO-1a: Pre-Activity Biological Surveys

MM BIO-2a-2e: Worker Environmental Awareness Training, Pathogen Prevention and Aquatic Invasive Species (AIS), Pre-Activity Biological Check, Avoidance of Sensitive Biological Resources, and Biological Monitoring

MM BIO-3: Vehicle and Equipment Decontamination for Plant Pathogen and Weed Prevention

MM BIO-7: Site Rehabilitation

With the incorporation of MMs BIO-1a, BIO-2a-2e, BIO-3, and BIO-7, potential impacts on state- and federally regulated waters, including wetlands, would be reduced to a less than significant level. Therefore, proposed Project impacts would be less than significant.

d. Less than Significant Impact. As described in the Valley Habitat Plan, the portion of Pacheco Creek immediately downstream of the confluence of North Fork Pacheco Creek and South Fork Pacheco Creek that flows under SR-152 is considered a wildlife landscape linkage, as assessed by the California Wilderness Coalition (SCVHA 2012). By crossing underneath the SR-152 bridge over Pacheco Creek, wildlife can safely disperse across the highway, which functions as a dispersal barrier for terrestrial wildlife species. However, due to the presence of the plunge pool downstream of the existing North Fork Dam, dense riparian vegetation, and a nearby rural residence, this crossing has lower value as a habitat linkage compared to bridge crossings located further downstream of the proposed Project along Pacheco Creek.

Upstream of North Fork Dam, Pacheco Reservoir provides limited dispersal opportunities for terrestrial wildlife in the late summer through early winter while it is drawing down, because it functions as a dispersal barrier for wildlife after it fills earlier in the year. As noted in Attachment 1, Biological Resources Assessment Report, in Appendix D, tule elk from the San Luis herd are known to cross the uppermost portion of Pacheco Reservoir while it is dry during rutting season (September through November), which could coincide with proposed geotechnical investigations. However, due to the discrete nature of each activity area, proposed Project activities would not create temporary or permanent barriers to wildlife dispersal, although the noise generated from proposed Project activities and human presence could result in wildlife avoiding work areas, expending more effort while dispersing through the proposed Project study area. Dispersing wildlife could also potentially enter activity areas while dispersing through the proposed Project study area, which could result in injury, stress, or mortality to wildlife. There are no known wildlife nursery sites within or in close proximity to the proposed Project study area. Based on the discrete and temporary nature of the geotechnical investigations (1-2 days at each activity area over a period of several months and expanse of intact habitat surrounding the proposed Project study area), the proposed Project

would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites. Therefore, proposed Project impacts would be less than significant.

e. Less than Significant Impact. As discussed above, this analysis conservatively assumes that up to 30 trees would be removed and up to 17 trees would be trimmed, although it would likely be much fewer. However, none of these trees have been designated for protection by Santa Clara County or meet the criteria for "protected trees" in Section C16-3 of the Santa Clara County Tree Preservation and Removal Ordinance. Therefore, the proposed Project does not conflict with the Santa Clara County Tree Preservation and Removal Ordinance.

The proposed Project would be consistent with the applicable policies of the General Plan. As the proposed Project was developed, a number of biological investigations and surveys were conducted and documented. BMPs and AMMs have been incorporated into the description of the proposed Project to further protect biological resources. Policy R-RC-33 has been addressed for all activity areas by incorporating design measures, BMPs and AMMs to avoid damage to freshwater and stream environments. Policy R-RC 37 has been addressed with respect to four activity sites (S-1, CB-18, CB-19 and CB-20). Activity area S-1 is within 150 feet of an intermittent stream; however, the activity area is limited to a portion of an existing road and no impact would occur to the bed or bank of the stream. Activity area CB-18 is within 150 feet of an intermittent stream, but on an upland location between the stream channel and the fill slope of SR-152. For activity areas CB-19 and CB-20, these activity areas are located on an upper terrace associated about 125 feet from the North Fork Pacheco Creek, a stream channel that been subject to major alternations since North Fork Dam was constructed in 1939. Activities in these four areas would be consistent with the applicable polices of the General Plan. Therefore, proposed Project impacts would be less than significant.

f. No Impact. As discussed above, the proposed Project is considered a covered activity by the Valley Habitat Plan (Gerry Haas, SCVHA, Pers Comm 2024) and will incorporate all of the Valley Habitat Plan conditions and measures described in Section 2.5 and Section 2.6. Therefore, the proposed Project would not conflict with the Valley Habitat Plan. As a result, there would be no impact.

4.4.4 Best Management Practices

The BMPs listed in Section 4.4.3 discussions in "a", "b", and "c" and described in Table 2-6 of Section 2 are applicable.

4.4.5 Avoidance and Minimization Measures

The AMMs and Conditions of the Valley Habitat Plan discussed in subsections "a", "b" and "c" above are presented in Table 2-7 and Section 2.6 incorporated into the description of the proposed Project.

4.4.6 Mitigation Measures

The following mitigation measures, as described in Table 4.4-5, would be implemented to reduce the potential for impacts on biological resources to less than significant levels.

Table 4.4-5: Biological Resources Mitigation Measures

Mitigation Measure/Name	Description
MM BIO-1: Pre-Activity Biological Surveys	**BIO-1a)** ***Pre-activity Surveys.*** A qualified biologist shall conduct pre-activity pedestrian biological surveys within the work activity areas (to be marked by the project engineer or geologist) between 14 and 21 days prior to the movement of heavy equipment. The biologist will identify by GPS, flagging, and communication to the geologist all sensitive biological resource areas (including nesting birds and animal burrows) for avoidance. Identified and flagged sensitive areas will be avoided during entry, during geotechnical investigations, and during the removal of heavy equipment from the work activity areas. **BIO-1b)** ***Purple Needlegrass Grassland.*** A qualified biologist shall conduct pre-activity surveys for purple needlegrass grassland within the proposed work activity areas and access routes between 14 and 21 days prior to start of work to allow relocation of work areas if needed. Areas of purple needlegrass grassland will be mapped using GPS and will be clearly marked in the field for avoidance. Access through purple needlegrass grassland will be restricted during critical life history stages (flowering, seed set) and during wet weather. Access (without ground disturbance) will be allowed during the dormant season for the plants (typically late summer). **BIO-1c)** ***Nesting Bird Surveys.*** The following measures shall be implemented to avoid Project impacts on nesting birds: • If excavation activities are planned during the avian nesting season (i.e., January 15 through September 1), a qualified biologist shall conduct ground-based surveys within the site(s) and within 150 feet for nesting passerines and 300 feet for nesting raptors. • Two rounds of surveys shall be conducted for nesting passerines and nesting raptors, one within 7 days prior to commencement of Project activities and the second within 48 hours prior to commencement of Project activities. Subsequent surveys will be performed if a lapse in Project activities of 7 days or longer occurs at a site. If an active nest is identified, an appropriate avoidance buffer will be established by the qualified biologist based on the species identified, the distance from the nest to potential activities (e.g., excavations, vehicles and helicopters), environmental conditions (e.g., topography, nearby anthropogenic disturbances), and input from Valley Water biologists. Avoidance buffers shall be maintained until a qualified biologist determines the nest(s) are no longer active (e.g., the young have fledged the nest). • Vegetation removal for site access, to the extent possible, shall be conducted from September 2nd to January 14th, outside of the nesting season of protected raptors and migratory birds (nesting season January 15 – September 1). • A qualified biologist shall train all Project staff, contractors, and other work crews regarding the following: 1) signs of nesting behavior and identification of active nests; 2) the requirement to stop work if any active nests are found or suspected

Table 4.4-5: Biological Resources Mitigation Measures	
Mitigation Measure/Name	**Description**
	until a qualified biologist inspects the area; and 3) compliance with avoiding the no-work buffer zones. **BIO-1d)** ***Special-status Animal Species.*** A qualified biologist shall conduct pre-activity surveys within 48 hours prior to commencement of Project activities at each site for special-status animal species (biologist to reference and utilize list of special-status species for the project, included in technical appendices to the Initial Study/Mitigated Negative Declaration (IS/MND)) and their habitats, at appropriate times of day and weather condition, using appropriate survey methods and equipment (e.g., binoculars, DSLR cameras with telephoto lens and high shutter speed, wind meters, etc.). For special-status wildlife species that require more than one round of pre-construction surveys (e.g., Crotch's bumble bee and nesting birds), the first survey round can be conducted during the pre-activity survey described in Mitigation Measure BIO-1a by a qualified biologist. The first survey round for Crotch's bumble bee can also be conducted during the first round of nesting bird surveys described in Mitigation Measure BIO-1c by a qualified biologist. The biologist will demarcate potential habitat for special-status animal species (e.g., potential denning locations, upland refugia, aquatic habitats) for avoidance using flagging or stakes, and boundaries will be recorded/collected by the biologist with a GPS for display on Project specific maps for crews to use in the field. Valley Water will contact the appropriate resource agency(ies) (i.e., CDFW and/or USFWS) in the event a special-status animal species is discovered, and Project activities will not commence in that work activity area until a qualified biologist has determined the animal(s) have left the area on its own accord (i.e., without disturbance or harassment). No excavation activities will occur within the avoidance areas without approval from Valley Water. Should excavation activities be necessary/required within identified avoidance areas, Contractor shall seek approval from Valley Water, and additional measures will be incorporated into Project activities to avoid impacts. Additional measures include but are not limited to postponing excavation activities to coincide with timeframes outside of sensitive time periods (e.g., breeding or pupping seasons), and having excavation activities performed with a qualified biologist present to direct crews to avoid impacts on potential habitat and to document special-status species were avoided. If the qualified biologist identifies sensitive resources and potential effects, the geologist shall work with the specialist to relocate the investigation site to avoid the sensitive area. After qualified biologist approval, any changes to work activities, including staging, access, borings, drilling, trenching, and road modifications, will be limited to prescribed work areas that have been reviewed by the qualified biologist. In some cases, known sensitive resources are located in close proximity of the proposed work sites, so it is essential that all work be limited to the immediate geotechnical investigation activity site and any changes be approved by the specialist.
MM BIO-2: Worker Environmental Awareness Training, Pre-Activity Biological Check, Avoidance of Sensitive Biological Resources, Pathogen Prevention, and Biological Monitoring	**BIO-2a)** ***Worker Environmental Awareness Training*****.** Prior to their initial entry to the site, all site personnel shall receive worker environmental awareness training (WEAT) from a qualified biologist regarding nesting birds, special-status species, and sensitive plants or natural communities as identified by pre-project surveys. The WEAT will include discussion of plant pathogens and aquatic invasive organisms (AIS) and measures to prevent introduction and spread. **BIO-2b)** ***Pathogen Prevention and Aquatic Invasive Species (AIS).*** Vehicles, equipment, tools, and boots shall be cleaned and decontaminated (see also MM BI-3) to remove any soil and/or plant material prior to entering the site to prevent introduction or spread of plant pathogens such as *Phytophthora* and non-native invasive weed species. To minimize the spread of AIS and aquatic pathogens (see also

Table 4.4-5: Biological Resources Mitigation Measures	
Mitigation Measure/Name	**Description**
	MM BI-4), the most current guidance from the CA Dept of Fish and Wildlife for equipment decontamination and sanitization will be consulted and adhered to, prior to entering any waterway (including ponds, creeks, rivers, wetlands, and reservoir). **BIO-2c) *Pre-Activity Biological Check.*** As part of biological monitoring, a qualified biologist shall conduct a pre-construction biological check of the access routes and work footprint on the morning of and immediately prior to start of mobilization of equipment to the work area and prior to start of work activities, for special-status species. The qualified biologist may also conduct equipment inspections for decontamination prior to entry of the equipment to the project site. **BIO-2d) *Avoidance of Sensitive Biological Resources*.** In the event that the qualified biologist identifies a sensitive biological resource such as a northwestern pond turtle nest or burrows suitable for amphibian refuge at or immediately adjacent to a marked work location (i.e., geotechnical bore, test pit, or seismic refractory spike location), the biologist shall document and flag the sensitive biological resource in the field for avoidance by work activities, and the geologist will work with the qualified biologist to shift the work location a distance of up to approximately 40 feet, confined to within the surveyed and cleared area, as-needed, to avoid impact to the sensitive biological resource. **BIO-2e) *Biological Monitoring*.** A qualified biologist shall be present during initial mobilization of equipment on the identified access route to investigation areas A-21-201 and A-21-203 (and for additional work locations on an as-needed basis based on findings of pre-activity surveys), during setup and start of geotechnical boring at each work activity area, and during any ground disturbance and/or vegetation removal activities. The biologist shall document pre-disturbance conditions and verify the mitigation measures and BMPs are appropriately implemented. Because the proposed Project is located within critical habitat for California red-legged frog, a qualified biologist for this species and other special-status amphibians shall be present for the duration of all the geotechnical investigation activities. All work shall be conducted during the dry season.
MM BIO-3: Vehicle and Equipment Decontamination for Plant Pathogen and Weed Prevention	To prevent the spread/introduction of non-native invasive plant species, plant pathogens such as sudden oak death syndrome (*Phytophthora ramorum*), other soil-borne *Phytophthora* species, and chytrid fungus the following decontamination procedures shall be implemented. The number of vehicles and equipment shall be minimized to the extent feasible. Vehicular travel shall be limited to established access roads and trails (i.e., off-road travel will only occur on foot). Heavy equipment (e.g., excavators, drill rigs, track mounted rigs), vehicles, and large tools t shall be cleaned (i.e., thoroughly washed) and free of soil and debris prior to entering the study area from outside locations (i.e., arriving from other projects or areas outside of the PREP region). Vehicles that only travel and park on paved roads do not require external cleaning. The interior of vehicles and heavy equipment shall be free of dirt/debris and other potentially contaminated materials. Interiors should be vacuumed, washed, and/or treated with sanitizing agents to minimize the introduction of invasive plants and pathogens. The exterior of large equipment such as bucket loaders, tracks or wheels, undercarriage, and anything that accumulates soil and debris should be thoroughly cleaned. Spray bottles containing either 70 to 90 percent ethyl/isopropyl alcohol or a solution containing a 1:20 bleach-to-water ratio and boot brushes or hoof picks shall be

Table 4.4-5: Biological Resources Mitigation Measures	
Mitigation Measure/Name	**Description**
	present at all entry points for personnel to decontaminate their shoes, small tools, and other equipment prior to entering the study area when arriving from outside locations (i.e., arriving from other projects or areas outside of the PREP region). The spray shall be liberally applied (i.e., until thoroughly soaked) to all small equipment and tools (e.g., shovels, screens, boots) and allowed to air dry prior to entry.
MM BIO-4: Aquatic Invasive Species (AIS) Decontamination	The most current guidance from CA Dept of Fish and Wildlife on equipment decontamination and sanitization to prevent the spread of AIS into sensitive waterways (including ponds, creeks, rivers, wetlands, and reservoir) will be adhered to.
MM BIO-5: Nesting Golden Eagle and Bald Eagle Surveys and Avoidance of Active Eagle Nests (Bald and Golden Eagle Protection Act)	A qualified biologist shall perform nesting surveys for golden eagle and bald eagle within a 1-mile radius of the project footprint and access routes, including flight paths for any proposed helicopter work, where access is permitted. Ground based surveys will be conducted in January and late March/early April, as well as aerial surveys in late March/early April. If active eagle nests are documented with their corresponding avoidance buffers intersecting the planned work areas, a third survey will be conducted in June/July to confirm nest status. No project activities shall occur within 1-mile of any active golden eagle nest, or within 660 feet of any active bald eagle nest (within 1,000 feet for any helicopter work), from mid-December through the end of August, unless project-specific consultation and a project-specific Bald and Golden Eagle Protection Act (BGEPA) short-term disturbance permit has been previously obtained by Valley Water from USFWS.
MM BIO-6: Biological Site Inspections and Summary Report	Qualified biologists shall conduct daily inspections of Project activities to document that BMPs and mitigation measures are being implemented appropriately. Monitoring reports summarizing the daily inspections shall be provided to Valley Water on a monthly basis. Following the completion of Project activities, a monitoring report will be prepared that summarizes all the worker environmental awareness trainings provided, biological site visits conducted, observations and direction given by the biologists during excavation activities regarding avoidance of sensitive biological resources, rehabilitation efforts performed at each site, and the pre- and post-activity photographs taken.
MM BIO-7: Site Rehabilitation	Areas disturbed by geotechnical investigation activities at each site shall be rehabilitated to near pre-Project conditions to the extent feasible. Rehabilitation activities shall include backfilling of all excavations/borings and recontouring the areas to match the surrounding conditions as required, seeding with an erosion control seed mix containing native locally occurring watershed specific forbs, wildflowers and/or grasses.

4.5 Cultural Resources

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

4.5.1 Environmental Setting

Cultural Context

The proposed Project is located within the western slopes of the Diablo Range, where there is extensive archaeological evidence of Native American history. Based on ethnohistorical reconstructions, the proposed Project study area falls within the territory of the Ohlone (Levy 1978), with the western boundary of the Yokuts situated directly to the east in the lower Diablo hills and the San Joaquin Valley. The Ohlone and Yokuts were hunter-gatherers who lived in villages with well-defined tribal territories, interacted and traded extensively with neighboring groups, and spoke unique languages. Both languages were also part of the Penutian-speaking phylum.

The territory of the Ohlone covered around 17,350 square kilometers (6,700 square miles), extending 177 kilometers (110 miles) along the Pacific Coast from south of Monterey Bay all the way up the San Francisco Peninsula and inland some 32–72 kilometers (20–45 miles) to the crest of the Coast Ranges, running along the east side of San Francisco Bay to the Carquinez Strait. At the time of Spanish contact, the coast, Bay-Delta Area, and Coast Range valleys were dotted with Ohlone villages. Population estimates range between 7,000 (Kroeber 1925:464) and 16,130 (Milliken 2010), with an average population density of up to 2.4 individuals per square mile.

Prior to European contact, the Ohlone and other Native people in Central California were hunters, gatherers, and fisherfolk. Subsistence activities centered around gathering seasonally availability resources, such as acorns, nuts, seeds, greens, and bulbs; hunting deer, pronghorn, tule elk, smaller animals, sea mammals, and waterfowl; fishing; and collecting shellfish (clams, oysters, mussels, and abalone). Notably, the Ohlone territory included the open coast, the littoral zone of the bay, and a variety of inland settings, each with a varied range of resources available within the territorial extent of a tribelet. Although they did not cultivate crops, the Ohlone practiced burning on an annual basis to ensure an abundance of seed-bearing annuals and forage for large game, and to facilitate gathering fall-ripening acorns (Crespí 1927; Levy 1978:491).

In coastal Central California, traditional Native lifeways were disrupted first by the influx of European explorers, and then profoundly altered by the establishment of Spanish missions in the late eighteenth century (Lightfoot and Simmons 1998; Milliken 1995, 1999; Milliken et al. 1993). Colonization and occupation quickly reduced Native populations, displaced them, and dramatically altered their traditional way of life.

Prior Investigations

Multiple records searches of the California Historical Resources Information System were conducted for prior phases of the PREP planning process. The first was conducted at the Northwestern Information Center (NWIC) in Rohnert Park by NWIC staff on November 15, 2018 (Reference Number 18-0796). Subsequent records searches were conducted at the NWIC on April 9, 2019 (Reference Number 18-1942), April 29, 2022 (Reference Number 21-1596), and May 23, 2023 (Reference Number 22-1767). The records search area included the proposed Project study area and a buffer of 200-meters (1/8-mile) around the proposed Project study area.[7]

The results of these records searches included 4 previously identified cultural resources and 25 reports overlapping the proposed Project study area and 200-meter buffer (Table 4.5-1). These reports are dominated by regional overviews (40%) and surveys (36%). There were also 2 historic-era[8] resource surveys (8%), 2 management studies (8%), 1 ethnohistory (4%), and 1 research compendium (4%). The 4 resources were comprised of 2 prehistoric habitation sites and 2 historic-era residences: a ranch and a former tavern listed on the Heritage Resource Inventory as "Bell's Station" (Table 4.5-2).

In addition to the 25 previous studies and 4 previously recorded cultural resources identified, Valley Water's consultant, Far Western, conducted a Class III intensive pedestrian survey of the entire PREP study area between 2019 and 2023 as part of prior PREP planning phases, and recorded 30 resources within the proposed Project area of potential effects (APE) and surrounding 200-meter buffer during the course of survey (Engbring and Byrd 2023). These 30 resources consist of 13 Native American sites (6 lithic scatters, 5 habitation sites, 1 quarry, and 1 bedrock mortar), and 17 historic-era sites (7 road alignments, 6 stock ponds, 1 dam, 1 ranch, 1 refuse deposit, and 1 shell scatter with a likely historic-era association; Table 4.5-2).

[7] For purposes of this document, the proposed Project study area generally corresponds to the area of potential effects (APE) and these terms may be used interchangeably.

[8] The term "historic-era" is used in this report to describe Euro-American cultural resources that post-date the onset of the Spanish Colonial Period in 1769 CE (Thomas and Hyde 2021).

Table 4.5-1: Previous Cultural Resources Studies within the APE and Buffer				
Number	**Year**	**Author**	**Title / Description**	**Type**
S-03453	1950	Meadows, Roy, Roy Martin, and Ann Fisher	Notes on the Carmel Indians (notes taken from Roy Meadows and Roy Martin on March 4th, 1950); and Southern Costanoan-Esselen Notes (notes taken from Ann Fisher on March 4th, 1950)	Regional Overview
S-04720	1973	Williams, Thomas	A preliminary archaeological survey within the proposed development areas of Mustang Mountain Ranch (letter report)	Survey
S-08585	1974	King, Thomas, Gary Berg, Patricia Hickman, Richard Hastings, Chester D. King, Katherine Flynn, and William Roop	Archaeological Element, Environmental Impact Report on the San Felipe Water Distribution System	Management
S-00848	1977	Fredrickson, David A.	A Summary of Knowledge of the Central and Northern California Coastal Zone and Offshore Areas, Vol. III, Socioeconomic Conditions, Chapter 7: Historical & Archaeological Resources	Research Compendium
S-09462	1977	Miller, Teresa Ann	Identification and Recording of Prehistoric Petroglyphs in Marin and Related Bay Area Counties	Regional Overview
S-05259	1979	Hines, Ann, Pauline Pace, and Gail Woolley	Santa Clara County Heritage Resource Inventory	Historic Architecture
S-04831	1980	Breschini, Gary S. and Trudy Haversat	Preliminary Archaeological Reconnaissance of a Parcel in the Pacheco Pass Area, Santa Clara County, California	Survey
S-08372	1980	Dietz, Stephen A.	An Archaeological Reconnaissance of the Proposed Bell Station Improvements, Bell Station, Santa Clara County, California	Survey
S-05222C	1980	Van Horn, David M.	Archaeological and Historical Investigations in Portions of the Central Valley Project, San Felipe Division	Survey
S-08378	1981	Wasserman, Fred and Mara Melandry	First Addendum Archaeological Reconnaissance Report, 04-SCL-152 29.9-32.4, Proposed Construction of a Truck Lane along Pacheco Pass, Santa Clara County, 04217-389221	Survey
S-07850	1983	Breschini, Gary S., Trudy Haversat, R. Paul Hampson, MaryEllen Ryan, Charles R. Smith, Georgia Lee, and Laurence H. Shoup	A Cultural Resources Overview of the Coast and Coast-Valley Study Areas	Regional Overview
S-48493G	1985	Gross, Robert L.	Extended Phase I Archaeological Survey Report for The Pacheco Pass Highway Improvement Project Santa Clara County 04-SCL-152 22.1/30.1 04216-112750	Survey
S-07408	1985	Roop, William	Archaeological survey for "Kallend Truck Stop EIR", your project number 16907-085 (letter report)	Survey

Table 4.5-1: Previous Cultural Resources Studies within the APE and Buffer				
Number	**Year**	**Author**	**Title / Description**	**Type**
S-07483	1985	Albert B. Elsasser, R. L., Anastasio, J. C. Bard, C. I. Busby, D. M. Garaventa, S. A. Guedon, E. L. Moore, K. M. Nissen, and M. E. Tannam	Revised Data Recovery Plan, Part I: Review of the Prehistory of the Santa Clara Valley Region as Part of the Guadalupe Transportation Corridor Compliance with 36 CFR Part 800	Regional Overview
S-09915	1988	Simpson, Susan A. and Marcia K. Kelly	Archaeological Survey Report, proposed access road into Henry Coe State Park, 04-SCL-152 P.M.26.2/30.3 04272-112751 (Caltrans).	Survey
S-16394	1994	Busby, Colin I., Donna M. Garaventa, Stuart A. Guedon, and Melody E. Tannam	Recorded Archaeological Resources in Santa Clara County, California (Plotted on the BARCLAY 1993 LoCaide Atlas)	Regional Overview
S-17852	1995	Jensen Kehl, Jacquelin, and Linda Yamane	Ethnohistoric Genealogy Study, Tasman Corridor Light Rail Project, Santa Clara County, California	Ethnohistory
S-18217	1996	Gmoser, Glenn	Cultural Resource Evaluations for the Caltrans District 04 Phase 2 Seismic Retrofit Program, Status Report	Historic Architecture
S-48927	1997	Crull, Donald Scott	The Economy and Archaeology of European-made Glass Beads and Manufactured Goods Used in First Contact Situations in Oregon, California and Washington.	Regional Overview
S-20395	1998	Donna L. Gillette	PCNs of the Coast Ranges of California: Religious Expression or the Result of Quarrying?	Regional Overview
S-30204	2003	Gillette, Donna L.	The Distribution and Antiquity of the California Pecked Curvilinear Nucleated (PCN) Rock Art Tradition	Regional Overview
S-32596	2006	Milliken, Randall, Jerome King, and Patricia Mikkelsen	The Central California Ethnographic Community Distribution Model, Version 2.0, with Special Attention to the San Francisco Bay Area, Cultural Resources Inventory of Caltrans District 4 Rural Conventional Highways	Regional Overview
S-33600	2007	Meyer, Jack, and Jeff Rosenthal	Geoarchaeological Overview of the Nine Bay Area Counties in Caltrans District 4	Regional Overview
S-43964	2010	Rohde, Bob	Field Office Report of Cultural Resources Ground Survey Findings, Pipeline, range planting, spring development, Contract # 749104101AB	Survey

Table 4.5-2: Cultural Resources within the APE and Buffer by Age and Resource Type	
Cultural Resources Type	**Count (n)**
Native American Resources	
Bedrock Mortar	1
Habitation	7
Lithic Scatter	6
Quarry	1
Subtotal	15
Historic-Era Resources	
Dam	1
Commercial/Residential	1
Ranch	2
Refuse Deposit	1
Road	7
Shell Scatter	1
Stock Pond	6
Subtotal	**19**
Total	**34**

Cultural Resources

Of the 34 known cultural resources within the proposed Project APE and the 200-meter buffer, only 2 occur within 150 feet of planned subsurface disturbance or staging areas, and these 2 resources are both greater than 50 feet from planned disturbance or staging areas and have been extensively determined through survey and subsurface testing to not extend into any areas of planned impacts. However, there are 11 known cultural resources that overlap with or are immediately adjacent to existing[9] ranch roads to be used for equipment access as part of the proposed Project (Table 4.5-3, see also Confidential Appendix E). The 11 known cultural resources do not include the one previously identified resource listed in the Heritage Resource Inventory, which does not overlap with the proposed Project APE. It does include 2 Native American habitation sites, 3 Native American lithic scatters, and 6 historic-era built environment resources. Of these 11 resources, only the 2 Native American habitation sites have been evaluated as eligible for the National or California Register, and thereby warrant further consideration (Byrd et al. 2024). The remaining 9 resources were evaluated and found to be ineligible (Byrd et al. 2024; Thomas and Hyde 2021).

[9] Some of these existing access roads have been in use for more than 150 years and pre-date the construction of North Fork Dam in 1939. No access routes are publicly accessible.

Table 4.5-3: Cultural Resources Overlapping with Access Routes by Age, Type, and Eligibility	
Cultural Resources Type	**Count (n)**
Eligible Resources	2
Native American	**2**
Habitation	2
Ineligible Resources	9
Native American	**3**
Lithic Scatter	3
Historic-Era	**6**
Dam	1
Ranch	1
Road	4
Total	**11**

4.5.2 Regulatory Framework

Federal Laws, Regulations, and Policies

National Historic Preservation Act

Undertakings that involve federal funding, lands, or permits require that as part of the environmental analysis of a proposed project, a cultural resources investigation must be conducted pursuant to the provisions of Section 106 of the National Historic Preservation Act (NHPA; 36 CFR 800) of 1966, as amended (16 US Code 470 *et seq*.).

Under the NHPA, the lead federal agency must identify and assess cultural resources (including archaeological remains, historical structures, and traditional cultural properties) eligible for the National Register of Historic Places (NRHP) in consultation with the State Historic Preservation Officer. The significance of cultural resources within the proposed Project area must be measured against the NRHP criteria for eligibility (36 CFR 60.4), which state that the quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, materials, workmanship, feeling, and association, and:

- Are associated with events that have made a significant contribution to the broad patterns of our history; or
- Are associated with the lives of persons significant in our past; or
- Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- Have yielded, or may be likely to yield, information important in prehistory or history.

"Traditional Cultural Properties" are defined separately as eligible for the NRHP because of their "association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community" (Parker and King 1998).

Compliance with the NHPA requires consideration of the context and intensity of the environmental effects that would result from the proposed Project. The criteria used to determine the significance of an impact to historic properties are based on Section 800.5(a)(1) and (a)(2) of the NHPA and the U.S. Bureau of Reclamation's Directives and Standards (Land Management and Development 02-01). The NHPA defines an adverse effect to an eligible resource as physical destruction, damage, or alteration, including moving the property from its historical location, isolation from or alteration of the setting, introduction of intrusive elements, neglect leading to deterioration or destruction, and transfer, sale, or lease from federal ownership.

Native American burials are also protected by federal law. The Native American Graves Protection and Repatriation Act (Public Law 101-601; 25 US Code 3001–3013) protects Native American burial sites and controls the removal of human remains, funerary objects, sacred objects, and items of cultural patrimony on federal and tribal lands.

State Laws, Regulations, and Policies

California Environmental Quality Act

Historical Resources. Under CEQA, a project will have a significant effect if it causes a "substantial adverse change" in the significance of a "historical resource." A "historical resource" is defined as a resource that is (*CEQA Guidelines* §15064.5[a]):

- Listed in or determined by the State Historical Resources Commission to be eligible for listing in the California Register of Historical Resources (CRHR);
- Listed in a local register of historic resources;
- Determined to be eligible for California Register listing based on an historical resource survey meeting defined requirements; or
- Determined by the Lead Agency's exercise of discretion, based on substantial evidence in the record, to be an historical resource.

The *CEQA Guidelines* also provide guidance on how to mitigate significant impacts on historical resources (*CEQA Guidelines* §15126.4(b)).

Unique Archeological Resources. In addition, Public Resources Code §21083.2 requires that the lead agency determine whether a project or program may have a significant effect on "unique archaeological resources." A unique archaeological resource is defined in CEQA as an archaeological artifact, object, or site about which it can be clearly demonstrated that there is a high probability that it:

- Contains information needed to answer important scientific research questions, and there is demonstrable public interest in that information.

- Has a special or particular quality, such as being the oldest of its type or the best available example of its type; or
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Measures to mitigate significant effects on these resources are also provided in Public Resources Code §21083.2.

California Health and Safety Code Section 7050.5

Section 7050.5 of the Health and Safety Code requires that construction or excavation be stopped in the vicinity of discovered human remains until the county coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner must then contact the Native American Heritage Commission, which has jurisdiction pursuant to Section 5097 of the Public Resources Code. When human remains are discovered or recognized in any location other than a dedicated cemetery, no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains may take place until the county coroner has been informed and has determined that no investigation of the cause of death is required. If the remains are of Native American origin, either the descendants of the deceased Native American(s) have made a recommendation to the landowner or the person responsible for the excavation work for means of treating or disposing of, with appropriate dignity, the human remains, and any associated grave goods as provided in Public Resources Code §5097.98. This excludes instances where the Native American Heritage Commission was unable to identify a descendant, or the descendant failed to make a recommendation within 24 hours after being notified by the commission.

Similar procedures are required by *CEQA Guidelines* §15064.5(e).

California Register of Historical Resources

The CRHR is established in Public Resources Code §5024.1. The register lists all California properties considered to be significant historical resources, including all properties listed in, or determined to be eligible for listing in, the NRHP, including properties evaluated under Section 106 of the NHPA. Resources listed in, or eligible for listing in, the CRHR are referred to as "historical resources." The criteria for listing are similar to those of the NRHP. Criteria for listing in the CRHR include resources that:

- Are associated with the events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- Are associated with the lives of persons important in our past;
- Embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possess high artistic values; or
- Have yielded, or may be likely to yield, information important in prehistory or history.

The regulations set forth the criteria for eligibility as well as guidelines for assessing historical integrity and resources that have special considerations.

Assembly Bill 52

Please see complete discussion of Assembly Bill 52 in Section 4.18, Tribal Cultural Resources.

Regional and Local Laws, Regulations, and Policies

Santa Clara County General Plan

The General Plan was adopted in 1994. The document provides a comprehensive approach to identifying and addressing cultural resources (referred to as "heritage resources"). The General Plan identifies three strategies for protecting heritage resources:

Strategy #1. Inventory and Evaluate Heritage Resources

Strategy #2. Prevent, or Minimize, Adverse Impacts on Heritage Resources

Strategy #3. Restore, Enhance, and Commemorate Resources as Appropriate

The General Plan also acknowledges the challenges for preserving heritage resources in urban settings versus rural settings, such as the proposed Project study area, and provides similar but different policies for each setting. There are two general policies that guide implementation of the strategies in rural settings:

R-RC 81: Heritage resources within the rural unincorporated areas of Santa Clara County shall be preserved, restored wherever possible, and commemorated as appropriate for their scientific, cultural, historic and place values.

R-RC 82: The following strategies should provide overall direction to efforts to preserve heritage resources:

- Inventory and evaluate heritage resources.
- Prevent, or minimize, adverse impacts on heritage resources.
- Restore, enhance, and commemorate resources as appropriate.

4.5.3 Discussion

The proposed Project APE has been completely surveyed with subsurface testing to refine resource locations, as discussed in Section 4.5.1, and the proposed Project activity areas have been developed, as described in Section 4.5.1, to avoid subsurface disturbance within 150 feet[10] of known sensitive resources (e.g., cultural resources) with two exceptions, which are both greater than 50 feet from resources and are not anticipated to impact cultural resources. There are 11 recorded cultural resources that overlap with or are immediately adjacent to existing unpaved ranch roads identified as access routes for the proposed Project, including 5 precontact

[10] This is a standard buffer designed to protect resources through avoidance.

archaeological resources and 6 historic-era resources, of which 2 Native American habitation sites have been evaluated as eligible for the NRHP and CRHR (Byrd et al. 2024; see Table 4.5-3). The roads intersecting with these resources have been in use since the 1870s (Thomas and Hyde 2021) and continue to be used regularly for ranching activities.[11] The proposed Project would not constitute a substantial increase in use of these roads above the current baseline conditions.[12] Extensive use of these roads over the last 150 years combined with regular collection of exposed artifacts precludes the presence of significant or intact cultural material within these road alignments. The impacts associated with the continued use of these existing access roads are therefore not anticipated to have a substantial adverse change in the significance of the cultural resources that they pass through. In the case of unanticipated inadvertent discoveries of cultural resources or human remains during project-associated work, Avoidance and Minimization Measures (AMMs) CU-1: Accidental Discovery of Archaeological Artifacts, Tribal Cultural Resources, or Burial Finds and CU-2: Pre-activity Cultural Resources Identification and Sensitivity Training, would be implemented.

a. Less than Significant Impact. The proposed Project study area has been completely surveyed. With two exceptions, there are no known historic-era resources located within 150 feet of each work activity area described in Section 2 (e.g., seismic lines, text pits, boring sites, staging areas). The two exceptions are well-defined, greater than 50 feet away from the work activity areas, and would not be impacted by proposed Project activities. Six historic-era resources have been identified as overlapping with or being immediately adjacent to proposed Project-associated access routes, but all 6 known historic-era resources have been evaluated as not eligible for listing on the NRHP or CRHR (Thomas and Hyde 2021) and therefore do not constitute historical resources as defined under *CEQA Guidelines* §15064.5[a]). Consequently, the proposed Project would not result in substantial adverse changes to the significance of any identified historic resources pursuant to *CEQA Guidelines* §15064.5.

b. Less Than Significant Impact. The proposed Project study area has been completely surveyed. With two exceptions, there are no known historic-era resources located within 150 feet of each work activity area described in Section 2. (e.g., seismic lines, text pits, boring sites, staging areas). The two exceptions are well-defined, greater than 50 feet away from the work activity areas, and would not be impacted by Project activities. Five known Native American archaeological resources have been identified as overlapping with or being immediately adjacent to existing access routes identified as activity areas within the proposed Project study area. Of these 5 known archaeological resources, 3 have been evaluated as not eligible for listing on the NRHP or CRHR and 2 Native American habitation sites have been evaluated as eligible (Byrd et al. 2024). However, adverse changes in the significance of any archaeological resource as a result of the continued use of existing access routes during proposed Project implementation would be less than significant, as discussed above. AMM CU-1: Accidental

[11] These access routes also provide primary access for CAL FIRE for wildfire prevention and suppression efforts.

[12] Section 2 provides additional details on the type of vehicles and level of use of these roads. Note that the use of these roads for the proposed Project is similar to the level of use by fire suppression vehicles over the course of fire suppression and rehabilitation in 2000 associated with large wildfires in the North Fork Pacheco Creek watershed.

Discovery of Archaeological Artifacts, Tribal Cultural Resources, or Burial Finds would be implemented to address any inadvertent discoveries. In addition, AMM CU-2: Pre-activity Cultural Resources Identification and Sensitivity Training would be implemented to educate geotechnical personnel regarding the inclusion of relevant information regarding sensitive cultural resources (including human remains and burials), applicable regulations, protocols for avoidance, and consequences of violating state laws and regulations. With the incorporation of these measures, the proposed Project would have a less than significant impact upon all archeological resources pursuant to Section 15064.5 of the *CEQA Guidelines*.

c. Less Than Significant Impact. The proposed Project study area has been completely surveyed. With two exceptions, there are no known historic-era resources located within 150 feet of each work activity area described in Section 2. (e.g., seismic lines, text pits, boring sites, staging areas). The two exceptions are well-defined, greater than 50 feet away from the work activity areas, and would not be impacted by Project activities. Human remains were recovered during prior subsurface testing within the two Native American habitation sites that overlap with or are immediately adjacent to project-associated access routes and have been evaluated as eligible for listing on the NRHP and CRHR (Byrd et al. 2024). However, no human remains were encountered within the proposed access route alignments, and no human remains disturbance is expected within the boundaries of either of these resources as a result of continued use of existing unpaved access roads during proposed Project implementation, as discussed above. AMM CU-1: Accidental Discovery of Archaeological Artifacts, Tribal Cultural Resources, or Burial Finds would be implemented to address any inadvertent discoveries. In addition, AMM CU-2: Pre-activity Cultural Resources Identification and Sensitivity Training would be implemented to educate geotechnical personnel regarding the inclusion of relevant information regarding sensitive cultural resources (including human remains and burials), applicable regulations, protocols for avoidance, and consequences of violating state laws and regulations. With AMMs CU-1 and CU-2 in place, the proposed Project would not disturb any human remains, resulting in a less-than-significant impact pursuant to *CEQA Guidelines* §15064.5.

4.5.4 Best Management Practices

No BMPs are applicable.

4.5.5 Avoidance and Minimization Measures

The following AMMs described in Table 2-7 are applicable to cultural resources:

CU-1: Accidental Discovery of Archaeological Artifacts, Tribal Cultural Resources, or Burial Remains

CU-2: Pre-activity Cultural Resources Identification and Sensitivity Training

See details in Table 2-7 in Section 2.

4.5.6 Mitigation Measures

No mitigation measures are required.

4.6 Energy

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☐	☒
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

4.6.1 Environmental Setting

California's energy system includes electricity, natural gas, and petroleum. According to the California Energy Commission, California's energy system generates approximately 70 percent of the electricity, 10 percent of the natural gas, and approximately 26 percent of the petroleum consumed or used in the state. The rest of the state's energy and energy sources are imported and include electricity from the Pacific Northwest and the Southwest; natural gas purchases from Canada, the Rocky Mountain states, and the Southwest; and petroleum imported from Alaska and foreign sources (CEC 2023a; 2023b; and 2021). Project implementation would require the use of transportation fuels, primarily in the form of gasoline and diesel.

4.6.2 Regulatory Setting

Federal Laws, Regulations and Policies

National Energy Conservation Policy Act

The National Energy Conservation Policy Act serves as the underlying authority for federal energy management goals and requirements. Signed into law in 1978, it has been regularly updated and amended by subsequent laws and regulations. The act is the foundation of most federal energy requirements. It established fuel economy standards for on-road motor vehicles in the United States.

Energy Policy Act of 2005

The Energy Policy Act created energy-related tax incentives from 2005 to 2016 to promote energy efficiency and conservation, renewable energy, oil and gas production and transmission, coal production, and electric generation and transmission.

American Recovery and Reinvestment Act of 2009

As part of a larger stimulus package, the Recovery Act authorized federal funding to the U.S. Department of Energy to forward specific energy priorities, including modernizing the nation's electric transmission grid.

Fuel Economy Standards

The U.S. Environmental Protection Agency (EPA), in conjunction with the National Highway Traffic Safety Administration, issued the first of a series of greenhouse gas (GHG) emissions standards for new cars and light-duty vehicles in April 2010 and significantly increased the fuel economy of all new passenger cars and light trucks sold in the United States. Under the Safer Affordable Fuel-Efficient Vehicles Rule, the National Highway Traffic Safety Administration and EPA have proposed establishing new standards covering model years 2021 through 2026 by maintaining the current standards through 2026. The California Clean Air Act waiver issued by the EPA allows California to set and enforce more stringent emissions standards than the federal government, including California's greenhouse gas emission standards and zero emissions vehicle mandate. Also, the EPA and National Highway Traffic Safety Administration in 2026 adopted fuel economy and GHG standards for medium- and heavy-duty trucks (81 Federal Register 73478).

State Laws, Regulations, and Policies

Senate *Bill 350*

SB 350 (Chapter 547, Statutes of 2015) was signed into law in September 2015. SB 350 establishes tiered increases to the Renewables Portfolio Standard of 40 percent by 2024, 45 percent by 2027, and 50 percent by 2030. The former target was 33 percent by 2020. SB 350 also set a new goal to double the electricity and natural gas savings for existing buildings through energy efficiency and conservation measures.

Senate Bill 100

SB 100 (Chapter 312, Statutes of 2018) establishes a state goal of 100 percent clean electricity goal by 2045 and advances the Renewables Portfolio Standard to 50 percent by 2025 and 60 percent by 2030.

California Energy Commission

The California Energy Commission was established by the Warren-Alquist Act in 1974 and is the state's primary energy policy and planning agency. The commission has five major responsibilities: forecasting future energy needs and keeping historical energy data; licensing thermal power plants 50 megawatts or larger; promoting energy efficiency through appliance and building standards; developing energy technologies and supporting renewable energy; and planning for and directing the state's responses to any energy emergencies.

California 2019 Energy Action Plan Update

Originally developed in 2003 and most recently updated in 2019, the California Energy Efficiency Action Plan identifies specific action areas to ensure that California's energy resources are adequate, affordable, technologically advanced, and environmentally sound (CEC 2019). Initial priorities of the plan were to address California's increasing energy demands and energy efficiency and demand response (i.e., reduction of customer energy usage during peak periods to address system reliability and support the best use of energy infrastructure). Additional priorities included

the use of renewable sources of power and distributed generation. The plan also notes that investment in conventional transmission infrastructure is crucial to helping the state meet its renewable energy goals. The latest 2019 version is divided into three specific goals that drive energy efficiency, including doubling energy efficiency savings by 2030, removing and reducing barriers to energy efficiency in low-income and disadvantaged communities, and reducing greenhouse gas emissions from the buildings sector (CEC 2019).

Regional and Local Laws, Regulations, and Policies

Santa Clara County General Plan

The General Plan was adopted in 1994 and includes energy efficiency and conservation strategies. Those that are relevant to the proposed Project include:

Policy C-RC 77 – Energy efficiency and conservation efforts in the transportation, industrial, commercial, residential, agricultural, and public sectors shall be encouraged at the local, county (subregional), and regional level.

Valley Water Climate Change Action Plan and Board Policies

Valley Water's Climate Change Action Plan (CCAP) builds upon its existing climate change efforts by identifying the ways in which Valley Water and Santa Clara County are vulnerable to climate change and providing goals, strategies, and possible actions (Valley Water 2021). As shown below, applicable goals include reducing direct greenhouse gas emissions, expanding renewable energy and improving energy efficiency, and reducing indirect greenhouse gas emissions.

CCMA Goal 5.1: Minimize greenhouse gas emissions from Valley Water's operations.

CCMA Objective 5.1.1: Expand the use of clean technology in vehicles, equipment, and buildings, and develop carbon-efficient construction and service delivery practices.

CCMA Objective 5.1.2: Optimize energy use and expand renewable energy portfolio.

CCMA Objective 5.1.3: Incentivize low carbon practices, projects, and efforts by employees, contractors, and partners.

4.6.3 Discussion

a. No Impact. The proposed Project proposes to implement the design level geotechnical investigations that consist of drilling 119 borings, and up to an additional 30 supplemental borings, excavating up to 32 test pits, and conducting 16,890 feet of surface geophysical surveys. Once the design-level geotechnical investigations have been completed, no ongoing or operational activities would occur that would consume additional energy. The proposed Project would not use excessive amounts of fuel (i.e., gasoline and diesel fuel) that would constitute wasteful, inefficient, or unnecessary consumption of energy. Only the required amount of fuel necessary to complete the proposed work would be used. In addition, the following Valley Water BMP would be implemented in compliance with Title 13, Section 2485

of the California Code of Regulations to reduce air quality impacts and fuel consumption by limiting idling times to 5 minutes.

BMP AQ-1 (7), states, "Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations), and this requirement shall be clearly communicated to construction workers (such as verbiage in contracts and clear signage at all access points)."

Therefore, the proposed Project would not result in any impacts due to wasteful, inefficient, or unnecessary consumption of energy resources.

b. No Impact. The proposed Project would not include the development or demolition of any buildings. Therefore, no impact related to compliance with applicable energy and energy efficiency/conservation standards or codes, such as the California Building Standards or California Energy Code, would result. In addition, given the nature of the proposed Project, it would have no impact related to conflicting with or obstructing federal, state, regional, or local laws, regulations, and policies in addition to California's Renewable Portfolio Standard. Therefore, no impact would occur.

4.6.4 Best Management Practices

The following BMP described in Table 2-6 is applicable to energy:

AQ-1 (7): Minimize Idling Times of Equipment

4.6.5 Avoidance and Minimization Measures

No AMMs are applicable.

4.6.6 Mitigation Measures

No mitigation measures are required.

4.7 Geology and Soils

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii. Strong seismic ground shaking?	☐	☐	☐	☒
iii. Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv. Landslides?	☐	☐	☐	☒
b. Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☒
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☐	☒
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒

4.7.1 Environmental Setting

The proposed Project study area lies entirely in the central portion of Coast Ranges Geomorphic Province, south of San Francisco Bay. The mountains within the Coast Ranges are generally between 2,000 to 4,000 feet above mean sea level (msl) with some peaks over 6,000 feet above msl. The valleys of the Coast Ranges range between 400 to 1,000 feet above msl. The ridges and valleys of the Coast Ranges trend northwest, subparallel to the San Andreas Fault. To the east, strata dip beneath the alluvium underlying the San Joaquin Valley. To the west is the Pacific Ocean where the coastline is uplifted, terraced, and wave cut. The Coast Ranges are composed of thick Mesozoic and Cenozoic strata. The San Andreas Fault crosses through this province 26 miles west of the proposed Project study area (CGS 2002).

Regional Geologic Setting

This section describes the geologic formations, seismicity, geologic hazards, and unique geological resources at the regional scale. Due to the scale and type of geologic features and geomorphic processes, this section also includes a discussion of geologic hazards related to landslides, earthquakes, and seiches. Figure 4.7-1 provides a regional geology map for the proposed Project study area.

The igneous, metamorphic, and sedimentary rock units in this part of the Coast Ranges province are tilted along the eastern flank of the Diablo Range to form an east-dipping homocline,[13] and they flatten eastward across the western San Joaquin Valley (Harden 2004). The Mt. Hamilton structural block, within which the proposed Project study area is located, is comprised of predominantly eastern belt Franciscan Complex rocks: graywacke sandstone, siltstone, shale, chert, and high grade metamorphic rocks (Wentworth et al. 1999).

Regional Seismicity

The San Francisco Bay Area and surrounding areas are characterized by numerous geologically young faults (see Figure 4.7-2). These faults can be classified as historically active, active, potentially active, or inactive (Valley Water 2021a and 2021b) and redefined under the new classification of the Alquist-Priolo Act, which includes Holocene active faults, pre-Holocene faults, and age-undetermined faults. Fault activity levels as described under the 1972 Alquist-Priolo Earthquake Fault Zoning Act and the Division of Safety of Dams (DWR 2018) are:

[13] Homocline is a geological structure in which the layers of a sequence of rock strata dip uniformly in a single direction.

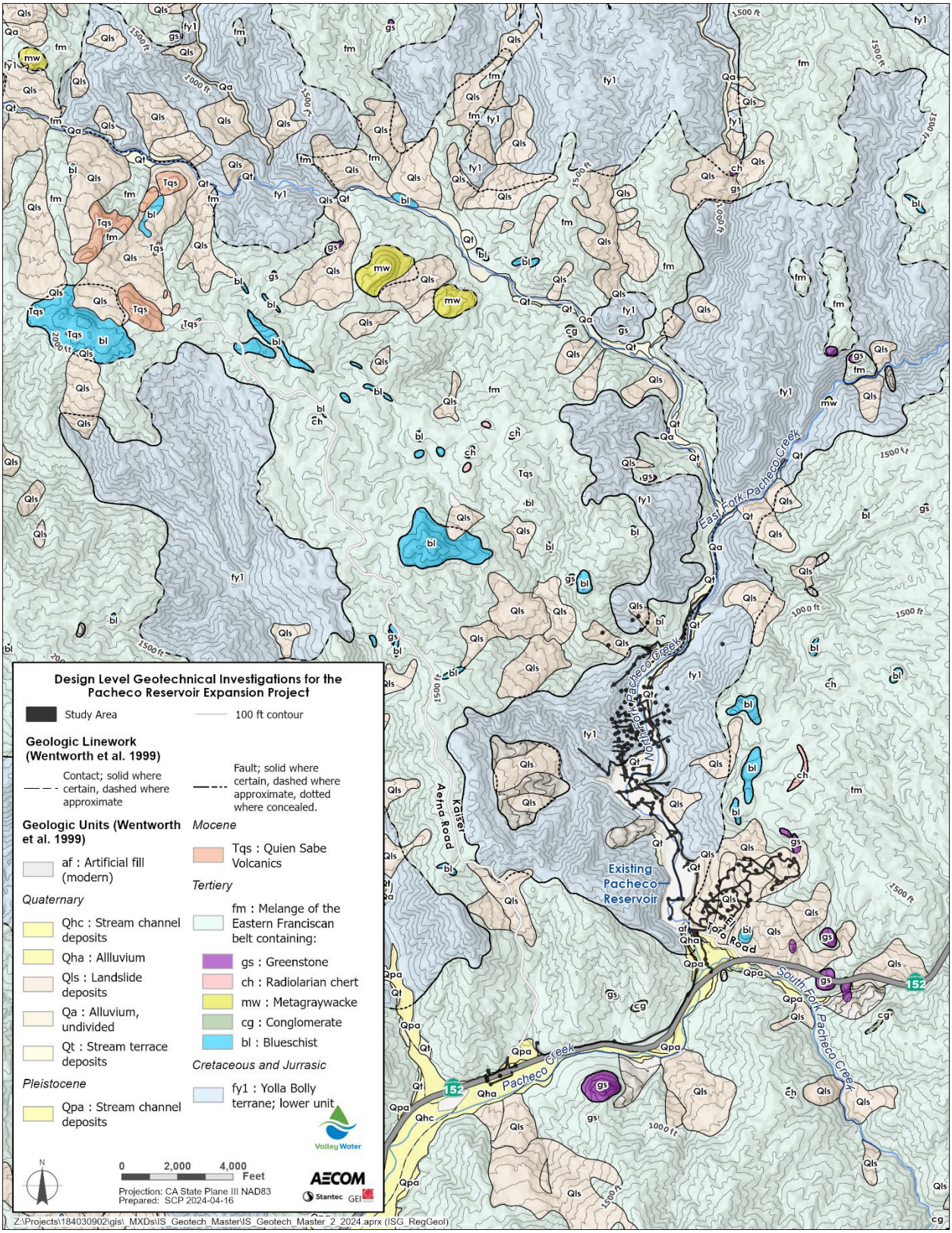


Figure 4.7-1: Regional Geology Map

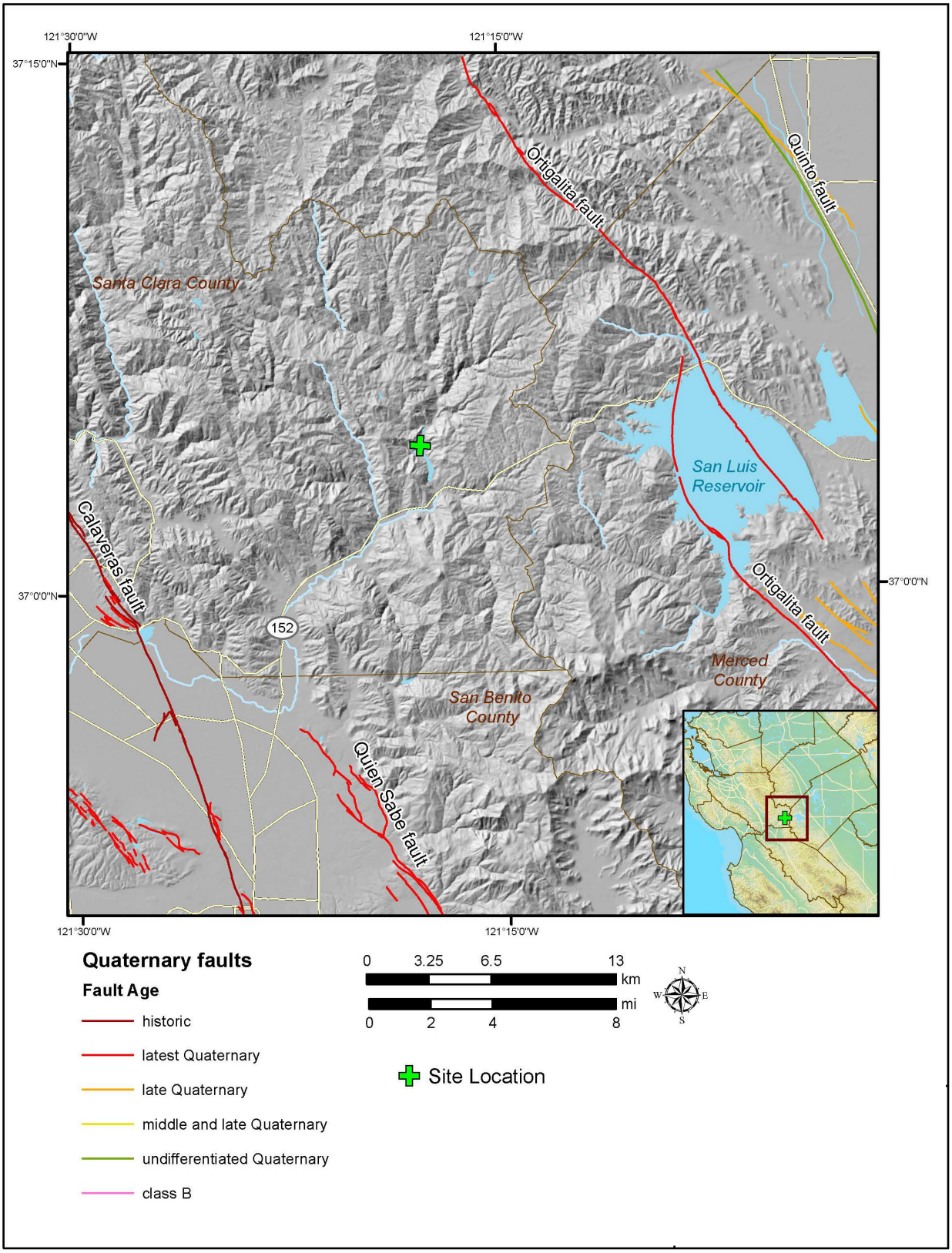


Figure 4.7-2: Regional Fault Locations

Alquist-Priolo Act fault classification

- Faults that have generated earthquakes accompanied by surface rupture during Holocene time (approximately the last 11,700 years) and faults that exhibit seismic fault creep are defined as Holocene-active faults. Previous fault activity classifications under the Alquist-Priolo Act call this an historically active fault.
- Faults that are older than Holocene time are referred to as pre-Holocene faults that have not moved in the last 11,700 years. Previous fault activity classifications under the Alquist-Priolo Act call this an inactive fault or potentially active fault.
- Faults where the recency of fault movement is unknown is referred to as age-undetermined faults.

Division of Safety of Dams fault classification

- The Division of Safety of Dams requires that fault activity be based on fault rupture events within the past 35,000 years (DWR 2018).
- These include active faults that ruptured within the past 35,000 years; conditionally active faults that have moved in Quaternary,[16] time but the rupture displacement date is unknown and inactive faults demonstrated by a fault trace that is consistently overlain by unbroken geologic material older than 35,000 years.
- A fault that has no indication of Quaternary activity is presumed to be inactive, except in regions of sparse Quaternary cover.

Geologic Hazards

Regionally, geologic hazards include rockfall, landslides, earth and debris flows, strong shaking, surface rupture, and secondary seismic effects from earthquakes, and seiches. Hillslopes within the Diablo Range have been subjected to a wide array of mass wasting events including numerous landslides and large landslide complexes. These include rockfall; rock topple in bedrock; rotational, translational, debris slides, earthflows, and slumps for mass movement in soil; and debris flows. Many of the landslides are "nested" together to form large landslide complexes that have a combination of slope movement types. The slope stability is tied to the low shear strength of the soil and steep slopes in the region, increased soil moisture, and lack of competent rock. In many cases, the unstable slopes are found in the mélange material of the Franciscan Complex.[17] Earthquakes produce strong ground shaking that can produce secondary seismic effects such as liquefaction, lateral spreading, seismically induced landsliding, and waves on lakes and reservoirs known as seiches.

[16] Quaternary time is the most recent geologic time which includes the Ice Ages (Pleistocene), the various ages of bronze through iron (Holocene), and the Anthropocene which marks the human influence on Earth's climate from 1850 AD to the present.

[17] Mélange is a French word used by geologists to describe rocks that are mixed up together. As a heterogenous rock unit, mélange has low shear strength and hence is considered to be a source area for unstable slopes.

Unique Geological Resources

The proposed Project study area is associated with an area generally referred to by geologists as Pacheco Pass. The Pacheco Pass area is recognized by the Geological Society of America, American Geophysical Union, and several universities (e.g., Stanford, UC Berkeley, and UC Davis) because it provides physical evidence of tectonic plate activity (i.e., exhumed accretionary prism of an ancient subduction zone). Many other parts of the Coast Ranges geomorphic province also display accretionary deposits. There are no unique geological resources within the proposed Project study area.

Local Geologic Setting

The geologic formations within the proposed Project study area are presented in Figure 4.7-1 and include recent and Quaternary surface deposits and landslide features, Quien Sabe Volcanics[18], the Franciscan Complex, and serpentinite of the Coast Ranges ophiolite. The Franciscan Complex eastern belt includes mélange and tectonic blocks of Yolla Bolly terrane[5] (Dibblee and Minch 2007a and 2007b; Wentworth et al. 1999). A key objective of the proposed geotechnical investigations is to provide additional details on geophysical, geological, and geomorphological features within the proposed Project study area.

Geologic Formations

Eastern Belt Franciscan Complex

The Franciscan rocks of the Hamilton structural block, unlike the volcanic-rich rocks of the central belt Franciscan Complex to the west, consist largely of metagraywacke with thin, locally preserved basal chert, and greenstone layers. The interleaved zones of Franciscan mélange are of equal importance in the block occurring as thin slices within the metagraywacke and as thicker slabs that separate the coherent units.

Two distinctive Franciscan terranes are present based on detailed mapping and age-dating studies. The mélange terrane (fm map symbol) consists largely of sheared shale mélange and arkosic metagraywacke; whereas the Jurassic Yolla Bolly terrane (fy1 map symbol) consists largely of lithic, quartzofeldspathic metagraywacke.[19]

In the proposed Project study area, except for the blueschist[20] blocks, the distribution of the various resistant blocks is generally random. The exposed outcrop-scale blocks typically range from a few square feet to hundreds of square feet in size, with larger blocks of greenstone as large as several thousand square feet of exposed outcrop. Blueschist outcrops, in comparison, range in

[18] Site -specific surface and subsurface geologic investigations conducted to-date within the proposed Project study area have not confirmed volcanic rocks.

[19] Arkosic metagraywacke is dominated by sand (arkose) size material whereas lithic metagraywacke is dominated by sand size rock fragments (lithic). For the geologist this helps determine the depositional environment for these units.

[20] Blueschist is a metamorphic rock found in tectonic margins where subduction has occurred. These rocks, rich in iron and magnesium, are formed in an environment that is high in pressure but low in temperature.

size from less than 100 square feet to more than 10,000 square feet with rock types that range from low-grade glaucophane schist[21] to garnet rich eclogites.[22] The mélange matrix's intensely sheared nature makes the Franciscan Complex highly susceptible to unstable hillslopes.

Coast Range Ophiolite

The Coast Range ophiolite formation includes isolated serpentinite outcrops that have been mapped in the North Fork Pacheco Creek watershed; however, extensive field surveys have not identified any exposures of serpentinite on the surface or within areas subjected to various types of subsurface investigations (e.g., drilling, test pits) that have been performed by engineering geologists and geotechnical engineers within the proposed Project study area (Valley Water 2021a and 2021b).

Quaternary Geology

Colluvium, alluvium, and landslides are the common Quaternary[23] geologic units in the proposed Project study area. River terraces, both bedrock strath and depositional terraces, are associated with North Fork Pacheco Creek and unnamed tributaries. Alluvial deposits are present along the North Fork South Fork of Pacheco Creek and major tributaries. These units include alluvial fan deposits preserved on the older terraces that are adjacent to both the North Fork Pacheco Creek and South Fork Pacheco Creek channels within the proposed Project study area. Colluvium is an accumulation of surficial soil on the lower portion of a hill slope that has formed due to slow gravitational creep, as opposed to deposits moved by flowing water. Detailed landslide mapping indicates that the channel gradient of North Fork Pacheco Creek, and associated deposition of alluvial material (locally referred to as Turkey Flat) about one mile upstream from North Fork Dam, has been influenced periodically by landslides that dammed the creek for some period of time until sufficient stream power resulted in reestablishment of the channel through the affected reach (Valley Water 2021b).

Geomorphology

The majority of the proposed Project study area is within the North Fork of Pacheco Creek watershed. Several proposed activity areas (e.g., borings, access routes) are associated with floodplain and/or terrace features adjacent to this channel and South Fork Pacheco Creek, and the majority of the proposed Project activities are proposed for hillslopes and ridges above the stream channel. Fluvial and hillslope erosional and depositional processes dominate the geomorphic setting throughout the larger Pacheco Creek watershed. Hillslopes throughout the watershed have numerous landslides, most of which are inactive.

[21] Another name for blueschist.

[22] Ecologite is a metamorphic rock formed from igneous rocks rich in iron and magnesium. Ecologites form at higher pressures and temperatures than blueschist.

[23] Quaternary time is the most recent geologic time which includes the Ice Ages (Pleistocene), the various ages of bronze through iron (Holocene), and the Anthropocene which marks the human influence on Earth's climate from 1850 AD to the present.

Fluvial Geomorphology

In general, the stream networks adjacent and directly tributary to North Fork Pacheco Creek (including the area directly draining into Pacheco Reservoir) and Pacheco Creek have steep gradients with dendritic drainage patterns[24] reflecting the presence of the mélange rock units dominating the watershed.[25]

Hillslope Geomorphology

The hillslope geomorphology within the proposed Project study area is dominated by the dendritic drainage pattern in the watersheds that contribute water, sediment, and organic materials to Pacheco Reservoir and North Fork Pacheco Creek (including tributaries). As described above, most of the bedrock that underlies the watershed is mélange material that ranges from mostly competent (hard) and erosion-resistant to not competent and susceptible to erosion. Generally, the more shaley and clayey mélange matrix are homogenous with uniform surface erosion resistance that, when combined with the rugged topography and Mediterranean climate conditions, results in the dendritic drainage pattern for these watersheds. The more resistant metamorphic rock bodies within this weaker mélange matrix material tend to form topographically prominent knobs that extend up through the more easily eroded rocks.

Geologic and Seismic Hazards

Landslide Hazards

Evidence of various types of mass wasting events (e.g., landslides, slumps, and earthflows) can be observed throughout the proposed Project study area dating from millions of years old to as recently as the winter of 2023/2024. One of the key objectives of the geotechnical investigations is to better identify, characterize, and define these features for use in engineering siting, analysis, and design efforts. Many of these features are associated with Franciscan Complex Yolla Bolly sandstone, mélange, or blueschist rock units. Some of these bedrock failures are found where channel migration undercuts and over steepens the slopes. Rockfall deposits from these slopes are limited in extent and usually small in terms of both area and volume. Similarly, rock slumps and slides are also associated with slopes undercut by stream migration resulting in over steepened rock slopes. They are also found in headscarps of historic landslide features.

The most common slope failures throughout the proposed Project study area are associated with shallow weathered bedrock and soil materials. Deposits from these landslides include both rock and soil materials. These types of features are typically associated with conditions where intact sections of soil and weathered rock overlying more competent bedrock or previous landslide

[24] Dendritic drainage patterns develop in areas with homogenous rock units and looks like a branching pattern of hardwood tree leaf veins.

[25] When a watershed has one type of rock and similar topography (relief) that is drained by tributaries that flow into one mainstem stream channel, the resulting fluvial pattern is called dendritic because it appears like the veins in large hardwood leaves. The dominance of the Burt Hills and Yolla Bolly mélanges controls the hill slope erosion mechanics in the proposed Project area.

deposit of mixed soil and rock are disturbed in some manner (e.g., road cut, channel incision). Relative to the deeper landslides, the debris and earth slumps are typically shallow with small runouts. Landslide processes commonly initiate as debris slides or slumps that can transition to slow moving, complex debris/earth flows with long runouts. Earthflows of various ages and sizes are present in the proposed Project study area and elsewhere throughout the North Fork Pacheco Creek watershed (Wentworth et al. 1999).

Valley Water's consultants (Valley Water 2021b) found that the spatial distribution of inactive landslide features along North Fork Pacheco Creek and larger tributaries within the proposed Project study area indicates these landslides are a likely function of fluvial incision and the position of that incision relative to bedrock units and structure. This investigation also suggests that large landslide complexes throughout the proposed Project study area are considered ancient and most likely initially active under different climatic conditions than the present. After review and detail mapping, including maps generated by Light Detection and Ranging (LiDAR),[26] Valley Water's consultants interpreted that most large landslide complexes are comprised of numerous ancient landslides and a minority are recent. Determination of the movement age was difficult for ancient landslides although Valley Water consultants used several methods without a high degree of confidence.[27] The older landslides, which are typically mapped as larger features, are less prominent than the younger landslides. These younger landslides have more "fresh features" than the older landslides due to their young age with less time to undergo erosion.

Seismicity

The proposed Project study area, like most of California, is a region of high seismic hazard zone due to strong ground shaking associated with the numerous active faults in the general area surrounding the North Fork Pacheco Creek watershed. The proposed Project study area is between the Calaveras and Quien Sabe faults, approximately 11 miles west of North Fork Dam, and the Ortigalita fault, about 8 miles to the east of the dam. The portion of the Calaveras fault closest to North Fork Dam has been active historically (Figure 4.7-2). The Ortigalita and Quien Sabe faults are classified as latest Quaternary-active faults. The historically active San Andreas Fault is approximately 20 miles southwest of North Fork Dam. These north-northwest trending faults control much of the geomorphology including creek drainage geometries, some landslide complex locations, and to varying degrees erosional processes.

Nine large historic earthquake events have occurred since 1838 that likely affected the proposed Project study area. These events ranged in magnitude from 5.8 to 7.8. The largest of these events was the 1906 Great Earthquake of San Francisco with a magnitude of 7.8. There is no evidence

[26] Light Detection and Ranging, an aerial method using radar in which vegetation can be "removed" by computer algorithms from the field data, thereby displaying "bare earth" topography from which landslides are easily inventoried.

[27] In landslide classifications for determining age, most use stream course(s) history. Ancient large landslides will show stream course remnants that had flow when the landslide topography was different from today. Approximate age is difficult to determine unless soil geochemistry is completed and/or dendrochronology of trees on the landslide mass.

that suggests that any impact has occurred to the North Fork Dam as a result of earthquakes since construction of the dam in 1939 (Valley Water 2021a).

Surface Rupture and Seismic Shaking

There are no active faults mapped crossing the proposed Project study area. Therefore, the potential for surface rupture to occur on the proposed Project site is considered to be extremely low. All active faults are located several miles to the west or east of the proposed Project study area. The nearest active fault, the Ortigalita fault, is a right-lateral strike-slip fault within the San Andreas system that predominantly accommodates lateral movement between the North American and Pacific tectonic plates and is located about 8 miles from North Fork Dam and outside of the proposed Project study area. Faults In general proximity to the proposed Project study area that represent substantial potential seismic sources are presented Table 4.7-1.

Seismic shaking intensity, or strong ground motion, is dependent on the distance between an area and the earthquake epicenter, the earthquake magnitude, and the geologic conditions of the site. Faults in general proximity to the proposed Project study area that have the potential for earthquakes that could generate the largest ground motions include the Calaveras, Quien Sabe, Ortigalita, and San Andreas strike-slip faults. Active blind and reverse thrust faulting outside of the proposed Project study area includes the Mount Diablo blind thrust fault, located northeast of the proposed Project study area.

Traditionally, earthquakes have been classified by the amount of energy released, measured using the Richter scale. Seismologists, however, now use the Moment magnitude (M) that provides a more accurate measurement of the size of major earthquakes. The Moment and Richter magnitude scales are nearly identical for earthquakes of less than 7.0. Moment magnitude scales are slightly greater than the corresponding Richter magnitude for earthquakes greater than 7.0.

Faults

During the initial Pacheco Reservoir Expansion Project design efforts, a technical investigation was conducted to evaluate faulting at the site necessary for design and environmental analysis (Valley Water 2021a). Findings from this work were:

- There are no historic, Holocene, or latest Quaternary active faults crossing the proposed Project study area; the nearest active fault is about 8 miles away.
- Active faulting indicators are absent within the proposed Project study area. These indicators include geologic, geomorphic, and seismologic features.
- North Fork Pacheco Creek stream terraces are reflective of normal fluvial activities absent of any Quaternary-aged faulting.
- Site-specific borehole and seismic refraction work at locations associated with construction of Project facilities support the absence of recent faulting.

Table 4.7-1: Faults with Potential for Seismic Activity Near the Proposed Project Study Area

Fault Name	Distance to Project Study Area (miles)	Estimated Maximum Earthquake Magnitude1,2	Approximate Fault Segment Length (miles)2	Average Recurrence Interval (years)3	Approximate Slip Rate (mm/year)2
San Andreas (Peninsula)	20	7.3	62	229	17
San Andreas (North Coast South)	110	7.5	106	223	24
Calaveras (Northern)	11	6.9	30	187	6
Calaveras (Central)	16	6.9	32	54	15
Ortigalita Quien Sabe Hayward (Southeast Extension)	8 11 25	7.2 6.5 7.2	63 16 48	Unknown Unknown Unknown	1.5 0.4 9.0

Source: (CGS 2003; USGS 2003)

Notes:

1. Maximum Earthquake Magnitude – Moment Magnitude based on Magnitude-Area relationships of UCERF3.
2. Fault parameters from the USGS (2023).
3. Recurrence intervals from the USGS (2003).

Liquefaction

Liquefaction is a geotechnical phenomenon in which saturated granular surficial sediments temporarily lose shear strength and become fluid-like during periods of strong earthquake ground shaking. The susceptibility of any site to liquefaction is a function of depth, density, particle size distribution, and water content of the surface deposits and the earthquake magnitude likely to affect the site. Soils most susceptible to liquefaction are saturated, unconsolidated granular sediments within 50 feet of the ground surface. Liquefaction hazards include vertical settlement from densification, lateral spreading, ground oscillation, flow failures, bearing strength loss, subsidence, and buoyancy effects.

Liquefaction is especially prone to alluvial sediments of Holocene (12,000 BC to 1850 AD) and Anthropocene (1850 AD to the present) age. These soils (i.e., loams) tend to be loose because they are geologically young. A small proportion of the proposed Project area has underlying alluvial soils high sand contents. Geologically young, loose sands can rapidly lose their shear strength during seismic shaking. This is the result of uplift forces caused by the shaking ending in liquefaction (Lambe and Whitman 1969). Geologically older soils, Pleistocene (2.5 million years to 12,000 BCE) age alluvial sediments, are generally non-liquefiable because they tend to be more consolidated than the younger sediments. The Holocene-Anthropocene aged alluvial sediment deposits found along the lower valley wall and floor adjacent to North Fork Pacheco Creek within the proposed Project study area do not show evidence that liquefaction has occurred, nor is there any evidence that liquefaction has occurred in the past 80 years since Pacheco Reservoir was developed (Valley Water 2021a).

Lateral Spreading

When lateral spreading occurs, large intact, non-liquified soil blocks move downslope on a liquified layer that is large in areal extent. As the mass moves downslope, it will move toward an unconfined area, such as a stream cut bluff or road cut. It can occur on very gentle slopes (i.e., one degree). Although these conditions may be present locally throughout the North Fork Pacheco Creek watershed, there is no evidence that this process has occurred within the proposed Project study area (Valley Water 2021a).

Seiches

Seiches are waves on bodies of standing water that are initiated by either earthquake shaking or large landslide deposits rapidly entering a water body. Seiches can adversely affect the built or natural environment adjacent to or downstream from the water body. Adverse effects can include damages to impoundment structures including dams. Due to the small sized of the existing Pacheco Reservoir, the hazard from seiche activity is classified as very low.

Soils

There are 8 soil units including series, complexes, and associations in the proposed Project study area. The soil types were identified from the Soil Survey Geographic Database by the National Cooperative Soil Survey from the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS 2021). A review of these 8 soils units identified 2 soil units that are susceptible to erosion. Figure 4.7-3 illustrates the soil unit that underlies each activity area. There are no expansive soil units within the proposed Project study area.

The 2 soil units that are susceptible to erosion are all loams and are organized below as loam and clay loam:

Loam

Vallecitos Loam: on 30 to 75 percent slopes

Clay Loam

Gaviota Clay Loam: on 15 to 30 percent slopes; MLRA 15

Gravelly Loam

- Argonaut Gravelly Loam: on 2 to 15 percent slopes
- Red Bluff Gravelly Loam: on 0 to 3 percent slopes

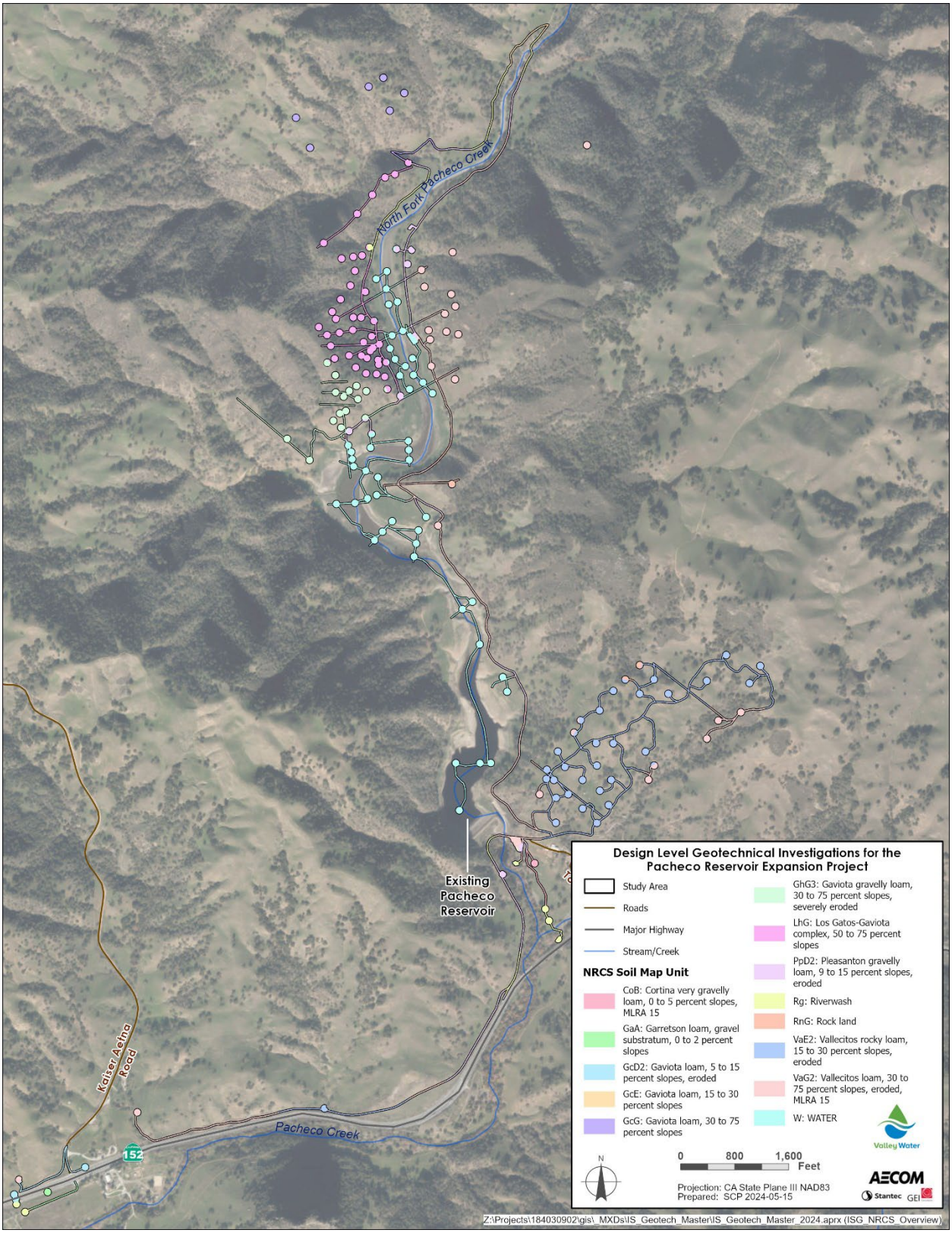


Figure 4.7-3: Mapped Soil Units at Activity Areas within the Proposed Project Study Area

Unique Paleontological Resources and Geologic Features

Unique Paleontological Resources

None of the geologic formations mapped within the proposed Project study area are considered fossiliferous (Wakabayashi 2011; Wentworth et al. 1999; Ingersoll et al. 1999; and Ernst 1993 and 1965), and therefore paleontological resources are not present.

Unique Geologic Feature

Geologists have recognized that the North Fork Pacheco Creek watershed and the area generally referred to as "Pacheco Pass" provides opportunities to the research community with respect to studying plate tectonics. The "exhumed"[28] accretionary prism[29] of the eastern belt Franciscan Complex (i.e., mélange, Burnt Hills, and Yolla Bolly terranes) can be useful with respect to understanding plate tectonics. However, Franciscan Complex rocks are present throughout much of the Coast Ranges Geomorphic Province in California, so their occurrence on the proposed Project site does not represent a unique occurrence.

4.7.2 Regulatory Setting

Federal Laws, Regulations, and Policies

Clean Water Act

In 1972, Congress enacted the Clean Water Act (CWA), and the act has been amended several times since its inception. This is the primary federal law regulating water quality in the United States, and its objective is to reduce or eliminate water pollution in the nation's rivers, streams, lakes, and coastal waters. The CWA prescribes the basic federal laws for regulating discharges of pollutants into waters of the United States. This includes setting water quality standards for contaminants in surface waters, establishing wastewater and effluent discharge limits from various industry categories, and imposing requirements for controlling nonpoint-source pollution.

Section 402 of the CWA, which is applicable to the proposed Project, creates the National Pollutant Discharge Elimination System (NPDES) permit program. This program authorizes point sources of pollution discharging into a surface water body. In California, the NPDES program is administered at the state level, and the Central Coast Regional Water Quality Control Board (CCRWQCB) administer the program in the proposed Project study area, as it relates to the proposed Project.

[28] Exhumed in geology is the process in which an older geologic feature, previously buried by younger geologic units, is uplifted and eroded to expose the previously buried units.

[29] Accretionary prism is the area in plate tectonics where subduction occurs (one plate is pushed under a second plate) and trapped materials between the two plates are tightly folded. The Franciscan Complex is well known for its accretionary prisms.

State Laws, Regulations, and Policies

Alquist-Priolo Earthquake Fault Zoning Map

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface fault rupture to structures for human occupancy. In accordance with the Alquist-Priolo Act, the State Geologist has established regulatory zones called Earthquake Fault Zones around the surface traces of active faults and has published maps showing these zones. No Earthquake Fault Zones are mapped on the proposed Project study area. Also, the temporary nature of the geotechnical investigations proposed would not result in the construction of any building that would be subject to human occupancy.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act was passed in 1990 following the Loma Prieta earthquake to reduce threats to public health and safety and to minimize property damage caused by earthquakes. This act requires the State Geologist to delineate Seismic Hazard Zones related to liquefaction and landsliding, and cities, counties, and other local permitting agencies are required to regulate certain development projects within these zones. Resources available for evaluating seismic hazard zones are available from the California Geological Survey (CGS 2004 and 2008). However, Seismic Hazard Zones have so far only been mapped in more urban developed areas of California and none have been mapped on the Pacheco Peak quadrangle, which includes the proposed Project study area.

Regional and Local Laws, Regulations, and Policies

Santa Clara County General Plan

The proposed geotechnical investigations, as described in Section 2 of this IS/MND, would occur within unincorporated Santa Clara County and therefore be subject to the strategies and policies of the General Plan. The relevant goals, strategies, and policies related to sedimentation, erosion, and geologic hazards were considered in the development of the proposed Project.

Book A in the General Plan (Santa Clara County 1994) describes the Goals for Responsible Resource Conservation, specifically Goal 5.1 related to protection and preservation of heritage resources, including paleontological resources. *Book B* in the General Plan (Santa Clara County 1994) in the Resource Conservation and the Safety and Noise chapters outlines the management of natural hazards and resources pertaining to soil erosion and geologic hazards in unincorporated rural areas of the county.

General plan strategies and policies for erosion are included in the Resource Conservation chapter, Water Supply, Quality & Watershed Management section. Strategy #2 is to reduce water quality impacts to rural land use and development. Under that strategy, the plan includes the following policy:

R-RC 13: Sedimentation and erosion shall be minimized through controls over development, including grading, quarrying, vegetation removal, road and bridge construction, and other uses which pose such a threat to water quality.

General plan strategies and policy for geologic hazards are included in the Natural Hazard section of the Safety and Noise chapter. Plan direction is based in part on the overall principle that "no individual or public agency should be allowed to take actions which impose significant, demonstrable risks on neighboring properties or upon the community at large." Strategy #3 is to design, locate, and regulate development to avoid or withstand hazards. Policy related to geologic hazards includes:

R-HS 14: Critical structures and infrastructure vital to the public health, safety, and general welfare, such as water supply facilities, other utilities, police and fire stations, and communications facilities, shall not be located in areas subject to significant impacts from geologic or seismic hazards unless there is no feasible alternative site. Projects shall be designed to mitigate any seismic hazards associated with their sites.

R-HS 19: In areas of high potential for activation of landslides, there shall be no avoidable alteration of the land or hydrology which is likely to increase the hazard potential, including:

a. saturation due to drainage or septic systems;

b. removal of vegetative cover; and

c. steepening of slopes or undercutting the base of a slope.

Santa Clara County Grading Ordinance

The proposed geotechnical investigations that are described in Section 2 of this IS/MND are considered to be exempt from a grading permit, as stated in Sections C12-407(e) and (f) of the Santa Clara County Grading Ordinance.

Geotechnical or geological investigations, C12-407(e) states:

> *Excavations for soils or geological investigations by a soils engineer or engineering geologist is exempt from a grading permit provided such work is backfilled, compacted to 90 percent and shaped to the original contour of the land under the direction of the soils engineer or engineering geologist immediately after the investigation, or within 45 days after the start of the work, whichever is sooner. Disturbed areas shall have adequate erosion prevention measures.*

Temporary access, C12-407(f) states:

> Grading necessary for the temporary access to a site for geotechnical engineering, geologic investigation, septic investigation, or the installation of temporary water tanks or story poles is not subject to a grading permit. This exemption shall allow up to 300 cubic yards of material on any site, and no cuts or fills shall create slopes greater than 5 feet in vertical depth at their deepest points measured from the natural ground surface or affect a watercourse. Written notice of the beginning of work shall be provided to the Grading Official at least 48 hours prior to the beginning of the work. Disturbed area shall have adequate erosion prevention measures.
>
> Restoration shall include a keyway into the natural ground, backfill, compacted to 90 percent relative density, and shape to the original contour of the land under the direction of a soils engineer. Restoration work shall take place within 45 days after the start of the work, unless

additional time is approved by the Grading Official, with the submittal of photo documentation, or other materials acceptable to the Grading Official, demonstrating completion of the restoration work.

Santa Clara Valley Habitat Plan

The Valley Habitat Plan identifies two conditions that are relevant to Geology and Soils: Condition 3. Maintain Hydrologic Conditions and Protect Water Quality, and Condition 11. Stream and Riparian Setbacks. These are discussed in Section 2.6 and fully described in Appendix B.

4.7.3 Discussion

a. i. No Impact. Surface rupture occurs when the ground surface is broken due to fault movement during an earthquake. The location of surface rupture generally can be assumed to be along an active or potentially active major fault trace. There are no active earthquake faults mapped in the proposed Project study area. The proposed Project study area is located between the Calaveras and Quien Sabe faults, approximately 11 miles west of the proposed Project study area, and the Ortigalita Fault, about 8 miles to the east of the proposed Project study area. Segments of the Calaveras and Quien Sabe faults are historically active, whereas other segments display Holocene activity. The Ortigalita Fault is a Holocene fault. The historically active Peninsula segment of the San Andreas Fault is approximately 20 miles west of the proposed Project study area (Figure 4.7-2).

The Assessment of Local and Site-Specific Faulting for the Pacheco Reservoir Expansion Project (Valley Water 2021a) concluded the following:

- There are no historic, Holocene, or latest Quaternary active faults crossing the proposed Project study area; the nearest fault is about 8 miles away.
- Active faulting indicators are absent within the proposed Project study area. These indicators include geologic, geomorphic, and seismologic features.
- North Fork Pacheco Creek stream terraces are reflective of normal fluvial activities absent of any Quaternary-aged faulting.
- Site-specific borehole and seismic refraction work at locations associated with construction of Project facilities support the absence of recent faulting.

Therefore, the proposed Project would not directly or indirectly cause potential substantial adverse impacts from rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Maps.

ii. No Impact. The major faults in the region that could cause strong ground shaking within the proposed Project area during large earthquakes include the San Andreas, Hayward, and Calaveras, and Ortigalita faults, which are located about 20 miles, 28 miles, 11 miles, and 8 miles from the proposed Project study area, respectively. In addition, there are no Quaternary-aged or younger faults crossing the proposed Project study area, and active faulting indicators

are absent within the proposed Project study area (Valley Water 2021a). Although, seismic ground shaking has the potential to occur within the proposed Project study area, the proposed geotechnical investigations would not cause substantial adverse effects, including the risk of loss, injury, or death from seismic ground shaking. Therefore, no impact would occur.

iii. No Impact. The phenomenon in which saturated granular sediments temporarily lose shear strength and become fluid-like during periods of strong earthquake ground shaking is called "liquefaction." The site susceptibility to liquefaction is a function of depth, density and water content of the sediments, and the earthquake magnitude likely to affect the site. The surficial deposits most susceptible to liquefaction are the saturated, unconsolidated granular sediments within 50 feet of the ground surface.

The young alluvial sediment deposits found along the lower valley floor adjacent to North Fork Pacheco Creek within the proposed Project study area could be susceptible to liquefaction if saturated during a strong shaking event. Although seismic-related ground failure, including liquefaction, has the potential to occur within the proposed Project study area, the proposed geotechnical investigations would not cause substantial adverse effects, including the risk of loss, injury, or death from seismic-related ground failure, including liquefaction. Therefore, no impact would occur as a result of seismic-related ground failure, including liquefaction, from implementation of the proposed Project.

iv. No Impact. The proposed Project study area has been the subject of initial geotechnical engineering investigation work to assist in the selection of the upstream dam site and inform the design of the new dam for Pacheco Reservoir Expansion Project. The geotechnical and engineering investigations (AECOM 2020 and 2021) identified where landslides have occurred at the proposed new dam site and within the expanded reservoir. Implementation of surface and subsurface geotechnical investigations would not result in any changes to the slopes, drainage, or groundwater characteristics that influence the stability of these landslide features. Therefore, the proposed Project would not cause substantial adverse effects, including the risk of loss, injury, or death involving landslides. No impact would occur.

b. Less than Significant Impact. The proposed Project proposes 119 initial geotechnical borings, 30 supplemental geotechnical borings, and 32 test pits. The geotechnical borings would require the placement of temporary drilling platforms at 46 planned locations and up to 18 supplemental locations to allow for helicopter mobilization of portable drills and equipment and supplies onto the hillslopes of the proposed Project site. Although surface geophysical studies would be conducted (e.g., seismic refraction and electrical resistivity) at a number of locations, these would not result in ground disturbance. All geotechnical investigations would occur during the dry season. Soil disturbance associated with each of the geotechnical borings would include an area of approximately 4 square feet. Each of the proposed 32 test pits would temporarily impact an average area of approximately 400 square feet. Hand contouring associated with each drilling platform location would result in minor temporary ground disturbance of approximately 30 square feet (½ cubic yard of soil) and would be completed with hand tools (e.g., shovel). Collectively, the temporary disturbance area of approximately 4 square feet for each proposed bore site would occur from

geotechnical borings, 12,600 square feet (0.29 acre) of temporary disturbance for the 32 proposed test pits, and 7,840 square feet (0.18 acre) of temporary disturbance for the 64 proposed drilling platforms. The proposed Project also includes the implementation of the BMPs contained in Section 2 of this document. These include WQ-4 (Limit impacts of from Staging and Stockpiling of Materials); WQ-9 (Use Seeding for Erosion Control, Weed Suppression, and Site Improvement), which requires that disturbed areas are seeded with native seed as soon as is appropriate after activities are complete; WQ-11 (Maintain clean conditions at work sites), which requires that the work sites and access roads are maintained in an orderly condition; WQ-15 (Prevent water pollution), which requires oily, greasy, or sediment laden substances or other material that originates from Project operations to not be allowed to enter or be placed where it may enter a waterway; and WQ-16 (Prevent Storm Water Pollution), which requires that measures be implemented to prevent storm water pollution, including seeding and stabilizing soils exposed during project activities using hydroseeding, straw placement, mulching, and/or erosion control fabric. Implementation of the proposed BMP would avoid adverse impacts associated with soil erosion and loss of topsoil. Many of these BMPs are also similar to the Conditions and AMMs associated with the Valley Habitat Plan described in Section 2. As described in the regulatory section, two conditions apply to the proposed Project that would reduce the potential for soil erosion. In addition, twelve AMMs would be applicable to avoid or minimize impacts to soil resources resulting from erosional processes. These AMMs are: 21, 23, 61, 63, 65, 73, 85, 86, 88, 96, 97, and 102, as listed in Table 2-7. As applicable, measures including minimizing ground disturbance, controlling exposed soil by stabilizing slopes and avoiding wet season construction would reduce the potential for soil erosion throughout the proposed Project study area. Therefore, the proposed Project would result in a less than significant impact on soil erosion and the loss of topsoil.

c. No Impact. The proposed Project study area has been the subject of extensive geotechnical engineering investigation work to assist in the selection of the upstream dam site and ensure the design and construction of the new dam for the Pacheco Reservoir Expansion Project (DWR, 2018). The geotechnical and engineering investigations (i.e., Valley Water 2021a; Valley Water 2021b) included the identification of where landsliding may occur in response to construction at the new dam site or within the expanded reservoir. Although there are identified inactive landslides within the proposed Project study area near the existing Pacheco Reservoir, the proposed geotechnical investigations would not result in changes to the slopes, drainage or groundwater characteristics that influence the stability of these inactive or historic landslide features. Therefore, no impact associated with on- or off-site landslides, lateral spreading, subsidence, liquefaction or collapse would occur from implementation of the proposed Project.

d. No Impact. Expansive soils expand and contract with changes in water content. Expansive soils swell upon wetting and shrink upon drying. During these cycles, the volume of the soil changes markedly. Expansive soils are common throughout California and can cause damage to structures unless properly treated or unless appropriate foundation design measures are incorporated during construction. According to the previous discussion under Soils, and the

mapped soils provided in Figure 4.7-3, no expansive clay soils are known to occur within the proposed Project study area. In addition, the proposed Project does not propose the construction of any permanent structures. Therefore, no impact associated with expansive soils would occur.

e. No Impact. The proposed Project does not include the installation of septic tanks or alternative wastewater disposal systems. Therefore, the proposed Project would not result in soils incapable of adequately supporting the use of septic tanks or other wastewater disposal systems and would result in no impact from the proposed Project. (Temporary portable toilets would be used by proposed Project workers at the site.)

f. No Impact. The proposed Project study area is not known to contain paleontological resources. The exposed marine sediments have undergone metamorphism including those underlying the proposed Project study area; none of the geologic formations mapped within the proposed Project study area are considered fossiliferous (Wakabayashi 2011; Wentworth et al. 1999; Ingersoll et al. 1999; and Ernst 1993 and 1965). Therefore, there is no potential for unique paleontological resources to occur within, or close to the proposed Project study area. No impact to paleontological resources would occur from Project implementation.

4.7.4 Best Management Practices

The following BMPs described in Table 2-6 are applicable to geology and soils:

WQ-4: Limit impacts of from Staging and Stockpiling of Materials

WQ-9: Use Seeding for Erosion Control, Weed Suppression, and Site Improvement

WQ-11: Maintain Clean Conditions at Work Sites

WQ-15: Prevent Water Pollution

WQ-16: Prevent Storm Water Pollution

4.7.5 Avoidance and Minimization Measures

In accordance with the discussion in item "b", the following Valley Habitat Plan AMMs listed in Table 2-7 are applicable: 21, 23, 61, 63, 65, 73, 85, 86, 88, 96, 97, and 102.

4.7.6 Mitigation Measures

No mitigation measures are required.

4.8 Greenhouse Gas Emissions

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

4.8.1 Environmental Setting

Greenhouse Gas Emissions and Climate Change

The Physical Scientific Basis of Greenhouse Gas Emissions and Climate Change

Certain gases in the earth's atmosphere, classified as greenhouse gases (GHGs), play a critical role in determining the earth's surface temperature. Solar radiation enters the atmosphere from space. A portion of the radiation is absorbed by the earth's surface, and a smaller portion of this radiation is reflected toward space. The absorbed radiation is then emitted from the earth as low-frequency infrared radiation. Most solar radiation passes through GHGs; however, infrared radiation is absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on earth.

Prominent GHGs contributing to the greenhouse effect are CO_2, methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Human-caused emissions of these GHGs in excess of natural ambient concentrations are found to be responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. It is "extremely likely" that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in GHG concentrations and other anthropogenic forcing (IPCC 2014).

Whereas most pollutants with localized air quality effects have relatively short atmospheric lifetimes (approximately 1 day), GHGs have long atmospheric lifetimes (1 year to several thousand years). GHGs persist in the atmosphere long enough to be dispersed around the globe. Although the lifetime of any GHG molecule depends on multiple variables and cannot be determined with any certainty, it is understood that more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. The quantity of GHGs in the atmosphere responsible for climate change is not precisely known, but it is considered to be enormous. No single project alone would measurably contribute to an incremental change in the

global average temperature or to global or local climates or microclimates. From the standpoint of CEQA, GHG impacts relative to global climate change are inherently cumulative.

Greenhouse Gas Emissions Sources and Sinks

Emissions of CO_2 are byproducts of fossil fuel combustion. CH_4, a highly potent GHG, primarily results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) and is largely associated with agricultural practices, landfills, and forest fires. N_2O is also largely attributable to agricultural practices and soil management. CO_2 sinks, or reservoirs, include vegetation and the ocean, which absorb CO_2 through sequestration and dissolution (CO_2 dissolving into the water) and are two of the most common processes for removing CO_2 from the atmosphere.

Effects of Climate Change on the Environment

According to the Intergovernmental Panel on Climate Change (IPCC), which was established in 1988 by the World Meteorological Organization and the United Nations Environment Programme, global average temperature will increase by 3.7 to 4.8 degrees Celsius (°C) (6.7 to 8.6 degrees Fahrenheit (°F)) by the end of the century unless additional efforts to reduce GHG emissions are made (IPCC 2014:10). According to *California's Fourth Climate Change Assessment*, with global GHGs reduced at a moderate rate, California will experience average daily high temperatures that are warmer than the historic average by 2.5°F from 2006 to 2039, by 4.4°F from 2040 to 2069, and by 5.6°F from 2070 to 2100. If GHG emissions continue at current rates, then California will experience average daily high temperatures that are warmer than the historic average by 2.7°F from 2006 to 2039, by 5.8°F from 2040 to 2069, and by 8.8°F from 2070 to 2100 (OPR et al. 2018).

As temperatures increase, the amount of precipitation falling as rain rather than snow also increases, which could lead to increased flooding because water that would normally be held in the snowpack of the Sierra Nevada and Cascade Range until spring would flow into the Central Valley during winter rainstorm events. This scenario would place more pressure on California's levee/flood control system (CNRA 2018). Furthermore, the sea level along California's coastline is expected to rise 54 inches by 2100 if GHG emissions continue at current rates (OPR et al. 2018). Changes in temperature, precipitation patterns, extreme weather events, wildfires, and sea-level rise have the potential to threaten transportation and energy infrastructure, crop production, forests and rangelands, and public health (CNRA 2018; OPR et al. 2018). The effects of climate change will also have an indirect adverse impact on the economy as more severe natural disasters cause expensive physical damage to communities and the state.

4.8.2 Regulatory Setting

Federal Laws, Regulations, and Policies

Supreme Court Ruling

In *Massachusetts et al. v. Environmental Protection Agency et al.,* 549 U.S. 497 (2007), the Supreme Court of the United States ruled that CO_2 is an air pollutant as defined under the federal Clean Air

Act (CAA) and that the U.S. Environmental Protection Agency (EPA) has the authority to regulate GHG emissions. In 2010, the EPA started to address GHG emissions from stationary sources through its New Source Review permitting program, including operating permits for "major sources" issued under Title V of the CAA.

State Laws, Regulations, and Policies

Plans, policies, regulations, and laws established by the state agencies are generally presented in the order they were established.

Statewide GHG Emission Targets and Climate Change Scoping Plan

Reducing GHG emissions in California has been the focus of the state government for approximately two decades. GHG emission targets established by the state legislature include reducing statewide GHG emissions to 1990 levels by 2020 (Assembly Bill (AB) 32 of 2006) and reducing emissions to 40 percent below 1990 levels by 2030 (Senate Bill (SB)] 32 of 2016). Executive Order S-3-05 calls for statewide GHG emissions to be reduced to 80 percent below 1990 levels by 2050. This target was superseded by AB 1279, which codifies a goal for carbon neutrality and to reduce emissions by 85 percent below 1990 levels by 2045. These targets are in line with the scientifically established levels needed in the United States to limit the rise in global temperature to no more than 2 degrees Celsius, the warming threshold at which major climate disruptions, such as super droughts and rising sea levels, are projected; these targets also pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius (United Nations 2015).

The California Air Resources Board adopted the *Final 2022 Scoping Plan for Achieving Carbon Neutrality* (2022 Scoping Plan) on December 16, 2022, which outlines the state's pathway to achieve its carbon neutrality and an 85 percent reduction in 1990 emissions goal by 2045. It identifies the reductions needed by each GHG emission sector (e.g., transportation (including off-road mobile source emissions), industry, electricity generation, agriculture, commercial and residential, pollutants with high global warming potential, and recycling and waste) to achieve these goals.

The state has also passed more detailed legislation addressing GHG emissions associated with transportation, electricity generation, and energy consumption, however, these policies do not relate to the proposed Project and are not discussed further.

Regional and Local Laws, Regulations, and Policies

Bay Area Air Quality Management District

BAAQMD California Environmental Quality Act Air Quality Guidelines (2022)

BAAQMD has not adopted GHG thresholds for projects that would only emit short-term temporary GHG emissions (e.g., construction-only projects, geotechnical investigation activities). Currently, BAAQMD's approach to developing thresholds of significance for climate impacts is to use a "fair share" approach for determining whether an individual project's GHG emissions would be cumulatively considerable. According to BAAQMD's 2022 *CEQA Guidelines*, if a project would

contribute its "fair share" of what is needed to achieve the state's long-term GHG reduction goals, then the lead agency can find that the project is adequately contributing to solving the problem of global climate change and that project's impact is not significant (BAAQMD 2022). BAAQMD has identified project design elements that would be required to achieve California's long-term climate goal of carbon neutrality by 2045. This threshold, referred to as option "A," requires that projects incorporate building design elements (such as excluding natural gas appliances or natural gas plumbing in both residential and nonresidential development; avoiding any wasteful, inefficient, or unnecessary energy usage as determined by the analysis required under CEQA §21100(b)(3) and *CEQA Guidelines* §15126.2(b)); and transportation design elements (such as achieving a reduction in project-generated vehicle miles traveled (VMT) for residential projects at 15 percent below the existing VMT per capita); and achieving compliance with off-street electric vehicle requirements in the most recently adopted version of CALGreen Tier 2). According to BAAQMD, if these design elements are incorporated into the design of a project, then the project would contribute its portion of what is necessary to achieve California's long-term climate goals—its "fair share," and a lead agency reviewing the project under CEQA can conclude that the project would not make a cumulatively considerable contribution to global climate change.

BAAQMD also states that, alternatively, a project for which these design elements are not implemented could still be determined to make a less-than-significant contribution of GHG emissions by demonstrating consistency with a local GHG reduction strategy that is consistent with state guidance (*CEQA Guidelines* §15183.5(b)) (BAAQMD 2022). This threshold is referred to as option "B."

Option "A" is only concerned with design elements of a project that would reduce GHG emissions during operation of a project. Because the proposed Project only entails short-term geotechnical investigation activities and does not include an operational phase, this threshold would not apply. Regarding option "B," as stated in the following section, Santa Clara County has not adopted a GHG reduction strategy. Therefore, this threshold would also not apply to the proposed Project.

County of Santa Clara

Santa Clara County General Plan

The General Plan, 1995-2010, was first adopted in 1994 and was updated in 2015 to include the Health and Environmental Justice Update, which includes the Health Element of the General Plan. The Health Element includes several strategies and accompanying policies relating to GHGs. The strategies and policies applicable to the project include the following:

Strategy #1: Strive for air quality improvement through regional and local land use, transportation, and air quality planning.

Policy HE-G.1 Air quality environmental review. Continue to utilize and comply with the Air District's project- and plan-level thresholds of significance for air pollutants and greenhouse gas emissions.

Policy HE-G.3 Fleet upgrades. Promote Air District mobile source measures to reduce emissions by accelerating the replacement of older, dirtier vehicles and equipment, and by expanding the use of zero emission and plug-in vehicles.

Policy HE-G.4 Off-road sources. Encourage mobile source emission reduction from off-road equipment such as construction, farming, lawn and garden, and recreational vehicles by retrofitting, retiring and replacing equipment and by using alternate fuel vehicles.

Santa Clara Valley Water District

Santa Clara Valley Water District Climate Change Action Plan

Valley Water finalized its Climate Change Action Plan (CCAP) (Valley Water 2021) in July 2021. This plan builds on Valley Water's climate change response efforts and presents goals and strategies to continue and expand these efforts. The CCAP is both a plan to reduce GHG emissions and provide a framework to ensure a safe and resilient water supply in the future. It also provides a comprehensive guide to Valley Water's current and future climate change mitigation and adaptation efforts. While the proposed Project is intended to support the PREP design and planning processes, the CCAP was adopted in July of 2021 and the goals and strategies are relevant and would be applied to the proposed Project.

4.8.3 Discussion

GHG emissions associated with the proposed Project would be generated during the proposed Project's implementation. The proposed Project does not include operational activities; thus, the focus of this analysis is short-term GHG emissions generated by use of equipment during the proposed geotechnical investigation activities. Estimated levels of investigation activity-related GHGs are presented in responses "a" and "b" below. See Section 4.3, Air Quality, for details regarding equipment operation emissions modeling methodology and investigation activities.

a. Less than Significant Impact. Implementation of the proposed Project would generate GHG emissions from the combustion of fossil fuel used to power heavy-duty equipment; transport material, equipment, and workers; and power other equipment such as a helicopter, barge/boats, pumps, and chainsaws. Table 4.8-1 details the GHG emissions that would occur from various sources during the approximately five to six-month period that proposed Project activities would take place. See Appendix C for detailed summary of modeling inputs and outputs. Once completed, the proposed Project would not have any resultant or long-term activities or facilities that would generate GHG emissions.

Table 4.8-1: Equipment Related Emissions of Greenhouse Gases

Emission Source	GHG Emissions MT CO2e (Total)
Heavy Equipment (excavator)	237
Mobile Sources	44
Other (helicopter, barge)	538
Total	**820**

Notes: $MTCO_2e$ = metric tons of carbon dioxide equivalent; totals may not equal due to rounding.
Source: Modeling performed by Ascent Environmental in 2023.

As shown, use of equipment for geotechnical investigations would result in total emissions of 820 metric tons of carbon dioxide equivalent ($MTCO_2e$). As previously discussed, BAAQMD has not adopted a GHG emission threshold for short-term GHG emissions. However, other air districts in California have, including nearby Sacramento Metropolitan Air Quality Management District, which has adopted a GHG emission threshold for short-term GHG emissions of 1,100 $MTCO_2e$/year and 10,000 $MTCO_2e$/year for stationary sources. In addition, 10,000 $MTCO_2e$/year is the trigger level used by the California Air Resources Board to require stationary sources to report GHG emissions under the GHG Mandatory Reporting Rule. While these numbers are not adopted as thresholds in this particular analysis, they are used for informational purposes to provide context to the magnitude of emissions the proposed Project would generate.

A review of applicable GHG reduction plans was conducted for the GHG analysis; these included the 2022 Scoping Plan, Santa Clara County CAP, and Valley Water's 2021 CCAP. As previously discussed, the Santa Clara County CAP only applies to municipal operations; thus, it does not apply to short-term emissions from the proposed Project. The only relevant plan in place for the purpose of reducing GHG emissions within the proposed Project study area is the 2022 Scoping Plan, used primarily in this analysis.

The basis of the GHG reduction strategy in the 2022 Scoping Plan is the baseline GHG inventory conducted for statewide emissions for years 2000–2021 (CARB 2023). The GHG inventory quantified statewide emissions from all relevant GHG emissions sectors including off-road equipment and found that this source represents less than 1 percent of statewide emissions (CARB 2023). Likewise, the Scoping Plan did not identify GHG reduction targets or strategies to address GHG reductions from the off-road sector of emissions.

The 2022 Scoping Plan outlines the main strategies California is implementing to achieve the 2045 statewide carbon neutrality goal and GHG target of 80 percent below 1990 levels by 2045. *Appendix E of the 2022 Scoping Plan* includes detailed GHG reduction measures and local actions that development projects and municipalities can implement to support the statewide targets. However, these measures pertain primarily to land use development projects and emissions sources typically associated with these (e.g., passenger vehicle exhaust emissions, building-related natural gas use, areawide emissions from landscape equipment and consumer products, waste and water treatment emissions). As described in the 2022 Scoping Plan, the combination of statewide GHG reduction strategies (e.g., Cap-and-Trade, Low Carbon Fuel Standard, Renewable Portfolio Standard, carbon capture/sequestration) and GHG reductions from local actions pertaining to land use development, would achieve the state's GHG reduction targets. In other words, the 2022 Scoping Plan does not identify necessary GHG reductions associated with off-road equipment as a means to achieving overall state GHG reduction targets. For these reasons, one-time finite emissions associated with investigation activities are not deemed to be significant or otherwise conflict with adopted plans (i.e., 2022 Scoping Plan) for the purpose of reducing GHG emissions.

BAAQMD acknowledges that there are reasonable measures that can be implemented during short-term phases of projects (i.e., geotechnical investigation activities) that generate emissions to reduce GHG emissions. As described in 2.3.2 of this IS/MND, Valley Water has listed four features that are incorporated into the description of the proposed Project intended to minimize GHG emissions associated with the temporary activities associated with the use of heavy equipment. These features would be required by all Valley Water's contractors and enforced through bid specifications and contracts, which are consistent with BAAQMD recommendations. The features were established based on a review of all recommended BAAQMD GHG reduction measures for short-term emissions associated with projects like the proposed Project and revised as appropriate based on the specific proposed activities that would occur. As proposed, the proposed Project would not generate GHG emissions that would have a significant impact on the environment or conflict with a plan adopted for the purpose of reducing GHG emissions. This impact would be less than significant.

b. Less than Significant Impact. As previously discussed, projects that do not incorporate available reasonable GHG-reduction measures may result in a substantial contribution to climate change. All proposed Project activities would adhere to the proposed Project features described in Section 2.3.2 of this document is required by all Valley Water's contractors and enforced through bid specifications and contracts, which are consistent with BAAQMD recommendations. The features incorporated into the description of the proposed Project specifically developed to reduce GHG emissions were developed following a review of all recommended BAAQMD GHG reduction features for short-term emissions associated with projects like the proposed Project and revised, as appropriate, based on the specific proposed activities that would occur. With incorporation of the proposed Project features described in Section 2.3.2, the proposed Project, as a finite, geotechnical investigation would not generate GHG emissions that would have a significant impact on the environment or conflict with a plan adopted for the purpose of reducing GHG emissions. This impact would be less than significant.

4.8.4 Best Management Practices

No BMPs are applicable.

4.8.5 Avoidance and Minimization Measures

No AMMs are applicable.

4.8.6 Mitigation Measures

No mitigation measures are required.

4.9 Hazards and Hazardous Materials

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Create a significant hazard to the public or the environment through the routine transport, use, storage or disposal of hazardous materials?	☐	☐	☒	☐
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼ mile of an existing or proposed school?	☐	☐	☐	☒
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
e. For a project located within an airport land use plan or, where such plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☒	☐	☐
g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☒	☐

4.9.1 Environmental Setting

Section 25501 of the California Health and Safety Code defines hazardous materials as materials that, "because of their quantity, concentration, or physical or chemical characteristics, pose a substantial present or potential hazard to human health and safety or to the environment if released into the workplace or environment." Hazardous materials have been and are commonly used in commercial, agricultural, and industrial applications, as well as in residential settings. The existing potential sources of hazardous materials in the proposed Project study area are:

- Existing use of hazardous materials in the construction and operation of the North Fork Dam and Pacheco Reservoir;
- Naturally occurring asbestos (NOA) and naturally occurring metals associated with geologic formations in the proposed Project study area, including the contributions from the North Fork Pacheco Creek watershed upstream;
- Soil-dwelling fungus (Coccidioides) associated with Valley fever; and
- Hazardous materials storage or release sites.

Existing Use of Hazardous Materials at North Fork Dam and Pacheco Reservoir

North Fork Dam was constructed in 1939, forming Pacheco Reservoir at the lower end of the North Fork Pacheco Creek watershed. The dam and associated reservoir are located in southeastern Santa Clara County and are surrounded on three sides by ranchlands that have been used for seasonal livestock grazing to varying degrees for more than a century. There is no evidence that hazardous materials, other than petroleum products (e.g., diesel, propane) used for vehicle fuel and generators, are associated with residential and agricultural activities on ranchlands within the proposed Project study area. In addition to the transport of hazardous materials on SR-152, the primary east-west corridor that connects Interstate 5 and U.S. Highway 101, and the occasional use of hazardous materials by Caltrans and various utilities within the SR-152 corridor, there is no evidence of use or storage of hazardous materials within the proposed Project study area.

The use of lead compounds as gasoline additives between the 1920s and 1970s has resulted in the accumulation of aerially deposited lead (ADL) in proximity to public roads. According to the California Environmental Protection Agency (CalEPA) (2016) Docket No. ESPO-SMA 15/16-001: Soil Management Agreement for Aerially Deposited Lead-Contaminated Soils (Health and Safety Code §25187[b][5]):

> *ADL-contaminated soil still exists along roadsides and medians and can also be found underneath some existing road surfaces due to past construction activities. The highest lead concentrations are usually found within 10 feet of the edge of the pavement and within the top six inches of the soil. In some cases, lead is as deep as 2 to 3 feet below the surface and can extend 20 feet or more from the edge of pavement.*

As part of an environmental hazards desktop review, a regulatory agency database report was obtained from Environmental Risk Information Services (ERIS), a third-party environmental database search firm that compiles data from federal, state, tribal, and county agencies. Data from this report includes hazardous materials use, spills, and cleanup reports for listed properties within a 1-mile radius of the proposed Project study area. This database report is provided in Appendix FE, Hazards and Hazardous Materials. The database report provides records of a Hazardous Materials/Waste Registration Form for the Pacheco Pass Water District maintained by Santa Clara County Department of Environmental Health (SCCDEH)–Hazardous Materials Compliance Division. According to the form, the hazardous materials stored at the North Fork Dam did not exceed the minimum threshold that would otherwise require a Hazardous Materials Business Plan (HMBP). The hazardous materials maintained onsite comprised a lead-acid battery used to power instrumentation installed by Valley Water in the hydro-gauge blockhouse structure, located adjacent to the right abutment atop the existing embankment dam. SCCDEH records indicate that the 15-pound lead-acid battery was stored within adequate secondary containment, with a readily available battery acid neutralizer and emergency procedures posted nearby. Storage of this hazardous material was subject to a permit implemented by SCCDEH in December 2004. The permit was closed in November 2012 when the Pacheco Pass Water District no longer stored the hazardous materials onsite. Recent communication with Valley Water staff suggests that no leakage was evident during the time this battery was used and there is no evidence of hazardous materials at this structure (J. Micko, Personal Communication, 2021).

Existing Naturally Occurring Asbestos and Metals

As described in Section 4.7, bedrock underlying most of the proposed Project study area consists of two primary Franciscan Complex units: (1) mélange and (2) low-grade metasandstone and siltstone with lesser amounts of blueschist, greenstone, chert, conglomerate, and amphibolite of the Yolla Bolly terrane (Wentworth et al. 1999). Franciscan Complex mélange, a rock type known to occasionally contain asbestos and naturally occurring metals, is mapped at a regional scale throughout the watershed, and shown in Figure 4.9-1. The Franciscan mélange is composed of several rock types primarily including greywacke sandstone, siltstone, shale, with lesser amounts of serpentinite, siliceous schist, greenstone, and blueschist. In general, serpentinite has not been identified within the proposed Project study area, and as discussed in Section 4.7, it is mapped as minimally present in the upper reaches of the North Fork Pacheco Creek watershed. Recent research has identified the potential for amphibole asbestos to be present in the alkali-amphibole group including glaucophane, the primary mineral in blueschist (Erskine and Bailey 2018). Limited blueschist outcrops have been identified adjacent to the proposed Project study area. Franciscan Complex sandstones and conglomerates, which are potentially composed of detrital blueschist, are present within the proposed Project study area.

NOA, which was identified as a toxic air contaminant (TAC) in 1986 by the California Air Resources Board (CARB), is present in many parts of California and is commonly associated with serpentinite and ultramafic rock types. Chrysotile (a form of asbestos from the serpentinite mineral group) and amphibole asbestos (including crocidolite) are NOA minerals that may present a human health hazard by inhalation if they become airborne. Some occurrences of serpentinite and ultramafic

rock are also known to have potentially elevated concentrations of naturally occurring metals such as chromium and nickel (Wilcke 2000) while a combination of anthropogenic sources, ore deposits, and the presence of organic-rich shales or coal may contribute to regionally elevated concentrations of arsenic (Duvergé 2011). These metals can also present a human health hazard through direct exposure and if inhaled when airborne. In areas with rock or soil containing NOA and naturally occurring metals, dust-generating activities such as quarrying, general grading and construction, and use of unpaved roads, may contribute to the presence of airborne NOA and naturally occurring metals. In addition, construction-related activities may contribute to the direct exposure of naturally occurring metals to construction workers.

Hazards associated with the potential presence of NOA and metals occur at two scales relative to the proposed Project: regionally with the potential for accumulation of 84 years of sediment stored in Pacheco Reservoir behind North Fork Dam and locally within portions of the proposed Project study area where geotechnical investigations are proposed. To-date, extensive biological investigations (i.e., floristic surveys) conducted over several years for most of the proposed Project study area have not identified any evidence of plants endemic to serpentine rocks (see Section 4.4for more details). As described in Section 4.7, surface and subsurface geotechnical investigations have not identified evidence of rock units with NOA or other metals (e.g., chromium, nickel, and arsenic) that could be considered a TAC.

The primary rock types and soils within the proposed Project study area that may be minimally disturbed during geotechnical investigations were analyzed for concentrations of chrysotile asbestos, amphibole asbestos, and naturally occurring metals. The analytical data were presented in the Geotechnical Data Report for the Pacheco Reservoir Expansion Project (Valley Water 2020 and 2021). The geologic materials analyzed include Franciscan sandstone (greywacke), siltstone, phyllite, siliceous schist, and greenschist, and soil and landslide deposits derived from these same Franciscan rocks. Additional soils were sampled and analyzed by the proposed Project design team in 2021, consisting of Franciscan Complex-derived quaternary alluvium (sediment accumulated in Pacheco Reservoir). Figure 4.9-1 illustrates the locations where soil and/or rock samples were collected in the 2021 geotechnical investigations supporting PREP. The analytical samples consisted of a) composite samples created from discrete soil and rock samples from test pits and b) discrete rock core samples. All were submitted to State of California-accredited laboratories for analysis.

All samples were submitted to State of California-accredited laboratories and analyzed for NOA and for Title 22 metals, a suite of metals that includes antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc. NOA and Title 22 metals analyses were performed in accordance with methodology set forth by overseeing regulatory agencies. NOA was analyzed for Bulk Asbestos Material by transmission electron microscopy (TEM) according to method U.S. Environmental Protection Agency (EPA) 600/R-93/116 with CARB 435 sample preparation, and Title 22 metals were analyzed according to method EPA 6010B / 7471A.

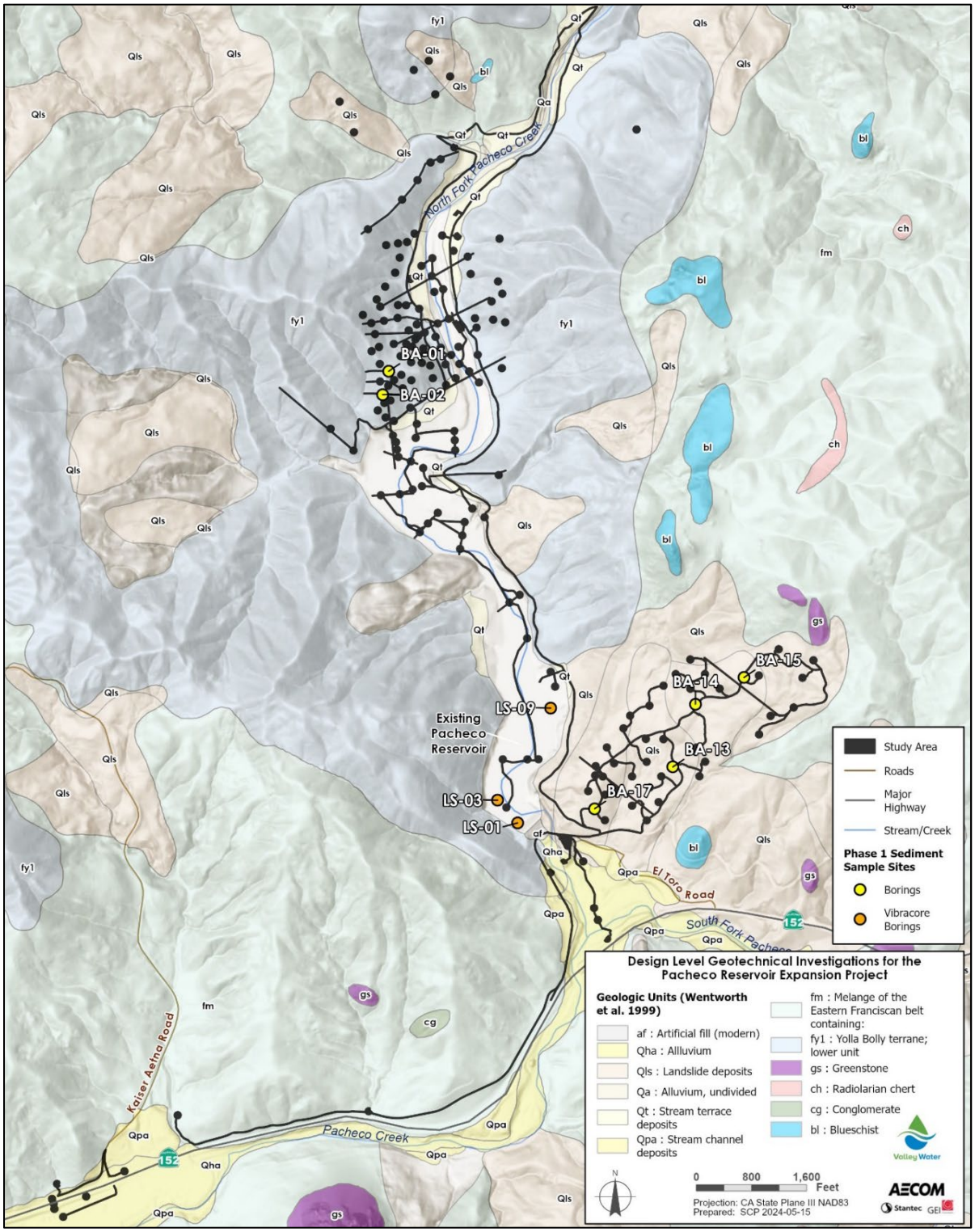


Figure 4.9-1: Soil and Rock Sample Locations in Proposed Project Study Area Relative to Geologic Units

The NOA results were compared to CARB's Airborne Toxic Control Measures (ATCM) background threshold values, and the metals results were compared to San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) construction worker safety environmental screening levels (ESL) and to California thresholds for hazardous waste classification (Total Threshold Limit Concentrations (TTLC)). SFBRWQCB ESLs are used by regulatory agencies throughout California to assess whether further action is necessary relative to cleaning up a given site even though many of these agencies are outside the jurisdictional boundary of the SFBRWQCB. TTLCs are used as acceptance criteria for landfills to determine whether a material is classified as hazardous or non-hazardous waste. Furthermore, a Soluble Limit Threshold Concentration (STLC) extraction is required for those metals that are reported at 10 times or greater than their STLC limit. TTLC and STLC thresholds and analytical methods are set forth according to Title 22 CCR Section 66261.24: Characteristic of Toxicity. The analytical results for NOA for all samples sampled for chemical constituents indicated that no concentrations were detected above the laboratory reporting limit of 0.001 percent by weight. This reporting limit is orders of magnitude below the CARB ATCM background threshold level of 0.25 percent by weight.

The analytical results for metals indicated that arsenic, cobalt, and nickel in some samples exceeded their respective screening levels, indicating that further investigation and, if necessary, protection and/or remediation measures may be required to protect workers during subsurface geotechnical investigations. Specifically, arsenic was reported in one sample (1530-2) at a concentration of 14 milligrams per kilogram (mg/kg), exceeding the background threshold level of 11mg/kg. Cobalt was reported in one sample (LS-01) at a concentration of 30 mg/kg, exceeding the construction worker ESL of 28mg/kg. Nickel was reported in seven samples (LAWLER, 1530-2, 1530-3, 1530-4, LS-01, LS-03 and LS-09) at concentrations ranging from 92 to 290 mg/kg, exceeding the construction worker ESL of 86 mg/kg.

None of the analytical results for metals exceeded their respective TTLCs. However, chromium and nickel were reported to be ten-times greater than their respective STLC limits in some of the samples analyzed. It should also be noted that additional sampling and testing would not be required for these metals since excavated samples would not be sent for offsite disposal.

Based on the results of the subsurface investigations to-date, none of the rock types or sediments analyzed within the proposed Project study area contain NOA at levels above regulatory thresholds or allowable limits. As described previously, extensive botanical surveys, coupled with these subsurface investigations, suggest that the occurrence of rock or soil containing NOA and/or metals is unlikely to be present within the proposed Project study area

Naturally occurring metals are likely present at both a watershed scale and locally within the footprint of the activity areas associated with alluvial sediments deposited in Pacheco Reservoir that could have concentrations that would exceed the SFBRWQCB Tier 1 ESLs. However, Tier 1 ESLs are based on the most stringent of the various potential exposure pathways assessed (including Direct Soil Exposure: Residential, Commercial/Industrial or Construction Worker, Terrestrial Habitat, Leaching to Groundwater, Gross Contamination, and Odor Nuisance). Of these potential exposure pathways, Construction Worker Safety is the most applicable to the proposed Project. As noted in Table 4.9-1, an ESL for total chromium (trivalent and hexavalent chromium

comprise total chromium) applicable to construction workers has not been established. In conjunction with ongoing geotechnical investigations, new samples would be analyzed for total chromium, but there is no indication that levels of chromium in new sampling efforts would exceed those described in Table 4.9-1.

Soil-dwelling Fungus (Coccidioides) Associated with Valley Fever

Valley fever—sometimes called "San Joaquin Valley fever" or "desert rheumatism"—is an infection caused by a soil-dwelling fungus (Coccidioides) that, when inhaled, can affect the lungs, causing respiratory symptoms including cough, fever, chest pain, and tiredness. Valley fever can be contracted as a result of ground disturbing activities and may be common in soil types throughout the proposed Project study area. There are no commercially available tests to detect this fungus in soil (CDC 2021). In 2021, Santa Clara County reported 65 cases (equivalent to rates of 3.3 cases per 100,000 population) (CDPH 2022).

Hazardous Building Materials in Existing Structures

Overall, the rural lands within and adjacent to the proposed Project study area are minimally developed and much of the land is used for some degree of seasonal livestock grazing (see Section 4.11, Land Use and Planning). The primary existing infrastructure is located adjacent to the proposed Project study area and includes the existing North Fork Dam and appurtenant structures and several small ranch/residential structures located along El Toro Road and south of SR-152 at Bell Station, outside of the proposed Project study area. In addition, the Bell Station Farmers Market is located north of SR-152 at Bell Station. The proposed Project study area was developed to avoid all existing infrastructure, with the exception of infrastructure within the SR-152 right-of-way.

Hazardous Materials Storage and Releases

An environmental hazards desktop review, prepared in 2021, covers the proposed Project study area and is included as Appendix F, Hazards and Hazardous Materials. For the proposed Project, this document was reviewed to identify any recognized environmental conditions (REC) associated with the proposed Project study area or adjacent parcels of land that would require disclosure through the CEQA process. As part of this review, an ERIS Physical Setting Report (see Appendix FE) was prepared that summarizes information available from federal, state, tribal, and county agencies for any listings within a one plus mile radius of the proposed Project study area. Table 4.9-2 presents the single disclosed parcel in the proposed Project study area. Table 4.9-3 presents the disclosed listings within one plus mile of the proposed Project study area.

Table 4.9-1: Sample Analytical Results

Sample ID	LAWLER	1530-20-1	1530-20-2	1530-20-3	1530-20-4	LS-01	LS-03	LS-09	Const. ESL 1
Metals analyzed according to EPA Method 6010B / 7471A									
Antimony	<1.9	<1.9	<2.0	<2.0	<2.0	<5.7	4.0 J	<4.8	50
Arsenic	10	4.8	14	11	11	10	11	8.6	11 [2]
Barium	180	110	110	110	350	300	240	230	3,000
Beryllium	0.51	0.62	0.74	0.33	0.39	0.34 [J]	2.3	0.21 [J]	27
Cadmium	<0.24	<0.24	<0.26	<0.26	<0.26	<0.95	1.5	<0.80	51
Chromium (total)	250	26	44	180	140	220	170	140	NE[3]
Cobalt	25	7.5	18	25	21	30	27	23	28
Copper	47	22	76	59	60	60	51	44	14,000
Lead	9.6	8.8	17	11	13	17	17	14	160
Mercury	0.094 [H]	0.024	0.12	0.078	0.084	0.098 J	0.094 J	0.077 J	44
Molybdenum	4.2	14	17	5.9	5.8	<1.9	2.3	<1.6	1,800
Nickel	290	67	92	240	190	250	200	170	86
Selenium	<1.9	<1.9	<2.0	<2.0	<2.0	<5.7	<4.8	<4.8	1,700
Silver	<0.24	<0.24	<0.26	<0.26	<0.26	<0.95	<0.80	<0.80	1,800
Thallium	<0.47	<0.49	<0.51	<0.51	<0.52	<5.7	2.3 J	<4.8	3.5
Vanadium	57	27	41	44	47	75	63	56	470
Zinc	78	47	100	91	88	110	98	99	110,000
Bulk Asbestos Material analyzed according to EPA Method 600/R-93/116 and CARB 435									
TEM (% by weight)	<0.0001%	<0.001 %	<0.001 %	<0.001 %	<0.001 %	<0.001 %	<0.001 %	<0.001%	0.25%[4]

Source: Samples LAWLER, 1530-1, 1530-2, 1530-3 and 1530-4 from Geotechnical Data Report – Pacheco Reservoir Expansion Project, Volume 1: Phase 1 Dam Explorations and Volume 2: Phase 1 Other Explorations (Valley Water 2020, 2021). Samples LS-01, LS-03 and LS-09 collected and analyzed by the proposed Project design team in 2021.

Notes: All metals concentrations reported in milligrams per kilogram

1. Environmental Screening Levels, San Francisco Bay Regional Water Quality Control Board, 2019 (Rev. 2): construction worker direct exposure screening level.
2. Background Threshold Level for Arsenic, from "Establishing Background Arsenic in Soil of the Urbanized San Francisco Bay Region prepared by Dylan Jacques Duvergé (December 2011)."
3. Construction worker ESL for total Chromium not established. Total Chromium comprised of Chromium III (trivalent) and Chromium VI (hexavalent).
4. Background Threshold Levels of 0.25% by weight for naturally occurring asbestos, from California Air Resources Board Airborne Toxic Control Measures 17 CCR §93105: Asbestos ATCM for Construction, Grading, Quarrying and Surface Mining Operations

J: Concentration less than reporting limit, greater than method detection limit. Laboratory flagged result as an "estimated value."

H: Laboratory flagged the reported value with a H, indicating the holding time was exceeded

< - Indicates the analyte was not detected at or above the indicated laboratory reporting limit.

BOLD indicates analyte was reported above the laboratory reporting limit.

Greyed value indicates concentration exceeded ESL.

Key:

% = percent EPA = Environmental Protection Agency ESL = environmental screening level

Table 4.9-2: Database Report – Listings for Properties			
Listed Facility Name/Address[1]	**Database Listing**	**Distance/Direction from proposed Project Study Area**	**REC? (Yes/No)**
PPWD – North Fork Dam 17610 Pacheco Pass Highway Hollister, CA 95023 APN: 898-49-002 (Santa Clara Co.)	Santa Clara CUPA	Within approximately 800 feet of the proposed Project study area	No
The PPWD-North Fork Dam is listed as a Hazardous Materials Storage Facility with minimal storage. No additional information was provided in the environmental database report. This listing is within the proposed Project study area; however, given the minimal quantities and no reported underground features or releases, it is not considered a parcel with a REC and no further assessment appears warranted at this time.			
Notes: 1. Listed facility address provided by environmental database report may not accurately reflect physical address of property. See ERIS Physical Setting Report in the Hazards and Hazardous Materials Appendix FE for additional information. Key: CUPA = Certified Unified Program Agency PPWD = Pacheco Pass Water District REC = Recognized Environmental Condition			

Table 4.9-3: Database Report – Listings for Sites in General Vicinity of Proposed Project Study Area with Potential to Impact Proposed Project Study Area			
Listed Facility Name/Address[1]	**Database Listing**	**Distance/Direction from proposed Project Study Area**	**REC? (Yes/No)**
T-Mobile West Corporation 28890 Pacheco Pass Highway Gilroy, CA 95020 APN: 078-040-015-000 (Merced Co.)	GILROY CUPA	Approximately 6 miles or 31,600 feet southwest[2]	No
The T-Mobile West Corporation is listed with a CERS ID of 10720354. No additional information was provided in the environmental database report. Given the minimal quantities and no reported underground features or releases, this listing is not considered an environmental concern associated with the proposed Project study area and no further assessment appears warranted at this time.			
Sprint PCS 38777 Dinosaur Point Road Hollister, CA 94023 APN: 898-46-002 (Santa Clara Co.)	GILROY CUPA	Approximately 4.3 miles or 22,500 feet east northeast	No
The Sprint PCS facility is listed as a Hazardous Materials Storage Facility with minimal storage. No additional information was provided in the environmental database report. Given the minimal quantities and no reported underground features or releases, this listing is not considered an environmental concern associated with the proposed Project study area and no further assessment appears warranted at this time.			
NEXTEL-SITE CA 1511 38777 Dinosaur Point Road Hollister, CA 94023 APN: 898-46-002 (Santa Clara Co.)	SANTA CLARA CUPA	Approximately 4.3 miles or 22,500 feet east northeast	No
The Nextel-Site is listed as a Hazardous Materials Storage Facility with minimal storage. No additional information was provided in the environmental database report. Given the minimal quantities and no reported underground			

Table 4.9-3: Database Report – Listings for Sites in General Vicinity of Proposed Project Study Area with Potential to Impact Proposed Project Study Area

Listed Facility Name/Address[1]	Database Listing	Distance/Direction from proposed Project Study Area	REC? (Yes/No)
features or releases, this listing is not considered an environmental concern associated with the proposed Project study area and no further assessment appears warranted at this time.			
Pacheco State Park 38778 Dinosaur Point Road Hollister, CA 95023 APN: 898-14-001 (Santa Clara Co.)	LUST	Approximately 4.3 miles or 22,500 feet east northeast	No
The Pacheco State Park listing is related to a gasoline leaking underground storage tank (LUST) release to soil which received closure from the Regional Water Quality Control Board (RWQCB) on January 31, 2006. According to the RWQCB closure letter, one 1,000-gallon gasoline underground storage tank (UST) was removed on April 1, 1998. Three groundwater monitoring wells were installed and showed no detections of petroleum constituents. Residual petroleum hydrocarbon contamination exists in soil in the former tank pit area (14 parts per million (ppm) of total petroleum hydrocarbons as gasoline; 0.12 ppm of benzene, 0.38 ppm of toluene, 0.83 ppm of xylenes, and 0.13 ppm of ethylbenzene). Given the distance to the proposed Project study area, media involved, and regulatory status, this facility is not considered an environmental concern associated with the proposed Project study area and no further assessment appears warranted at this time.			
California State Parks Pacheco Park 38787 Dinosaur Point Road Hollister, CA 95023 APN: 078-030-012-000 (Merced Co.)	RCRA NON-GEN	Approximately 4.3 miles or 22,700 feet east northeast	No
Listed Facility Name/Address[1]	Database Listing	Distance/Direction from proposed Project Study Area	REC? (Yes/No)
The California State Parks Pacheco State Park listing stated there are no records and as of October 2020, there were no compliance monitoring/enforcement records associated. No additional information was provided in the environmental database report. Given there were no reported underground features or releases, this listing is not considered an environmental concern associated with the proposed Project study area and no further assessment appears warranted at this time.			
AT&T Mobility International Turbine Research 38787 Dinosaur Point Road Santa Nella, CA 95322 APN: 078-030-012-000 (Merced Co.)	MERCED CUPA	Approximately 4.3 miles or 22,700 feet east northeast	No
The AT&T Mobility Facility is listed as a having two permits for hazardous material storage. No additional information was provided in the environmental database report. Given there were no reported underground features or releases, this listing is not considered an environmental concern associated with the proposed Project study area and no further assessment appears warranted at this time.			

Notes:

1. Listed facility address provided by environmental database report may not accurately reflect physical address of property.
2. Listed facility is not located within the 1-mile radius considered in regulatory agency database report. See ERIS Physical Setting Report in the Hazards and Hazardous Materials Appendix FE for additional information.

Key:

CERS = California Environmental Reporting System
CUPA = Certified Unified Program Agency
LUST = leaking underground storage tank
REC = Recognized Environmental Condition

The ERIS Physical Setting Report (see Appendix FE) documents a search of local and regional environmental sources to obtain information pertaining to and/or indications of RECs in connection with the proposed Project study area. As records for portions of the proposed Project study area that had assessor parcel numbers only were not available, records requests were made for physical addresses associated with the proposed Project study area. Table 4.9-4: summarizes information available from the local and regional agencies.

Table 4.9-4: Environmental Records from Local and Regional Agencies

Agency Name Contact Information	Finding
County of Santa Clara Department of Environmental Health 1555 Berger Drive Suite 300 San Jose, CA 95112	The County of Santa Clara Department of Environmental Health provided available records for the addresses associated with the proposed Project study area on January 29, 2021. Records available consisted of California Environmental Reporting System (CERS) hazardous materials inventory summaries for the AT&T Mobility station at the Bell Town Pull Off which contains lead acid batteries, hazardous materials clearance forms for cell site, and official notices of inspection of cell sites. Notice of inspection forms for the North Fork Dam Facility indicated there was lead acid battery storage in a hydro-gauge blockhouse. According to the notice of inspection for HH Holding LLC located at 16110 Pacheco Pass Highway, Gilroy, CA there is a 500-gallon aboveground diesel tank, one 500-gallon aboveground gasoline tank, one 1,000-gallon propane tank, and 12 solar batteries. Given there were no violations or indication of a release, these records are not considered an environmental concern associated with the proposed Project study area.
RWQCB, Central Coast Region 895 Aerovista Place, Suite 101 San Luis Obispo, CA 93401 Online Database: http://geotracker.waterboards.ca.gov	The RWQCB's online database (Geotracker) was searched on February 5, 2021. No records were available for facilities within the proposed Project study area. The Pacheco State Park located at 38778 Dinosaur Point, Gilroy, California, had a closed LUST case dated January 31, 2006, for soil only. This facility is discussed in Table 4.9-3.
DTSC 700 Heinz Avenue, Unit 200 Berkeley, CA 94710 Online database: https://www.envirostor.dtsc.ca.gov/public/	According to a letter dated February 5, 2021, no records were available for facilities in the proposed Project study area. Additionally, the DTSC online database (Envirostor) was searched, and no records were found for the proposed Project study area or surrounding properties.
CalGEM 5816 Corporate Avenue, Suite 200 Cypress, CA 90630 Online database: http://www.conservation.ca.gov/calgem/Pages/Well-Search.aspx	Stantec reviewed the CalGEM online well search database (Well Finder) on February 5, 2021. According to the database, there are no known current or former oil wells in the proposed Project study area or within a one-mile radius of the proposed Project study area.

Note: See ERIS Physical Setting Report in the Hazards and Hazardous Materials Appendix FE for additional information.

Key:

CalGEM = California Geologic Energy Management Division
DTSC = Department of Toxic Substances Control
RWQCB = Regional Water Quality Control Board
CERS = California Environmental Reporting System
CA=California

The listed addresses relative to publicly available aerial imagery and county assessor's maps indicate that the North Fork Dam listing in Table 4.9-2 is the only listing within the immediate vicinity of the proposed Project study area. Based on information provided in ERIS Physical Setting Report (see Appendix F) none of the properties listed in Table 4.9-3 would have any physical or environmental nexus to the proposed Project study area.

4.9.2 Regulatory Setting

Federal Laws, Regulations, and Policies

Resources Conservation and Recovery Act 42 USC 6901 et seq.

The Resources Conservation and Recovery Act (RCRA) is a federal statute designed to provide "cradle to grave" control of hazardous waste by imposing management requirements on generators and transporters of hazardous wastes and on owners and operators of treatment, storage, and disposal facilities. The EPA is responsible for administering the RCRA. RCRA has been amended and strengthened by Congress numerous times. In November 1984, the Federal Hazardous and Solid Waste Amendments were passed. In 1992, the Federal Facility Compliance Act strengthened the enforcement of RCRA at federal facilities. Most recently, in 1996, the Land Disposal Program Flexibility Act was added to provide regulatory flexibility for land disposal of certain kinds of wastes. RCRA may apply to the transportation of hazardous materials to or from the proposed Project study area if such materials are identified or required as part of the proposed geotechnical investigation activities.

U.S. Department of Transportation Hazardous Materials Transportation Act (49 USC 5101)

The Hazardous Materials Transportation Act regulates interstate transport of hazardous materials and wastes. This act specifies driver training requirements, load labeling procedures, and container design and safety requirements. Transporters of hazardous wastes must also meet the requirements of other statutes, such as the RCRA. The Hazardous Materials Transportation Act requires that carriers report accidental releases of hazardous materials to the U.S. Department of Transportation at soon as is practical (49 Code of Federal Regulations Subsection C). Incidents that must be reported include deaths, injuries requiring hospitalization, and property damage exceeding $50,000. The U.S. Department of Transportation, the Federal Highway Administration, and the Federal Railroad Administration are the agencies responsible for administering the Hazardous Materials Transportation Act. This law may apply to the transportation of hazardous materials to or from the proposed Project study area if such materials are identified or required as part of the proposed geotechnical investigation activities.

The Federal Motor Carrier Safety Administration (49 Code of Federal Regulations Part 382)

The Federal Motor Carrier Safety Administration, a part of the U.S. Department of Transportation, issues regulations concerning highway routing of hazardous materials, the hazardous materials endorsement for a commercial driver's license, highway hazardous material safety permits, and

financial responsibility requirements for motor carriers of hazardous materials. These regulations may apply to the storage and transportation of hazardous materials to or from the proposed Project study area to reduce the possibility of spills.

Occupational Safety and Health Administration (29 USC 15)

The Occupational Safety and Health Act (OSHA) defines occupational health and safety standards, with the goal of providing employees with a safe working environment. The California Occupational Safety and Health Administration (Cal/OSHA) is the agency responsible for administering this federal act in California. The OSHA regulations apply to workplaces and cover activities ranging from confined space entry to toxic chemical exposure. Employers are required to provide a workplace free of recognized hazards that could cause serious physical harm. Cal/OSHA regulates workplace exposure to hazardous chemicals and activities through workplace procedures and equipment requirements (29 U.S. Code 651–678). Cal/OSHA regulations would apply to construction activities and long-term operations and maintenance activities.

Clean Air Act

The Clean Air Act (CAA) protects the general public from exposure to airborne contaminants that are known to be hazardous to human health. Under the CAA, the EPA established National Emissions Standards for Hazardous Air Pollutants (NESHAP), which are emissions standards for air pollutants that may cause an increase in fatalities or in serious, irreversible, or incapacitating illness. Asbestos was one of the first hazardous air pollutants regulated by NESHAPs. Compliance with the asbestos NESHAP regulations protects the public by minimizing the release of asbestos fibers during activities involving the processing, handling, and disposal of asbestos-containing material (e.g., NOA).

State Laws, Regulations, and Policies

Caltrans Processes and Procedures

Although the proposed Project is not a transportation project, it is subject to the Caltrans requirements for projects that would encroach on a Caltrans easement (SR-152). The process of compiling accurate information regarding hazardous materials, hazardous waste, and contamination includes performing a project screening and initial site assessment (ISA), performing a preliminary site investigation in the event the ISA identifies a potentially contaminated site, and performing a detailed site investigation if applicable (Caltrans 2014). The outcome of this process would be documented in the Preliminary Environmental Analysis Report required by Caltrans to support issuance of an encroachment permit.

California Code of Regulations, Title 13, Vehicle Code

In addition to the RCRA hazardous waste transportation standards, California regulates the transportation of hazardous waste originating or passing through the state. State regulations are contained in the CCR, Title 13, Vehicle Code. Hazardous waste must be regularly removed from

generating sites by licensed hazardous waste transporters. Transported materials must be accompanied by hazardous waste manifests.

The California Highway Patrol (CHP) and Caltrans are responsible for enforcing federal and state regulations pertaining to the transport of hazardous materials through California. The CHP enforces materials and hazardous waste labeling and packaging regulations that prevent leakage and spills of material in transit and provides information to cleanup crews in the event of an incident. Vehicle and equipment inspection, shipment preparation, container identification, and shipping documentation are all part of the responsibility of the CHP. The CHP conducts regular inspections of licensed transporters to assure regulatory compliance. The CHP and Caltrans also respond to hazardous materials transportation emergencies. Caltrans has emergency chemical spill identification teams at locations throughout the state. California Code of Regulations Title 13 and additional policies from Caltrans and CHP may apply to the transportation of hazardous materials to or from the proposed Project study area if such materials are identified or required as part of the proposed geotechnical investigation activities.

California Department of Toxic Substances Control

The mission of the Department of Toxic Substances Control (DTSC) is to protect California's people and environment from harmful effects of toxic substances by restoring contaminated resources, enforcing hazardous waste laws, reducing hazardous waste generation, and encouraging the manufacture of chemically safer products. The DTSC establishes standards for the management of hazardous waste, including regulation of the generation, transportation, and disposal of hazardous waste. The California DTSC, part of the CalEPA, regulates the generation, transportation, treatment, storage, and disposal of hazardous waste under the RCRA and the State Hazardous Waste Control Act. Standards or regulations from the California DTSC may apply to the transportation, storage, or handling of hazardous materials to or from the proposed Project study area if such materials are identified or required as part of the proposed geotechnical investigation activities.

California Environmental Protection Agency Unified Program

The CalEPA Unified Program was created to protect California's citizens from hazardous waste and materials. CalEPA has certified 83 local government agencies as California Unified Program Agencies including SCCDEH, which is responsible for implementing the hazardous waste and materials standards for five different state agencies including CalEPA, DTSC, California Governor's Office of Emergency Services (Cal OES), CAL FIRE, and the SWRCB (CalEPA 2021). Under the Unified Program, the administration, permit, inspection, and enforcement activities are consolidated for the following environmental and emergency management programs (CalEPA 2021):

- Aboveground Petroleum Storage Act
- Area Plans for Hazardous Materials Emergencies
- California Accidental Release Prevention Program
- Hazardous Materials Release Response Plans and Inventories (Business Plans)

- Hazardous Material Management Plan and Hazardous Material Inventory Statements (CFC)
- Hazardous Waste Generator and Onsite Hazardous Waste Treatment (tiered permitting) Programs
- Underground Storage Tank Program

These standards may apply to the transportation, storage, or handling of hazardous materials to or from the proposed Project study area if such materials are identified or required as part of proposed Project implementation.

San Francisco Bay Regional Water Quality Control Board

In 2000, the SFBRWQCB first published human health risk-based screening levels (RSL) for over 100 commonly detected contaminants at sites with impacted soil and groundwater. The RSLs were revised in 2003 to become ESLs and their scope broadened to include direct exposure screening levels for construction and trench workers (SFBRWQCB 2007 User's Guide), ecological risk and nuisance/gross contamination concerns (SFBRWQCB 2019a User's Guide, Revision 1, 2019b Revision 2). The ESLs are conservative risk-based screening levels initially informed by EPA Region 9 Preliminary Remediation Goals and CalEPA California Human Health Screening Levels.

Although initially developed to regulate water quality for the San Francisco Bay Basin Water Quality Control Plan, the conservative, risk-based ESLs have been adopted by many California regulatory agencies as default screening levels. The proposed Project study area site does not formally belong within the San Francisco Bay Basin Water Quality Control Plan; however, SCCDEH relies on the SFBRWQCB ESLs to evaluate risk to human health and the environment at sites throughout Santa Clara County enrolled in their Site Cleanup Program (SCCDEH 2019).[30]

California Emergency Plan

The current California Emergency Plan was developed in 2017 to facilitate and coordinate responses to natural or human-caused emergencies consistent with the requirements of the California Emergency Services Act (Cal OES 2017). Emergency prevention and response to hazardous materials incidents are part of the State plan that is administered by the Cal OES (formerly California Emergency Management Agency). In 2017, the 2009 Emergency Response Plan was updated and retitled, and the Emergency Management Agency was merged with the Public Safety Communications Office and renamed the California Governor's Office of Emergency Services. Coordinating agencies include CalEPA, CHP, CAL FIRE, local fire departments, the California National Guard, Caltrans, CDFW, regional water quality control boards (RWQCB), and other emergency service providers. These plans may apply in the unlikely event that hazardous materials are released during proposed Project implementation.

[30] Neither the CCRWQCB nor the Sacramento Valley RWQCB have established ESLs for their respective jurisdictions.

Worker Safety Requirements

Regulations pertaining to the use of hazardous materials in California workplaces are provided in CCR Title 8 and include requirements for safety training, availability of safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation. Cal/OSHA standards are more stringent than federal OSHA regulations. Cal/OSHA assumes primary responsibility for developing and enforcing workplace safety regulations in the state. Cal/OSHA also enforces hazard communication program regulations that contain training and information requirements, including procedures for identifying and labeling hazardous substances, communicating information related to hazardous substances and their handling, and preparing health and safety plans to protect workers and employees at hazardous waste sites. Cal/OSHA requirements would apply if hazardous materials were stored, handled, or transported as part of the proposed Project implementation.

Regional and Local Laws, Regulations, and Policies

County of Santa Clara Department of Environmental Health

The Santa Clara Department of Environmental Health (SCCDEH) oversees assessment and mitigation of contaminated sites to protect groundwater resources, human health, safety, and the environment. Since July 1, 2004, the SCCDEH has served as the local oversight agency for investigations and cleanup of petroleum releases from underground storage tanks (UST) through implementation of the Local Oversight Program contract with the SWRCB.

County of Santa Clara DEH Hazardous Materials Compliance Division

The Hazardous Materials Compliance Division was established in 1983 with the adoption of the local Hazardous Materials Storage Ordinance, which regulates the storage of hazardous materials both above and below ground. Passage of Senate Bill 1082 in 1993 required consolidation of state-mandated hazardous waste and hazardous materials management programs within a singled unified program, to be administered by a Certified Unified Program Agency (CUPA). Hazardous Materials Compliance Division has been certified by the state to be the CUPA to administer the six CUPA programs throughout Santa Clara County, except in the cities of Santa Clara, Gilroy, and Sunnyvale, which are themselves CUPAs. The proposed Project would require the use, transport, and disposal of hazardous materials and hazardous waste within Santa Clara County that would be subject to county requirements.

Santa Clara County Office of Emergency Services

The Santa Clara County Office of Emergency Services (OES) is the county agency responsible for preparation of the Santa Clara County Emergency Plan and all supporting documentation (Santa Clara OES 2017). The Emergency Plan is an "all-hazard" plan, designed on the premise that all kinds of emergencies share common response needs (i.e., fire suppression, law enforcement, medical attention). The plan also describes the circumstances that justify activation of its procedures when a disaster or a possible disaster threatens the safety of persons or property

anywhere within the County (Santa Clara County 1994). Justifiable causes include air pollution, riot, fire, epidemic, flood, storm, earthquake, and war. The proposed Project would be subject to the requirements of Santa Clara County's emergency plan.

Santa Clara County General Plan Safety and Noise Section

The Safety and Noise section of the General Plan (1994) identifies strategies and policies to manage hazards and hazardous materials in the County. The General Plan identifies the following applicable policy to manage hazards and hazardous materials:

Policy C-HS 14: All feasible measures to safely and effectively manage hazardous materials and site hazardous materials treatment facilities should be used, including complying with all Federal and State mandates.

This policy may apply to the transportation, storage, or handling of hazardous materials to or from the proposed Project study area if such materials are identified or required as part of the proposed Project activities.

Santa Clara County General Plan Health & Safety Chapter

The Health and Safety chapter of the General Plan provides an overview of countywide hazards, hazardous materials, management responsibilities and management issues which relate directly to the land use policies contained in the General Plan (Santa Clara County 1994). This chapter evaluates the natural and built environment for potential hazards, including but not limited to those related to hazardous materials and natural hazards.

Santa Clara Valley Habitat Plan

The Valley Habitat Plan identifies two conditions that are relevant to Hazards and Hazardous Materials: Condition 3. Maintain Hydrologic Conditions and Protect Water Quality and Condition 5. Avoidance and Minimization Measures for In Stream Operations and Maintenance. These are discussed in Section 2.6 and fully described in Appendix B.

4.9.3 Discussion

a. Less than Significant Impact. The Project proposes geotechnical investigations consisting of up to 119 exploratory borings, 30 supplemental borings, 32 test pits, 19 seismic refraction lines totaling approximately 16,890 linear feet, and one 1,520-foot-long electrical resistivity survey line. Following completion of the proposed Project, there would be no transportation or use of hazardous materials. Gasoline and diesel fuel would typically be used by proposed Project vehicles and equipment, and in accordance with BMP AQ-1 (Use Dust Control Measures). All vehicles would be restricted to 15 miles per hour or less on all access routes within and adjacent to the proposed Project study area. As part of the proposed Project, Valley Water would implement the following BMPs:

- BMP HM-7 (Restrict Vehicle and Equipment Cleaning to Appropriate Locations)

- BMP HM-8 (Ensure Proper Vehicle and Equipment Fueling and Maintenance), which would require that vehicles and equipment are washed only at approved areas and that no fueling or servicing of vehicles is done in a waterway or immediate floodplain
- BMP HM-9 (Ensure Proper Hazardous Materials Management), which includes BMPs to ensure that hazardous materials are properly handled and the quality of water resources is protected
- BMP HM-10 (Utilize Spill Prevention Measures), which includes measures to prevent the accidental release of chemicals, lubricants, and non-storm drainage water measures as noted in the proposed Project description in Section 2 (Table 2-6) to minimize the potential of geotechnical investigation-related fuel hazards.
- BMP HM-12 (Incorporate Fire Prevention Measures) to reduce the likelihood of a fire, and to provide quick response in the event of a fire.

In addition, use, storage, transport, and disposal of hazardous materials (including any hazardous wastes) during geotechnical investigations would be conducted in accordance with existing local, state, and federal hazardous materials regulations. Many of these BMPs are similar to the Conditions and AMMs associated with the Valley Habitat Plan described in Section 2. As described in the regulatory section, two Conditions apply to the proposed Project that would reduce the potential for exposure to hazardous materials. In addition, 13 AMMs would be applicable to avoid or minimize impacts related to exposure to hazardous conditions or materials. These AMMs are 2, 7, 8, 9, 11, 12, 72, 75, 76, 87, 88, 90, 100, as listed in Table 2-7. As applicable, measures including prevention of accidental release of chemicals, fuels, lubricants, and non-storm drainage water into channels, restricting equipment storage, fueling, and staging areas to disturbed areas outside stream or riparian areas, and disposal of all construction waste in designated areas would reduce the potential for discharge or accidental release of materials hazardous to the environment throughout the proposed Project study area. Implementation of the proposed Project would not create a significant hazard to the public or the environment through routine transport, use, or disposal of hazardous materials. Therefore, this impact would be less than significant.

b. Less than Significant Impact. As described in response "a", proposed Project implementation would not require operational or long-term use of hazardous materials; therefore, no hazards or hazardous materials impacts related to long-term operation of the proposed Project are anticipated. However, the proposed geotechnical investigations would include the use of limited quantities of ordinary equipment fuels (gasoline and diesel), aviation fuel, and fluids. These materials would not be used in sufficient quantities to pose a substantial threat to human or environmental health. An onsite fuel truck based out of the Hollister Airport would be used to provide fuel for the proposed helicopter operations. The helicopter fuel truck would only occur onsite on days with scheduled helicopter operations. A second fuel truck would also be onsite to provide fuel for the gasoline and diesel-powered drilling equipment. Such fuels and other fluids would be kept at designated staging areas or offsite with maintenance crews and would be secured when not in use. As described in response "a", to avoid or minimize potential of accidental release of hazardous materials, Valley Water would

implement BMP HM-7 (Restrict Vehicle and Equipment Cleaning to Appropriate Locations); HM-8 (Ensure Proper Vehicle and Equipment Fueling and Maintenance); BMP HM-9 (Ensure Proper Hazardous Materials Management); and BMP HM-10 (Utilize Spill Prevention Measures). In the unlikely event of a spill, fuels and or fluids would be controlled and disposed of in accordance with applicable regulations. Therefore, the proposed Project would not create a significant hazard to the public or environment. This impact would be less than significant.

c. No Impact. See the discussions under responses "a" and "b". The proposed Project would not create a significant hazard to the public or the environment. In addition, no existing or proposed schools occur within ¼ mile of the proposed Project study area. The nearest school (i.e., North County Joint Union Elementary School) is located approximately nine miles to the south of the proposed Project study area in San Benito County. As a result, implementation of the proposed Project would result in no impact to an existing or proposed school.

d. Less than Significant Impact. As described in Table 4.3-2, no known hazardous material sites were identified within the proposed Project study area or immediate vicinity, with the exception of the Pacheco Pass Water District-North Fork Dam. The small building on the east abutment of North Fork Dam is listed as a Hazardous Materials Storage Facility with minimal storage. No additional information was provided in the environmental database report. Although this listing is within the proposed Project study area, given the minimal quantities and no reported underground features or releases, it is not considered a parcel with an REC. Therefore, no further assessment is warranted at this time.

No other Hazardous material sites were identified to occur within a one-mile radius of the proposed Project study area. As provided in Table 4.3-3, the closest sites are located beyond a 4-mile radius of the proposed Project study area. Because there are no sites, including sites compiled pursuant to Government Code §65962.5, in the proposed Project vicinity, implementation of the proposed Project is not anticipated to result in impacts from hazardous materials, which would be a less than significant impact.

e. No Impact. The Frazier Lake Airpark is located approximately 10.5 miles west of the proposed Project study area in Hollister. According to the Airport Land Use Compatibility Plan for the Frazier Lake Airpark (San Benito County 2019), the proposed Project study area is outside of the Airport Influence Area and would not result in a safety hazard to people working within the proposed Project study area. Therefore, the proposed Project would not result in a substantial safety hazard for people residing or working in the proposed Project study area, and there would be no impact.

f. Less than Significant Impact with Mitigation. Under the proposed Project, SR-152 would provide primary access to the proposed Project study area for trucks, heavy equipment, and workers. Primary access from SR-152 would be via the existing site access located approximately 1.4 miles east of Bell Station Farmers Market on the north side of SR-152. SR-152 is the main access route from both directions and would be the main evacuation route from the proposed Project study area in case of an emergency.

The Santa Clara County OES plan applicable to the proposed Project study area is not specific with respect to emergency response or evacuation routes. The proposed geotechnical

investigation activities within the SR-152 right-of-way could temporarily conflict with emergency response and evacuation, primarily at the intersection of Kaiser-Aetna Road. As part of the proposed Project, Valley Water would implement BMP TR-1 (Incorporate Public Safety Measures), which requires incorporation of public safety measures to give adequate warning to the public of the construction and of any dangerous condition to be encountered. However, potential conflicts with emergency vehicles could still occur in the form of traffic slowdowns, which could be a significant impact. Therefore, Valley Water would implement mitigation measure MM TR-1 (Traffic Control Plan), which would minimize conflicts with emergency vehicles and/or evacuation traffic for SR-152 at Kaiser-Aetna Road. The notification and communication requirements of the traffic control plan would ensure that local emergency managers such as CAL FIRE, CHP, Santa Clara County Fire Department, and the Santa Clara County Sheriff would be aware of any traffic management issues and would be able to share that information with first responders. Therefore, this impact would be less than significant with the incorporation of mitigation.

g. Less than Significant Impact. The proposed geotechnical investigations would have a duration of up to two fire seasons and would have the potential to expose people to existing risks associated with natural or human-caused wildfires that may start or spread into the proposed Project study area, similar to the 2020 Santa Clara Unit (SCU) Lightning Complex fires that burned a substantial portion of the North Fork Pacheco Creek watershed. The majority of the proposed Project study area is located within the high fire hazard severity zone (see Figure 4.20-1). While most of the watershed is uninhabited, during the implementation of the proposed geotechnical investigations, approximately 5 to 20 workers and project staff could be working within the proposed Project study area and be subjected to existing wildfire risk while conducting the specified geotechnical investigations. As described in Section 4.20, the proposed Project does not propose any new development and would not exacerbate wildfire risks, exposing occupants to pollutant concentrations from a wildfire or uncontrolled spread of wildfire. The proposed Project activities (e.g., excavation, drilling) are not high potential activities for wildfire ignition and, with implementation of BMP HM-12 (Incorporate Fire Prevention Measures), are not likely to exacerbate wildfire risks. Therefore, this impact would be less than significant because there would not be a significant risk of loss, injury, or death involving wildland fires.

4.9.4 Best Management Practices

The following BMPs described in Table 2-6 are applicable to hazards and hazardous materials:

- **AQ-1:** Use Dust Control Measures
- **HM-7:** Restrict Vehicle and Equipment Cleaning to Appropriate Locations
- **HM-8:** Ensure Proper Vehicle and Equipment Fueling and Maintenance
- **HM-9:** Ensure Proper Hazardous Materials Management
- **HM-10:** Utilize Spill Prevention Measures
- **HM-12:** Incorporate Fire Prevention Measures
- **TR-1:** Incorporate Public Safety Measures

4.9.5 Avoidance and Minimization Measures

In accordance with the discussion in item "b", the following Valley Habitat Plan AMMs listed in Table 2-7 are applicable: 2, 7, 8, 9, 11, 12, 72, 75, 76, 87, 88, 90, 100.

4.9.6 Mitigation Measures

MM TR-1: Traffic Control Plan. Valley Water shall prepare and implement a Traffic Control Plan to minimize traffic delays and safety hazards that may result from lane restrictions or closures in the work zone within and adjacent to the SR-152 Caltrans ROW. The Traffic Control Plan shall comply with Caltrans' standard lane closure requirements and shall be submitted to Caltrans for review and approval prior to commencement of investigations that require shoulder or lane closure within Caltrans' ROW.

4.10 Hydrology and Water Quality

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☐	☒
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: i. result in a substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☐	☐	☒
iii. create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☐	☒
iv. impede or redirect flood flows?	☐	☐	☐	☒
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☐
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	☒

4.10.1 Environmental Setting

The following discussion describes the environmental setting related to hydrology for the proposed Project. Water quality is discussed in the subsection that follows.

Hydrology

The proposed Project study area depicting the Pacheco Creek Watersheds, as shown on Figure 4.10-1, includes the North Fork Pacheco Creek watershed and Pacheco Creek corridor, including San Felipe Lake.

Surface Water

North Fork Pacheco Creek and Pacheco Reservoir

The existing Pacheco Reservoir is situated on North Fork Pacheco Creek, a tributary of Pacheco Creek that drains a 67 square-mile area ranging in elevation from 385 feet to 2,600 feet. The area is mountainous and steep in the upper portions of the watershed, including the East Fork Pacheco Creek watershed. The north and eastern boundary of the watershed also serves as the boundary between Santa Clara County with Merced and Stanislaus Counties, respectively. The creek is characterized by high interannual flow variance, with high flows occurring during the rainy season of wet years, driven by winter rainstorms, and very low base flows during summer and periodic drought conditions. The existing Pacheco Reservoir, impounded by North Fork Dam constructed in 1939, captures runoff from a 66.5 square-mile drainage area in the upper North Fork Pacheco Creek watershed.[31] The U.S. Geologic Survey National Hydrology Dataset (USGS 2021a) indicates that 94 percent of the 517 miles of channel upstream from the existing Pacheco Reservoir is classified as intermittent or ephemeral. Flow in intermittent and ephemeral channels is seasonal, with the majority of flow transported downstream episodically during storm events. Under certain seasonal or climatic conditions, North Fork Pacheco Creek and its larger tributaries may flow year-round upstream from Pacheco Reservoir.

The existing Pacheco reservoir provides 5,500 acre-feet of water storage capacity and is filled by seasonal runoff. Historical mean annual unimpaired inflows are estimated to be approximately 13,104 acre-feet, varying from a mean of 24,800 acre-feet in Wet water years to a mean of 1,500 acre-feet in Critical water years, as defined by the Sacramento Valley Year Index[32] and Modeled mean monthly inflows to the reservoir by water-year type.[33]

[31] A small portion of the North Fork Pacheco Creek watershed drains into the creek downstream of North Fork Dam.

[32] The Sacramento Valley Year Index is based on the measured unimpaired runoff of the Sacramento River, Feather River, Yuba River, and the American River. The index is calculated as 0.4* Current April July Runoff Forecast (in million acre-feet) + 0.3* Current October-March Runoff (in million acre-feet) + 0.3* Previous Water Year's Index (if the Previous Water Year's Index exceeds 10.0, then 10.0 is used). The index includes five water year classifications: Wet (index equal to or greater than 9.2), Above Normal (Index greater than 7.8, and less than 9.2), Below Normal (Index greater than 6.5, and equal to or less than 7.8), Dry (Index greater than 5.4, and equal to or less than 6.5), and Critical (Index equal to or less than 5.4).

[33] Simulation period: 1922-2003.

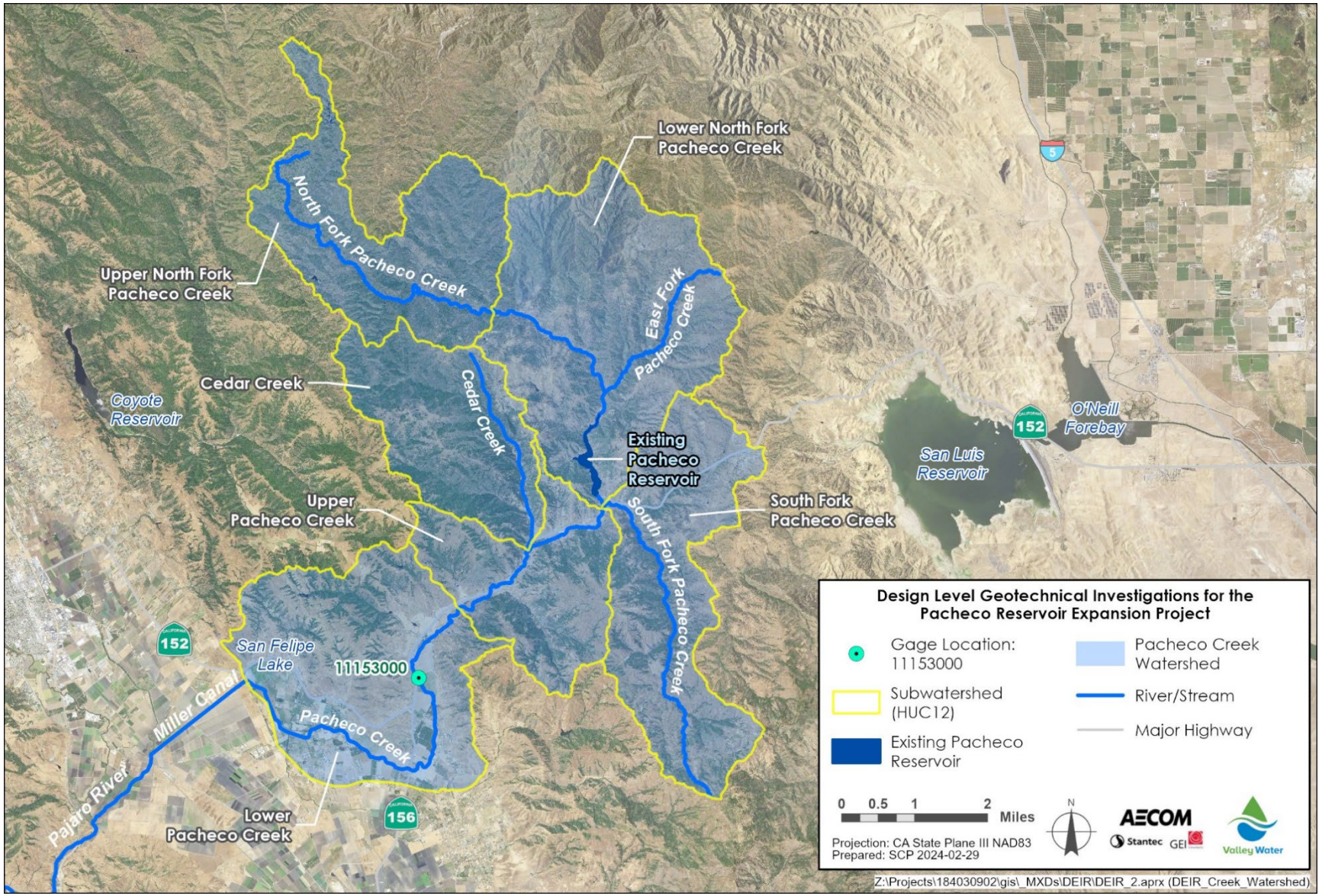


Figure 4.10-1: Pacheco Creek Watersheds

Pacheco Reservoir is operated by Pacheco Pass Water District (PPWD) to capture wet season flows and store them for later release in summer months for the purpose of recharging groundwater aquifers underlying Pacheco Creek in downstream reaches. Due to significant annual variation in inflows and annual groundwater recharge operations, Pacheco Reservoir is often filled and emptied within a single water year. This operation results in spill in above-average water years when the reservoir is full, and both seasonal and annual periods with no water in storage during dry periods when the reservoir has been drained and there are no inflows. Historic records are limited, and it appears likely that different reservoir operation strategies were employed at different times.

Pacheco Creek

Water from Pacheco Reservoir is released into North Fork Pacheco Creek where it flows approximately 0.4 miles until it joins South Fork Pacheco Creek and forms mainstem Pacheco Creek just upstream from SR-152. North Fork Pacheco Creek drains 67 square miles, including East Fork Pacheco Creek, and South Fork Pacheco Creek drains 27.7 square miles. The mainstem Pacheco Creek drains a combined 165 square miles in Santa Clara and San Benito Counties through several tributaries, including Cedar Creek with a 19.9 square mile drainage area, before emptying into San Felipe Lake, the headwaters of the Pajaro River. The Pacheco Creek watershed is shown in Figure 4.10-1.

Flows in Pacheco Creek from 1939 through 1982, and from 2007 through the present were measured at USGS gage 11153000 Pacheco Creek Near Dunneville, CA, also known as the Walnut Avenue Gage. The USGS gage is located approximately 8 miles downstream from the confluence of North Fork and South Fork Pacheco Creek, and it measures the flow contributions from North Fork Pacheco Creek (including spills and releases from North Fork Dam), South Fork Pacheco Creek, Cedar Creek, and other small tributaries to Pacheco Creek. Wet years see significant flow volumes averaging greater than 40,000 acre-feet, while dry years generally see flow volumes averaging less than 2,000 acre-feet.

Pacheco Creek hydrology is primarily influenced by releases from North Fork Dam, unregulated flows[34] from major Pacheco Creek tributaries (e.g., Cedar Creek), and surface-groundwater interactions. Figure 4.10-2 shows key features that influence Pacheco Creek hydrology, including tributaries and groundwater reaches that receive percolated streamflow.

In wet winter and spring months, unregulated tributaries and spill from Pacheco Reservoir are the primary source of flow in Pacheco Creek. In winter and spring months of Average to Critical water-year types, unregulated tributaries are the primary source of flow in Pacheco Creek, as Pacheco Reservoir captures and stores inflow. In summer and fall months of all water-year types, PPWD releases from Pacheco Reservoir for groundwater recharge are the primary source of flows in Pacheco Creek. These summer releases often percolate entirely into the streambed before reaching the Walnut Avenue Gage. From May through November, releases of 2 to 15 cubic feet per second (cfs) made from Pacheco Reservoir can percolate entirely into the streambed of

[34] Unregulated flow refers to streamflow that is naturally occurring in a waterway and not the result of a regulated release or discharge from a water impoundment or storage facility.

Pacheco Creek, as indicated by measured flow of 0 cfs in the same month at the USGS gage (SBCWD 2009).

Historically, flooding has occurred in portions of Pacheco Creek. A flood study conducted by the U.S. Army Corp of Engineers on lower Pacheco Creek identified flooding around San Felipe Lake,[35] a natural lake during high-flow events (USACE 1973). The study noted that during floods, trees, brush, and other vegetation growing in floodways impeded flood flows, resulting in overbank flows and unpredictable areas of flooding, destruction of or damage to bridges and culverts, and increased velocity of flow. Eight events from 1940 through 1973 were reported to result in property damage in the San Felipe Lake area, with all peak flows measuring greater than 3,600 cfs at the USGS gage upstream, equating to a flow event between a 5- and 10-year return period.

Flooding was reported in 2017 near San Felipe Lake where the banks of Pacheco Creek were overtopped at various locations upstream from the lake during multiple high flow events during that water year (Chadwell 2017). The peak flow measured in early 2017 at the USGS gage 11153000 was 11,700 cfs, somewhere between a 15- and 50-year event depending on the method used for estimating peak flows.

The Federal Emergency Management Agency (FEMA) provides information on flood hazard and frequency for cities and counties on its Flood Insurance Rate Maps (FIRM). FEMA identifies designated zones to indicate flood hazard potential. In general, flooding occurs along waterways, with infrequent localized flooding also occurring due to constrictions of storm drain systems or surface water ponding. The FIRM for Pacheco Creek includes the existing Pacheco Reservoir (FEMA 2009). The existing reservoir inundation area, the North Fork Pacheco Creek channel below the dam, and the Pacheco Creek channel are designated as Zone A (100-year floodplain). Areas outside of the reservoir inundation area and outside the primary channels of North Fork Pacheco Creek and Pacheco Creek are designated as Zone D (areas in which the flood hazard is undetermined, but possible).

Groundwater

The water released from Pacheco Reservoir flows through the lower reach of North Fork Pacheco Creek into Pacheco Creek where it percolates through the streambed to recharge groundwater aquifers. Pacheco Reservoir and the upstream portion of Pacheco Creek are located outside of any groundwater basins defined by the California Department of Water Resources (DWR), as shown in Figure 4.10-2.

Water users adjacent to the proposed Project study area generally receive their water supply as groundwater from wells. Valley Water regulates the construction, modification, and destruction of all groundwater wells through a well permitting process,[36] and locations and classifications of wells are publicly available on the Valley Water Well Information Map (Valley Water 2021b).

[35] San Felipe Lake is a natural shallow lake that was modified by the construction of the Miller Canal in 1874 which reduced the size of the lake.

[36] Valley Water initiated the well permitting program in the mid-1970s; it is possible that wells currently functioning within Santa Clara County do not have a permit and are not included in the well registration program.

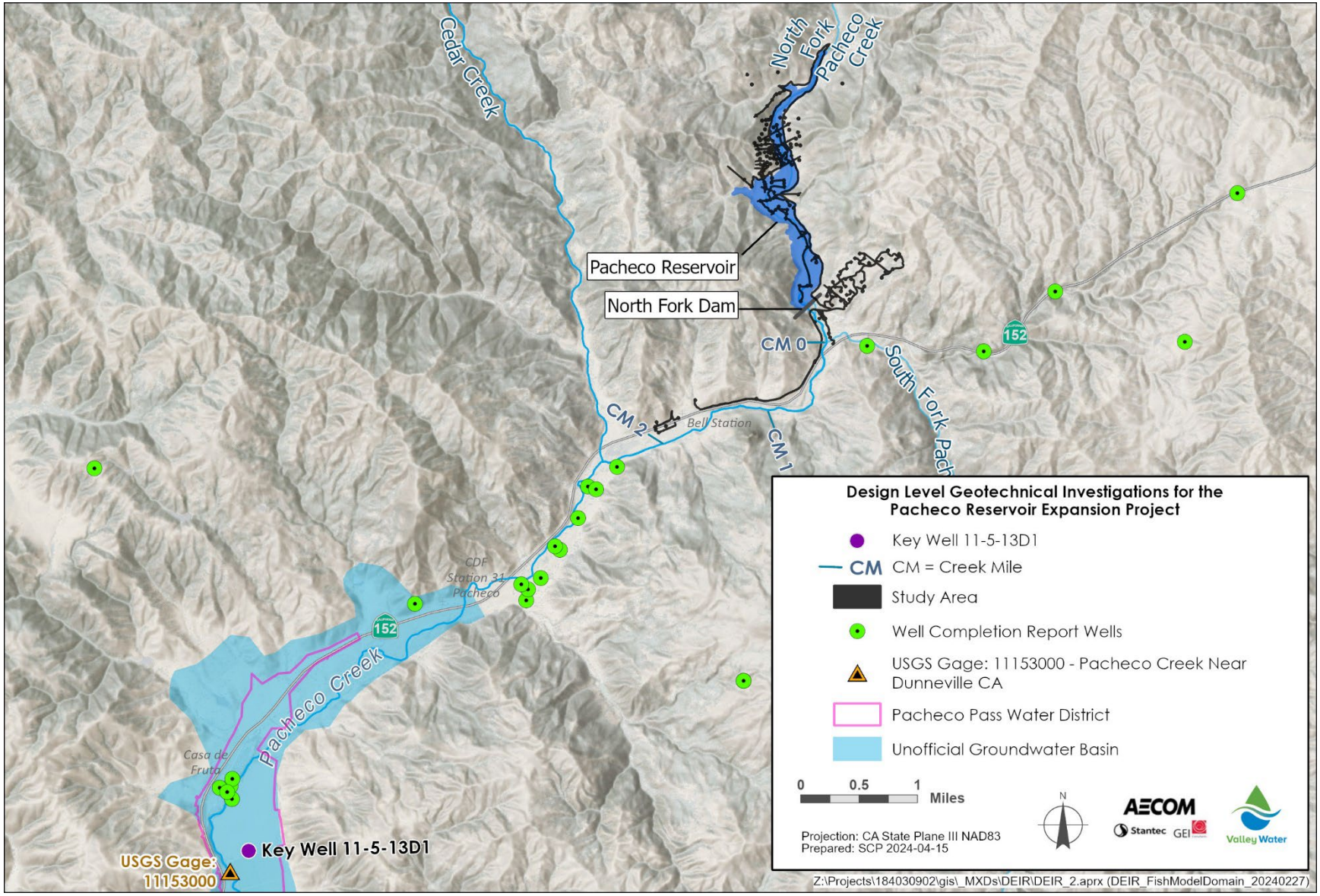


Figure 4.10-2: Key Locations, Creeks, Creek Mile Markers, and Physical Features of Pacheco Creek

Based upon information from Valley Water and DWR, approximately 70 unique wells are reported to be located downstream of the proposed Project study area near Pacheco Creek. However, no wells are reported to be located directly within the proposed Project study area. The number of wells and classifications include 46 water supply wells (including 6 agricultural wells), 9 monitoring wells, 4 cathodic protection wells, 1 industrial water supply well, 3 test wells, and 7 wells with unknown classification.

Pacheco Creek surface flows eventually percolate through the alluvial sediments floor into the North San Benito Subbasin (DWR Bulletin 118 Basin Number 3-003.05) of the Gilroy-Hollister Valley Groundwater Basin. The North San Benito Subbasin begins in Santa Clara County and extends southwards into San Benito County (SBCWD and Valley Water 2021). The service areas of Valley Water, SBCWD, and PPWD overlay the subbasin, which is used by both agricultural and municipal well operators. SBCWD primarily manages and is the exclusive Groundwater Sustainability Agency (GSA)[37] for the San Benito County portion of the subbasin.[38] Valley Water is the GSA for Santa Clara County portions. However, PPWD has not prepared or adopted a Groundwater Sustainability Plan (GSP).

Water Quality

The following discussion describes the environmental and regulatory setting for water quality. Water quality in North Fork Pacheco Creek, including its tributaries (e.g., East Fork Pacheco Creek) as well as Pacheco Reservoir is primarily affected by natural runoff and agriculture (i.e., grazing). Downstream in Pacheco Creek the addition of agricultural return flows, releases from North Fork Dam, and urbanization contribute to existing water quality conditions. To protect water quality, both the federal (Clean Water Act; described under 4.10.2, Regulatory Framework) and the state (Porter-Cologne Water Quality Control Act of 1969; described under 4.10.2, Regulatory Framework) governments use water quality standards or objectives that consist of the designated beneficial use or uses (e.g., recreation, drinking water, industrial, other) of a water body, plus a numerical or narrative statement identifying maximum concentrations of various pollutants that would not interfere with the designated use. This discussion lists beneficial uses and water quality objectives of surface water and groundwater in the proposed Project study area, then describes the general environmental setting and current water quality conditions of surface waters and groundwater.

[37] Groundwater Sustainability Agencies are the local public agencies tasked with developing and implementing Groundwater Sustainability Plans under the Sustainable Groundwater Management Act.

[38] The geographic boundaries of groundwater basins near the proposed Project study area defined by SBCWD in their historical Annual Groundwater Reports differ from those defined by the DWR. The Hollister Management Area, as defined by SBCWD, falls within the San Benito County portion of the Gilroy-Hollister Groundwater Basin and includes the SBCWD-defined subbasins of Pacheco, Bolsa SE, Hollister East and West, and Tres Pinos. The Pacheco subbasin is within the vicinity of Pacheco Creek.

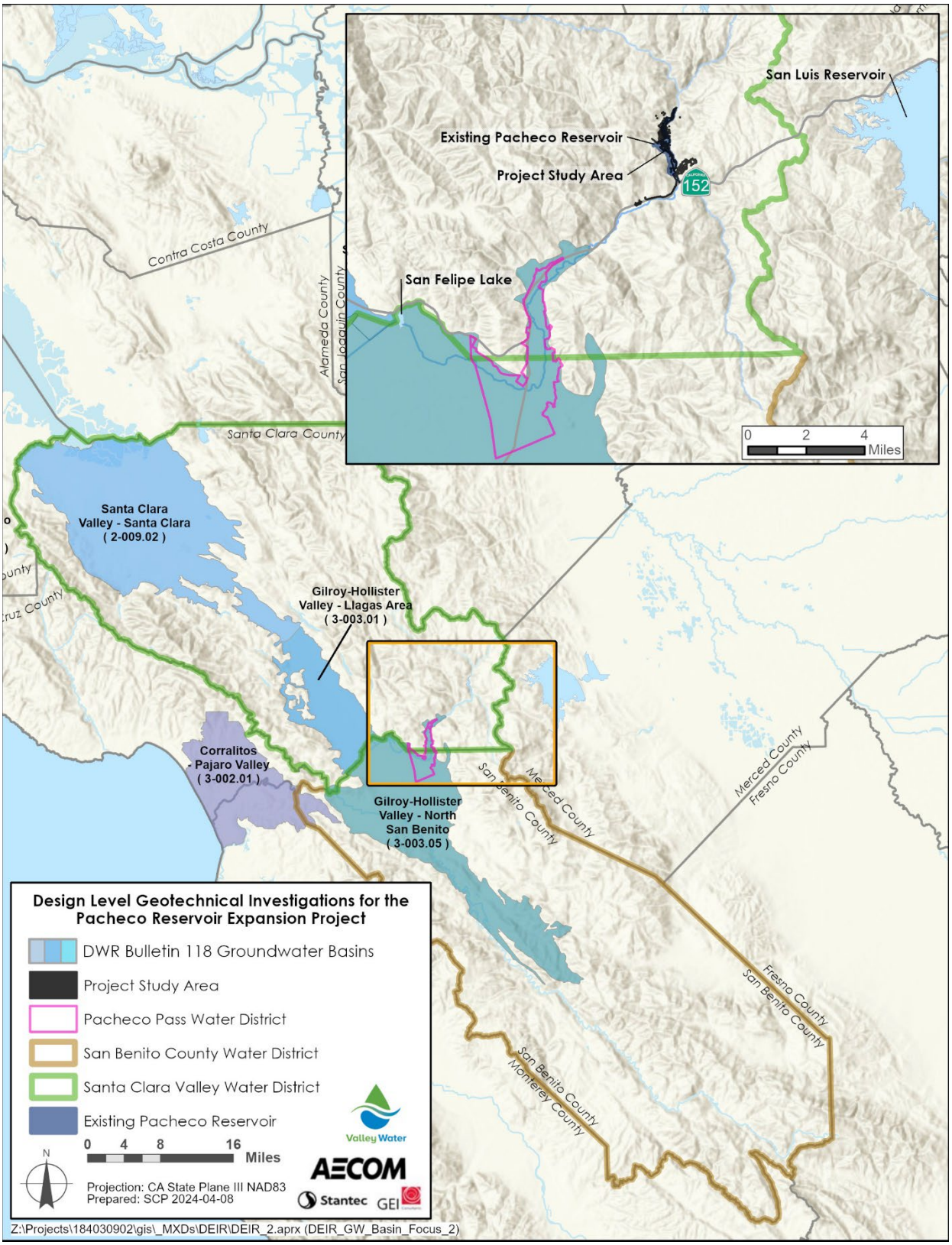


Figure 4.10-3: California Department of Water Resources Defined Groundwater Basins in the Vicinity of the Proposed Project Study Area

Beneficial Uses and Water Quality Objectives

CCRWQCB has established 13 beneficial uses, as documented in the Water Quality Control Plan for the Central Coast Basin (CC Basin Plan), for Pacheco Reservoir (referred to as Pacheco Lake in the CC Basin Plan) and 14 beneficial uses for Pacheco Creek (Table 4.10-1). The CC Basin Plan also describes the water quality objectives that must be maintained to allow those uses. The most recent edition of the CC Basin Plan was adopted on June 14, 2019 (CCRWQCB 2019). However, several amendments to the 2019 CC Basin Plan have been approved that are in effect but not included in the CC Basin Plan. These amendments can be accessed on the CCRWQCB website (CCRWQCB 2024).

Inland Surface Waters

General objectives for all inland surface waters in the CC Basin Plan aim to protect water quality conditions resulting from human activities that may impact current and probable future beneficial uses for surface waters. The goal of these water quality objectives is to prevent constituents causing nuisances or adversely affecting beneficial uses. Constituents described in the general objectives include color, tastes and odors, floating material, suspended material, settleable material, oil and grease, biostimulatory substances,[39] sediment, turbidity, pH, dissolved oxygen, temperature, toxicity, pesticides, chemical constituents, other organics, and radioactivity. Water quality in the proposed Project study area generally meets the general objectives. Key water quality conditions and constituents of concern are discussed under Water Quality Conditions.

Table 4.10-1: Beneficial Uses of Pacheco Creek and Pacheco Reservoir

Beneficial Use	Pacheco Creek	Pacheco Reservoir1
Municipal and Domestic Supply	x	x
Agricultural Supply	x	x
Groundwater Recharge	x	x
Water Contact Recreation	x	x[2]
Non-Contact Water Recreation	x	x[2]
Wildlife Habitat	x	x
Cold Fresh Water Habitat	x	x
Warm Fresh Water Habitat	x	x
Migration of Aquatic Organisms	x	
Spawning, Reproduction, and/or Early Development	x	x
Preservation of Biological Habitats of Special Significance	x	
Rare, Threatened, or Endangered Species	x	x
Fresh Water Replenishment	x	x

[39] Substances that can cause eutrophication, such as nitrogen, phosphorous, or organic matter.

Table 4.10-1: Beneficial Uses of Pacheco Creek and Pacheco Reservoir		
Beneficial Use	**Pacheco Creek**	**Pacheco Reservoir1**
Navigation		x[2]
Commercial and Sport Fishing	x	x[2]

Notes:

1. The existing Pacheco Reservoir is referred to as Pacheco Lake in the Basin Plan for the Central Coast Basin.
2. The Basin Plan for the Central Coast Basin identifies water contact recreation, non-contact water recreation, navigation, and commercial and sporting fishing as beneficial uses; however, no public access is provided for Pacheco Reservoir. Therefore, water contact recreation, non-contact water recreation, navigation and commercial and sport fishing are potential beneficial uses but do not currently occur at the reservoir.

Source: Central Coast Regional Water Quality Control Board, 2019.

In addition to general objectives for all inland surface water, the CC Basin Plan has water quality objectives for specific beneficial uses. The water quality objectives for the specific beneficial uses identified for Pacheco Creek and Pacheco Reservoir are shown in Table 4.10-2.

Table 4.10-2: Water Quality Objectives for Specific Beneficial Uses for Pacheco Creek and Pacheco Reservoir		
Beneficial Use	**Constituent**	**Water Quality Objective[1]**
Municipal and Domestic Supply	Phenol	Concentrations of less than 1.0 µg/L
	Organic and Inorganic Chemicals	Shall not contain concentrations of organic chemicals in excess of the maximum contaminant levels for California primary drinking water standards
	pH	Greater than 6.5 and less than 8.3
	Radioactivity	Shall not exceed listed[2] concentration limits for radionuclides
Agricultural Supply	pH	Greater than 6.5 and less than 8.3
	Dissolved Oxygen	Not reduced below 2.0 mg/L at any time
	Chemical Constituents	Shall not exceed concentration limits for listed chemicals
Water Contact Recreation[3]	pH	Greater than 6.5 and less than 8.3
	Bacteria	Fecal coliform shall not exceed a log mean of 200/100 mL based on a minimum of five samples in a 30-day period
Non-Contact Water Recreation[3]	pH	Greater than 6.5 and less than 8.3
	Bacteria	Fecal coliform shall not exceed a log mean of 2,000/100 mL based on a minimum of five samples in a 30-day period
Cold Fresh Water Habitat	pH	Greater than 7.0 and less than 8.5
	Dissolved Oxygen	Not reduced below 7.0 mg/L at any time
	Temperature	Not increased by more than 5°F above natural receiving water temperature
	Chemical Constituents	Shall not exceed concentration limits for listed chemicals
	Turbidity[4]	Water shall be free of changes in turbidity that cause a nuisance or adversely affect beneficial uses[5]
Warm Fresh Water Habitat	pH	Greater than 7.0 and less than 8.5
	Dissolved Oxygen	Not reduced below 5.0 mg/L at any time

Table 4.10-2: Water Quality Objectives for Specific Beneficial Uses for Pacheco Creek and Pacheco Reservoir

Beneficial Use	Constituent	Water Quality Objective[1]
	Temperature	Not increased by more than 5°F above natural receiving water temperature
	Chemical constituents	Shall not exceed concentration limits for listed chemicals
	Turbidity[4]	Water shall be free of changes in turbidity that cause a nuisance or adversely affect beneficial uses[5]

Notes:
1. Some of these objectives have different ranges for the same waterbody if multiple beneficial uses are designated. In such cases, the most conservative objective is applied for analysis (e.g., the higher pH threshold of 7.0 is used rather than 6.5 in waters that contain both water contact recreation and cold freshwater habitat beneficial uses).
2. Radionuclide maximum contaminant levels are specified in California Code of Regulations, Title 22, Division 4, Chapter 15, Article 5, Section 64443.
3. The Basin Plan for the Central Coast Basin identifies water contact recreation and non-contact water recreation as beneficial uses; however, no public access is provided for Pacheco Reservoir. Therefore, water contact recreation and non-contact water recreation are potential beneficial uses but do not currently occur at the reservoir.
4. The basin plan does not identify specific turbidity water quality objectives or numeric criteria for cold and warm freshwater habitat, but turbidity impairments in Pacheco Creek have been identified in the 303(d) listing with a criterion of 25 NTU or less used as an evaluation guide for impairment.
5. Increases in turbidity attributable to controllable water quality factors shall not exceed the following limits:
    1. Where natural turbidity is between 0 and 50 NTU, increases shall not exceed 20 percent.
    2. Where natural turbidity is between 50 and 100 NTU, increases shall not exceed 10 NTU.
    3. Where natural turbidity is greater than 100 NTU, increases shall not exceed 10 percent.

    Allowable zones of dilution within which higher concentrations will be tolerated will be defined for each discharge in discharge permits.

Key:
°F = Degrees Fahrenheit mg/L = milligrams per liter
µg/L = micrograms per liter mL = milliliter
NTU = Nephelometric Turbidity Units
Source: Central Coast Regional Water Quality Control Board, 2019.

Groundwater

The CC Basin Plan includes two narrative water quality objectives applicable to all groundwaters under the jurisdiction of the CCRWQCB, objectives for specific beneficial uses, and objectives specific to groundwater quality (CCRWQCB 2019). The first narrative objective states "groundwaters shall not contain taste or odor producing substances in concentrations that adversely affect beneficial uses." The second objective states "[groundwaters] shall not contain radionuclides[40] in concentrations that are deleterious to human, plant, animal, or aquatic life, or result in the accumulation of radionuclides in the food web to an extent which presents a hazard to human, plant, animal, or aquatic life." The water quality objectives for specific groundwater beneficial uses are shown in Table 4.10-3, and the median groundwater quality objectives for the Hollister Sub-area, the only specific local groundwater near the proposed Project study area identified in CC Basin Plan, are shown in Table 4.10-4.

[40] Radionuclides are radioactive forms of elements that can either occur naturally in the environment or unnaturally through direct release or as a byproduct of nuclear reactions.

Table 4.10-3: Water Quality Objectives for Specific Groundwater Beneficial Uses		
Beneficial Use	**Constituent**	**Water Quality Objective**
Municipal and Domestic Supply	Bacteria	Median concentration of coliform organisms over any seven-day period shall be less than 2.2/100 mL
	Organic and Inorganic Chemicals	Shall not contain concentrations in excess of the maximum contaminant levels for California primary drinking water standards for organic[1] or inorganic[2] chemicals
Agricultural Supply	Radioactivity	Shall not exceed listed[3] concentration limits for radionuclides
	Chemical Constituents	Shall not exceed concentration limits for listed[4] chemicals

Notes:

1. Maximum contaminant levels for California primary drinking water standards are found in California Code of Regulations, Title 22, Division 4, Chapter 15, Article 5.5, Section 64444, Table 64444-A.
2. Maximum contaminant levels for California primary drinking water standards are found in California Code of Regulations, Title 22, Division 4, Chapter 15, Article 5.5, Section 64431 and 64433.2.
3. Limits specific in California Code of Regulations, Title 22, Division 4, Chapter 15, Article 5.5, Section 64443.
4. See Table 3-1 and Table 3-2 in CCRWQB 2019.

mL - milliliter

Source: Central Coast Regional Water Quality Control Board, 2019

Table 4.10-4: Median Groundwater Objectives for the Hollister Sub-area	
Constituent	**Water Quality Objective (mg/L)**
Total Dissolved Solids	1,200
Chlorine (Cl)	150
Sulfate (SO_4)	250
Boron (B)	1.0
Sodium (Na)	200
Nitrogen (N)	5

Note: mg/L – milligram per liter

Source: Central Coast Regional Water Quality Control Board, 2019

Pacheco Reservoir and Vicinity

The existing Pacheco Reservoir is situated on North Fork Pacheco Creek, a tributary of Pacheco Creek. The 67 square mile drainage area of North Fork Pacheco Creek ranges in elevation from 385 to 2,600 feet above mean sea level and is mountainous and steep in the upper portions. Most of the upper watershed contains rugged, sparsely populated areas dominated by oak forests and grazing lands. The mountainous portion of the watershed is classified almost entirely as either grassland/herbaceous, shrub/scrub, or mixed hardwoods (MRLC 2021). An extensive channel network exists in the drainage areas above North Fork Pacheco Creek. The watershed above Pacheco Reservoir encompasses 517 linear miles of channel, with 486 linear miles (94 percent of all channel miles) classified as intermittent and ephemeral based on the United States Geologic Survey (USGS)

National Hydrography Dataset. Flow in these intermittent and ephemeral channels is seasonal, with the majority of flow and sediment transported downstream episodically during storm events.

Pacheco Reservoir provides 5,500 acre-feet of water storage capacity and is filled by seasonal runoff from within the 65 square mile watershed above the existing reservoir (North Fork Pacheco Creek drains an additional 2 square miles below North Fork Dam). Historical mean annual unimpaired inflows are estimated to be approximately 13,104 acre-feet, varying from a mean of 24,800 acre-feet in Wet years to a mean of 1,500 acre-feet in Critical years, as defined by the Sacramento Valley Index. Water from Pacheco Reservoir is released into North Fork Pacheco Creek where it flows approximately 0.4 miles until it joins South Fork Pacheco Creek and forms mainstem Pacheco Creek, an intermittent stream. Due to significant annual variation in inflows and the groundwater recharge objectives of North Fork Dam, Pacheco Reservoir is often filled and emptied within a single water year. This operation results in spill in wet water years when the reservoir is full, and both seasonal and annual periods with no water in storage during dry and critical water when the reservoir has been drained and there are no inflows.

As described above under Hydrology, the existing reservoir inundation area, the North Fork Pacheco Creek channel below the dam, and the Pacheco Creek channel are designated by the Federal Emergency Management Agency (FEMA) as Zone A (100-year floodplain). Areas outside of the reservoir inundation area and the primary channel of North Fork Pacheco Creek and Pacheco Creek are designated as Zone D (areas in which the flood hazard is undetermined, but possible).

Pacheco Creek

Approximately 0.4 miles downstream from North Fork Dam is the confluence of North Fork Pacheco Creek and South Fork Pacheco Creek, which marks the start of mainstem Pacheco Creek, a tributary of the Pajaro River. North Fork Pacheco Creek drains 67 square miles and South Fork Pacheco Creek drains 27.7 square miles. The mainstem Pacheco Creek drains a combined 165 square miles in Santa Clara and San Benito Counties, including several intermittent streams (e.g., Cedar Creek), which contribute flow, sediments, and organic debris into Pacheco Creek before emptying into San Felipe Lake, which drains into the Pajaro River through Miller Canal. The topography is mountainous and steep in the upper portions of the Pacheco Creek watershed, transitioning into a flat and broad alluvial valley in the lower portions of the watershed.

Surface water quality in Pacheco Creek is primarily influenced by releases from North Fork Dam and unregulated flows from South Fork Pacheco Creek and other tributaries to Pacheco Creek (e.g., Cedar Creek). Surface water quality is also influenced by percolation to groundwater. As streamflow travels downstream through Pacheco Creek, it percolates into groundwater subbasins, and the lowered streamflow can lead to relatively warmer water temperatures and reduced natural stream reaeration. In wet winter and spring months, unregulated tributaries and spill from Pacheco Reservoir are the primary source of flow in Pacheco Creek. In winter and spring months of average to critical water years, unregulated tributaries are the primary source of flow in Pacheco Creek, as Pacheco Reservoir captures and stores inflow to varying degrees. In summer and fall months of all water-year types, releases from Pacheco Reservoir for groundwater recharge are the primary source of flows in Pacheco Creek, though these flows can percolate entirely within the 8-mile reach below the confluence of North Fork and South Fork.

Under Section 303(d) of the Clean Water Act (CWA) (see 4.10.2, Regulatory Framework), states must analyze readily available water-quality related data and information and identify waters for which a water quality standard has not been met for individual pollutants. Such waters are considered impaired waters for that specific pollutant. Pacheco Creek is listed as impaired under Section 303(d) due to high concentrations of fecal coliforms (affecting contact and non-contact recreation beneficial uses), low dissolved oxygen (affecting cold and warm freshwater habitat beneficial uses), and high turbidity (affecting cold and warm freshwater habitat beneficial uses) (SWRCB 2018a). Sources of turbidity and dissolved oxygen impairments in Pacheco Creek are listed as unknown in the 303(d) analysis. Sources of fecal coliform impairments are listed as domestic animals and livestock, collection system failure, and urban runoff and storm sewers (SWRCB 2018a). Releases from the existing Pacheco Reservoir are not listed as a source of the identified impairments.

Groundwater

The water released from the existing Pacheco Reservoir flows into Pacheco Creek where it percolates through the streambed to recharge groundwater aquifers. Groundwater is later pumped by private irrigation and domestic wells and by public water supply retailers, including PPWD and SBCWD. Groundwater quality near Pacheco Creek is typically very good, and most public water supply wells do not require any treatment beyond disinfection.

Pacheco Reservoir and the upstream portion of Pacheco Creek are located outside of any DWR-defined groundwater basins, as shown in Figure 4.10-2. However, Pacheco Creek eventually percolates through the Pacheco Valley floor into the North San Benito Subbasin (DWR Bulletin 118 Basin Number 3-003.05) of the Gilroy-Hollister Valley Groundwater Basin. The North San Benito Subbasin is primarily managed by SBCWD, the exclusive GSA for the San Benito County portion of North San Benito Subbasin. Valley Water is the GSA for the Santa Clara County portion of the North San Benito Subbasin, the Llagas Area Subbasin of the Gilroy-Hollister Valley Basin, and for the Santa Clara Valley-Santa Clara Subbasin. Both districts manage groundwater in these subbasins, including percolation of surface water and imported Central Valley Project supplies from San Luis Reservoir. The Santa Clara Subbasin generally produces groundwater of good quality that does not need treatment beyond disinfection (Valley Water 2016). SBCWD is working to improve their groundwater monitoring programs to ensure accurate and consistent data for the annual reports. These data are being used to identify areas of groundwater quality concern and help SBCWD comply with the Sustainable Groundwater Management Act (SGMA). Currently, PPWD has not prepared or adopted a sustainable Groundwater Management Plan.

The Salt and Nutrient Management Plan (SNMP), developed by SBCWD in 2014 for Northern San Benito County (SBCWD 2014), and the SNMPs developed by Valley Water for the Llagas Subbasin (Valley Water 2014a) and the Santa Clara Subbasin (Valley Water 2014b) are important documents that address groundwater quality. Each of these SNMPs identify total dissolved solids (TDS) and nitrate (NO3) as key constituents of concern that are indicators of overall groundwater quality.

In the North San Benito Subbasin, a monitoring program for TDS and nitrate, implemented in 1997, has helped track overall changes in groundwater quality throughout the basin. Water quality goals, or General Basin Plan Objectives (GBPO), for TDS were developed in the SNMP, with an

objective for TDS of 1,200 milligrams per liter (mg/L) (approximately 2,000 microsiemens per centimeter [µS/cm]) or less in the Hollister groundwater subbasin management area (SBWCD 2014). Average groundwater quality for TDS is compared with the California Department of Public Health-recommended lower secondary drinking water Maximum Contaminant Level (SMCL) of 500 mg/L and a median water quality baseline of 300 mg/L for TDS in the Llagas Subbasin SNMP (Valley Water 2014a). The Santa Clara Subbasin SNMP presents TDS testing results alongside the "recommended" and "upper" SMCL targets of 500 mg/L and 1,000 mg/L, respectively, as adopted by the Division of Drinking Water (Valley Water 2014b).

The North San Benito Subbasin GBPO and primary maximum contaminant level (MCL) for nitrate, when expressed as NO3, is 45 mg/L or less for municipal water use and 100 mg/L or less for livestock watering. Specific objectives for the Hollister basin, which sits below Pacheco Creek, are set at 22.5 mg/L or less for nitrate (as N). The SNMP criterion for nitrate (as N) is an MCL of 10 mg/L or less for municipal water use. The CC Basin Plan states for waterbodies that are not expressing biostimulatory impairments, the most stringent relevant water quality objective for nitrate is the same as the SNMP, a numeric objective of 10 mg/L or less of nitrate (as N). Water quality goals are addressed every three years in San Benito County groundwater reports (SBCWD 2019). The Llagas and Santa Clara Subbasin SNMPs (Valley Water 2014a and 2014b) also compare average nitrate (as N) concentrations to the MCL of 45 mg/L. The Llagas Subbasin SNMP adds an additional nitrate objective for a median water quality baseline of 22.5 mg/L (Valley Water 2014a).

Water Quality Conditions

This section discusses key water quality conditions, constituents of concern, the factors influencing their numeric values, and the regulatory objectives associated with maintaining beneficial uses for the proposed Project study area as outlined in the CC Basin Plan, as applicable. The focus of the following discussion is water quality conditions under the CC Basin Plan and water quality parameters or constituents that may be influenced by the proposed Project.

Temperature

The CC Basin Plan established specific water temperature objectives for cold and warm freshwater habitat: at no time or place shall the temperature of any water be increased by more than 5 degrees Fahrenheit (°F) above natural receiving water temperature for these beneficial uses (CCRWQCB 2019). The CC Basin Plan also includes a narrative objective that receiving surface water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the CCRWQCB that such alteration in temperature does not adversely affect beneficial uses. To implement this objective in the 303(d) analysis, the CCRWQCB has applied an evaluation guideline for water temperature based on Moyle (1976), which states that for rainbow trout (i.e., *Oncorhynchus mykiss*, which includes the South Central Coast steelhead present in the region), the optimum range for growth and completion of most life stages is 55.4 to 69.8°F (13 to 21 degrees Celsius (°C)). The maximum water temperature threshold is rounded to 70°F for ease of discussion in the remainder of this section. Pacheco Creek is not currently on the 303(d) list for impairment for water temperature.

Sediment and Turbidity

This section relates to sediment in the existing Pacheco Reservoir and turbidity in surface waters downstream. Turbidity is the amount of particulate matter suspended in water, generally measured in nephelometric turbidity units (NTU), which signifies the opaqueness of water due to the presence of suspended solids. The CC Basin Plan does not identify specific objectives for sediment or turbidity for any beneficial use in Pacheco Creek or Pacheco Reservoir. General objectives for all inland surface waters within the proposed Project study area state that the suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses, and waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. As stated in the CC Basin Plan, increases in turbidity attributable to controllable water quality factors shall not exceed the following limits:

- Where natural turbidity is between 0 and 50 NTUs, increases shall not exceed 20 percent.
- Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs.
- Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.

The CC Basin Plan also states that all waters shall be maintained free of toxic substances in concentrations which are toxic to, or which produce detrimental physiological responses in, human, plant, animal, or aquatic life. Water quality conditions related to sediment and turbidity in the proposed Project study area include fine grained sediment deposited and stored behind North Fork Dam, high turbidity (greater than 50 NTUs) in the existing reservoir (based on visual estimates), and Pacheco Creek (based on measured data).

No data are available to characterize the turbidity or suspended sediment concentrations in inflows to Pacheco Reservoir[41]. A 1951 survey of Pacheco Reservoir by the U.S. Department of Agriculture (USDA) estimated annual sediment loading into the reservoir of 0.12 acre-feet per square mile per year (118 tons per square mile per year) (USDA 1954). This value is consistent with recent estimates of suspended sediment loads for watersheds in the South Bay near Pacheco Reservoir (McKee et al. 2013) that range from 71 and 217 tons per square mile per year. These values are between 3 and 10 times less than annual suspended sediment loads in the East Bay and North Bay. Using an estimated sediment load of 0.12 acre-feet per square mile per year, the existing Pacheco Reservoir is estimated to have lost approximately 600 acre-feet of storage capacity due to sedimentation from when the dam was built in 1939 to 2014 (Valley Water 2021a) These estimates suggest the watershed may have produced between 500 and 1,000 acre-feet of sediment (800,000 to 1,600,000 cubic yards) since North Fork Dam was built in 1939. Due to the flashy nature of North Fork Pacheco Creek (i.e., infrequent, high magnitude flow events), the majority of sediment is assumed to be transported and deposited into Pacheco Reservoir during high flow events. However, because the reservoir was frequently operated to be emptied before the wet season, high magnitude flows may have carried the sediment downstream to the dam before the sediment settled out.

[41]A fundamental objective of the proposed Project is to characterize the nature and extent of these sediments.

Bacteria (Fecal Coliform)

The beneficial use of water contact recreation is not being protected in the Pajaro River watershed, including in Pacheco Creek, because fecal coliform concentrations exceed CC Basin Plan numeric water quality objectives (SWRCB 2018a). The (TMDL) for the impaired waters of Pacheco Creek are concentration-based TMDLs applicable to each day of all seasons. A total of 11 of 27 samples tested from 1997 to 2006 from Pacheco Creek at San Felipe Road exceeded the criterion for fecal coliform.

Pacheco Reservoir and the upper portions of Pacheco Creek are characterized as rural with no municipally owned storm sewers or sanitary sewer collection systems, as most private and public properties are on septic systems.[42] Grazing cattle and wildlife (e.g., feral pigs) throughout the Pacheco Creek watershed are the predominant likely source of animal-related contamination, and these sources are natural, uncontrolled, and dispersed. There is limited data to suggest controllable sources of fecal coliform are within the vicinity of Pacheco Reservoir and upper Pacheco Creek or its tributaries. Data supporting the fecal coliform impairment of Pacheco Creek was collected at San Felipe Road, near the most downstream portion of Pacheco Creek where more rural development, agricultural use, and infrastructure occur. These sources have been identified in the CC Basin Plan as the major controllable sources contributing fecal coliform to the Pajaro River watershed.

Dissolved Oxygen

The cold freshwater habitat beneficial use for both Pacheco Creek and Pacheco Reservoir provides the most restrictive numeric criteria for dissolved oxygen in the CC Basin Plan that concentrations shall not be reduced below 7.0 mg/L at any time. As a general objective for inland surface waters subject to the CC Basin Plan, median values of dissolved oxygen should not fall below 85 percent saturation as a result of controllable water quality conditions.

Limited historical measured dissolved oxygen data are available in Pacheco Creek. Data collected by the Monterey Area Research Consortium (MARC) from October 2002 through January 2007 (SWRCB 2018b) at five locations along Pacheco Creek, from North Fork Pacheco Creek downstream to San Felipe Lake, was used to support placement of Pacheco Creek on the 303(d) list for dissolved oxygen impairment in 2018. Out of 377 total samples, 229 did not exceed the minimum dissolved oxygen water quality objective of 7.0 mg/L. Potential sources of impairment were not specifically identified, but low dissolved oxygen concentrations may be due to low streamflow, warm water temperatures, possible fecal coliform impairment and organic nutrient loading due to the presence of livestock, nutrient loading from agricultural runoff, anoxic releases from the existing Pacheco Reservoir, and/or ponding of streamflow in Pacheco Creek. The maximum, mean, and minimum values of dissolved oxygen concentration and the number of samples taken at each location are shown in Table 4.10-6: for 345 available measurements. Mean values were below the minimum dissolved oxygen criteria of 7 mg/L at North Fork Pacheco Creek (only one measurement available) and San Felipe Road. Minimum measured values were below the minimum dissolved oxygen criteria of 7 mg/L at all locations. Mean monthly measured values are shown in Table 4.10-6.

[42] Section 4.19 Utilities-Service Systems provides additional information on this topic.

Table 4.10-5: Maximum, Mean, and Minimum Dissolved Oxygen Concentrations Measured in Pacheco Creek between 2002 and 2007

Location Along Pacheco Creek	Maximum Value (mg/L)	Mean Value (mg/L)	Minimum Value (mg/L)	# of Samples
Location Along Pacheco Creek	6.7	6.7	6.7	1
Walnut Avenue	14.3	9.6	5.4	41
Highway 156	11.6	7.5	2.5	114
San Felipe Road	10.7	6.4	0.8	102
Lovers Lane	9.7	7.1	3.6	87

Source: Data obtained from the Monterey Area Research Consortium as reported in the Final California 2018 Integrated Report (303(d) List/305(b) Report) for Pacheco Creek.

Key: mg/L = milligram per liter

Table 4.10-6: Mean Monthly Dissolved Oxygen Concentrations Measured in Pacheco Creek Between 2002 and 2007

Month	At North Fork Pacheco Creek (mg/L)	Walnut Avenue (mg/L)	Highway 156 (mg/L)	San Felipe Road (mg/L)	Lovers Lane (mg/L)
January	NM	9.9	9.6	8.8	8.7
February	NM	11.2	9.3	6.1	8.5
March	NM	9.2	9.2	8.4	8.3
April	NM	9.4	8.1	7.1	7.0
May	NM	7.9	6.8	6.1	6.1
June	NM	9.9	6.3	5.6	6.1
July	6.7	NM	6.2	4.9	6.5
August	NM	8.7	6.2	5.0	6.1
September	NM	9.3	6.4	4.8	5.1
October	NM	9.0	7.9	6.4	6.9
November	NM	9.5	7.2	6.9	7.5
December	NM	9.7	7.3	7.2	7.7

Source: Data obtained from the Monterey Area Research Consortium as reported in the Final California 2018 Integrated Report (303(d) List/305(b) Report) for Pacheco Creek.

Key:

mg/L = milligram per liter

NM = no measurement

pH

pH is a measure of hydrogen ion concentration, which indicates how acidic or basic water is. A pH less than 7.0 indicating acidity, a pH of greater than 7.0 indicating a base, and a pH of 7.0 representing neutral conditions. In the CC Basin Plan, the water contact and non-contact water recreation beneficial uses provide the most restrictive maximum numerical criteria for pH of 8.3. The warm and cold freshwater habitat beneficial uses provide the most restrictive minimum numeric criteria for pH of 7.0. These beneficial uses also include the CC Basin Plan objective that changes in normal ambient pH levels shall not exceed 0.5 in fresh waters. The CC Basin Plan includes a pH objective of between 6.5 and 8.5.

Data collected by MARC (SWRCB 2018b) from October 2002 through January 2007 at five locations along Pacheco Creek, from North Fork Pacheco Creek down to Lover's Lane near San Felipe Lake, shows a range of maximum, mean, and minimum pH values. The mean values at all locations met the pH criteria. Out of 386 total measurements, minimum criteria were not met for two total measurements at two locations, and maximum numeric criteria were not met for 19 total measurements across four locations. These frequencies were not high enough to list Pacheco Creek as impaired for pH.

Total Dissolved Solids

The CC Basin Plan does not include any specific water quality objectives for TDS for inland surface waters. The CC Basin Plan definition of municipal and domestic supply beneficial use states surface waters are considered suitable or potentially suitable for municipal or domestic water supply if TDS does not exceed 3,000 mg/L (TDS is commonly measured based on the conductivity of the water, so the CC Basin Plan provides a conductivity threshold of 5,000 µS/cm for TDS).

Data collected by MARC (SWRCB 2018b) from October 2002 through January 2007 at five locations along Pacheco Creek, from North Fork Pacheco Creek downstream to Lover's Lane near San Felipe Lake, shows a range of maximum, mean, and minimum monthly conductivity that generally increases as flow travels downstream. Out of 388 total measurements, the mean and maximum conductivity values were all below the municipal or domestic water supply criteria for TDS (as listed in µS/cm) except for one measurement at Lover's Lane. The increase in TDS levels in the downstream direction is likely the result of increased agricultural and urban runoff as a result of increased drainage area, urbanization, and agricultural land use in lower Pacheco Creek.

The maximum TDS concentrations measured in the groundwater subbasins that underlie Pacheco Creek reported by SBCWD (2019) for 2017 to 2019 were less than 1,000 mg/L (approximately 1,667 µS/cm). In general, since 2001 TDS concentrations in groundwater measured at wells along Pacheco Creek has averaged 800 mg/L (approximately 1,667 µS/cm), ranging from 232 to 1,028 mg/L (approximately 387 to 1,713 µS/cm), within the water quality objectives for the subbasin.

Nitrate

The CC Basin Plan specific water quality objective for municipal and domestic supply for nitrate is the California Department of Public Health MCL for public water systems of 45 mg/L as nitrate or 10 mg/L as nitrogen. The same objective of 10 mg/L as nitrogen was established for groundwater quality in the Salt and Nutrient Management Plan (SNMP) developed by SBCWD.

In 2014, the SNMP for Northern San Benito County (SBCWD 2014) identified nitrate as a constituent of concern related to groundwater quality. Nitrate is the most common form of nitrogen detected in groundwater. Natural nitrate concentrations are typically low, and elevated nitrate concentrations are often due to agricultural activities, septic systems, confined animal facilities, landscape fertilization, and wastewater treatment facility discharges. Locally elevated nitrate concentrations are recognized as a long-term concern in the North San Benito Subbasin.

Data collected by MARC (SWRCB 2018b) from October 2002 through January 2007 at five locations along Pacheco Creek, from North Fork Pacheco Creek down to Lover's Lane near San Felipe Lake, shows a range of maximum, mean, and minimum nitrate (as N) values in surface water. Out of 436 total measurements, maximum criteria were exceeded a total of five times at one location, Highway 156, and were otherwise below the criterion of 10 mg/L.

Based on measurements by SBCWD (2019), relatively high nitrate concentrations occur in groundwater throughout most of the North San Benito Subbasin. Average measured nitrate concentrations over the past three years in the Hollister subbasin, which contains Pacheco Creek, were 35 mg/L, below the general basin objective but exceeding the Hollister basin specific objective. While measurements were not published for portions of the subbasin directly underlying Pacheco Creek, SBCWD notes the maximum concentrations of nitrate are relatively low along Pacheco Creek, distinguishing this location from areas with a long history of agricultural use and wastewater disposal (municipal and domestic) that exceed the basin objective and MCL of 45 mg/L.

Nitrogen is most commonly detected in groundwater as NO3. Concentrations above the MCLs can cause methemoglobinemia, or "blue baby syndrome," in humans and livestock (SWRCB 2017). Some causes of elevated concentrations are agricultural activities like confined animal facilities and fertilization or human activities like septic systems and wastewater treatment plant discharges. Average nitrogen concentrations measured in the Pacheco subbasin during the sampling period of 2013 – 2016 were 12.9 mg/L, 17.6 mg/L in Hollister East, 34.4 mg/L in Hollister West, and 25.1 in Bolsa Southeast (SBCWD 2016). The average nitrogen concentration within the Hollister Management Area during the sampling period of 2017 – 2019 was 35 mg/L. Elevated concentrations of nitrogen were found in samples within the Pacheco, Bolsa SE and Hollister subbasins during this time period. While the average nitrogen concentrations did not exceed the 45 mg/L drinking water standard, they were higher than the 22.5 mg/L basin objectives identified in the 2019 Annual Groundwater Report (SBCWD 2019).

Other Constituents

Toxicity. The CC Basin Plan includes a narrative objective for toxicity in surface waters that states the following: "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal or aquatic life designated as a beneficial use." There are no data or measurements available to characterize toxicity within the proposed Project study area.

Oil and Grease. The CC Basin Plan includes a narrative objective for oil and grease that states the following: "Waters shall not contain oils, greases, waxes or other similar materials that result in a visible film or coating on the surface of the water or objects in the water, that cause nuisance, or

that otherwise adversely affect beneficial uses." There are no data or measurements available to characterize oil and grease within the proposed Project study area.

Chromium. Hexavalent chromium (also known as CrVI or chromium VI) was considered a constituent of concern in past SBCWD Groundwater Reports.[43] In 2017, the SWRCB stopped enforcing the MCL for hexavalent chromium. Therefore, hexavalent chromium is no longer a designated constituent of concern for the North San Benito Subbasin though the Superior Court of Sacramento County has ordered the SWRCB to adopt a new MCL for hexavalent chromium. The 2019 Annual Groundwater Report (SBCWD 2019) measured total chromium, instead of hexavalent chromium, for non-regulated facilities in the basin between 2017-2019. The MCL for total chromium is 50 µg/L. Groundwater from four wells in the central portion of the Hollister Management Area had median total chromium concentrations over 20 µg/L during this sampling period. Hexavalent chromium is often the dominant form of chromium in oxygen-rich groundwater (SBCWD 2019).

All Other Constituents. Other narrative water quality objectives in the CC Basin Plan not described in the previous paragraphs relate to color, tastes and odors, floating material, suspended material, settleable material, biostimulatory substances, pesticides, chemical constituents, other organics, and radioactivity. The 303(d) analysis evaluated Pacheco Creek for the following specific pollutants and did not find any evidence of impairment or contributing sources: ammonia, boron, chloride, chlorophylla, Chlorpyrifos, Diazinon, E. coli, and sodium. The specific pollutants and narrative water quality objectives listed in this paragraph are excluded from further analysis due to the lack of evidence they currently contribute to degradation of water quality or will under the proposed Project activities.

4.10.2 Regulatory Framework

Federal Laws, Regulations, and Policies

Clean Water Act

The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the nation's waters." The CWA establishes the regulatory framework regulating discharge of pollutants into the waters of the United States and gives the Environmental Protection Agency (EPA) the authority to implement pollution control programs (e.g., setting wastewater standards for industries). In certain states such as California, the EPA has delegated authority to state agencies.

Section 303

This section of the CWA requires states to adopt water quality standards for all surface waters of the United States. There are three major components of water quality standards: designated users, water quality criteria, and antidegradation policy. In California, the EPA gave the SWRCB and its nine RWQCBs the authority to identify beneficial uses and adopt applicable water quality

[43] Additional information on this metal is provided in Section 4.9, Hazards and Hazardous Materials.

objectives. The CCRWQB is responsible for identifying water quality objectives in the proposed Project study area.

Section 303(d). Section 303(d) of the CWA requires states and authorized Native American tribes to develop a list of water quality-impaired segments of waterways. The list includes waters that do not meet water quality standards necessary to support the beneficial uses of that waterway, even after point sources of pollution have installed the minimum required levels of pollution control technology, and the pollutants that impair them. Only waters impaired by "pollutants," not those impaired by other types of "pollution" (e.g., altered flow and/or channel modification), are to be included on the list. (Pollutants include clean sediments, nutrients [e.g., nitrogen and phosphorus], pathogens, acids/bases, temperature, metals, cyanide, and synthetic organic chemicals.) In the primary study area, Pacheco Creek (including its tributaries) is listed as impaired under Section 303(d), due to high concentrations of fecal coliforms, low dissolved oxygen, and high turbidity.

Section 303(d) of the CWA also requires states to maintain a listing of impaired water bodies so that a total maximum daily load (TMDL) can be established. A TMDL is a plan to restore the beneficial uses of a stream or to otherwise correct an impairment. It establishes the allowable pollutant loadings or other quantifiable parameters (e.g., pH or temperature) for a water body and thereby provides the basis for the establishment of water quality-based controls. The calculation for establishment of TMDLs for each water body must include a margin of safety to ensure that the water body can be used for the purposes the state has designated. Additionally, the calculation also must account for seasonal variation in water quality.

Section 401. This section of the CWA requires an applicant for any federal license or permit that may result in discharge into waters of the United States to obtain a certification from the state that discharge would comply with state water quality standards. Section 401 certifications in California are issued either by the SWRCB or the RWQCBs.

Section 402. This section creates the National Pollutant Discharge Elimination System (NPDES) permit program. This program authorizes point sources of pollution discharging into a surface water body. In California, the NPDES program is administered at the state level through the Construction General Permit, and the Central Coast Regional Water Quality Control Board administers the program in the proposed Project study area.

Executive Order 11988

Under Executive Order 11988, FEMA is responsible for managing floodplain areas, which are defined as the lowland and relatively flat areas adjoining inland and coastal waters subject to a 1 percent or greater chance of flooding in any given year (the 100-year floodplain). FEMA requires that local governments covered by federal flood insurance pass and enforce a floodplain management ordinance that specifies minimum requirements for any construction within the 100-year floodplain.

The existing Pacheco Reservoir, North Fork Pacheco Creek below the existing dam, and Pacheco Creek downstream to and north of the San Benito County line are mapped as flood Zone A, and several structures and portions of SR-152 are located within the current mapped Zone A boundaries. As defined by FEMA, flood Zone A includes:

Areas subject to inundation by the 1-percent-annual-chance flood event generally determined using approximate methodologies. Because detailed hydraulic analyses have not been performed, no Base Flood Elevations or flood depths are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply" (FEMA 2021).

State Laws, Regulations, and Policies

California State Water Resources Control Board

The SWRCB allocates water rights, adjudicates water right disputes, develops statewide water protection plans, and establishes water quality standards. The SWRCB also oversees nine RWQCBs located in the major watersheds of the state.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Act, enacted in 1969, established a comprehensive program to govern water quality and beneficial uses of water in California. The Porter- Cologne Act applies to surface waters, wetlands, and groundwater, as well as to point and nonpoint sources of pollution; it also established nine RWQCBs and the SWRCB, which are charged with implementing the Act's provisions and protecting water quality in California. Discharges are regulated by RWQCBs primarily through issuances of NPDES

permits/waste discharge requirements for point source discharges and waste discharge requirements for non-point source discharges.

The Porter-Cologne Act also requires adoption of water quality control plans to guide water pollution management in California. These include both statewide water quality control plans, as well as regional water quality control plans, also known as basin plans. These plans identify existing and potential beneficial uses of waters of the United States, establish water quality objectives to protect these uses and identify implementation, surveillance, and monitoring plans.

Actions within the proposed Project study area are subject to the requirements of the 2019 Cc Basin Plan. The CC Basin Pan includes water quality objectives for the proposed Project study area as previously discussed.

Construction General NPDES Permit

The state of California adopted the NPDES General Permit for Construction General Permit, Order 2022-0057-DWQ on September 8, 2022. The SWRCB Construction General Permit regulates construction site stormwater management. Dischargers whose projects disturb 1 or more acres of soil, or whose projects disturb less than 1 acre but are part of a larger common plan of development that in total disturbs 1 or more acres, are required to obtain coverage under the general permit for discharges of stormwater associated with construction activity. This requirement includes linear projects that disturb 1 or more acres. Construction activity subject to this permit includes clearing, grading, and other ground disturbance, such as stockpiling or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility.

Permit applicants are required to submit a Notice of Intent to SWRCB and to prepare a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP identifies BMPs that must be implemented to reduce construction effects on receiving water quality based on pollutants. The BMPs identified are directed at implementing both sediment- and erosion-control measures and other measures to control chemical contaminants. The SWPPP must also include descriptions of the BMPs to reduce pollutants in stormwater discharges after all construction phases have been completed at the site (post-construction BMPs). The SWPPP must contain a visual monitoring program, a chemical monitoring program for "nonvisible" pollutants to be implemented if there is a failure of BMPs, and a sediment monitoring plan if the site discharges directly to a waterbody listed on the CWA 303(d) list for sediment.

Water Quality Control Plan for the Central Coast Basin

The CC Basin Plan developed by the CCRWQCB (CCRWQCB 2019) describes how the quality of surface water and groundwater in the Central Coast Region should be managed to provide the highest water quality reasonably possible. The CC Basin Plan identifies beneficial uses for specific surface water, describes the water quality which must be maintained to allow those uses. Programs, projects, and other actions that are necessary to achieve the standards established in the plan are also identified. The CC Basin Plan would apply to the proposed Project.

Regional and Local Laws, Regulations, and Policies

Santa Clara County General Plan

The Resource Conservation section of the General Plan (1994) identifies strategies, policies, and implementation actions for the protection of the County's water resources. This includes the following applicable policies regarding water quality:

- **R-RC 10**: For lands designated as Resource Conservation Areas (Hillsides, Ranchlands, Agriculture, and Baylands) and for Rural Residential areas, water resources shall be protected by encouraging land uses compatible and consistent with maintenance of surface and ground water quality.
- Uses that pose a significant potential hazard to water quality should not be allowed unless the potential impacts can be adequately mitigated.
- **R-RC 13**: Sedimentation and erosion shall be minimized through controls over development, including grading, quarrying, vegetation removal, road and bridge construction, and other uses which pose such a threat to water quality.

Groundwater Sustainability Plans

The Sustainable Groundwater Management Act (SGMA) requires local Groundwater Sustainability Agencies (GSAs) in high- and medium-priority basins to develop and implement Groundwater Sustainability Plans (GSPs) or alternatives to GSPs (GSP-Alternative) that provide a roadmap for how groundwater basins will reach long-term sustainability. SBCWD and Valley Water have developed a draft GSP for the North San Benito Subbasin (SBCWD and Valley Water 2021), Valley Water has developed a GSP-Alternative for the Santa Clara and Llagas Subbasins (Valley Water

2016), and the Pajaro Valley Water Management Agency has developed a GSP-Alternative for the Pajaro Valley Subbasin (PV Water 2014). To date, PPWD has not prepared or adopted a GSP.

Santa Clara Valley Habitat Plan

The Valley Habitat Plan identifies four Conditions that are relevant to Hydrology and Water Quality; Condition 3. Maintain Hydrologic Conditions and Protect Water Quality, Condition 5. Avoidance and Minimization Measures for In-Stream Operations and Maintenance, Condition 11. Stream and Riparian Setbacks and Condition 12. Wetland and Pond Avoidance and Minimization. These are discussed in Section 2.6. And fully described in Appendix B.

4.10.3 Discussion

a. Less than Significant Impact. Activities required to complete the proposed Project would include both surface and subsurface investigations. Surface investigations would include placement of 19 seismic refraction lines, and one electrical resistivity survey with minimal surface disturbance and no use of mechanized equipment other than for vehicular access. For subsurface investigations, some minor vegetation removal for equipment access, drilling of up to 149 geotechnical borings, excavation of 32 test pits would occur. Some of these activities have the potential to expose soils and mobilize sediments in stormwater. Additionally, hazardous materials such as fuels, oils, grease, and lubricants necessary to perform excavation and drilling investigations could be accidentally released during implementation of subsurface investigations (e.g., drilling) proposed within and adjacent to Pacheco Reservoir. It should be noted that all work would occur during the dry season.[44] Accidental discharge of these materials into the Pacheco Reservoir could adversely affect water quality and/or result in violation of water quality standards. Therefore, the proposed Project would include numerous Valley Water BMPs to avoid and minimize any water quality related impacts (Valley Water 2014c).

The proposed Project would incorporate the following BMPs to avoid or minimize water quality impacts associated with the storage and release of hazardous materials: HM-7 (Restrict Vehicle and Equipment Cleaning to Appropriate Locations) and HM-8 (Ensure Proper Vehicle and Equipment Fueling and Maintenance), which require that vehicles and equipment are washed only in approved areas and that no fueling or servicing of vehicles occurs in a waterway or immediate floodplain, and HM-9 (Ensure Proper Hazardous Materials Management) and HM-10 (Utilize Spill Prevention Measures), which include measures that ensure that hazardous materials are properly handled and the quality of water resources are protected. In addition, spill prevention measures are incorporated to prevent the accidental release of chemicals, fuels, lubricants, and non-storm drainage water.

The proposed Project also incorporates the following water quality BMPs: WQ-4 (Limit Impacts from Staging and Stockpiling Materials), which requires implementation of measures to minimize soil from being tracked onto roadways (e.g., SR-152) near work sites; WQ-9 (Use Seeding for Erosion Control, Weed Suppression, and Site Improvement), which requires

[44] The dry season is generally described as April 1 to November 15 but may be compressed due to wet weather, work delays to avoid sensitive biological resources, and persisting wet site conditions.

disturbed areas to be seeded with native seed as soon as it is appropriate after activities are complete; WQ-11 (Maintain Clean Conditions at Work Sites), which requires that the work sites and access roads are maintained in an orderly condition; WQ-12 (Manage Well or Exploratory Boring Materials), which requires all materials or waters generated during drilling will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statutes; WQ-13 (Protect Groundwater from Contaminates Via Wells or Exploratory Borings), which requires that substances or materials that may degrade groundwater quality be prevented from entering any well or boring and that well openings or entrances be sealed or secured in such a way as to prevent the introduction of contaminants; WQ-14 (Backfill Completed Exploratory Borings), which requires all borings to be backfilled within 24 hours of termination of testing and not left in such a condition as to allow for the introduction of surface waters or foreign materials into them; WQ-15 (Prevent Water Pollution), which requires that oily, greasy, or sediment-laden substances or other material that originate from proposed Project operations be prevented from entering or being placed where they may enter a waterway; WQ-16 (Prevent Storm Water Pollution), which requires that measures be implemented to prevent storm water pollution; and WQ-17 (Manage Sanitary and Septic Waste, which requires that all onsite portable restrooms for workers be placed outside of waterways or wetlands and routinely serviced to prevent spills. Implementation of the specified BMPs would ensure that impacts to water quality as a result of the proposed geotechnical investigations would be less than significant.

Many of these BMPs are also similar to the Conditions and AMMs associated with the Valley Habitat Plan described in Section 2. As described in the regulatory section, four Conditions apply to the proposed Project that would reduce the potential for violating water quality standards or degrading water quality. In addition, thirteen AMMs would be applicable to avoid or minimize impacts related to exposure to hazardous conditions or materials. These AMMs are: 2, 7, 8, 9, 11, 12, 72, 75, 76, 87, 88, 90, 100 as listed in Table 2-7. As applicable, measures including prevention of accidental release of chemicals, fuels, et into channel, restricting equipment storage, fueling and staging areas to disturbed areas outside stream or riparian areas, and disposal of all construction waste in designated areas would reduce the potential for discharge or accidental release of materials hazardous to the environment throughout the proposed Project study area.

The NPDES General Permit (GP) for Construction (Order 2022-0057-DWQ) requires construction sites over one acre that do not qualify for a waiver to prepare and implement a SWPPP. Because the proposed Project would not exceed one acre of ground disturbance (a maximum of 0.48 acres of disturbance proposed), Valley Water would not be required to prepare and implement a SWPPP or file a Notice of Intent with the RWQCB to obtain coverage under the GP.

b. No Impact. No groundwater supplies would be used or impacted by the proposed Project. All water used for proposed Project activities would be provided from existing municipal or commercial sources. The existing 5,500–acre-foot Pacheco Reservoir located within the proposed Project study area, is operated by PPWD, which releases water downstream into Pacheco Creek during the dry season for groundwater recharge, despite not having a sustainable groundwater management plan. Further, the proposed Project would not interfere

with the PPWD's ability to store and release water for the purposes of groundwater recharge. Therefore, implementation of the proposed Project would not decrease groundwater supplies or interfere substantially with groundwater recharge. No impact would occur from implementation of the proposed Project.

c. -i. Less than Significant Impact. Geotechnical investigations (e.g., geotechnical borings and test pits) associated with the proposed Project could temporarily increase the potential for erosion or siltation. However, disturbed areas would be returned to their original grade immediately after exploration is complete and reseeded with native seed mix just prior to the start of the rainy season for maximum likelihood of germination and growth. BMPs outlined in the discussion under response "a" would be implemented during proposed Project activities. For example, BMP WQ-4 limits impacts from staging and stockpiling materials; BMP WQ-9 requires disturbed areas to be seeded with native seed as soon as is appropriate after activities have been completed and that erosion control seed mix to be applied to exposed soils; and BMP WQ-16 requires that measures be implemented to prevent storm water pollution. With the implementation of the specified BMPs, the proposed Project would not result in substantial erosion or siltation on- or off-site and any impacts would be less than significant.

c.-ii. No Impact. The proposed Project would not increase the amount of impervious surface area resulting in on- or off-site flooding. All disturbed areas would be returned to their original grade immediately after investigation activities are completed at each work activity area and reseeded with a native seed mix just prior to the start of the rainy season for maximum likelihood of germination and growth. Therefore, no increase in the amount of surface runoff would occur, and no impact would result.

c.-iii. No Impact. The proposed Project is specific to geotechnical investigations and would not increase the amount of impervious surface area, increase runoff that would exceed the capacity of stormwater drainage systems, or provide additional sources of polluted runoff. All work activity areas within the proposed Project study area would be returned to their original grade immediately after investigation activities are completed at each activity site and reseeded with native seed mix just prior to the start of the rainy season for maximum likelihood of germination and growth. BMPs outlined in the discussion under response "a" would be implemented during proposed Project activities to reduce impacts associated with any potential for polluted runoff. Therefore, the proposed Project would not result in an increase in runoff water that would exceed the capacity of existing stormwater drainage systems or provide additional sources of polluted runoff. No impact would occur from implementation of the proposed Project.

c.-iv. No Impact. No permanent or temporary fill would be placed within Pacheco Reservoir, within the North Fork Pacheco Creek, within the Pacheco Creek mainstem, or within any other waterway as a result of Project implementation. All exploratory borings would be properly sealed, and test pit excavation areas would be backfilled to the pre-existing grade. In addition, all work would occur during the dry season, which is generally described as April 1 to November 15, but may be compressed due to wet weather, work delays to avoid sensitive biological resources, and persisting wet site conditions. As a result, the proposed Project would not substantially alter the existing drainage pattern of the site or area, including through the

alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede flood flows. Therefore, no impact to flood flows would occur.

d. Less than Significant Impact. The proposed Project proposes to conduct geotechnical investigations within and adjacent to the existing Pacheco Reservoir, which is located within a flood hazard area. All geotechnical investigations are proposed to occur during the dry season. For this reason, there is low potential for impacts associated with a flood hazard that could result in the release of pollutants as a result of inundation. In addition, there is a low potential for impacts associated with an earthquake generated seiche during the approximately 8-month project schedule, due to work occurring during the dry season when the reservoir is dry or low and the limited likelihood of a large seismic event occurring during proposed Project implementation. In addition, based on the proposed Project's approximate 30-mile distance from the nearest mapped tsunami inundation areas located adjacent to both San Francisco and Monterey bays to the west, the proposed Project study area would not be exposed to inundation by a tsunami (Department of Conservation 2024). Therefore, potential pollutants used during geotechnical investigations within the proposed Project area would not be subject to inundation by a flood hazard, tsunami, or seiche; therefore, impacts would be less than significant.

e. No Impact. The proposed Project proposes minor vegetation removal for equipment access, drilling of up to 149 geotechnical borings, excavation of 32 test pits, placement of 19 seismic refraction lines, and 1 electrical resistivity survey line. The proposed Project would not conflict with or obstruct implementation of the CC Basin Plan or be inconsistent with sustainable groundwater management by the PPWD, which has not prepared or adopted a groundwater sustainability plan.

4.10.4 Best Management Practices

The following BMPs described in Table 2-6 are applicable for hydrology and water quality:

- **HM-7**: Restrict Vehicle and Equipment Cleaning to Appropriate Locations
- **HM-8**: Ensure Proper Vehicle and Equipment Fueling and Maintenance
- **HM-9:** Ensure Proper Hazardous Materials Management
- **HM-10:** Utilize Spill Prevention Measures
- **WQ-4:** Limit Impacts from Staging and Stockpiling Materials
- **WQ-9:** Use Seeding for Erosion Control, Weed Suppression, and Site Improvement
- **WQ-11:** Maintain Clean Conditions at Work Sites
- **WQ-**12: Manage Well or Exploratory Boring Materials
- **WQ-**13: Protect Groundwater from Contaminates Via Wells or Exploratory Borings
- **WQ-**14: Backfill Completed Exploratory Borings
- **WQ-15:** Prevent Water Pollution
- **WQ-16:** Prevent Storm Water Pollution
- **WQ-17:** Manage Sanitary and Septic Waste

4.10.5 Avoidance and Minimization Measures

In accordance with the discussion in item "b", the following Valley Habitat Plan AMMs listed in Table 2-7 are applicable: 2, 7, 8, 9, 11, 12, 72, 75, 76, 87, 88, 90, 100.

4.10.6 Mitigation Measures

No mitigation measures required.

4.11 Land Use and Planning

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Physically divide an established community?	☐	☐	☐	☒
b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

4.11.1 Environmental Setting

The environmental setting related to land use and planning includes the consideration of land ownership and the General Plan. County ordinances related to land use are also considered. The regulatory aspects of land use designations and zoning are discussed under 4.11.2, Regulatory setting. In addition, relevant planning direction for specific resources is included in the Regional and Local Laws, Regulations, and Policies section under Section 4.11.2.

The proposed Project study area is located within, adjacent to, and in the vicinity of the existing Pacheco Reservoir, and along SR-152 from Kaiser-Aetna Road to the site entrance located, approximately one mile east of Kaiser-Aetna Road on the north side of SR-152 (Figure 2-1, Section 2). Pacheco Reservoir is located along North Fork Pacheco Creek and behind North Fork Dam (near 37.05022, -121.291754), roughly equidistant between the cities of Gilroy and Los Banos.

Land Ownership

Most of the proposed Project study area is located on private lands within unincorporated Santa Clara County, as shown on Figure 4.11-1. Most of the proposed Project study area is located on private lands within unincorporated Santa Clara County, as shown on Figure 4.11-1. However, Pacheco Reservoir and North Fork Dam, which are located on North Fork Pacheco Creek, are owned and operated by the PPWD. Water released from North Fork Dam into North Fork Pacheco Creek flows into Pacheco Creek just downstream from the confluence with the South Fork Pacheco Creek. In addition, Caltrans owns SR-152 right-of-way, which is located in the southern portion of the proposed Project study area.

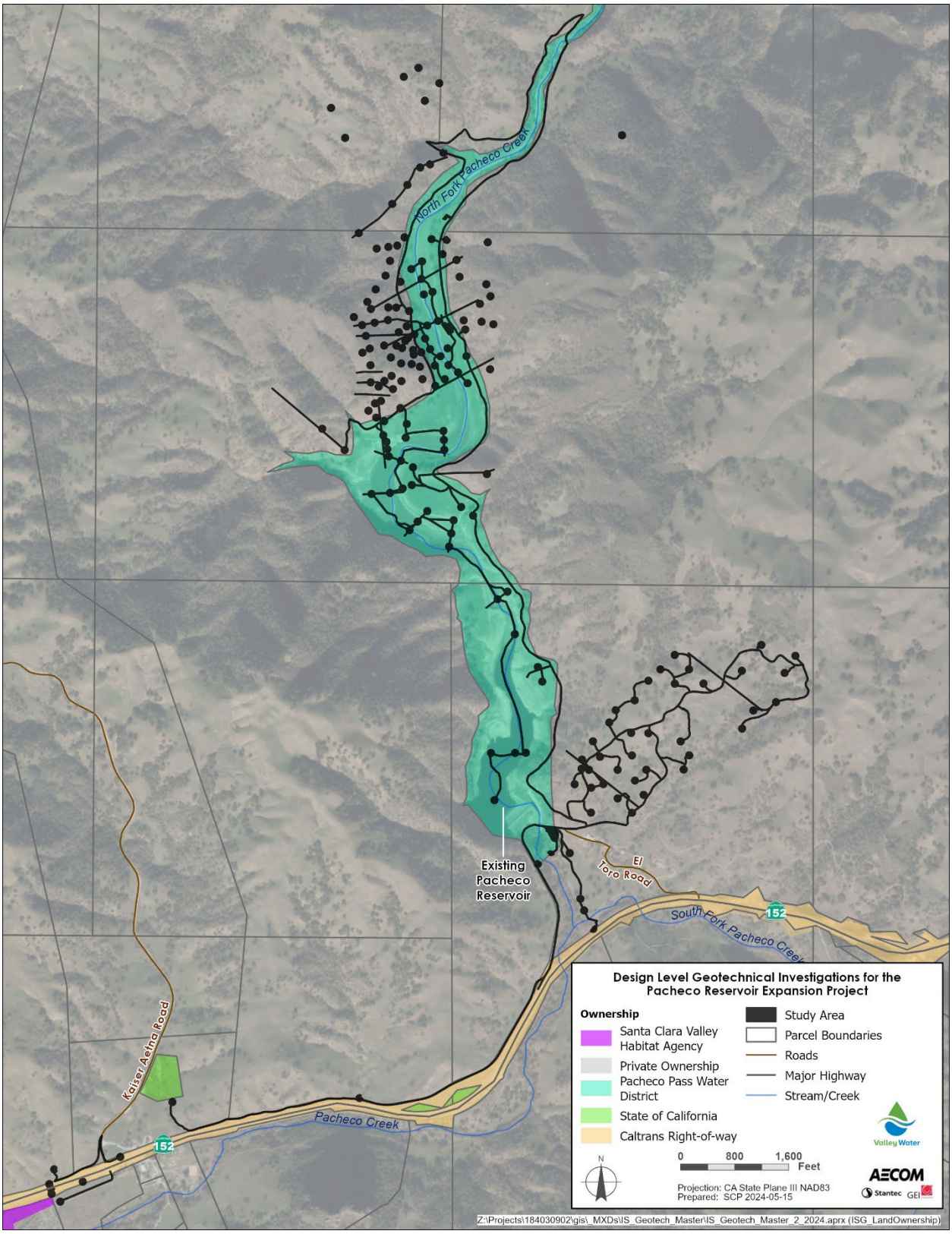


Figure 4.11-1: Land Ownership

Santa Clara County General Plan Land Use Designations

The General Plan can be described as the County's "blueprint" for future development. It represents the community's view of its future and comprises the goals and policies upon which the County's Board of Supervisors will base its land use decisions. The General Plan and its figures have a long-term outlook, identifying the types of development that will be allowed, the spatial relationships among land uses, and the general pattern of future development. Consistent with that approach, the General Plan designates the land use for areas within its jurisdiction. Figure 4.11-2 shows the land use designations in the proposed Project study area. The primary land use designations in the proposed Project study area are Ranchlands and Roadside Services.

Santa Clara County Zoning

Zoning implements the policies of the General Plan through specific standards such as lot size, building setback, and a list of allowable uses. The land uses shown on the County's General Plan maps are reflected in the local zoning ordinances and maps. Figure 4.11-3 shows the Santa Clara County zoning designations for the proposed Project study area. The primary zoning associated with the proposed Project study area is Agricultural Ranchland. One small area adjacent to SR-152 near Kaiser-Aetna Road is zoned Roadside Services to accommodate the Bell Station Farmers Market.

4.11.2 Regulatory Setting

Federal Laws, Regulations, and Policies

No federal laws, regulations, or policies related to land use and planning apply to the proposed Project.

State Laws, Regulations, and Policies

California Government Code. The California Government Code (CGC) Title 5, Division 2, Part 1, Chapter 1, Article 5 establishes the relationship between local agencies such as Valley Water and Counties. Pursuant to Section 53091(a), local agencies such as Valley Water "shall comply with all applicable building ordinances and zoning ordinances of the county or city in which the territory of the local agency is situated."[45]

[45] The proposed Project is not subject to the exemption to this general rule, set forth in Government Code section 53091(e), because it would not locate or construct facilities for the production, generation, storage, treatment, or transmission of water.

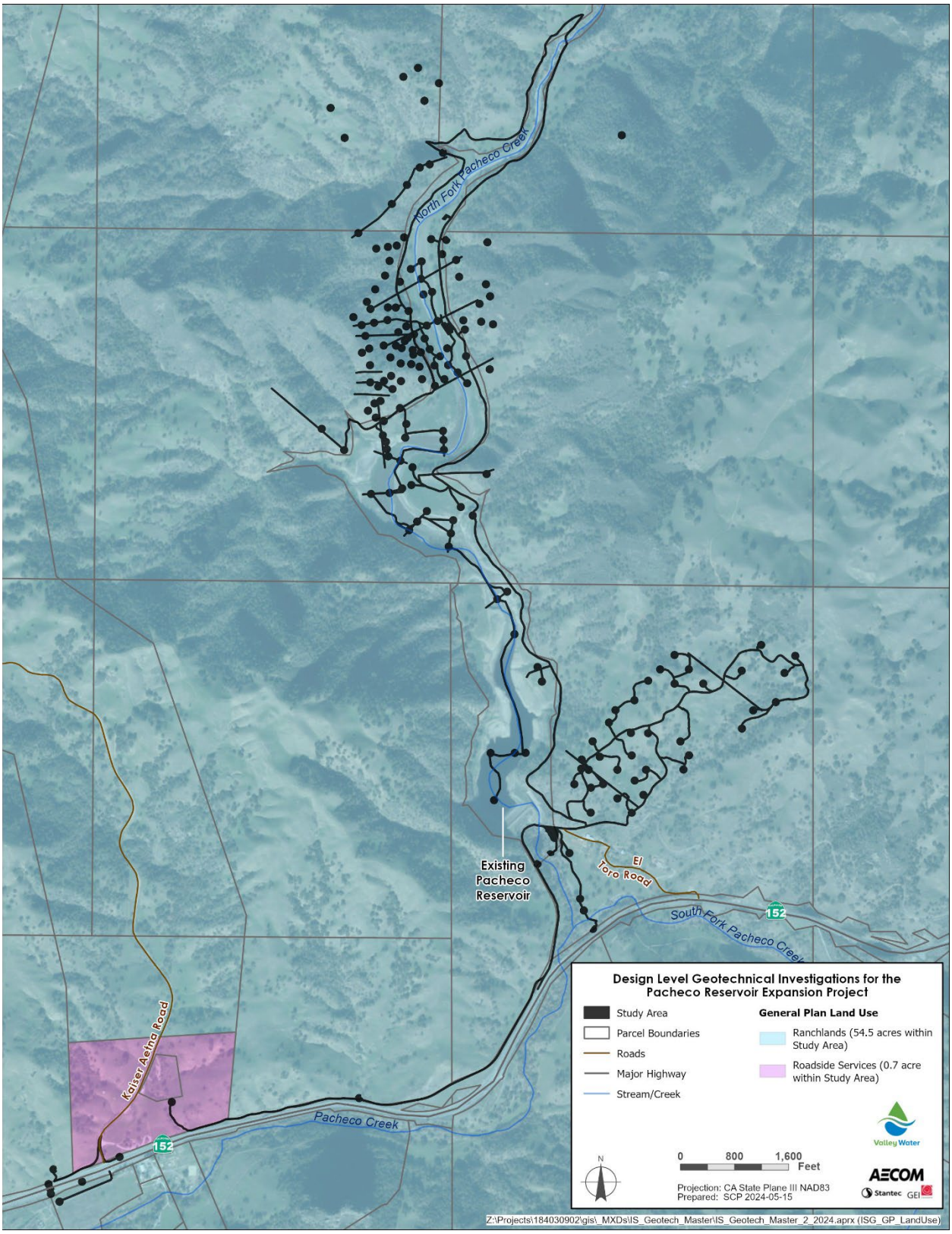


Figure 4.11-2: General Plan Land Use Designations

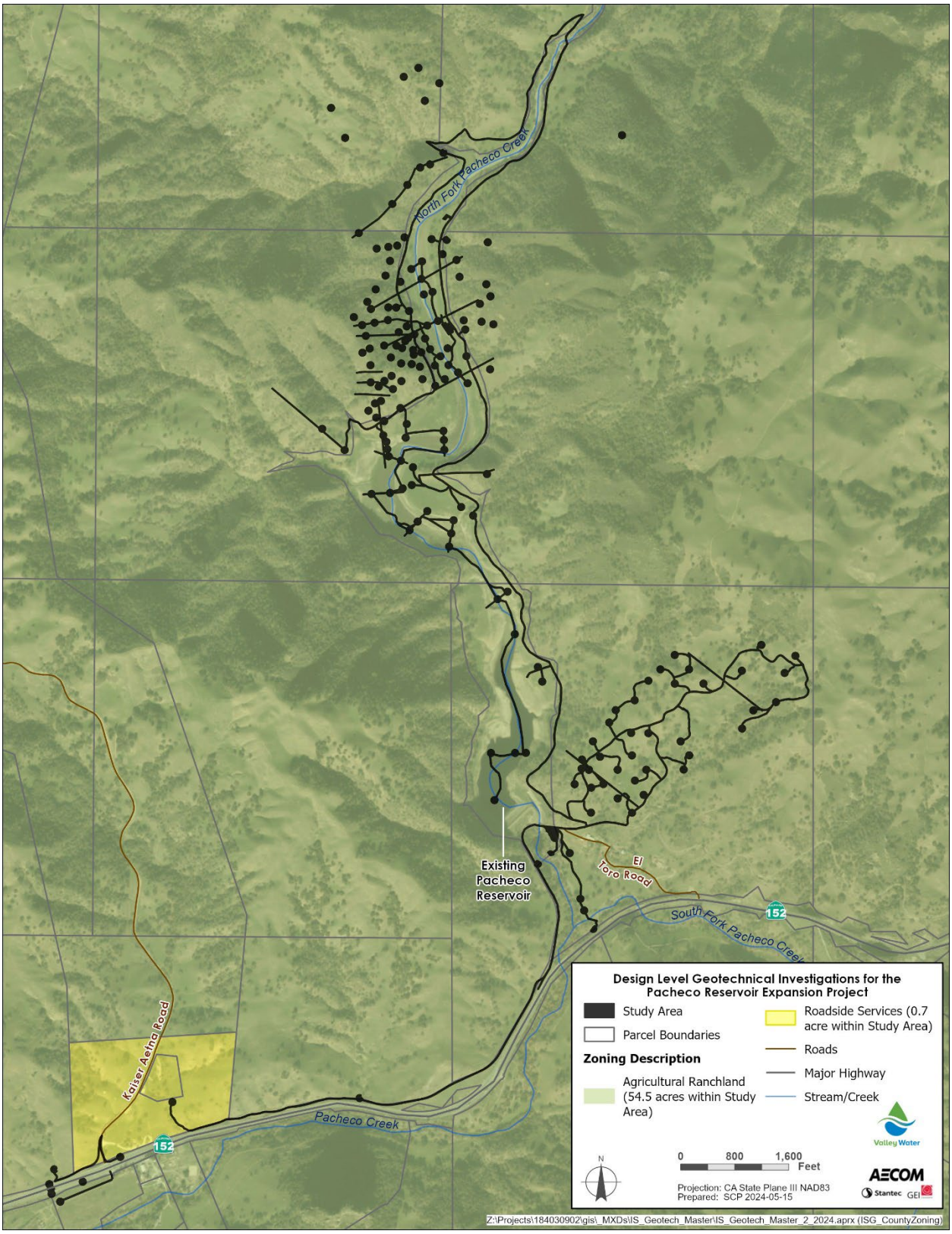


Figure 4.11-3: Santa Clara County Zoning

Regional and Local Laws, Regulations, and Policies

County of Santa Clara

Santa Clara County General Plan

As illustrated on Figure 4.11-2, the majority of the privately owned lands within the proposed Project study area are designated as Ranchlands under the General Plan (Santa Clara County 1994).

The General Plan policy includes:

R-LU 36: The general intent of the Ranchlands designation is to maintain the existing conditions of very low intensity uses, rural lifestyle, and limited public access. Development policies shall protect and enhance the continued use of the land for ranching.

R-LU 39: The primary use shall be ranching. Other allowable uses shall be:

a. Agriculture
b. Low intensity recreational uses
c. Mineral extraction
d. Land in its natural state
e. Hunting
f. Wildlife refuges
g. Very low-density residential development
h. Very low-intensity commercial, industrial, or institutional uses, provided that they primarily support ranching activities or the enhancement, protection, study or appreciation of the natural resources of the area

Roadside Services are defined by the General Plan as a limited number of private facilities and businesses serving the motoring public in dispersed locations. There is one parcel within the proposed Project study area designated as Roadside Services that is locally referred to as "Bell Station." Bell Station is the location of a business that advertises itself as farmers market just north of SR-152 and is accessed via a driveway from Kaiser-Aetna Road.

With the exception of Bell Station, all of the lands within the proposed Project study area along Pacheco Creek downstream from its confluence with the North Fork are designated as Ranchland.

The General Plan policy on Water Supply Resources acknowledges the role of Valley Water as "the county's multi-purpose agency known today with responsibilities for countywide water management, including flood control, conservation, and wholesale water supplier for most of Santa Clara County's water retailing services" (Santa Clara County 1994).

SC-15 13: Geotechnical investigations should be required on all projects in unstable areas, including areas of expansive soils, prior to construction to ensure that the potential hazards are identified and can be properly mitigated.

R-HS 10: In all hazard areas, projects shall be designed and conditioned to avoid placement of structures and improvements where they would:

a. Be directly jeopardized by hazards

b. Increase the hazard potential; and/or

c. Increase risks to neighboring properties

R-HS 13: Where needed to adequately assess the hazards of a proposal, the County shall require on-site investigations and analysis by certified professionals.

Santa Clara County Zoning Ordinance

Most of the proposed Project study area in Santa Clara County is zoned Agricultural Ranchlands (AR) as part of a Rural Base District. The purpose of the AR zone district is intended to preserve ranching, the natural resources, and the rural character of the areas to which it applies. Permitted uses include ranching or agriculture, low-intensity recreation, mineral extraction, and land in its natural state (Santa Clara County 2022).

The AR district is modified by the Scenic Roads combining district along SR-152. The purpose of the Scenic Roads combining district is to protect the visual character of scenic roads in Santa Clara County through special development and sign regulations (Santa Clara County 2016).

One parcel located adjacent to SR-152 at Bell Station is zoned Roadside Services. The purpose of the Roadside Services district is to allow specific and necessary highway uses and services within clusters at appropriate locations necessary to serve the motoring public. Such uses are to be located a sufficient distance from other Roadside Services districts to prevent strip commercial development and protect the existing scenic features, landscape, and open space character along certain scenic roads such as SR-152 (Santa Clara County 2022).

Santa Clara County Grading Ordinance

The proposed geotechnical investigations that are described in Section 2 of this Initial Study are considered exempt from a grading permit, as stated in Sections C12-407(e) and (f) of the Santa Clara County Grading Ordinance.

> Geotechnical or geological investigations, C12-407(e) states, *Excavations for soils or geological investigations by a soils engineer, or engineering geologist is exempt from a grading permit provided such work is backfilled, compacted to 90 percent and shaped to the original contour of the land under the direction of the soils engineer or engineering geologist immediately after the investigation, or within 45 days after the start of the work, whichever is sooner. Disturbed areas shall have adequate erosion prevention measures.*

Temporary access, C12-407(f) states, *Grading necessary for the temporary access to a site for geotechnical engineering, geologic investigation, septic investigation, or the installation of temporary water tanks or story poles is not subject to a grading permit. This exemption shall allow up to 300 cubic yards of material on any site, and no cuts or fills shall create slopes greater than five feet in vertical depth at their deepest points measured from the natural ground surface or affect a watercourse. Written notice of the beginning of work shall be provided to the Grading Official at least 48 hours prior to the beginning of the work. Disturbed areas shall have adequate erosion prevention measures.*

Restoration shall include a keyway into the natural ground, backfill, compacted to 90 percent relative density, and shape to the original contour of the land under the direction of a soils engineer. Restoration work shall take place within 45 days after the start of the work, unless additional time is approved by the Grading Official, with the submittal of photo documentation, or other materials acceptable to the Grading Official, demonstrating completion of the restoration work.

Santa Clara Valley Habitat Agency

Santa Clara Valley Habitat Plan

The Santa Clara Valley Habitat Agency (SCVHA) was formed in 2013 to implement the Santa Clara Valley Habitat Plan (Valley Habitat Plan). The Valley Habitat Plan provides streamlined state and federal permitting for public and private projects by pre-identifying mitigation obligations for impacts on species habitat. The Valley Habitat Plan also offers a comprehensive and effective way to address impacts of those projects on endangered and threatened species and their habitats.

SCVHA acquired the Pacheco Creek Reserve in 2017 for the purposes of habitat conservation and restoration, consistent with the goals and objectives of the Valley Habitat Plan. The Pacheco Creek Reserve is a 55.4-acre property comprised of three parcels adjacent to SR-152 located outside of the proposed Project study area. A 0.7-mile reach of Pacheco Creek flows through this reserve (Santa Clara Valley Habitat Agency 2019).

4.11.3 Discussion

a. **No Impact.** The physical division of an established community typically refers to the construction of a physical feature (such as an interstate highway or railroad tracks) or removal of a means of access (such as a local road or bridge) that would impair mobility within an existing community or between a community and an outlying area. The proposed Project study area is located in a rural area within the unincorporated area of Santa Clara County. The proposed Project would conduct geotechnical investigations in support of the Pacheco Reservoir Expansion Project. The proposed geotechnical investigations would be temporary, take place over a period of approximately 8 working months and could extend through 2025. The proposed Project would have no impact on mobility within an existing community or between a community and an outlying area. Therefore, the proposed Project would not divide an established community and would have no impact on land use and planning.

b. **No Impact.** The proposed Project would not conflict with General Plan policies R-LU 36 or R-LU 39 because the proposed Project is temporary and does not propose any uses that would restrict the current and ongoing use of ranching. Also, the proposed Project would be consistent with General Plan policies SC-15 13, R-HS 10, and R-HS 13 because the proposed Project is intended to collect geotechnical data to identify onsite geologic hazards that would be used to influence the design of PREP to avoid or mitigate those hazards. Also, the proposed geotechnical investigations would not conflict with the Santa Clara County Zoning Ordinance because they would be temporary and not restrict ongoing ranching activities or roadside services. The proposed Project would not conflict with C12-407(e) and C12-407(f), and no grading permits for the proposed geotechnical investigations would be required by Santa Clara County. Finally, the proposed Project would be consistent with the Valley Habitat Plan as described in Section 4.4 (Biological Resources) and would not encroach into the Pacheco Creek Reserve. Therefore, the proposed Project would result in no impact on land use and planning.

4.11.4 Best Management Practices

No BMPs are applicable.

4.11.5 Avoidance and Minimization Measures

No AMMs are applicable.

4.11.6 Mitigation Measures

No mitigation measures are required.

4.12 Mineral Resources

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

4.12.1 Environmental Setting

Minerals are any naturally occurring chemical element or compound, or groups of elements and compounds, formed from inorganic processes and organic substances including, but not limited to, coal, peat and oil-bearing rock but excluding geothermal resources, natural gas, and petroleum. Rock, sand, gravel, and earth are also considered minerals by the Department of Conservation when extracted by surface mining operations (California Department of Conservation 2000).

There are several mineral resource deposits in Santa Clara County that are of regional or state-wide significance, as determined by state agencies. Mineral resources of significance found and extracted in Santa Clara County include construction aggregate deposits, limestone, and, to a lesser extent, salts derived from evaporation ponds at the edge of San Francisco Bay (Santa Clara County 1994). Construction of North Fork Dam, SR-152 access improvements, and other infrastructure used local sources of common mineral materials (e.g., sand, gravel, aggregate) for fill material within and adjacent to the proposed Project study area; however, there are no commercial sources to mine or process mineral resources within the proposed Project study area.

The Geologic Map of Santa Clara County, which shows mineral deposits within the region, does not identify any Mineral Resource Zones (MRZs) within the proposed Project study area. However, according to the California Department of Conservation, designated mineral resources have been identified within and adjacent to Pacheco Creek, immediately downstream of the proposed Project study area. These mineral resources consist of MRZ-2 resources that include Holocene stream channel and terrace deposits of Pacheco Creek, suitable for AC aggregate (California Department of Conservation, 2021a and 2021b). MRZ-2 resources are areas where adequate information indicates that significant mineral deposits are present or where it is judged that there is a high likelihood for their presence; see Section 4.12.2, Regulatory Setting.

4.12.2 Regulatory Setting

Federal Laws, Regulations, and Policies

There are no federal laws, regulations, or policies pertaining to mineral resources that regulate the proposed Project.

State Laws, Regulations, and Policies

Surface Mining and Reclamation Act of 1975

As mandated by the Surface Mining and Reclamation Act (SMARA), the California State Mining and Geology Board classifies the state's mineral resources with the MRZ system.

Mineral land classification for the region is designated as follows (Public Resources Code, Sections 2710–2796):

MRZ-1: Areas where adequate information indicates that no significant mineral deposits are present or where it is judged that little likelihood exists for their presence.

MRZ-2: Areas where adequate information indicates that significant mineral deposits are present or where it is judged that there is a high likelihood for their presence.

MRZ-3: Areas containing mineral deposits, the significance of which cannot be evaluated from available data.

MRZ-4: Areas where available information is inadequate for assignment to any other MR zone.

Regional and Local Laws, Regulations, and Policies

Santa Clara County General Plan

Several mineral resource deposits in Santa Clara County are of regional or state-wide significance, as determined by state agencies (Santa Clara County 1994). The following General Plan policies are relevant to the proposed Project:

Policy R-RC 67. Local supplies of mineral resources should be recognized for their importance to the local, regional, and state economy. Strategies for preserving and managing mineral resources include:

a. ensuring continued availability of mineral resources to meet long term demand;

b. mitigating environmental impacts of extraction and transportation; and

c. reclaiming sites for appropriate subsequent land uses.

Policy R-RC 69. Existing sites and access routes for regionally significant resources should be protected from incompatible land uses and development that would preclude or unnecessarily limit resource availability.

4.12.3 Discussion

a. **No Impact.** According to the California Department of Conservation, designated mineral resources that are of value to the region and residents of the state have been identified within and adjacent to the bed and banks of Pacheco Creek. These mineral resources consist of MRZ-2 resources that include Holocene stream channel, floodplain, and terrace deposits of Pacheco Creek. However, these mineral deposits are outside of the proposed Project study area. Further, the Geologic Map of Santa Clara County, which shows mineral deposits within the region, does not identify any MRZs within the proposed Project study area. As a result, there would be no loss of availability of these resources from Project implementation. Therefore, the proposed Project would have no impact on mineral resources of value to the region.

b. **No Impact.** Neither the General Plan nor any other specific plans nor other relevant land use plans identifies any locally important mineral resource recovery sites within the proposed Project study area. Therefore, implementation of the proposed Project would not preclude the availability of locally available mineral resource recovery sites, and no impacts would occur.

4.12.4 Best Management Practices

No BMPs are applicable.

4.12.5 Avoidance and Minimization Measures

No AMMs are applicable.

4.12.6 Mitigation Measures

No mitigation measures are required.

4.13 Noise

Would the project result in?	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b. Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

4.13.1 Environmental Setting

Acoustic Fundamentals

Acoustics is the scientific study that evaluates perception, propagation, absorption, and reflection of sound waves. Sound is a mechanical form of radiant energy, transmitted by a pressure wave through a solid, liquid, or gaseous medium. Sound that is loud, disagreeable, unexpected, or unwanted is generally defined as "noise." Noise is typically expressed in decibels (dB), which is a common measurement in sound energy. The following background information about sound, noise, and vibration provides context to facilitate understanding of the technical terms referenced throughout this section.

Common Noise Descriptors

Equivalent Continuous Sound Level (L_{eq}): L_{eq} represents an average of the sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound level that occurs during the same period (Caltrans 2013: 2-48). For instance, the 1-hour equivalent sound level, also referred to as the hourly L_{eq}, is the energy average of sound levels occurring during a 1-hour period and is the basis for noise abatement criteria used by Caltrans and the Federal Transit Administration (FTA) (Caltrans 2013: 2-47; FTA 2018).

Maximum Sound Level (L_{max}): L_{max} is the highest instantaneous sound level measured during a specific period (Caltrans 2013: 2-48; FTA 2018).

Day-Night Level (L_{dn}): L_{dn} is the energy average of A-weighted sound levels occurring over a 24-hour period, with a 10-dBA "penalty" applied to sound levels occurring during the nighttime hours between 10 p.m. and 7 a.m. because this time is normally used for sleep (Caltrans 2013: 2-48).

Community Noise Equivalent Level (CNEL): Same as L_{dn} with an additional penalty of 4.77 dBA for the hours 7 p.m. to 10 p.m., which are reserved for relaxation, television, reading, and conversation (Caltrans 2013: 2-48).

Vibration Decibels (VdB): VdB is the vibration velocity level in decibel scale (FTA 2018: Table 4.13-1).

Peak Particle Velocity (PPV): PPV is the peak signal value of an oscillating vibration waveform. Usually expressed in inches/second (in/sec) (FTA 2018: Table 4.13-1).

Sound Propagation

When sound propagates over a distance, it changes in level and frequency content. The manner in which a noise level decreases with distance depends on the following factors:

Geometric Spreading

Sound from a localized source (i.e., a point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Roads and highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources, thus propagating at a slower rate in comparison to a point source. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source.

Ground Absorption

The propagation path of noise from a source to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling provides additional attenuation associated with geometric spreading. Traditionally, this additional attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 feet. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver, such as soft dirt, grass, or scattered bushes and trees), additional ground-attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the attenuate rate associated with cylindrical spreading, the additional ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance. This would hold true for point sources, resulting in an overall drop-off rate of up to 7.5 dB per doubling of distance.

Atmospheric Effects

Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels, as wind can carry sound. Sound levels can be increased over large distances (e.g., more than 500 feet) from the source because of atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also affect sound attenuation.

Shielding by Natural or Human-Made Features

A large object or barrier in the path between a noise source and a receiver attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. A barrier that breaks the line of sight between a source and a receiver will typically result in at least 5 dB of noise reduction (Caltrans 2013:2-41; FTA 2018:16).

Existing Noise Environment

Existing Noise Sources

The proposed Project study area is located within a rural, primarily undeveloped area with few existing noise sources. Ambient noise levels within the proposed Project study area are most affected by proximity to transportation noise sources, such as SR-152 or to a much lesser degree Kaiser-Aetna Road. Background noise sources include aircraft overflights (including California Highway Patrol (CHP) and CAL FIRE aircraft), rural residences (e.g., people talking, dogs barking), and nature (e.g., birds chirping, wind).

An ambient noise survey was conducted on February 3 and 4, 2021, to establish existing noise conditions for Valley Water's PREP. One long-term (LT) 24-hour noise measurement and two short-term (ST) 15-minute measurements were conducted at three different locations, as shown in Figure 4.13-1. However, only the measurements at ST 2 and LT 1 are pertinent to the proposed Project study area described in Section 2. The LT 1 noise measurement was taken near the existing North Fork Dam (approximately 0.3 miles north of SR-152), near where the majority of test pits, borings, and the main staging area would be located. The ST 2 noise measurement was taken near the intersection of Kaiser-Aetna Road and SR-152 where several borings are proposed within the Caltrans right-of-way (ROW). In addition, on April 24, 2024, one additional 24-hour measurement (LT 2) was taken at the edge of the Caltrans ROW just south of ST 2.

Measurements were taken at non-specific times of the day to represent typical daily activity levels. A Larson Davis Laboratories Model 820 precision integrating sound level meter was used for the ambient noise level measurement surveys. The noise level measurements were taken in accordance with the standards of the American National Standards Institute using a Larson Davis Laboratories Model 820 precision integrating sound level meter for the LT measurement and an LDL SoundTrack LxT for the ST measurements. The results of the ST and LT measurement surveys are summarized in Table 4.13-1.

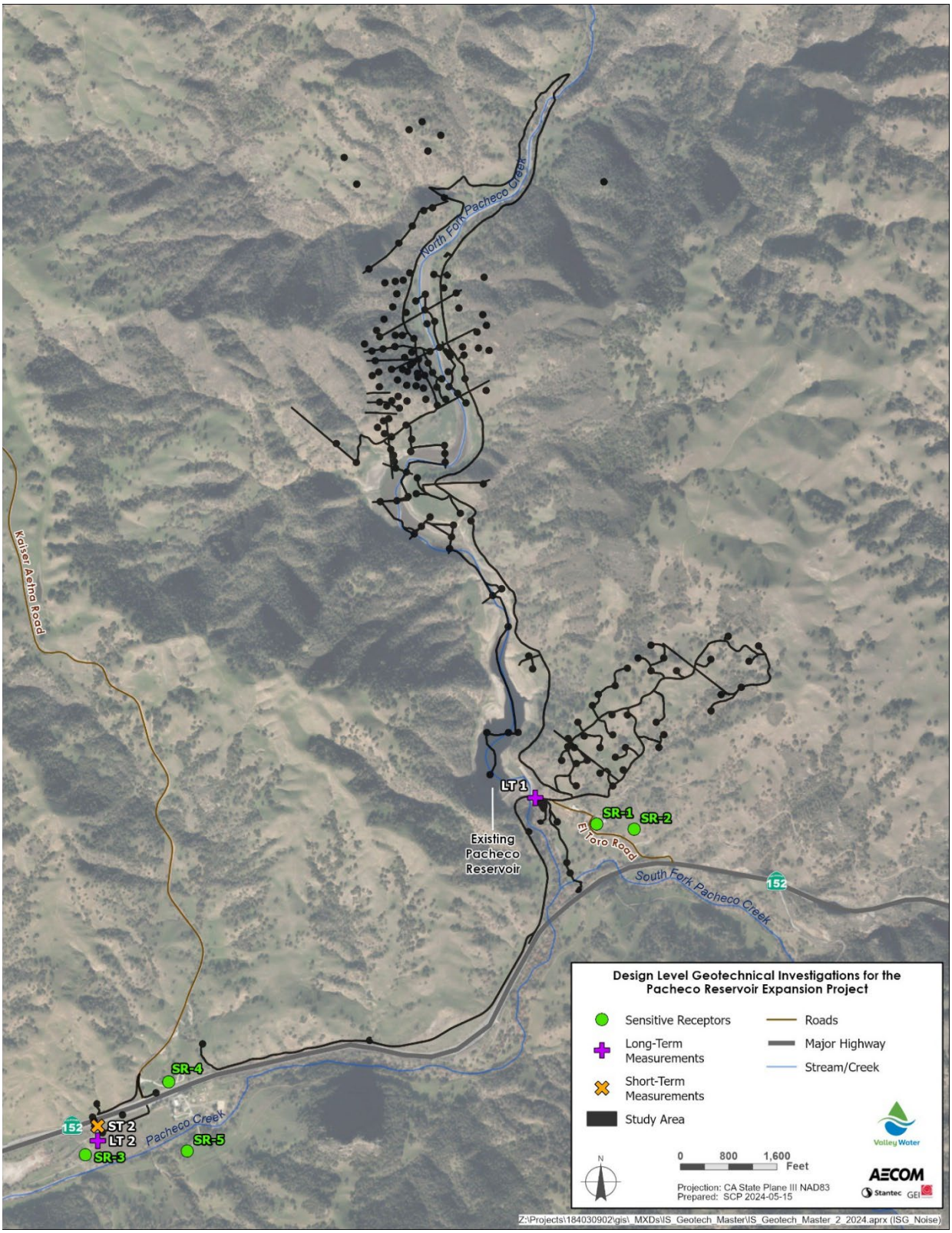


Figure 4.13-1: Project Features, Noise Measurement Location, and Sensitive Receptors

Table 4.13-1: Summary of Existing Ambient Noise Measurements						
Measurement Location[1]	**Date**	**Start Time/Duration**	**Primary Noise Source**	**Noise Levels**		
Short-Term (ST) Measurements				**(dBA) L_{eq}**	**(dBA) L_{min}**	**(dBA) L_{max}**
ST 2	2/4/2021	12:20 p.m./ 15 min	SR-152	69.6	51.4	79.0
Long-Term (LT) Measurement				**CNEL/L_{dn}**		
LT 1	2/3/2021 – 2/4/2021	3:00 p.m./ 24-hour	SR-152	49.9/49.5		
LT 2	4/25/2024 – 4/26/2024	2:00 p.m./ 24-hour	SR-152	66.6/66.3		

Notes:
ST = short-term, LT = long-term; Leq = hourly average noise levels; Lmax = the highest sound level measured during a single noise event; Lmin = the lowest sound pressure level within the measuring period.
1) Refer to Figure 4.13-1 for ambient noise level measurement locations.
Source: Data collected by Ascent in 2021

Noise-and Vibration-Sensitive Land Uses and Receptors

There are several existing sensitive receptors near the proposed Project study area (see Figure 4.13-1). Two residences (i.e., SR-1 and SR-2) are located along El Toro Road, southeast of North Fork Dam, and two residences (i.e., SR-3 and SR-5) are located south of SR-152, near the intersection with Kaiser-Aetna Road. Additionally, a roadside farmer's market (a commercial property) east of the SR-152 and Kaiser-Aetna Road intersection is treated as a sensitive receptor (i.e., SR-4) in this analysis.

Airports and Private Airstrips

There are no public airports or private airstrips within 2 miles of the proposed Project study area. The nearest airport is the Frazier Lake Airpark, which is located approximately 10 miles southwest of the proposed Project study area.

4.13.2 Regulatory Setting

Federal Laws, Regulations, and Policies

Federal Transit Administration

To address the human response to ground vibration, the Federal Transit Administration (FTA) has set forth guidelines for maximum-acceptable vibration criteria for different types of land uses. These guidelines are presented in Table 4.13-2. FTA has also established construction vibration damage criteria, shown below in Table 4.13-3.

Table 4.13-2: Ground-Borne Vibration (GBV) Impact Criteria for General Assessment			
Land Use Category	**GBV Impact Levels (VdB re 1 micro-inch/second)**	**GBV Impact Levels (VdB re 1 micro-inch/second)**	**GBV Impact Levels (VdB re 1 micro-inch/second)**
	Frequent Events[1]	**Occasional Events[2]**	**Infrequent Events[3]**
Category 1: Buildings where vibration would interfere with interior operations.	65[4]	65[4]	65[4]
Category 2: Residences and buildings where people normally sleep.	72	75	80
Category 3: Institutional land uses with primarily daytime uses.	75	78	83

Notes: VdB = vibration decibels referenced to 1 µ inch/second and based on the root mean square (RMS) velocity amplitude.
1. "Frequent Events" is defined as more than 70 vibration events of the same source per day.
2. "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day.
3. "Infrequent Events" is defined as fewer than 30 vibration events of the same source per day.
4. This criterion is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research would require detailed evaluation to define acceptable vibration levels.

Source: FTA 2018: 186.

Table 4.13-3: FTA Construction Damage Vibration Criteria	
Land Use Category	**PPV, in/sec**
Reinforced-concrete, steel, or timber (no plaster)	0.5
Engineered concrete and masonry (no plaster)	0.3
Non-engineered timber and masonry buildings	0.2
Buildings extremely susceptible to vibration damage	0.12

Notes: PPV = Peak particle velocity in inches per second.
Source: FTA 2018: 186.

In addition, FTA provides guidance for acceptable noise levels and when impacts to sensitive receptors are likely to occur. Based on this guidance, the maximum noise generated by a source (regardless of the existing noise level) where no impact would likely occur to people is 65 dBA (L_{eq} or L_{dn}), which is the level considered to be an acceptable living environment. Further, as existing noise levels increase, people become more sensitive to incremental increases in noise (FTA 2018).

State Laws, Regulations and Policies

Noise is generally regulated at the local level. While the State does provide guidance for developing local noise standards, none are available that pertain to the proposed Project.

Regional and Local Laws, Regulations, and Policies

Santa Clara County General Plan

The General Plan provides two separate safety and noise elements, one for Countywide issues *(Book A)* and one for rural unincorporated areas *(Book B)*. Although the proposed Project is located

in a rural area, both elements are considered to provide a comprehensive understanding of the County's noise policies. The General Plan includes the following noise policies that are applicable to the proposed Project:

Policy C-HS-24: Environments for all residents of Santa Clara County free from noises that jeopardize their health and well-being should be provided through measures which promote noise and land use compatibility.

Policy C-HS-25: Significant noise impacts from either public or private projects should be mitigated (Santa Clara County 1994).

Policy R-HS-1: Significant noise impacts from either public or private projects should be mitigated (Santa Clara County 1994b).

Santa Clara County Code of Ordinances

The Santa Clara County Code of Ordinances (County Code) establishes specific exterior and interior noise standards for noise at residential receptors, as well as specific noise standards for mobile and stationary construction activities. These standards are used as thresholds of significance in this analysis as they represent noise and vibration levels acceptable to the local community, consistent with *Appendix G of the CEQA Guidelines*.

The noise standards for the various receiving land uses as presented in County Code Table B11-152 (presented in this IS/MND as Table 4.13-3 will apply to all property within any zoning district.[46])

1 No person may operate or cause to be operated any source of sound at any location within the unincorporated territory of the County or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by the person, which causes the noise level when measured on any other property either incorporated or unincorporated, to exceed:

   a. The noise standard for that land use as specified in Table 4.13-3 for a cumulative period of more than 30 minutes in any hour; or the noise standard plus 5 dB for a cumulative period of more than 15 minutes in any hour; or

   b. The noise standard plus 10 dB for a cumulative period of more than five minutes in any hour; or the noise standard plus 15 dB for a cumulative period of more than one minute in any hour; or

   c. The noise standard plus 20 dB or the maximum measured ambient, for any period of time.

2 If measured ambient level exceeds that permissible within any of the first four noise limit categories above, the allowable noise exposure standard will be increased in 5 dB increments in each category as appropriate to encompass or reflect the ambient noise level. In the event

[46] These standards are used as thresholds of significance in this IS/MND since they represent noise and vibration levels acceptable to the local community, consistent with *CEQA Guidelines Appendix* G (Question XIII(a)). However, as a special district operating under mandates set forth by state law, Valley Water is not subject to any regulation under the County noise ordinance (*Hall v. City of Taft*, 47 Cal. 2d 177,189).

the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under the category will be increased to reflect the maximum ambient noise level.

3 If the noise measurement occurs on a property adjoining a different land use category, the noise limit applicable to the lower land use category, plus 5 dB, will apply.

4 If for any reason the alleged offending noise source cannot be shutdown, the ambient noise must be estimated by performing a measurement in the same general area of the source but at a sufficient distance that the noise from the source is at least ten dB below the ambient in order that only the ambient level be measured. If the difference between the ambient and the noise source is 5 to 10 dB, then the level of the ambient itself can be reasonably determined by subtracting a one-decibel correction to account for the contribution of the source.

5 Correction for character of sound. In the event the alleged offensive noise contains a steady, audible tone such as a whine, screech, or hum, or contains music or speech conveying informational content, the standard limits set forth in Table 4.13-4 will be reduced by 5 dB.

Table 4.13-4: Exterior Noise Limits

Receiving Land Use Category	Time Period	Noise Level (dBA)
One- and Two-Family Residential	10 p.m. – 7 a.m. 7 a.m. – 10 p.m.	45 55
Multiple-Family Dwelling	10 p.m. – 7 a.m.	50
Residential Public Space	7 a.m. – 10 p.m.	55
Commercial	10 p.m. – 7 a.m. 7 a.m. – 10 p.m.	60 65
Light Industrial	Any Time	70
Heavy Industrial	Any Time	75

Notes: dBA = A-weighted decibels
Source: Santa Clara County 2023

Section B11-156(d)(3) of the County Code provides an exemption from the exterior noise standards described in Table 4.13-4 for construction activities because construction-specific noise standards are established in Section B11-154(b)(6) of the County Code. Santa Clara County Code (Section B11-154[b][6]) prohibits between the hours of 7 p.m. and 7 a.m. on weekdays and Saturdays and at any time on Sundays or holidays the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work that would generate a noise disturbance across a residential or commercial real property line. Where technically and economically feasible, construction activities must be conducted in a manner such that the maximum noise levels at affected properties will not exceed those listed in Table 4.13-5 and Table 4.13-6.

Table 4.13-5: Mobile Equipment – Maximum Noise Levels for Nonscheduled, Intermittent, Short-Term Operation (Less than 10 days)			
Time Period	**Single- and Two-Family Dwelling Residential Area (dBA)**	**Multifamily Dwelling Residential Area (dBA)**	**Commercial Area (dBA)**
Daily, except Sundays and legal holidays 7:00 a.m. – 7:00 p.m.	75	80	85
Daily, 7:00 p.m. to 7:00 a.m. and all-day Sunday and legal holidays	50	55	60
Notes: dBA = A-Weighted decibel Source: Santa Clara County 2023			

Table 4.13-6: Stationary Equipment – Maximum Noise Levels for Repetitively Scheduled and Relatively Long-Term Operation (Periods of Ten Days or More)			
Time Period	**Single- and Two-Family Dwelling Residential Area (dBA)**	**Multifamily Dwelling Residential Area (dBA)**	**Commercial Area (dBA)**
Daily, except Sundays and legal holidays 7:00 a.m. – 7:00 p.m.	60	65	70
Daily, 7:00 p.m. to 7:00 a.m. and all-day Sunday and legal holidays	50	55	60
Notes: dBA = A-Weighted decibel Source: Santa Clara County 2023			

Ground Vibration

County Code Section B11-154(b)(7) prohibits operating or permitting the operation of any device that creates a vibrating or quivering effect that endangers or injures the safety or health of human beings or animals; annoys or disturbs a person of normal sensitivities; or endangers or injures personal or real properties.

Helicopters

County Code Section B11-154(b)(14) prohibits operating or permitting the operation of any helicopter that violates the nighttime exterior noise standards outlined in Section B11-152 or that causes a noise that exceeds 80 dBA during the day in residential or commercial areas without a variance. This standard was applied to helicopter noise as an Lmax, due to the non-stationary or temporary nature of the operation. Military and government-operated helicopters are exempt.

The following discussion for short-term project-generated noise, short-term vibration, and airport noise thresholds of significance is based on the General Plan:

Short-Term Project-Generated Noise

As shown in Table 4.13-5 and Table 4.13-6, Santa Clara County identifies one set of standards for short-term (i.e., less than 10 days) project activities using mobile equipment and one set for activities using stationary equipment for periods longer than 10 days. All proposed Project work would take approximately 10 days or longer, and both mobile and stationary equipment would be used. To remain conservative, the lower thresholds depicted in Table 4.13-6 were used for repetitively scheduled construction (equipment operation) that would occur over multiple hours per day with activities and noise levels fluctuating during the day and are applied as hourly averages (i.e., L_{eq}). The mobile-source noise standards were applied to equipment that would be used for access between sites (i.e., the all-terrain vehicle). It should be further explained that individual boring activities at each site would be completed in a matter of hours; however, due to the high number of test sites and their close proximity to one another, it is possible that activity could occur in the same general area for more than 10 days; thus, the noise standards applicable to short-term noise-generating activities occurring for more than 10 days were applied.

Short-term, temporary noise levels associated with equipment use for the proposed Project activities that exceed the maximum noise level of 60 dBA L_{eq} for repetitively scheduled proposed Project activities or 75 dBA L_{eq} for mobile equipment at single- and two-family dwelling residential areas between the hours of 7 a.m. and 7 p.m. or 50 dBA L_{eq} at residential property lines between the hours of 7 p.m. and 7 a.m. (County Code Section B11-154(b)(6))

Short-term, temporary noise levels associated with equipment use for the proposed Project activities that exceed the maximum noise level of 70 dBA L_{eq} for repetitively scheduled Project activities at commercial land uses between the hours of 7 p.m. and 7 a.m. (County Code Section B11-154(b)(6))

Helicopter noise that exceeds the maximum noise level of 80 dBA L_{max} (County Code Section B11-154(b)(14))

Short-term, temporary noise levels associated with equipment use for the proposed Project activities that result in a substantial increase in noise over existing conditions, defined as a 10 dBA increase in areas where existing noise is below 65 dBA and a 5 dBA increase in areas where existing noise is above 65 dBA.

Short-Term Vibration

Short-term vibration includes the generation of excessive groundborne vibration or groundborne noise levels that cause structural damage or result in sleep disturbance to sensitive receptors. Applying FTA's vibration assessment criteria, the proposed Project could result in a potentially significant vibration impact if the following standards are exceeded:

- Sleep disturbance: A limit of 72 VdB (frequent event) associated with equipment uses (Table 4.13-2).
- Structural damage: A limit of 0.20 in/sec PPV for non-engineered timber/masonry structures (Table 4.13-3)

Airport Noise

Airport noise is applicable 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, and that could expose people residing or working in the vicinity of a proposed Project study area to excessive noise levels. There are no public airports within 2 miles of the proposed Project study area.

4.13.3 Discussion

a. **Less than Significant Impact with Mitigation.** This discussion includes an analysis of short-term equipment operation noise associated with the proposed Project, which includes various types of surface and subsurface geotechnical investigations necessary to support the PREP design and planning processes. Noise can be characterized based on the type of project activity and the associated equipment needed. In this analysis, potential short-term (equipment operation-related) noise impacts are evaluated by considering sensitive receptors and their relative exposure to noise levels associated with the likely combination of investigation equipment required for the proposed Project. Noise levels generated from the operation of proposed Project equipment were based on methodologies, reference emission levels, and usage factors from FTA's Guide on Transit Noise and Vibration Impact Assessment (FTA 2018). Reference levels for noise emissions for specific equipment or activity types are well documented and the usage thereof common practice in the field of acoustics. The proposed Project would not result in long-term increases in operational noise; thus, this analysis focuses on short-term equipment operation-related noise and substantial increases in noise over existing ambient conditions.

Equipment Noise Exposure

Project investigations are anticipated to commence as early as August 2024 depending on access, field conditions, and availability of field investigation crews, and is expected to be completed by December 2025. As described in Section 2, investigation activities would primarily be conducted between 7 a.m. and 6 p.m. Monday through Friday and between 9 a.m. and 4 p.m. on Saturdays in accordance with County Code Section B11-154(b)(6). However, investigation activities at two boring sites (R-20-001, R-20-003) requiring a highway lane closure for safety, would require up to 3 to 4 nights of nighttime work per bore location, for a total of 6 to 8 nights, between the hours of 8 p.m. and 4 a.m. and 10 p.m. and 7 a.m., respectively. Temporary equipment-related noise would be generated by activities such as surface investigations (e.g., seismic), excavation and backfill of test pits, operation of geotechnical drilling equipment, and the transport of fuels and materials using trucks and medium lift helicopters. Equipment noise can be characterized based on the type of activity and associated equipment needed.

The typical maximum noise levels (i.e., L_{max}) for pieces of equipment that would be used during the proposed Project at a distance of 50 feet are presented in Table 4.13-7.

Table 4.13-7: Typical Noise Levels from Equipment	
Investigation Activity Equipment Type	**Typical Noise Level (L_{max} dBA) @ 50 feet**
Auger Drill Rig	85
All-Terrain Vehicle	89
Chainsaw	85
Compactor	82
Drill Rig Truck	84
Excavator	85
Generator	82
Small Generator (<25 kVA)	73
Medium lift Helicopter	98
Pneumatic Tools	85
Pumps	77
Rock Drill	95
Sledgehammer	76
Vibratory Roller	80
Water Truck/Pickup Truck	75
Notes: dBA = A-weighted decibels; L_{max} = maximum instantaneous noise levels; kVA= kilovoltamperes Source: FTA 2018: 176; FHWA 2006; NIOSH 2019	

The proposed Project would include two types of surface geophysical investigations (seismic refraction and electrical resistivity) and two types of subsurface geotechnical investigation methods (exploratory test pits and exploratory borings). Depending on the site characteristics, exploratory borings would be drilled with either a truck-mounted, all-terrain track-mounted, helicopter-portable, or barge-based rig. Although some proposed Project activities would require the same types of hand-held tools (e.g., sledgehammer), heavy equipment (e.g., excavator) equipment, or both, the combined noise levels generated by each proposed investigation activity would fluctuate depending on the number of pieces of equipment and the duration of use. For example, some boring sites would use one truck-mounted or all-terrain rig, while other areas in close proximity to each other could have up to three rigs operating concurrently at adjacent bore sites. Therefore, in this analysis, equipment noise is evaluated by considering the noise levels associated with the likely combination of hand tools and heavy equipment for each activity.

Specifically, seven proposed Project activities that would be implemented were modeled. Table 4.13-8 details the type of equipment that would be used during each activity, the sites at which each activity would be conducted, and summarizes the modeled noise level at 50 feet and the noise exposure levels at the nearest sensitive receptors. It should be noted that the noise levels for equipment used in electrical resistivity imaging and seismic refraction investigations were evaluated independently, as equipment use would not be concurrent. The assessment is conservative and considers that, although a single drill rig would operate at an individual site, it is plausible that more than one rig and associated equipment would be operating in the same general area, combining to affect the same nearby receptor due to the

close proximity of individual sites to one another. Thus, multiple pieces of equipment were assumed to be operating simultaneously, as shown in Table 4.13-8 and described in more detail in the subsections that follow. Detailed calculations are provided in Appendix G. The following impact analysis also contains separate discussions for various noise sources associated with proposed Project activities.

Table 4.13-8: Investigation Noise Estimates

Investigation Activity	Site Names[1]	Equipment	Modeled Noise Level (dBA Leq) at 50 feet	Distance from Nearest Sensitive Receptor (feet)	Modeled Noise Level (dBA Leq) at Nearest Sensitive Receptor[2]
Daytime Investigation Activities					
Electrical Resistivity Imaging[3]	UER-01	Sledgehammer	73.0	SR-1 (8,335 ft)	14.5
Seismic Refraction Investigations[3]	USR-11 through USR-21, DSR-21, DSR-22, LSSR-1 through LSSR-6	Sledgehammer	68.6	SR-1 (774 ft)	37.3
Seismic Refraction Investigations[3u]	USR-11 through USR-21, DSR-21, DSR-22, LSSR-1 through LSSR-6	All-terrain vehicle	85.0	SR-1 (774 ft)	53.7
Exploratory Test Pits	TP-16 through TP-33, TP-35, TP-36, TP-40, TP-41, TP-45, TP-46, TP-47, TP-48, TP-52, TP-53, TP-54, TP-60, TP-62, TP-63	Excavator, Water Truck	78.0	SR 1 (627 ft) SR-2 (741 ft)	49.1 47.2
Exploratory Boring (one drill rig)	A-201, A-202, A-406, A-20-101, A-20-104, A-21-201, A-21-203, CB-21, PB-01, PB-02, R-20-001, R-20-002, R-20-003, S-19, S-26, S-27, S-28, S-29	Auger drill rig, pumps, pickup truck, water truck	81.4	SR-4 (240 ft) SR-3 (435 ft) SR-5 (964 ft)	63.5 56.7 47.6
Exploratory Boring (multiple drill rigs: up to 3 drill rigs at adjacent activity areas)	UB-28, UB-44 through UB-46, UB-48, UB-49, UB-51 through UB-60, UB-63 through UB-67, UB-70 through UB-111, BA-19 through BA-25, BA-29, L-01 through L-09, CB-18 through CB-21, CB-25, LS-19 through LS-39, S-01 through S-30	Rock drill, 2 auger drill rigs, pumps, pickup truck, water truck	83.3	SR-1 (794 ft)	51.7
Exploratory Boring (Helicopter-mobilized sites)[5]	UB-28, UB-44, UB-45, UB-46, UB-48, UB-62 through UB-67, UB-73, UB-74, UB-81 through UB-84, UB-87 through UB-92, UB-96 through UB-101, UB-106 through UB-109, BA-19 through BA-22, L-01 through L-09, S-02, S-03, S-06, S-07, S-08, S-11 through S-17, S-20 through S-24	Pneumatic tools, pickup truck, chain saw	83.4	SR-1 (5,800 ft)	29.1
Barge-Based Exploratory Boring	LS-19 through LS-39	Auger drill rig, pumps, motorboat (outboard)	83.8	SR-1 (1,800 ft)	42.8

Table 4.13-8: Investigation Noise Estimates

Investigation Activity	Site Names[1]	Equipment	Modeled Noise Level (dBA Leq) at 50 feet	Distance from Nearest Sensitive Receptor (feet)	Modeled Noise Level (dBA Leq) at Nearest Sensitive Receptor[2]
Nighttime Investigation Activities					
Exploratory Boring	R-20-001 R-20-003	Truck-mounted drill rig, small generator	74.1	SR-3 (225 ft) SR-3 (295 ft)	56.9 53.8

Notes: dBA = A-weighted decibel; ft = feet; SR = Sensitive Receptor.
1. See Tables 2-2 and 2-3 for additional details.
2. See Figure 4.13-1 for the locations of five sensitive receptors labeled SR-1 through SR-5. Nighttime noise calculated at property line from center of activity areas (i.e.., sites).
3. Because the use of vehicles, handheld and heavy equipment would not be concurrent, the noise levels were evaluated independently. See Appendix G for modeling details.
4. A water truck could be used at any of the surface or subsurface activity sites for fire protection, soil compaction, or dust suppression.
5. This noise scenario does not include a helicopter as helicopter noise is evaluated separately using different thresholds/noise standards.

Source: Modeling conducted by Ascent in 2023 and 2024

Surface Geophysical Surveys

Two types of linear surface geophysical investigations (seismic refraction and electrical resistivity) would be performed within the proposed Project study area. This analysis analyzes the noise impacts from these two types of surface investigations separately.

Electrical Resistivity Imaging. One electrical resistivity survey would be performed across the valley bottom within the upstream portion of the proposed dam at site UER-01. This process would involve the use of a hand-held carpenter hammer to drive one-inch diameter stainless-steel electrodes approximately 4 to 6 inches into the ground and the use of a battery to induce a DC electrical current. The use of a small carpenter hammer can generate noise levels of 108 dBA L_{max} at 3 feet from the source (NIOSH 2019). At 50 feet from the source, the noise level from a hammer attenuates to 75.6 dBA L_{max} (see Appendix G for modeling details). No sensitive receptors are located within 165 feet of where a hammer would be used. The electrical resistivity imaging site is located approximately 8,335 feet northwest of SR-1, the nearest sensitive receptor. At this distance, noise levels from the use of a hammer would attenuate to 14.5 dBA L_{eq}, and therefore would not exceed applicable County standards. Noise associated with these activities at sites further away would be further reduced at these receptors, due to increasing distance from the noise source and typical attenuation rates. For these reasons, equipment noise associated with electrical resistivity imaging would not exceed County noise standards.

Seismic Refraction. Nineteen seismic refraction lines are proposed at multiple locations as described in Section 2. During activity associated with seismic refraction lines, a sledgehammer would be used to strike a metal plate on the ground surface one or more times to send an energy pulse out to geophone stakes that are placed on or pushed into the ground by hand or hammered into the ground with a small hammer. A handheld sledgehammer would be used in areas containing sensitive resources and an all-terrain vehicle (ATV)-mounted sledgehammer would be used when working in areas accessible using existing established access routes. Because the use of a sledgehammer and an ATV would not be concurrent, the noise levels from these two pieces of equipment were evaluated independently. The use of a sledgehammer can generate noise levels of 108 dBA L_{max} at 3 feet from the source (NIOSH 2019) and the noise level of an ATV pass by is 89 dBA L_{max} at 50 feet from the source (Berger et al. 2010). A reference L_{eq} of 68.6 dBA for the sledgehammer activities by was calculated by applying the acoustical usage factor applied to impact pile driving (i.e., 20 percent) to the Lmax of the sledgehammer at 50 feet. Typical maximum ATV speeds would be approximately 15 miles per hour (mph). Using the reference L_{max} of 89 dBA for an ATV and applying a 40 percent acoustical usage factor (factor applicable to other mobile equipment such as a truck), a reference L_{eq} of 85.0 dBA at 50 feet was calculated for the ATV. See Appendix G for modeling inputs and calculations.

The noise levels for a sledgehammer and an ATV would attenuate to the County noise standard of 60 dBA L_{eq} for single-family dwellings at distances of 110 feet and 501 feet, respectively. The seismic refraction line (DSR-22) nearest to an existing sensitive receptor (SR-1), which is located approximately 774 feet to the north. At this distance, noise levels from the use of a sledgehammer and an ATV would attenuate to 37.3 dBA L_{eq} and 53.7 dBA L_{eq}, respectively, and therefore would not exceed the applicable County noise standard of 60 dBA L_{eq} for stationary equipment or 75 dBA L_{eq} for mobile equipment. Noise associated with these activities at sites further away would be further reduced at these receptors, due to increasing distance from the noise source and typical attenuation rates. Therefore, equipment noise associated with seismic refraction activity would not exceed applicable County noise standards.

Exploratory Test Pits

A total of 32 test pits are proposed as part of the proposed Project. Each test pit would be excavated, logged, and backfilled over the course of several hours. As detailed in Section 2, each test pit would require excavation with a hydraulic excavator, backfilling, and compaction with an excavator bucket or an excavator-mounted sheep's foot roller; no test pits would require tree trimming or removal. Therefore, the modeling scenario for exploratory test pit investigation activity assumed that up to two pieces of heavy equipment (excavator and water truck) could be operating simultaneously at one location in the proposed Project study area. Modeling identified that the simultaneous operation of an excavator and a water truck[47] would result in noise levels of 78.0 dBA L_{eq} at 50 feet. See Appendix G for modeling inputs and results.

[47] Water trucks would only be used on existing access routes, water for compaction would be available from portable containers transported by ATV or by excavator bucket.

Heavy equipment operation associated with exploratory test pits would attenuate to the County's construction noise standard for single-family residential dwellings (i.e., 60 dBA L_{eq}) at a distance of 262 feet. No residences or other noise-sensitive receptors are located within this distance. The sensitive receptor nearest to an exploratory test pit in which this modeling scenario would occur (i.e., Site TP-19) is a residential dwelling, SR-1, which is located approximately 627 feet southeast of the edge of Site TP-19. At this distance, heavy equipment noise associated with exploratory test pits would attenuate to 49.1 dBA L_{eq}. SR-2 is located approximately 741 feet from TP-23 and would be exposed to noise levels of 47.2 dBA L_{eq} at this distance. Therefore, nearby sensitive receptors would not be exposed to heavy equipment noise levels from exploratory test pit activity that exceed County noise standards.

Exploratory Boring Sites

As detailed in Table 2-3 of Section 2. Section 2 it is assumed that one truck or all-terrain rig would be used for the conveyance pipeline, access road, bridge, and highway overpass and pavement boring sites. Table 2-3 also notes that all other boring sites would concurrently use two helicopter drill rigs and one trailer/truck/track drill rig. Therefore, for this analysis, modeling was conducted for boring sites with one drill rig and boring sites with three drill rigs. Table 4.13-8 details the specific sites at which each of these scenarios would apply.

Boring Sites with One Drill Rig. In Section 2, Table 2-3 specifies that a single auger/rotary wash drill truck rig would be used at the Caltrans- and Zhou-property boring sites, which are near three sensitive receptors (i.e., two residential dwellings [SR-1 and SR-3] and the roadside farmer's market [SR-4]). Auger or rotary wash truck rig drilling for the six borings within these activity areas are anticipated to take place over approximately 10 days in May 2024. Based on the information provided under Drilling Methods in Section 2.3.2 the first boring site noise modeling scenario assumes that up to 4 pieces of equipment (i.e., auger drill rig, pump, pickup truck, water truck) could be operating simultaneously at any one of the boring sites listed in Table 4.13-8.

Modeling identified that the simultaneous operation of an auger drill rig, pump, and pickup truck would result in noise levels of 81.4 dBA L_{eq} at 50 feet. Boring site PB-02 is located approximately 240 feet southwest of the roadside farmers market (i.e., SR-4), which is considered a sensitive commercial receptor in this analysis. Noise from equipment operations associated with boring activity would attenuate to the County construction noise threshold for commercial uses of 70 dBA L_{eq} at 143 feet. Therefore, the farmers market would not be exposed to noise levels that exceed County noise standards for commercial uses. There are also two residential sensitive receptors (i.e., SR-3 and SR-5) located south of SR-152 that are near exploratory boring sites. Boring activity with one drill would attenuate to the County construction noise threshold of 60 dBA L_{eq} for single-family dwellings at a distance of 359 feet. The boring site nearest to a residential dwelling is A-20-104, which is located approximately 435 feet northeast of the residential dwelling west of Kaiser-Aetna Road (i.e., SR-3). Noise levels associated with boring activity at Site A-20-104 would attenuate to 56.7 dBA L_{eq} at SR-3, which is below the applicable threshold of 60 dBA L_{eq}. Noise at SR-5 from this activity would attenuate to 47.6 dBA L_{eq}, approximately 964 feet from activity at Site PB-02. There are also several boring sites located near El Toro Road that would only use one truck/all-terrain rig

during boring activity, including sites CB-21 and A-21-203. Site CB-21 is the site nearest to a sensitive receptor in this area (i.e., SR-1), which is located approximately 610 feet east of Site CB-21. At this distance, boring activity at CB-21 would attenuate to 52.8 dBA L_{eq}, and therefore would not exceed County standards of 60 dBA L_{eq} for construction noise at a single-family residential dwelling. Noise associated with these activities at sites further away would be further reduced at these receptors, due to increasing distance from the noise source and typical attenuation rates. In summary, noise associated with daytime exploratory boring activities using one truck/all-terrain rig would not exceed County noise standards at any nearby sensitive receptors.

Regarding the potential need for investigation activities to occur during the nighttime hours (7 p.m. to 7 a.m.), two sites (R-20-001, R-20-003) located within the SR-152 right-of-way could require a single-lane highway closure to conduct the investigation, which, to reduce safety hazards and traffic impacts, would occur at night in accordance with Caltrans requirements. Santa Clara County has established nighttime noise standards of 50 dBA L_{eq} for activities occurring between 7 p.m. and 7 a.m., which apply at the receiving residential property boundary. Site R-20-003 is located 225 feet north of the nearest residential property (SR-3) boundary and Site R-20-001 is located 295 feet north of the nearest residential property (SR-3) boundary. As shown in Table 4.13-8, noise from nighttime activities at these sites could exceed established thresholds by 6.9 dBA (Site R-20-003) and 3.8 dBA (Site R-20-001). Nighttime activities are anticipated to require 6-8 hours of investigation work each night, for a total of up to 4 nights for each site; thus, although construction noise standards would be exceeded, they would not be exceeded for more than 4 nights at each site.

Boring Sites with Multiple Drill Rigs. For all other exploratory boring sites, a conservative estimate of vehicle and heavy equipment noise levels was used. Specifically, modeling assumed the simultaneous operation of six pieces of equipment (three drill rigs, pumps, and two trucks) operating at separate activity areas but within close proximity to each other (see Appendix G for modeling details). Such activity would generate a noise level of 83.3 dBA L_{eq} at 50 feet. This noise level would attenuate to the County construction noise standard of 60 dBA L_{eq} for single-family dwellings at a distance of 428 feet. No sensitive receptors are located within 428 feet of any boring sites that would use multiple drill rigs. The sensitive receptor nearest to a boring site in which this modeling scenario would occur (i.e., Site CB-20) is SR-1, a residential dwelling located approximately 794 feet northeast of boring Site CB-20. Noise levels would attenuate to 51.7 dBA L_{eq} at this distance and therefore would not exceed applicable County standards. For these reasons, equipment noise associated with exploratory boring sites using multiple drill rigs would not exceed County noise standards.

Barge-based Vibracore Drill

Depending on the field conditions (e.g., water levels, surface moisture) of activity areas below the full pool line of the existing Pacheco Reservoir, a vibracore drill rig on a pontoon barge could be used to acquire subsurface samples for some or all lake sediment borings. Modeling under this scenario assumed that an auger drill rig, pumps, and a motorboat would be operating as needed to reposition the barge and transport material between the barge and the launch area simultaneously at any one barge-based drill site in the proposed Project study area. To calculate

the L_{eq} of the motorboat, the acoustical usage factor applied to a tractor (i.e., 40 percent) was applied to the L_{max} of the motorboat at 50 feet (i.e., 85 dBA L_{max}). Noise levels from this scenario would be 83.8 dBA L_{eq} at 50 feet and attenuate to the applicable County noise threshold of 60 dBA Leq at 448 feet. There are no sensitive receptors located within 448 feet of any barge-based vibracore drilling sites. The nearest sensitive receptor (i.e., SR-1) is approximately 1,800 feet east of where activities that involve barge-based drilling would take place and, at this distance, noise from barge-based drilling would attenuate to 42.8 dBA L_{eq}. Therefore, this noise from this type of investigation ion activity would not exceed County standards at nearby sensitive receptors.

Helicopter Operations

As detailed in Section 2, there would be a maximum of one medium lift helicopter used during proposed Project activities to transport portable drill rigs, materials, and equipment to various activity sites. All helicopter operations would be staged from a single upland location northeast of the Pacheco Reservoir adjacent to an existing road, and the helicopter would fly along a flight path between various exploratory boring locations and the staging area. Helicopter fueling and minor maintenance activities would take place at the helicopter staging area several times per day. Additionally, a large pickup truck would transport helicopter fuel and carry tools and equipment necessary for on-site maintenance and safety inspections to the helicopter staging area daily. If helicopter flight plans/paths were to occur within 500 feet of sensitive receptors they could increase ambient noise levels for those sensitive receptors in excess of County helicopter noise standards. To ensure that helicopter operations stay at least 500 feet away from nearby sensitive receptors and ensure that helicopter operations do not exceed County helicopter noise standards at any nearby sensitive receptor locations, Valley Water would implement mitigation measure MM NOI-1 (Prepare Helicopter Flight Plan and Path to Avoid Sensitive Receptors). With the incorporation of MM NOI-1, any potential noise impacts would not exceed County helicopter noise standards (i.e.,80 dBA L_{max}) for sensitive receptors.

Exploratory Boring Access

A total of 64 helicopter-mobilized boring sites would require limited hand contouring with picks and shovels and clearing of brush, as well as the trimming or cutting of trees at select activity areas to allow the placement of temporary drilling platforms. This modeling scenario assumes that during the temporary drilling platforms, two pieces of equipment and vehicles (pneumatic tools, chainsaw, water truck) could be operating simultaneously at any one helicopter-mobilized boring site. Modeling identified that the simultaneous operation of this equipment necessary to assemble or disassemble the Helicopter noise levels from take-off and landing at 100 feet are 97.2 dBA L_{max} and 98.1 dBA L_{max}, respectively (Falzarano and Levy 2007: 13). Noise levels from takeoff and landing would attenuate to below the County threshold at 450 feet and 485 feet, respectively. There are no sensitive receptors located within these distances. The helicopter staging area is located approximately 9,500 feet north of the nearest sensitive receptor (i.e., SR-4). Therefore, daily helicopter liftoff and landing activities would not exceed County noise standards at any sensitive receptors. Further, the helicopter use would be short-term, operating for approximately four hours per day within the northern portion of the proposed Project study area, approximately 9,500 feet from the nearest

sensitive receptor. Further, with the incorporation of MM NOI-1 (Prepare Helicopter Flight Plan and Path to Avoid Sensitive Receptors), helicopter use throughout the duration of the proposed Project would not exceed applicable standards of significance at sensitive receptors.

Drilling platform activities assumed the use of up to three pieces of equipment (i.e., pneumatic tools, water truck, chain saw). Combined noise would result in a noise level of 83.4 dBA L_{eq} at 50 feet. This noise level would attenuate to the County construction noise standard of 60 dBA L_{eq} for single-family dwellings at 433 feet. No sensitive receptors are located within 433 feet of any helicopter-mobilized boring sites. The nearest site at which this activity could take place is approximately 5,800 feet northeast of a sensitive receptor (i.e., SR-1). Equipment noise would attenuate to 29.1 dBA L_{eq} at this distance. Therefore, noise associated with the temporary drilling platforms would not exceed County noise standards. Note that helicopter noise is not included in this scenario because helicopter noise is evaluated using a different noise standard (i.e., L_{max}), which is appropriate for helicopter noise and because the helicopter is not anticipated to be operating at the same time as the drill rigs. Therefore, helicopter noise would not combine at any one location with noise associated with on-ground equipment to affect the same nearby receptors.

After site preparation for the 64 helicopter-mobilized boring sites has been completed, a helicopter would be used to transport the drill rig and associated equipment (e.g., drill pipe, water tank) to these platforms. Once in place, the drill rig would operate for one or more days, as necessary, to acquire data at each boring. Several helicopter trips may be required to move from one site to the next and transport supplies and cores between the activity area and the staging areas. Once the boring is complete, the helicopter would repeat the process in reverse and the temporary platform would be dismantled and removed. The overflight noise level generated from operation of a mid-size helicopter (e.g., Bell 407HP) is approximately 77.5 dBA L_{max} at 400 feet above ground level (Falzarano and Levy 2007: 13). Although the helicopter flight paths are yet to be determined, if a helicopter were to fly over residential receptors at a height of 400 feet, the noise level would be below the applicable County standard for helicopter noise (i.e., 80 dBA L_{max}).

All-Terrain Vehicle Operations

ATVs would be used to provide access for personnel and equipment through the proposed Project study area where permissible for various activity types (excluding helicopter bore site). An off-road ATV pass-by can generate approximately 89 dBA L_{max} at 50 feet (Berger et al 2010). As discussed, Landowner restrictions require that an ATV not exceed speeds of 15 mph. Using the L_{max} reference level, an L_{eq} of 85.0 dBA at 50 feet was calculated. This noise level would attenuate to the County construction noise standard of 60 dBA L_{eq} for single-family dwellings at a distance of 501 feet. No residential sensitive receptors are located within 501 feet of any site that would use an ATV for site access. The residential sensitive receptor nearest to a boring site in which an ATV would be used for access (i.e., Site A-20-101) is SR-3 located approximately 794 feet southwest from the edge of boring Site A-20-101.

The nearest access road on which an ATV could be used is near Site CB-21 approximately 630 feet east of SR-1. At a distance of 630 feet, an ATV passing by would attenuate to a noise level of 56.0 dBA L_{eq}, which would not exceed the applicable County noise standard of 75 dBA L_{eq} for single-family dwellings exposed to mobile sources. Therefore, the use of ATVs would not exceed applicable County thresholds.

Substantial Temporary Increases in Noise

In addition to an evaluation of maximum noise levels, the temporary noise that could be generated by proposed Project activities at each sensitive receptor was compared to existing ambient noise levels to determine if a substantial temporary increase in noise would occur. Given the logarithmic properties of noise and the way in which humans perceive noise, a 3 dB increase in noise is characterized as barely perceptible, a 5 dB increase as distinctly perceptible, and a 10 dB increase as a doubling of the noise level. Further, an audible (i.e., 3 dB) increase requires the doubling of a noise source; thus, when two equal noise levels are combined, the result is a 3 dB increase. Existing noise levels were obtained from ST-2 (i.e., 69.6 dBA L_{eq} at 100 feet from the centerline of SR-152) and attenuated to each receptor. In addition, existing nighttime noise levels were established using LT-2 to calculate a 12-hour average L_{eq} using the hourly data from 7 p.m. to 7 a.m. Because traffic from SR-152 is the dominant noise source throughout the proposed Project study area, noise levels at each receptor are influenced primarily by SR-152. Project-generated equipment noise, existing noise levels, and the combined effect at each receptor location are summarized in Table 4.13-9 and detailed calculations are included in Appendix G.

Table 4.13-9: Project Generated Equipment Noise Compared to Existing Noise Levels

Sensitive Receptor[1]	Nearest Activity	Work Site with Highest Noise Affecting Receptor (Distance, ft)	Highest Equipment Noise Level at Receptor	Existing Ambient Noise Level at Receptor	Combined Noise Level	Change (dB)
Daytime Investigation Activities						
SR-1 (Residence)	Seismic Refraction Investigation	DSR-22 (774 ft)	53.7 dBA L_{eq}	52.6 dBA L_{eq}	56.2 dBA L_{eq}	+3.6
SR-2 (Residence)	Seismic Refraction Investigation	DSR-22 (786 ft)	53.5 dBA L_{eq}	56.0 dBA L_{eq}	57.9 dBA L_{eq}	+1.9
SR-3 (Residence)	Exploratory Boring – 1 Drill Rig	A-20-104 (435 ft)	56.7 dBA L_{eq}	57.0 dBA L_{eq}	59.9 dBA L_{eq}	+2.9
SR-4[2] (Commercial)	Exploratory Boring – 1 Drill Rig	PB-02 (240 ft)	63.5 dBA L_{eq}	64.8 dBA L_{eq}	67.2 dBA L_{eq}	+2.4
SR-5 (Residence)	Exploratory Boring – 1 Drill Rig	PB-02 (964 ft)	47.6 dBA L_{eq}	52.1 dBA L_{eq}	53.4 dBA L_{eq}	+1.3

Table 4.13-9: Project Generated Equipment Noise Compared to Existing Noise Levels

Sensitive Receptor[1]	Nearest Activity	Work Site with Highest Noise Affecting Receptor (Distance, ft)	Highest Equipment Noise Level at Receptor	Existing Ambient Noise Level at Receptor	Combined Noise Level	Change (dB)
Nighttime Investigation Activities						
SR-3 (Residence)	Exploratory Boring – Drill Rig	R-20-001 (295 ft) R-20-003 (225 ft)	53.8 dBA L_{eq} 56.9 dBA L_{eq}	59.9 dBA L_{eq}	60.9 dBA L_{eq} 61.7 dBA L_{eq}	+1.0 +1.8

Notes: SR = Sensitive Receptor; ft=feet; dBA= A-weighted Decibel; L_{eq}= hourly-average noise level
-See Figure 4.13-1 for location of sensitive receptors.
-Substantial increases in noise pertain to areas where people reside (Residence), not commercial uses; however, for informational purposes only, noise levels with the proposed Project at SR-4 (commercial property) were provided.
-A 5 dBA increase from proposed Project noise is appropriate for areas exposed to higher noise (i.e., 65 dBA) and a 10 dBA increase would be allowable in areas exposed to lower noise (i.e., below 65 dBA).
-No sensitive receptors would be exposed to noise level increases of more than 10 dBA and the proposed Project would not result in a substantial increase in temporary noise.
-Daytime 12-hour average (62.2 dBA) and nighttime 12-hour average (59.9 dBA) were calculated using data obtained from LT 2 at the property line of SR-3.
Source: Modeled by Ascent in 2023 and 2024

As shown in Table 4.13-9, existing noise levels range from 52.1 dBA to 64.8 dBA. In accordance with FTA guidance, areas exposed to lower levels of noise are less prone to adverse impacts from increases in project noise, whereas areas exposed to higher noise levels become increasingly adversely affected as noise levels increase. As such, a 5 dBA increase from proposed Project noise is appropriate for areas exposed to higher noise (i.e., 65 dBA) and a 10 dBA increase would be allowable in areas exposed to lower noise (i.e., below 65 dBA). As shown in Table 4.13-9, existing noise at all sensitive receptors is below 65 dBA; thus, the 10 dBA increase threshold was applied. When existing noise and Project-generated noise are combined, no sensitive receptors would be exposed to noise level increases of more than 10 dBA and the proposed Project would not result in a substantial increase in temporary noise.

In summary, Santa Clara County has established maximum noise levels for construction activity (also applicable to proposed Project activities involving heavy equipment) that are intended to protect the community from adverse noise impacts. As discussed, noise levels from the loudest equipment activities associated with the proposed Project would be as high as 56.7 dBA L_{eq} at the nearest existing residence (SR-3) and 63.5 dBA L_{eq} at the nearest commercial land uses (SR-4), which would not exceed the applicable construction noise standards (applicable to short-term noise associated with proposed Project activities) of 60 dBA L_{eq} or 70 dBA L_{eq}, respectively for daytime investigation activities.

With the exception of the potential for two sites to require nighttime work (i.e., R-20-001, R-20-003), all other activities would occur during the daytime hours of 7 a.m. and 6 p.m. Monday through Friday and between 9 a.m. and 4 p.m. on Saturdays, consistent with Santa Clara County Code. For potential nighttime activities that would occur at sites R-20-001 and R-20-

003, while existing noise levels at the nearest residential property line south of these sites during the night was measured to be higher than the anticipated highest project noise levels (i.e., existing nighttime average of 59.9 dBA L_{eq} compared to project noise of 56.9 dBA L_{eq}), Santa Clara County Code does not include allowable increases in construction noise standards based on existing noise conditions. Therefore, applying a strict interpretation of the adopted 50 dBA L_{eq} construction nighttime standard and of *CEQA Guidelines Appendix G* question "a" for Noise, which specifically asks whether the project would result in noise levels in "excess of standards established in the local general plan or noise ordinance," and without considering that the existing conditions already exceed the allowable noise limit and anticipated project-generated noise levels, the local nighttime construction noise standard would still be exceeded by approximately 1.8 dBA over ambient noise levels, as shown in Table 4.13-9, for up to four nights at each nighttime work site.

Regarding temporary increases in noise, Project-generated equipment noise combined with existing ambient noise levels at all nearby sensitive receptors would not result in a substantial (i.e., 10 dBA) temporary increase in noise over existing levels at all but the two boring sites associated with SR-152 (R-20-001 and R-20-003). At these two locations, nighttime noise exceeds the noise standard established in the Santa Clara County Code and would be a significant impact. MM-NOI-2 requires that Valley Water will require its construction contractors to use temporary sound barriers to attenuate noise, such as temporary noise curtains, sound walls, equipment enclosures, or similar products that provide a barrier to attenuate construction noise to achieve a minimum of a 4 dBA noise reduction from activities at Site R-20-001 and 7 dBA noise reduction from activities at Site R-20-003. The mitigation requirement is based on the modeled values that exceed the 50 dBA L_{eq} nighttime standard, as shown 4.13-9, rounded up to the nearest whole number.

Consistent with Caltrans requirements, these barriers will be placed as close to the noise sources as possible, within the boundaries of the respective activity areas. For these reasons presented in this discussion, this impact would be less than significant with incorporation of mitigation measures MM NOI-1 (Prepare Helicopter Flight Plan and Path to Avoid Sensitive Receptors) and MM NOI-2 (Noise Reduction During Nighttime Geotechnical Investigation Activities), as described in Section 4.13.6 Mitigation Measures.

b. **Less than Significant Impact.** Sensitive receptors and their relative exposure were identified for the assessment of potential short-term (investigation-related) vibration impacts, and proposed Project-generated vibration levels were determined based on methodologies, reference emission levels, and usage factors from FTA's Guide on Transit Noise and Vibration Impact Assessment methodology (FTA 2018). Vibration levels for pieces of heavy equipment that would be used during proposed Project construction are shown in Table 4.13-10.

Table 4.13-10: Vibration Source Levels for Heavy Equipment		
Equipment	**PPV at 25 ft, in/sec**	**Approximate Lv at 25 ft**
Vibratory Roller	0.210	94
Excavator	0.089	87
Caisson drilling (drill rig)	0.089	87
Loaded trucks	0.076	86
Source: FTA 2018: 184.		

Investigation activities proposed for the exploratory test pits after excavation would require backfilling the test pits with an excavator bucket or an excavator-mounted sheep's foot roller to ensure that all excavated materials are replaced in the pit. For a conservative analysis, the use of a vibratory roller was used in this analysis. However, it is important to note that a sheep's foot roller or excavator bucket would generate lower vibration levels than those modeled. The use of a vibratory roller generates a ground vibration level of 0.210 in/sec PPV and 94 VdB at 25 feet (FTA 2018: 184). Assuming normal propagation conditions, vibration from the use of a vibratory roller could exceed the FTA significance threshold of 0.20 in/sec for structural damage (for non-engineered timber and masonry buildings) within approximately 26 feet, or the significance criterion for human annoyance at residential land uses of 72 VdB within approximately 135 feet. No vibration-sensitive buildings are located within these distances. The sensitive receptor nearest to an exploratory pit in which a vibratory roller would be used (i.e., Site TP-19) is SR-1 located approximately 627 feet southeast, well beyond the impact distances of 26 feet for structural damage and 135 feet for annoyance.

Based on FTA reference vibration levels for typical construction equipment, the piece of equipment that could be used during proposed Project subsurface investigations and would generate the second highest levels of ground vibration would be caisson drilling (used to represent boring explorations). Caisson drilling generates vibration levels of 0.089 in/sec PPV and 87 VdB at 25 feet (FTA 2018: 184). Based on the recommended FTA procedure for applying a propagation adjustment to this reference level, vibration from the use of caisson drilling could exceed FTA significance criterion for structural damage of 0.2 in/sec PPV within 15 feet and the criterion for human annoyance within 79 feet. There are no sensitive receptors located within these distances of any site in which drilling would be implemented. The sensitive receptor nearest to an exploratory pit in which drilling would be used (i.e., Site PB-02) is SR-4, located approximately 160 feet northeast of the edge of Site PB-02. At this distance, the vibration levels associated with drilling would attenuate to 62.8 VdB and 0.005 in/sec PPV, which would not exceed applicable FTA thresholds.

FTA standards would not be exceeded during the investigation activities that use the most vibration-intensive equipment. Further, in compliance with Santa Clara County Code, with the exception of boring sites R-20-001 and R-20-003, geotechnical-related field activities would occur Monday through Friday from 7 a.m. to 6 p.m. and Saturdays between 9 a.m. and 4 p.m. At the two boring sites associated with SR-152, nighttime boring would occur, but as illustrated in Table 4.13-9, these two sites are well beyond the distance established for structural damage and human annoyance. For these reasons, this impact would be less than significant.

c. **No impact**. The proposed Project study area is not located within an airport land use plan, within 2 miles of a private airstrip, or within 2 miles of a public airport or public use airport. The nearest airport is the Frazier Lake Airpark, which is located approximately 10 miles southwest of the proposed Project study area. Additionally, the proposed Project would not include any new land uses where people would live. For these reasons, the proposed Project would not result in noise impacts related to the exposure of people residing or working within the proposed Project study area to excessive airport-related noise levels. There would be no impact.

4.13.4 Best Management Practices

No BMPs are applicable.

4.13.5 Avoidance and Minimization Measures

No AMMs are applicable.

4.13.6 Mitigation Measures

MM NOI-1: Prepare Helicopter Flight Plan and Path to Avoid Sensitive Receptors. Prior to initiating helicopter operations at the proposed Project site, Valley Water shall request a flight plan or similar documentation from the helicopter service. The flight plan or similar documentation shall demonstrate that helicopter operations within and near the proposed Project study area shall maintain a minimum distance of 500-feet from identified sensitive receptors (residential and commercial). Valley Water and/or its contractor(s) shall conduct any and all helicopter operations in compliance and consistent with Santa Clara County's noise standards (Section B11-154(b)(14) of the Santa Clara County Code).

MM NOI-2: Noise Reduction During Nighttime Geotechnical Investigation Activities. For any investigation activities that could occur during the nighttime hours (i.e., 7 p.m. – 7 a.m.) at activity sites R-20-001 and R-20-003, Valley Water shall require its construction contractors to use temporary sound barriers to attenuate noise, such as temporary noise curtains, sound walls, equipment enclosures, or similar products that provide a barrier to attenuate construction noise to achieve a minimum of a 4 dBA noise reduction from activities at Site R-20-001 and 7 dBA noise reduction from activities at Site R-20-003. Installation of temporary sound barriers can achieve up to 10 dBA in noise reduction. The temporary sound barrier shall be located within the boundary of each activity area consistent with Caltrans requirements and as close as possible to the noise generating equipment to reduce direct line of sight noise attenuation between the project construction noise sources and property boundaries of sensitive receptors to shield the receptors from construction noise. The installation of any temporary sound barrier shall meet all the following criteria:

- Shall be installed as close as possible to the boundary of the work activity area (e.g., directly around equipment, boundary of activity area, shoulder of the highway);
- Shall consist of durable, flexible composite material featuring a noise barrier layer bound to sound-absorptive material on one side; and/or
- Shall consist of rugged, impervious, material with a surface weight of at least one pound per square foot, such that the aforementioned sound reduction is achieved on the receiving side of the sound barrier.

4.14 Population and Housing

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

4.14.1 Environmental Setting

The proposed Project study area for population and housing resources is located in unincorporated Santa Clara County. Pacheco Reservoir is located approximately 15 miles northeast of Gilroy and 0.4 miles north of SR-152. The North Fork Dam and existing reservoir are located on land owned by Pacheco Pass Water District.

Several landowners own most of the private lands in the North Fork Pacheco Creek watershed within and surrounding the proposed Project study area. Most of the land within and adjacent to the proposed Project study area is rural and managed as open space or ranchlands primarily for grazing purposes. There are two residential properties located approximately 0.2 and 0.3 miles southeast of the existing North Fork Dam (Santa Clara County Assessor's Parcel Number 898-49-001) on El Toro Road. These residences are presumed to be permanently occupied. A ranch compound, referred to as the "O'Connor Ranch" is located along North Fork Pacheco Creek, approximately 6 miles upstream from Pacheco Reservoir. This compound has one residential structure and several outbuildings and improvements (e.g., corrals, barns). This compound serves as the ranch headquarters for the landowner and is presumed to be occupied year-round. In addition, several occupied residences are located south of the SR-152 intersection with Kaiser-Aetna Road near the southwest extent of the proposed Project study area. None of these residences are located within the proposed Project study area.

4.14.2 Regulatory Setting

Federal Laws, Regulations, and Policies

There are no federal laws, regulations, or policies related to population and housing resources that apply to the proposed Project.

State Laws, Regulations, and Policies

There are no state laws, regulations, or policies related to population and housing resources that apply to the proposed Project.

Regional and Local Laws, Regulations, and Policies

Santa Clara County General Plan Housing Element

The 2014 Housing Element Update of the General Plan assesses the existing housing needs for the unincorporated Santa Clara County population. It provides an overview of land use policies and regulations, impact fees, secondary dwelling provisions, building codes, development and site improvement standards, processing and permitting procedures, special needs housing, and code enforcement (Santa Clara County 2014). The Housing Element does not include any specific goals or policies pertaining to temporary housing for construction. According to the Housing Element, approximately 7.1 percent of the County employment is construction related (Santa Clara County 2014).

4.14.3 Discussion

a. **No Impact.** The proposed Project would not include any new housing, commercial or industrial space, result in the conversion of adjacent land uses, or provide access to previously inaccessible areas. The proposed Project entails conducting geotechnical investigations in support of PREP. The proposed geotechnical investigations would be temporary in nature and of short duration, and therefore would not require the construction of additional housing units for Project workers. As a result, the proposed Project would not directly or indirectly induce substantial planned or unplanned population growth. Thus, the proposed Project would have no impact.

b. **No Impact.** The proposed Project would not include the demolition of existing housing or displace existing housing or residents, which would necessitate the construction of replacement housing elsewhere. Therefore, the proposed Project would have no impact.

4.14.4 Best Management Practices

No BMPs are applicable.

4.14.5 Mitigation Measures

No mitigation measures are required.

4.15 Public Services

Would the project?	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or need for new or physical altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services: i. Fire protection?	☐	☐	☐	☒
ii. Police protection?	☐	☐	☐	☒
iii. Schools?	☐	☐	☐	☒
iv. Parks?	☐	☐	☐	☒
v. Other public facilities?	☐	☐	☐	☒

4.15.1 Environmental Setting

Pacheco Reservoir is located southeast of Henry W. Coe State Park in Santa Clara County, just north of SR-152. The proposed Project study area includes the existing Pacheco Reservoir upstream from North Fork Dam, North Fork Pacheco Creek upstream from the existing reservoir and downstream from the existing dam to the confluence with the Pacheco Creek mainstem, and within the Caltrans SR-152 ROW near the intersection with Kaiser-Aetna Road. There are many public services (i.e., police stations, fire stations, schools, airports, and hospitals) in the surrounding rural area and communities that support the residents and visitors to the proposed Project study area. Figure 4.15-1 illustrates that there are no public services within the proposed Project study area, but there is a wide array of public services that are available in the surrounding area. The array of public services is discussed in the following subsections.

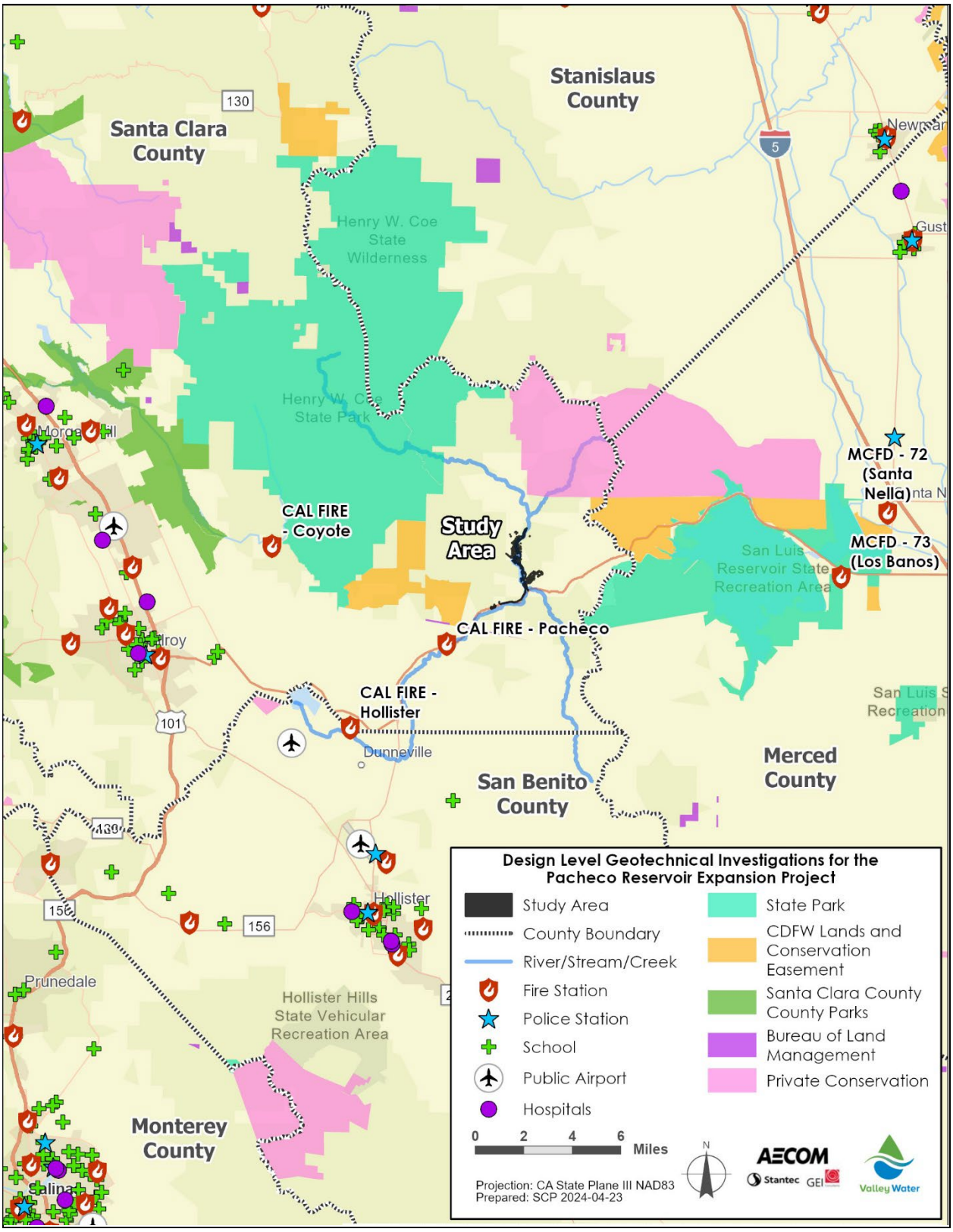


Figure 4.15-1: Public Services Surrounding the Proposed Project Study Area.

Fire Protection

The California Department of Forestry and Fire Protection is the primary agency responsible for fire protection services throughout the proposed Project study area. Section 4.20, Wildfire, provides additional information regarding CAL FIRE's role as it relates to the proposed Project. Mutual aid agreements enable CAL FIRE to access fire protection services from federal (e.g., U.S Forest Service), state (e.g., California Office of Emergency Services), and local (e.g., Santa Clara County Fire Department) specific to an incident or emergency. These mutual aid agreements ensure that adequate personnel and equipment can be provided as needed.

All of the proposed Project study area is located within the CAL FIRE Santa Clara Unit (SCU). The SCU serves Contra Costa, Alameda, and Santa Clara Counties, and portions of San Joaquin and Stanislaus Counties. CAL FIRE operates 12 fire stations within the SCU, and has 16 fire engines, 3 bulldozers and 1 helicopter (CAL FIRE 2023a). In addition, the Pacheco Fire Station located approximately 4 miles southwest of the Kaiser-Aetna Road intersection with SR-152 also has a wildland fire engine with advanced life support capabilities available. CAL FIRE also provides aerial fire protection and support from the Hollister Air Base (CAL FIRE 2013).

Police Protection

The CHP is responsible for patrolling approximately 1,200 miles of roadway in Santa Clara and San Benito Counties from its Hollister-Gilroy Area office, including that portion of SR-152 west of Pacheco Pass. In addition to CHP, California Parks and Recreation, CAL FIRE and CDFW law enforcement personnel also respond to law enforcement needs within their respective jurisdictions throughout the proposed Project study area.

The Santa Clara County Sheriff's Office (SCCSO) provides law enforcement services to the proposed Project study area. In addition, their South County sub-station is responsible for patrol of the proposed Project study area.

Schools

Portions of the proposed Project study area north of SR-152 are not within a designated school district; however, residents along the Pacheco Creek/SR-152 corridor are adjacent to the Gilroy Unified School District (GUSD), which operates 15 schools. There are seven elementary schools, three middle schools, four high schools, and an adult education facility. The closest school to the proposed Project study area is Eliot Elementary School, located in Gilroy, about 13 miles west of the proposed Project study area. At this time, there are no scheduled school bus stops within the proposed Project study area.

Parks

The proposed Project study area is surrounded by a variety of parks and recreational developments. Henry W. Coe State Park is on the western edge of the proposed Project study area and is managed by the California Department of Parks and Recreation. Cañada des Los Osos Ecological Reserve is located to the west, and Cottonwood Wildlife Area and San Luis Reservoir

State Recreation Area are located east of the proposed Project study area. All 3 areas are managed by the CDFW for various recreational purposes.

Figure 4.16-1 in Section 4.16, Recreation, illustrates the location of these areas. Recreational activities at these areas include but are not limited to off highway vehicle areas, camping, horseback riding, hunting, hiking, and biking. Section 4.16 provides additional information on parks and other recreational resources within or in close proximity to the proposed Project study area.

Other Public Facilities

The proposed Project study area is rural in character and largely undeveloped ranch lands. The closest facilities that have trained emergency personnel available on a daily basis are CAL FIRE's Pacheco and Los Banos fire stations, located approximately 5 to 20 miles from the proposed Project study area respectively. Ambulance service and full-service medical facilities are located in Hollister, Gilroy, and rather or Los Banos. Two public airports are located more than 6-miles southwest of the proposed Project study area. No other public facilities are located in the surrounding proposed Project study area.

4.15.2 Regulatory Setting

Federal Laws, Regulations, and Policies

No federal laws, regulations, or policies related to public services apply to the proposed Project.

State Laws, Regulations, and Policies

California Master Mutual Aid Agreement

The California Master Mutual Aid Agreement is a framework agreement between the State of California and local governments that provides aid and assistance through the interchange of services and facilities (Cal OES 2019). This aid agreement includes but is not limited to the following services: fire, police, medical and health, communication, and transportation and includes facilities to cope with issues related to rescue, relief, evacuation, rehabilitation, and reconstruction.

Regional and Local Laws, Regulations, and Policies

The major planning documents associated with public services near the proposed Project study area, as well as the General Plan, were reviewed for relevant policies in relation to public services. The applicable sections of the General Plan is discussed in the following subsection.

Santa Clara County General Plan

Except for the existing Pacheco Reservoir, the lands within the vicinity of the proposed Project upstream from North Fork Dam are privately owned and designated as Ranchlands under the General Plan (Santa Clara County 1994); see Section 4.11 for additional information on the land use and zoning designations for portions of the proposed Project study area.

The following policy in the General Plan applies to public service uses as related to the proposed Project:

> **R-LU 37:** Population shall be held to a minimum, and land uses shall be of a nature and intensity which do not require higher levels of public services than those presently provided.

4.15.3 Discussion

a. **No Impact.** There are no public services within the boundaries of the proposed Project study area. There are public services within 5-10 miles of the proposed Project study area. However, implementation of the proposed Project would not impact any public services including police, fire, schools, parks and "other public services" such as airports, hospitals, and ambulance services.

   i. Specifically, proposed Project activities would not contribute to an increased need for fire protection services, because the proposed Project would not contribute to population growth or other long-term land use modifications. Therefore, the proposed Project would have no impact on fire protection services.

   ii. Specifically, proposed Project activities would not contribute to an increased need for police protection services, because the proposed Project would not contribute to population growth or other long-term land use modifications. Therefore, the proposed Project would have no impact on police protection services.

   iii. Implementation of the proposed Project would also not result in long-term effects to existing school facilities, nor would it contribute to any change in population or other land use modifications that would impact the Gilroy Unified School District or any other school district. No substantial adverse physical impacts to the environment would occur, and no new or physically altered school facilities would be required. Therefore, no impact on schools would result from implementation of the proposed Project.

   iv. The proposed Project would also not result in substantial impacts associated with new or physically altered park facilities in order to maintain adequate recreational facilities for residents. Therefore, no impact on parks would occur as a result of Project implementation.

   v. Because the proposed Project would not contribute to population growth or other long-term land use modifications, it would not affect "other public facilities" such as airports, hospitals, and ambulance services.

   Therefore, no impact would occur as a result of Project implementation.

4.15.4 Best Management Practices

No BMPs are applicable.

4.15.5 Avoidance and Minimization Measures

No AMMs are applicable.

4.15.6 Mitigation Measures

No mitigation measures are required.

4.16 Recreation

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b. Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

4.16.1 Environmental Setting

The environmental setting related to recreation includes the identification of recreational facilities and opportunities within the proposed Project study area (see Figure 4.16-1) and surrounding vicinity (within 10 miles of the Proposed Project), including parks and ecological reserves. Reported recreational use at state parks within and adjacent to the proposed Project study area is discussed in the following subsections.

Existing Recreational Facilities and Opportunities

Current recreational facilities and opportunities in and adjacent to the proposed Project study area are summarized in Table 4.16-1. There are 3 publicly managed areas, 1 ecological reserve, and 2 wildlife areas managed by the California Department of Fish and Wildlife. Figure 4.16-1 illustrates the parks and ecological reserves adjacent to the proposed Project study area.

Henry W. Coe State Park

At 87,000 acres, Henry W. Coe State Park is the largest state park in Northern California. This remote and largely undeveloped park offering over 250 miles of dirt roads and trails, welcomes backpackers, equestrians, mountain bikers, day-hikers, and anyone seeking solitude in a nearly untouched setting. Part of the Diablo Range, the park is an amalgam of high ridges, plateaus, and both narrow and open valleys (CSP 2009).

Henry W. Coe State Park offers a primitive drive-in campground as well as numerous hike-in primitive camps for backpackers and ride-in horse camps for equestrians. The park also has two visitor centers with interpretive programs assisted by the Pine Ridge Association (Pine Ridge 2021).

Kaiser-Aetna Road provides seasonal access to the Dowdy Ranch Visitor Center through the Bell Station Gate located just north of SR-152, 5 miles east of the SR-152/SR-156 Interchange at the Bell Station Restaurant Road. The Bell Station Gate is open from 10 a.m. to 6 p.m. Saturday, Sunday, and Monday holidays only (Memorial Day and Labor Day) during the operating season.

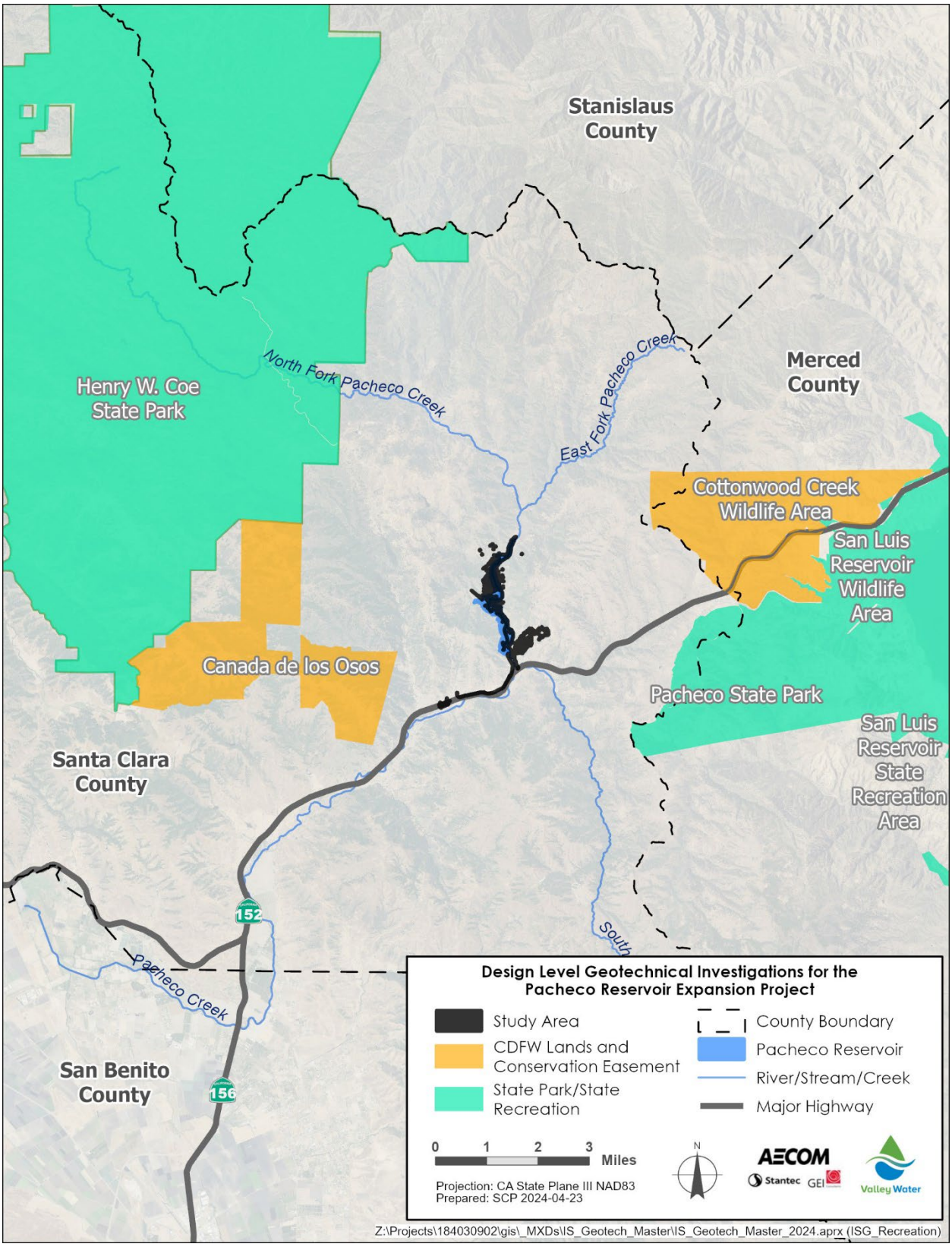


Figure 4.16-1: Recreational Facilities and Opportunities Adjacent to the Proposed Project Study Area and Surrounding Vicinity

Table 4.16-1: Existing Recreational Facilities and Associated Activities in the Proposed Project Vicinity and Surrounding Area

Park	Operator	Area (acres)	Visitor Center	Interpretive Program	Developed Camping (# units)	Primitive Camping	Day Use	Multi-Use Trail	Hiking (Miles of Trails	Biking (Miles of Trails)	Equestrian (Miles of Trails)	Boating	Hunting	Fishing	Comments
Henry W. Coe State Park	CSP	87,000	Yes	Yes	19	60	Yes	Yes	250	200	Yes	No	No	Yes	Horse camping sites, open riding terrain, designated state wilderness.
Pacheco State Park	CSP	6,890	No	Yes	No	Yes	Yes	28	Yes	Yes	Yes	No	No	No	Camping for events only, only 2,600 acres open to public access.
San Luis State Recreation Area	CSP	27,000	Yes	Yes	132	20+	Yes	No	11	No	No	Yes	Yes	Yes	OHV area, 5-mile-long accessible trail, start of the Aqueduct bikeway (north of O'Neil Forebay).
Cañada de los Osos Ecological Reserve	CDFW	5,800	No	No	No	No	No	No	No	No	No	No	Yes	Yes	Junior wildlife hunts, wildlife viewing. Open for events only.
Cottonwood Creek Wildlife Area	CDFW	6,300	No	No	No	No	No	No	32	No	No	No	Yes	No	Special draw hunt.
San Luis Reservoir Wildlife Area	CDFW	902	No	No	No	No	No	No	--	No	No	No	Yes	No	Foot access only.

Notes:
CDFW = California Department of Fish and Wildlife
CSP = California State Parks
OHV = off-highway vehicle

The gates at Bell Station and at the Dowdy Ranch Visitor Center are locked every night, with no public nighttime access. There is no parking allowed on Kaiser-Aetna Road (CSP 2021). Eastbound visitors turn left across westbound traffic on SR-152 at an uncontrolled intersection. Westbound visitors turn right from SR-152 onto Kaiser-Aetna Road.

The Dowdy Ranch Visitor Center site includes a visitor center, restrooms, drinking water, an equestrian staging area, shade ramadas, and picnic tables. There are several trails leading out of the Dowdy Ranch area and hikers, backpackers, mountain bikers, and equestrians can access the North Fork Pacheco Creek drainage, Burra Burra Peak, remote ponds, and Coit and Mississippi lakes (Pine Ridge 2021). Dowdy Ranch is the primary access point for the North Fork Trail via the Mack's Corral Trail. The North Fork Trail parallels and crosses North Fork Pacheco Creek before connecting with the Tie Down Trail.

Pacheco State Park

Managed and operated by California State Parks, this 6,890-acre state park several miles east of the proposed Project study area has 28 miles of trails with opportunities for hiking, biking, and equestrian activities. The day use picnic area has parking for horse trailers and corrals for horses. Primitive horse camping is allowed with reservations (CSP 2015a).

San Luis Reservoir State Recreation Area

The San Luis Reservoir State Recreation Area, managed by California State Parks, was built as part of the water storage and delivery system of reservoirs, aqueducts, power plants, and pumping stations operated under U.S. Department of the Interior, Bureau of Reclamation's Central Valley Project, and State Water Project. The 27,000-acre State Recreation Area includes the water surfaces of San Luis Reservoir, O'Neill Forebay, Los Banos Creek Reservoir, and adjacent recreation lands (Reclamation 2014). There are opportunities for camping, picnicking, swimming, boating, and fishing. There is a 5-mile accessible trail and a 6-mile loop hiking trail, and the area has a designated off-highway vehicle (OHV) recreation area. Waterfowl hunting is allowed but prohibited within 500 feet of the dam and recreation areas (CSP 2017a).

Cañada de Los Osos Ecological Reserve

Managed by CDFW, this 5,800-acre property is several miles southwest of the proposed Project study area includes the headwaters of Cedar Creek, a tributary to Pacheco Creek. It features a mix of annual grasslands, oak and montane woodland, chaparral, riparian, and wetland habitats, with numerous springs and ponds. Formerly known as Stevenson Ranch, the property was acquired for the protection and enhancement of habitat for native species and to provide a setting for a youth outdoor recreation program (CDFW 2005). The property was designated as an ecological reserve by the Fish and Game Commission in 2003. The area offers wildlife viewing and junior hunts by draw (CDFW 2019a). The reserve is only open to the public during designated events (CDFW 2019a). Many of these events such as youth education, university classes, and site restoration are managed by the Friends of Cañada de los Osos, a non-profit conservation organization dedicated to providing youth outdoor education programs, and to improving wildlife habitat on the Cañada de los Osos Ecological Reserve (Friends 2021).

Cottonwood Wildlife Area

Managed by CDFW, this area several miles east of the proposed Project study area encompasses 6,300 acres and is managed as two units. The upper unit is predominantly steep oak-grasslands, while the lower unit is predominately steep hilly grasslands. Wildlife includes wild pigs, black-tailed deer, gray fox, and 100 species of birds. Both the upper and lower units offer wildlife viewing along a hiking trail system and hunting in season (CDFW 2019b).

Fifield Road crosses the top end of the upper unit. There is no public vehicle access along this road, although, visitors to the wildlife area could hike to this location from the visitor parking lot located adjacent to the San Luis Reservoir along SR-152 east of Pacheco Pass.

San Luis Reservoir Wildlife Area

San Luis Reservoir Wildlife Area—which can only be accessed by foot—is 902 acres of steep oak-grassland habitat several miles east of the proposed Project study area. It is known to be a popular area for wildflower viewing and is abundant with animal life. Several mammals are found in the area, including gray fox, black-tailed deer, and wild pigs. Wildlife viewing and hunting are the primary recreational activities. The CDFW has documented 101 species of birds in the area (CDFW 2021).

Private Recreational Opportunities

Private landowners adjacent to Kaiser-Aetna Road and Fifield Road use their property for personal recreation opportunities such as hunting, equestrian use, and off-road vehicle use for themselves, their families, and invited guests. There is at least one private hunting club that uses Fifield Road for access.

Reported Recreation Use at State Parks

California State Parks produce annual statistical reports for all parks in the state. Table 4.16-2 summarizes the most recent data available for the three parks near the proposed Project study area.

Table 4.16-2: State Park Visits

State Park	2013 - 2014		2014 - 2015		2015 - 2016		2016 - 2017	
	Camping	Total	Camping	Total	Camping	Total	Camping	Total
Henry W. Coe State Park	18,370	44,446	18,252	46,549	19,036	47,906	19,741	58,201
Pacheco State Park	61	2,891	86	4,153	54	3,193	128	3,286
San Luis Reservoir State Recreation Area	21,756	170,464	28,749	250,701	33,918	242,694	29,664	254,247

Source: CSP 2014a, 2015b, 2016, 2017b

4.16.2 Regulatory Setting

Federal Laws, Regulations, and Policies

There are no applicable federal laws, regulations, or policies related to recreation that apply to the proposed Project.

State Laws, Regulations, and Policies

Ecological Reserve/Wildlife Area Management Plans

The CDFW develops land management plans for any property wholly under its jurisdiction that is purchased after January 1, 2002, and subject to an appropriation by the legislature for that purpose. The plans focus on maintaining viable populations of sensitive species and their habitats and on the restoration and enhancement of natural communities within an ecosystem-based framework (CDFW 2005). The Cañada De Los Osos Ecological Reserve Management Plan was published in 2005. Land management plans have not been developed for the Cottonwood or San Luis Wildlife Areas, and management is based on statewide and property specific regulations.

Henry W. Coe State Park General Plan.

The Henry W. Coe State Park General Plan (CSP 1985) was adopted in 1985. The plan outlines management objectives and actions to achieve the purposes adopted for the park, which are to make the landscape and wildland values available to the people for their inspiration, enlightenment, and enjoyment, in an essentially natural condition. The general plan is a comprehensive plan that adopts policies for a wide range of resources including management of recreation, access, and facility development. The 2014 Interpretive Master Plan (CSP 2014b) also provides internal guidance to park staff for development and management of interpretive opportunities but has limited application to facilities.

Regional and Local Laws, Regulations, and Policies

Santa Clara County General Plan

The General Plan (Santa Clara County 1994) Parks and Recreation Countywide Issues and Policies section outlines three types of areas and facilities that can contribute both to meeting future recreation demand and to maintaining the county's natural resources and beauty, including Regional Parks and Public Open Space Lands, Trails, and Scenic Highways.

The Regional Parks and Scenic Highways Map Element of the General Plan identifies the existing Pacheco Reservoir as a proposed park that "should be stocked with fish and opened for recreation" (Santa Clara County 2008). The Map Element also recommends that if the proposed Pacheco Reservoir is built, "provision should be made for recreational use."

Santa Clara County Parks 2018 Strategic Plan (2018 Strategic Plan).

Santa Clara County has an extensive history of countywide park planning and development managed by the Santa Clara County Parks and Recreation Department (County Parks and Recreation Department). Supported by a voter approved Park Charter Fund, the Parks and Recreation Department manages 28 parks comprising over 52,000 acres. Valley Water works in partnership with the County Parks and Recreation Department to provide recreational opportunities at many of Valley Water's reservoirs and along over 70 miles of creekside trails. The 2018 Strategic Plan (Santa Clara County Parks 2018) outlines the process used to define the Parks and Recreation Department's vision statement and vision elements, and defines priorities, goals, strategies, actions, and practices for implementing the vision.

4.16.3 Discussion

a. **No Impact.** As discussed earlier, there are three publicly managed areas, one ecological reserve, and two wildlife areas managed by CDFW that are located in the vicinity of the proposed Project study area Figure 4.16-1). Implementation of the proposed Project would not result in an increase in use of these recreational facilities since no development is proposed that would increase demand for these facilities. Because the use of these facilities is not expected to increase due to the implementation of the proposed Project, no physical deterioration of these facilities would occur or be accelerated by the proposed Project. And therefore, no impact would occur from proposed Project implementation.

b. **No Impact.** The proposed Project would conduct geotechnical investigations within the proposed Project study area. No development of new or expanded recreational facilities is proposed as a part of the proposed Project. Therefore, no impact or adverse physical effect on the environment would occur from Project implementation.

4.16.4 Best Management Practices

No BMPs are applicable.

4.16.5 Avoidance and Minimization Measures

No AMMs are applicable.

4.16.6 Mitigation Measures

No mitigation measures are required.

4.17 Transportation

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

4.17.1 Environmental Setting

The proposed Project study area includes the location where the proposed geotechnical investigations (including access and staging) would occur in unincorporated Santa Clara County. The proposed Project study area is bordered by SR-152 to the south, and Kaiser-Aetna Road to the west. Regional access to the proposed Project study area is provided by SR-152, which has connections I-5 to/from the east, and US-101 to/from the west. SR-152 is a major east-west corridor for interregional commercial, commuter, and recreational traffic connecting the South San Francisco Bay Area and Central Valley regions. Access to the proposed Project study area is provided via an unnamed ranch road located approximately 1 mile east of Kaiser-Aetna Road accessed from the west-bound lane of SR-152, approximately 35 miles from the City of Los Banos to the east and approximately 25 miles from the City of Gilroy to the west. A network of existing ranch roads, currently provide access from SR-152 to the proposed Project study area consisting of PPWD property and private lands.

Existing Roadway Network

The proposed Project study area for potential transportation impacts covers approximately 1.5 miles (between Post Mile 28.857 and Post Mile 30.285) along SR-152. The primary areas of interest are at the intersection of SR-152/Kaiser-Aetna Road, and the existing access to the proposed Project study area located approximately 1.4 miles east of Bell Station Farmers Market. Figure 4.17-1 illustrates the proposed Project study area for transportation. The transportation analysis focuses on this segment of SR-152 because it would be the primary roadway providing access for the equipment and supplies necessary to perform the proposed geotechnical investigations. While the proposed Project may result in some additional traffic on US-101, SR-156, I-5, and other local roads to connect to SR-152, the traffic volumes on these roadways from the proposed Project

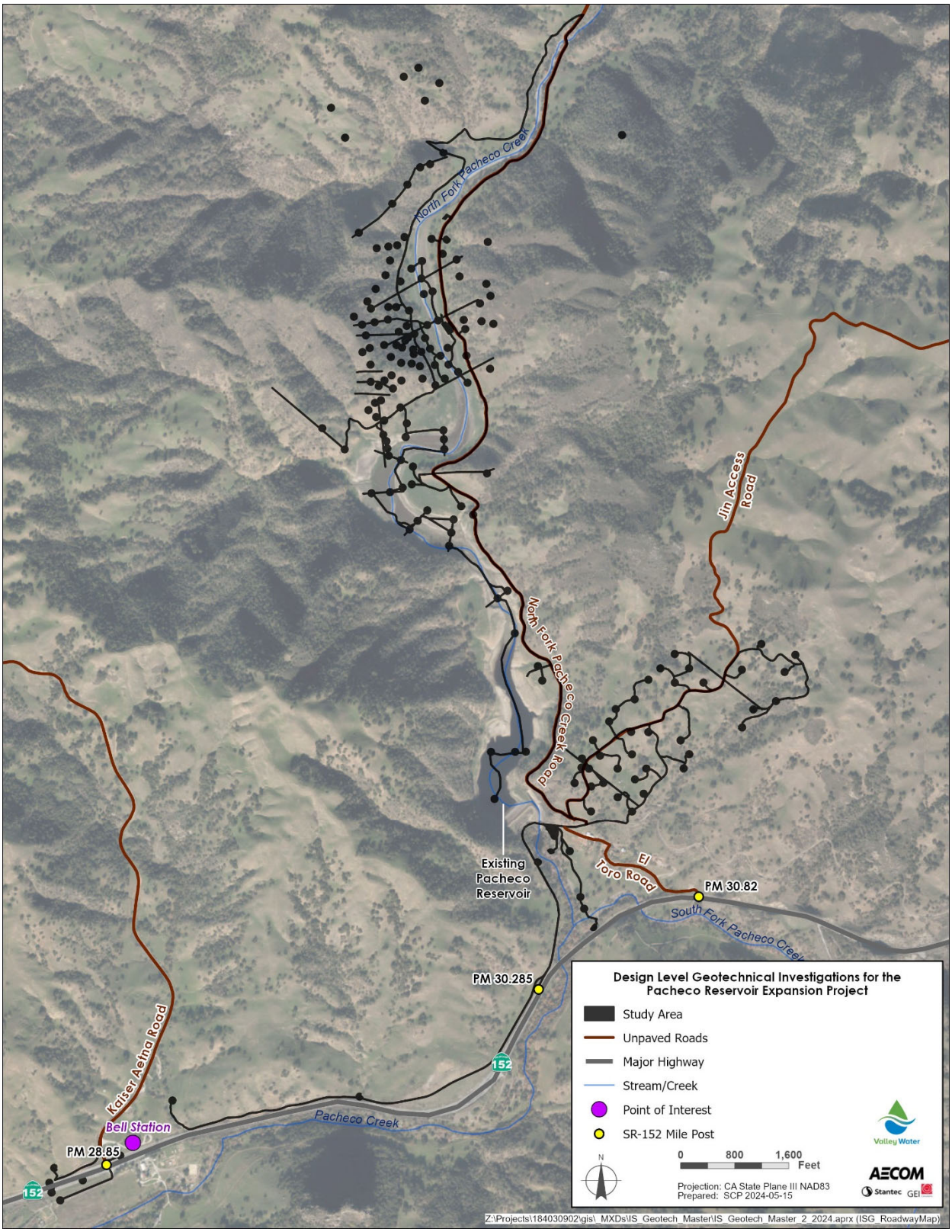


Figure 4.17-1: Roadways Within and Adjacent to the Proposed Project Study Area

would be a small percentage of existing volumes, largely because the trips for equipment and by Project staff drilling personnel would be minimal, in addition to being split among these various roadways. Thus, any impacts on these roadways would be negligible, and these roadways are not discussed further in this section.

State Route 152

SR-152 is a four-lane, divided state highway that runs east-west through the proposed Project study area, connecting to I-5 and the communities of Merced County to the east, and to US-101 and the communities within Santa Clara and San Benito Counties to the west. Because of these connections to major north-south highways that traverse the entire state, SR-152 is a heavily used truck route. Traveling east from US-101, SR-152 is a 2-lane undivided roadway in Gilroy, with a posted speed limit of 55 miles per hour (mph). SR-152 transitions to a 4-lane divided roadway at the interchange with SR-156 and continues in this configuration through the proposed Project study area with a posted speed limit of 65 mph for cars and 55 mph for trucks and trailers.

Kaiser-Aetna Road

Kaiser-Aetna Road is a rural north/south road that intersects with SR-152 at Post Mile 28.8. The northern leg of Kaiser-Aetna Road leads up to Henry W. Coe State Park, as well as Bell Station Farmers Market and private lands in the western portion of the North Fork Pacheco Creek watershed. Only a short section of Kaiser-Aetna Road is paved, up to the Bell Station Farmers Market access. Beyond the junction with the Bell Station Farmers Market driveway, Kaiser-Aetna Road continues northward to Henry W. Coe State Park. This stretch of Kaiser-Aetna Road is unpaved with a 25-mph posted speed limit and access is limited to daytime hours when the southern entrance to the park is open. South of SR-152, Kaiser-Aetna Road provides access to private lands along Pacheco Creek.

Local Roads

Local Roads in the proposed Project study area include El Toro Road that runs north from SR-152 and provides the primary access to two residences downstream from North Fork Dam. El Toro Road intersects an unnamed ranch road that provides access to North Fork Dam as well as the existing PPWD and private lands throughout the North Fork Pacheco Creek watershed upstream and downstream of the dam. Above North Fork Dam, this unnamed ranch road is narrow, has a native surface, and is maintained as needed by private landowners. This road extends downstream of the dam on the west side of North Fork Pacheco Creek to SR-152. Use of this road is restricted to private landowners and emergency personnel (e.g., CAL FIRE). Landowners use this road to haul livestock and equipment as needed to support their ongoing livestock operations. This road also provides the primary access to a network of roads and trails that have been developed over time to support these livestock operations. All movements at the intersections of El Toro Road and the unnamed ranch road with SR-152 are unsignalized and include left turn lane pockets from eastbound SR-152. There are no right turn lanes onto these roads from westbound SR-152.

Bicycle and Pedestrian Facilities and Transit Service

There are no existing or proposed bicycle paths or routes or pedestrian facilities along SR-152 within Santa Clara County. As part of Santa Clara Valley Transportation Authority's (VTA) 2018 Santa Clara Countywide Bicycle Plan, the bicycle routes referred to as "across barrier connections" (i.e., problem spots or locations where new or improved bicycle crossings are needed to improve bicycle connections and complete gaps in the bicycle network) proposed on SR-152 were removed from the 2008 list of proposed connection improvements due to very low-density land use with no planned land use changes in that area to merit including any bicycle infrastructure (VTA 2018).

The VTA provides light rail, bus, and paratransit service to Santa Clara County; however, there are no transit services on SR-152 within the proposed Project study area. Several local and regional bus routes travel on SR-152 within the City of Gilroy, but none operate along SR-152 through the proposed Project study area.

Existing Traffic Volumes

The annual average daily volume is 47,500 trips for SR-152 (Caltrans 2021). Existing peak hour traffic volumes for SR-152 were obtained from the Caltrans Performance Measurement System (PeMS). September 2019 data at the SR-152/Kaiser-Aetna Road intersection is presented in Table 4.17-1 and is reflective of the most current pre-COVID-19 volumes. The peak direction of traffic is westbound during the morning (a.m.) peak hour and eastbound during the afternoon (p.m.) peak hour. The a.m. and p.m. peak hours were identified from the PeMS data; both the a.m. and p.m. peak hours are 4:00–5:00 (see Table 4.17-1). According to the 2018 Caltrans Census data, trucks account for approximately 15 percent of the traffic volumes within the study limits (Caltrans 2018).

Table 4.17-1: Existing SR-152 Peak Hour Volumes per Direction

Direction	A.M. Peak Hour (veh/h)	P.M. Peak Hour (veh/h)
Eastbound	138	1,557
Westbound	1,849	725

Notes:
SR-152 = State Route 152
veh/h = vehicles per hour
Source: 2019 Caltrans Performance Measurement System

4.17.2 Regulatory Setting

Federal Laws, Regulations, and Policies

There are no federal traffic and circulation regulations, plans, and/or policies that are applicable to the proposed Project.

State Laws, Regulations, and Policies

California Senate Bill 743/California Environmental Quality Act

Senate Bill (SB) 743, which became effective in September 2013, initiated changes to the *CEQA Guidelines* to establish new criteria for determining the significance of transportation impacts. Specifically, SB 743 replaced automobile delay—as described solely by level of service or similar measures of vehicular capacity or traffic congestion—with vehicle miles traveled (VMT) as the recommended metric for determining the significance of transportation impacts. The intent of the change is to help achieve statewide goals related to infill development, the promotion of public health through active transportation, and the reduction of greenhouse gas emissions. The Governor's Office of Planning and Research (OPR) adopted *CEQA Guidelines* implementing SB 743 on December 28, 2018 (*CEQA Guidelines* §15064.3); statewide implementation began July 1, 2020. The portions of the *CEQA Guidelines* that were revised and are relevant to the proposed Project state:

a. Purpose. This section describes specific considerations for evaluating a project's transportation impacts. Generally, vehicle miles traveled is the most appropriate measure of transportation impacts. For the purposes of this section, "vehicle miles traveled" refers to the amount and distance of automobile travel attributable to a project. Other relevant considerations may include the effects of the project on transit and nonmotorized travel. Except as provided in subdivision (b)(2) below (regarding roadway capacity), a project's effect on automobile delay shall not constitute a significant environmental impact.

b. Criteria for Analyzing Transportation Impacts.

    a. Land Use Projects. Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles traveled in the proposed Project area compared to existing conditions should be presumed to have a less than significant transportation impact.

    b. Transportation Projects. Transportation projects that reduce, or have no impacts on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, such as in a regional transportation plan EIR, a lead agency may tier from that analysis as provided in §15152.

    c. Qualitative Analysis. If existing models or methods are not available to estimate the vehicle miles traveled for the particular project being considered, a lead agency may analyze the project's vehicle miles traveled qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit,

> proximity to other destinations, etc. For many projects, a qualitative analysis of construction traffic may be appropriate. (*CEQA Guidelines* §15064.3[a][b])

To assist with implementation of the VMT metric, the OPR prepared a Technical Advisory on Evaluating Transportation Impacts in CEQA (OPR 2018). OPR's Technical Advisory recommends that for land use projects a per capita or per employee VMT that is fifteen percent below that of existing development may be a reasonable threshold. In making this recommendation, OPR recognized that land use development projects (i.e., those involving residential, office, and retail proposals) tend to have the greatest influence on VMT. For other types of projects, lead agencies should consider the purposes in Public Resources Code § 21099(b)(1) (i.e., promote reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses) in applying a threshold of significance. Qualitative analyses are acceptable when methods do not exist for undertaking a quantitative analysis.

Caltrans

Caltrans has jurisdiction over California state highway facilities including SR-152. In its 2020 memorandum on CEQA significance determinations, Caltrans concurred that VMT is the most appropriate measure of transportation impacts under CEQA and required such assessment along with a supporting induced travel analysis for capacity-increasing transportation projects on the State Highway System (Caltrans 2020). *Attachment A* to that memorandum includes a list of project types not likely to lead to a measurable and substantial increase in vehicle travel and would not require an induced travel analysis. Project types enumerated in *Attachment A* include safety projects that do not add additional motor vehicle capacity, auxiliary lanes less than one mile in length designed to improve safety, installation or reconfiguration of traffic lanes that are not used for through traffic (e.g., left- and right-turn pockets, and installation of roundabouts (Caltrans 2020). Relevant to construction impacts, Caltrans offers the following guidance: "Impacts associated with construction of a project may also require VMT analysis, particularly for large projects or projects located a considerable distance from urbanized areas. Generally, a qualitative analysis of VMT impacts associated from the construction of the project would be appropriate. Vehicle trips used for construction purposes would be temporary, and any generated VMT would generally be minor and limited to construction equipment and personnel and would not result in long-term trip generation" (Caltrans 2020).

While the VMT metric is appropriate for CEQA analyses, Caltrans does continue to use the level-of-service metric for operating state highway facilities to evaluate their operations and as one of its measures of effectiveness.

Congestion Management Program

California Government Code 65088 requires that all urbanized counties in California prepare a Congestion Management Program (CMP) in order to obtain each county's share of the increased gas tax revenues. The legislation requires that each CMP contain the following five mandatory elements: 1) a system definition and traffic level of service standard element; 2) a transit service and standards element; 3) a trip reduction and transportation demand management element; 4) a land use impact analysis program element; and 5) a capital improvement element. The Santa

Clara County CMP is administered and managed by the VTA when it assumed this responsibility through a new joint powers agreement among Santa Clara County and its 15 cities (VTA 2017). The VTA establishes a standard level of service for all the CMP roadway network, including freeways, urban arterials, County Expressways, and rural highways; SR-152 is classified as a rural highway by VTA in Santa Clara County.

Regional and Local Laws, Regulations, and Policies

Plan Bay Area 2040 and 2050

Plan Bay Area 2040 and 2025 is the Bay Area's Regional Transportation Plan/Sustainable Community Strategy for the nine-county San Francisco Bay Area region. Prepared by the Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC), the plan focuses on four key issues: the economy, the environment, housing, and transportation; outlines strategies to accommodate increased growth in priority areas; seeks to improve multimodal transportation options for these targeted areas; and strives to meet and exceed federal and state requirements for improved air quality. MTC, and ABAG released the Final Plan Bay Area 2050 in October 2021 (MTC 2021).

Relevant to the proposed Project study area, Plan Bay Area 2040 and 2050 identify investments for maintaining, managing, and improving the region's multi-modal transportation network and proposes transportation projects and programs to be implemented with reasonably anticipated revenue. There are no identified investments along SR-152 within the proposed Project study area; however, a planning and environmental study for the SR-152 Trade Corridor study by Caltrans, VTA, and the Council of San Benito County Governments is evaluating new alignments for SR-152 between US-101 and SR-156 and eastbound truck climbing lanes at the Pacheco Pass, both of which would improve travel for commercial, commuter, and recreational traffic along the segment of SR-152 in the proposed Project study area (Caltrans 2015).

Santa Clara Valley Transportation Authority

The VTA is an independent special district that operates light rail and bus transit services, designs and funds highway and roadway improvements throughout Santa Clara Valley, and oversees several transportation programs such as the CMP, Valley Transportation Plan 2040 (VTA 2014), Bicycle Program, and Pedestrian Program (VTA 2018). The CMP is described above under applicable state programs and does not identify any programs, improvements, or service levels for SR-152. The Valley Transportation Plan was developed as a long-range countywide transportation plan, which also includes highway system program development and highway capital program. VTA identified 52 projects in its financially constrained list of projects to improve system operations, increase efficiency in key corridors and enhancements that relieve congestion, alleviate bottlenecks, and increase safety. Two of the identified capital projects (new SR-152 alignment between SR-156 and US-101 and eastbound SR-152 climbing lane at Pacheco Pass) are encompassed in the SR-152 Trade Corridor Study, described above. VTA's bicycle and pedestrian programs do not identify any improvements for SR-152 within the proposed Project study area.

Santa Clara County General Plan

The General Plan identifies long-range goals, policies, and implementation programs for the County's growth, development, and open space and resource management. The plan's Transportation Element addresses the County's transportation network and facilities and provides policy guidance for their development and operation. The element contains the following policies relevant to the proposed Project study area:

- **C-TR 12**: It is the goal of this plan to achieve an level of service (LOS) no lower than D at peak travel periods on city streets, county roads, expressways, and state highways. However, in certain instances, a lower level of service may be acceptable when LOS D cannot practically be achieved.
- **R-TR-9:** Rural roads should be designed and built to standards that will assure driving safety and provide access for emergency vehicles.

4.17.3 Discussion

The VMT metric concentrates on land development and project level and long-term planning decisions that support achieving the state's climate and air quality goals in accordance with SB 375. The 2018 OPR Technical Advisory offers recommendations for evaluating VMT for residential, office, retail, and mixed-use developments—those uses that have the greatest influence on VMT. For these uses, the types of trips, the typical lengths of those trips, and, hence, the VMT are well understood, as are means of reducing VMT. For data collection projects such as the proposed Project, VMT is a function of the number and length of trips to/from worker residences or lodging, and to/from various equipment suppliers, and to/from laboratory for transport of samples for testing during the temporary geotechnical investigation period.

The proposed Project does not lend itself neatly to a VMT analysis that seeks to analyze long-term travel patterns since it would only generate temporary traffic trips that would terminate following completion of the planned geotechnical investigations. Therefore, no permanent operational phase is proposed, and no permanent ongoing traffic trips would occur. For this type of project where quantification is not as straightforward, a qualitative approach is acceptable and is performed by comparing Project-related trips to those on SR-152, which is the only major roadway providing access to, and through the proposed Project study area.

Finally, this section contains a qualitative assessment of the proposed Project's potential to result in hazardous conditions by introducing an element that could pose a safety risk for travelers or result in inadequate emergency access along the SR-152 right-of-way or vehicle and equipment ingress and egress at the site entrance at SR-152.

a. **No Impact.** Geotechnical investigation activities associated with the proposed Project would generate a short-term increase in vehicle trips from workers and haul trucks transporting equipment to and from the proposed Project site on SR-152. The proposed geotechnical investigation work occurring during the approximately six-month period would not affect the applicable programs, plans, ordinances, policies, or regulations described under the regulatory setting discussed above. None of these plans and programs specifically address SR-152, which

functions within the proposed Project study area as an expressway through rural/open space portions of Santa Clara County.

In addition, the minor increase in traffic volumes along SR-152 during implementation of the proposed Project would not conflict with a program, plan, ordinance, or policy addressing the circulation system. The Valley Transportation Congestion Management Plan and the Valley Transportation Plan are long range plans and programs that do not discuss temporary congestion or traffic related to construction. Therefore, the proposed Project would have no impact on adopted measures of effectiveness for the performance of the street and highway system.

Based on the above analysis, implementation of the proposed Project would not conflict with a program plan, ordinance, or policy addressing the circulation system, and there would be no impact.

b. No Impact. During proposed Project implementation, trips via SR-152 would be needed to access the proposed Project study area to deliver equipment and materials to the staging areas and work activity areas, and to transport personnel to and from the proposed Project activity areas. All proposed Project related trips would access the proposed Project study area from SR-152 at the existing ranch road intersection located at Post Mile 30.285 (see Figure 4.17-1). The intersection of SR-152 and the existing ranch road is located approximately 35 miles west of Los Banos, 25 miles east of Gilroy, and 15 miles north of Hollister. These are the nearest communities to the proposed Project study area.

The surface and subsurface geotechnical investigations previously described are expected to take approximately 8 working months through 2025 to complete, depending upon drill rig, crew and helicopter availability. Proposed field activities are expected to begin in the summer of 2024 (e.g., August depending on timing of proposed Project approval, access, field conditions and availability of field investigation crews) and be completed by December 2025.[48] Three drill rigs are anticipated to be working for most of the schedule. Up to two additional drill rigs and crews may be added if they are available.

The proposed Project would not conflict or be inconsistent with *CEQA Guidelines* §15064.3, which considers a Project's transportation impacts by evaluating the vehicle miles travelled (VMT) that are attributable to the proposed Project. The proposed Project would generate a temporary increase in VMT that would terminate following completion of the planned geotechnical investigations. Therefore, no permanent operational phase is proposed, and no permanent ongoing traffic trips or VMT would occur. For this type of project where quantification is not as straightforward, a qualitative approach is acceptable and is performed by comparing Project-related trips to those on SR-152, which is the only major roadway providing access to, and through the proposed Project study area.

Valley Water's geotechnical consultant would be responsible for selecting drilling subcontractors who can provide helicopter access, track rig mounted equipment, truck/trailer mounted equipment, and barge-based equipment, as well as an excavator operator for conducting test pits. These subcontractors could come from throughout the Bay Area and the Central Valley, or as far as Idaho or Washington (see Table 4.17-2). Drilling equipment sourced

[48] Due to unforeseen circumstances, geotechnical investigations may need to resume in 2025.

from Idaho and Washington state would travel up to 1,050 miles and 950 miles to reach the proposed Project study area, respectively. Other drilling equipment from West Sacramento, California would travel just 135 miles to reach the proposed Project study area. As a result, travel distances to the proposed Project study area could be from near and far, accessing it via SR-152 from the west via US-101, and from the east via SR-99 and I-5.

As a result, opportunities to substantially lessen VMT during geotechnical investigations are limited, as the drilling contractor markets are distant from the proposed Project site and the choice of drilling contractors by Valley Water would depend on a number of factors, including availability when the work is scheduled.

Table 4.17-2 presents both the daily trip generation and VMT for the proposed Project. It is estimated that the proposed Project would generate a total of 57 maximum daily trips on SR-152. The existing annual average daily traffic volume on SR-152 is 47,500 trips, of which approximately 15 percent are trucks. The addition of 57 trips per day to SR-152 as a result of implementation of the proposed geotechnical investigations would not impact highway operations due to the low number of trips, and their temporary nature. Due to the relatively low number of proposed Project trips per day added to SR-152, and their temporary nature, the proposed Project would not conflict or be inconsistent with *CEQA Guidelines* §15064.3, subdivision (b); and therefore, no impact would occur.

The VMT anticipated for the proposed Project is estimated to total 122,586 miles for the entirety of the proposed Project. An estimated 100,200 of these VMTs would be attributed to 12 daily crew transport vehicles traveling approximately 50 miles round-trip per day for a total of 167 workdays. Due to the relatively low number of Project VMTs, and their temporary nature, the proposed Project would not conflict or be inconsistent with *CEQA Guidelines* §15064.3, subdivision (b); and therefore, no impact would occur.

Table 4.17-2: Vehicle Miles Traveled and Daily Trip Generation

Transport Vehicle and Equipment Type	Estimated Pieces of Equipment/Vehicles	Total Vehicle Miles Traveled	Number of Travel Days[3]	Daily Trip Generation
Truck/Trailer - Drill Rig Mobilization (Spokane WA)	2	1,900	2	2[1]
Truck/Trailer - Drill Rig Demobilization (Spokane WA)	2	1,900	2	2[1]
Truck/Trailer - Drill Rig Mobilization (Clark Fork, ID)	2	2,100	2	2[1]
Truck/Trailer - Drill Rig Demobilization (Clark Fork, ID)	2	2,100	2	2[1]
Truck/Trailer - Drill Rig Mobilization (West Sacramento, CA)	1	135	1	1[1]
Truck/Trailer - Drill Rig Demobilization (West Sacramento, CA)	1	135	1	1[1]
Truck/Trailer – Barge and Support Boat Mobilization (Aptos, CA)	1	50	1	1[1]

Table 4.17-2: Vehicle Miles Traveled and Daily Trip Generation

Transport Vehicle and Equipment Type	Estimated Pieces of Equipment/Vehicles	Total Vehicle Miles Traveled	Number of Travel Days[3]	Daily Trip Generation
Truck/Trailer – Barge and Support Boat Mobilization (Aptos, CA)	1	50	1	1[1]
Truck/Trailer – Barge and Support Boat Demobilization (Aptos, CA)	1	50	1	1[1]
Truck/Trailer – Excavator Mobilization (Concord, CA)	1	100	1	1[1]
Truck/Trailer – Excavator Demobilization (Concord, CA)	1	100	1	1[1]
Helicopter Service Truck (Hollister, CA)	1	3,328	128	2[2]
Water Truck	1	7,200	120	12[2]
Portable Toilet Maintenance	2	780	26	1[5]
Fuel Truck for Helicopter (Ford F650)	1	3,328	128	2[2]
Tree Trimming/Removal Crew	1	180	3	2
Crew Transport Vehicles	12	100,200	167	24[2]
Total	**--**	**122,586**	**--**	**57[4]**

Notes:
1. Would only be counted as "Mobilization" and "Demobilization" trips over a total of two days.
2. Would be counted as "Daily" trips.
3. Number of travel days when vehicles enter and/or leave the proposed Project site.
4. Total includes both daily trips and mobilization and demobilization trips.
5. Counted as "Mobilization" and "Demobilization" and then weekly maintenance trips from Hollister.

Source: Valley Water 2023

c. **Less than Significant Impact with Mitigation.** The proposed Project would not include new design features (e.g., new facilities or obstructions within a public roadway) or alterations of existing features (e.g., road realignment). No incompatible uses or hazardous design features are associated with the proposed geotechnical investigations. However, implementation of the proposed Project would result in the use of drilling equipment within the Caltrans SR-152 ROW near the intersection of SR-152 at Kaiser-Aetna Road. In addition, trucks hauling drilling equipment would be using the site access at SR-152 (Post Mile 30.285) to enter the proposed Project study area north of the highway. The presence of trucks hauling heavy equipment and project personnel accessing the proposed Project study area over a period of about 8 months could result in periodic traffic hazards for brief periods of time as traffic associated with the proposed Project enters or exits SR-152 at the uncontrolled intersection about 1.4 miles east of the Kaiser Aetna Road intersection. Most of the traffic associated with the proposed Project would occur early in the morning and during the late afternoon or evening timeframes as personnel enter and leave the proposed Project study area on a weekly basis (Monday through Saturday). With the exception of two exploratory borings (R-20 001, R-20 003), work would be conducted between the hours of 7 a.m. and 6 p.m., Monday through Friday and between 9 a.m. and 4 p.m. on Saturday. For two boring sites proposed within the Caltrans ROW (R-20-001, R-20-003), nighttime boring activities would be conducted to minimize the potential for traffic safety hazards to Project personnel and motorists traveling on SR-152 during daytime hours. Proposed activities at these two sites, including one in the center median and the other

on the north shoulder, would occur at a time when SR-152 traffic counts are low, compared to daytime hours. For the boring (R-20-001) north of the west-bound lane of SR-152, work would occur during nighttime hours. As described in the description of the proposed Project, hazards to drill crews and motorists associated with nighttime drilling within the SR-152 ROW would be minimized by implementing nighttime lane closures consistent with Caltrans requirements. This would require a closure of one west-bound lane from approximately 8 p.m. to 4 a.m. for up to 3 to 4 nights. For the boring (R-20-003) associated with the east-bound lane of SR-152, a lane closure would be required between 10 p.m. and 7 a.m. for up to 3 to 4 nights. A total of up to 6 to 8 nights of work is anticipated for these two borings. Temporary nighttime lighting would also be required for the safety of workers and motorists during the proposed nighttime work at these two locations.

Implementation of BMP TR-1 (Incorporate Public Safety Measures), which requires fencing, barriers, lights, flagging, guards, and/or signs (as appropriate) to provide warning to the public of proposed Project activities would avoid or minimize the effects from transporting equipment and personnel to and from the proposed Project study area on state, local, and private roads. However, there would still be a significant impact associated with short-term, temporary increases in transportation and traffic hazards. To mitigate this impact, Valley Water will implement MM TR-1 (Traffic Control Plan) consistent with the requirements of Caltrans and Santa Clara County. This mitigation measure will ensure all temporary transportation safety and traffic hazards along SR-152 and other roads that provide access to the proposed Project study area are avoided or minimized. Therefore, implementation of the proposed Project would result in a less than significant impact with mitigation from transportation and traffic hazards associated with the proposed Project with the implementation of MM TR-1.

d. No Impact. During geotechnical investigations, Valley Water would coordinate with surrounding property owners (e.g., PPWD, Caltrans, private property owners, etc.) to ensure that access for emergency vehicles is maintained at all times throughout the proposed Project study area during the proposed geotechnical investigations (e.g., roadways are clear of vehicles and equipment, gates are locked appropriately to allow emergency personnel access, etc.). Therefore, the proposed Project would have no impact to emergency access.

4.17.4 Best Management Practices

TR-1: Incorporate Public Safety Measures

4.17.5 Avoidance and Minimization Measures

No AMMs are applicable.

4.17.6 Mitigation Measures

MM TR-1: Traffic Control Plan. Valley Water shall prepare and implement a Traffic Control Plan to minimize traffic delays and safety hazards that may result from lane restrictions or closures in the work zone within and adjacent to the SR-152 Caltrans ROW. The Traffic Control Plan shall comply with Caltrans' standard lane closure requirements and shall be submitted to Caltrans for review and approval prior to commencement of investigations that require shoulder or lane closure within Caltrans' ROW.

4.18 Tribal Cultural Resources

Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or	☐	☐	☒	☐
b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in Subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☒	☐

4.18.1 Environmental Setting

Cultural Context

See Section 4.5, Cultural Resources, Section 4.5.1, Environmental Setting, Cultural Context, for details.

4.18.2 Regulatory Framework

Federal Laws, Regulations, and Policies

There are no federal laws, regulations, or policies related to tribal cultural resources that apply to the proposed Project.

State Laws, Regulations, and Policies

Assembly Bill 52 and the California Environmental Quality Act

Effective July 1, 2015, Assembly Bill 52 (AB 52) requires (1) a lead agency to provide notice to any California Native American tribes that have requested notice of projects proposed by the lead agency, and (2) if a tribe requests consultation within 30 days upon receipt of the notice, the lead agency must consult with the tribe. Topics that may be addressed during consultation include

tribal cultural resources, the potential significance of proposed Project impacts, type of environmental document that should be prepared, and possible mitigation measures and proposed Project alternatives. AB 52 created a new category of resources, i.e., tribal cultural resources as defined below in Section 21074(a) of the California Public Resources Code.

Section 21074(a) "Tribal cultural resources" are either of the following:

1. Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
    a. included or determined to be eligible for inclusion in the California Register of Historical Resources; and/or
    b. included in a local register of historical resources as defined in subdivision (k) of Section 5020.1; and/or
2. 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 Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

In addition to Section 21074(a) above, tribal cultural resources are further defined under Section 21074(b) and (c) as follows:

c. A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resources to the extent that the landscape is geographically defined in terms of the size and scope of the landscape; and

d. A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms to the criteria of subdivision (a) [of Section 21074].

Mitigation measures for tribal cultural resources may be developed in consultation with the affected California Native American tribe in accordance with Public Resources Code § 21080.3.2. Under Public Resources Code § 21084.3, tribal cultural resources mitigation measures include avoidance and preservation of tribal cultural resources and treating tribal cultural resources with culturally appropriate dignity, taking into account tribal cultural values and the meaning of the resource.

Pursuant to AB 52, a project that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. Section 21084.3 of the California Public Resources Code states that:

(a) Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource; and

(b) if the lead agency determines that a project may cause a substantial adverse change to a tribal cultural resource, and measures are not otherwise identified in the consultation process provided in Section 21080.3.2 [formal AB 52 consultation], additional mitigation measures may be considered to avoid or minimize the significant adverse impacts.

Regional and Local Laws, Regulations, and Policies

Santa Clara County General Plan

See Section 4.5 Cultural Resources, Section 4.5.2, Regulatory Framework, Regional and Local Laws, Regulations, and Policies.

4.18.3 Summary of Tribal Consultation

AB 52 consultation requirements went into effect on July 1, 2015, for all projects that have not already published a Notice of Intent to Adopt a Negative Declaration or Mitigated Negative Declaration or published a Notice of Preparation of an Environmental Impact Report. To date, Valley Water has received written requests from the Muwekma Ohlone Indian Tribe of the San Francisco Bay Area Region and the Tamien Nation of the Santa Clara Valley to receive notifications of proposed projects as specified in Public Resources Code § 21080.3.1. Therefore, Valley Water emailed a proposed Project notification letter to the following recipients: Charlene Nijmeh, Chairwoman of the Muwekma Ohlone Indian Tribe of the San Francisco Bay Area Region on October 26, 2023, Quirina Luna Geary, Chairwoman of the Tamien Nation on October 26, 2023, and to Johnathan Costillas, Tribal Cultural Resource Officer for the Tamien Nation on October 26, 2023 (see Appendix H). Although not required under AB 52, a proposed Project notification letter was also sent out to Chair Valentin Lopez of the Amah Mutsun Tribal Band on October 26, 2023 since they have been named Most Likely Descendant by the Native American Heritage Commission (NAHC) for the proposed Project study area, and have previously been consulting with Valley Water regarding the PREP. The proposed Project notification letters provided a brief description and location of the proposed Project (See Appendix H). Hard copies of the notification letter were also sent via the U.S. Postal Service certified mail on October 26, 2023. No requests for consultation were received within or following the 30-day response period.

Subsequent to sending the proposed Project notification letters, Valley Water reached out to Chair Valentin Lopez of the Amah Mutsun Tribal Band on January 24, 2024, via e-mail, which included a copy of the October 26, 2023, letter as an attachment intended to open a dialogue with Chair Lopez. On March 21, 2024, the Amah Mutsun Land Trust and the Amah Mutsun Tribal Band responded to subsequent attempts by Valley Water to obtain the Tribe's input and requested informal consultation. The Tribe's March 21, 2024, letter raised three primary issues. First, the Tribe requested Valley Water use 150-feet as a minimum buffer distance around all 181 work activity areas. Second, the Tribe identified special culturally important plant foods with potential to occur within the various locations that would contain the proposed test pits. Third, the Tribe requested more information about proposed cultural resource monitoring. In a letter dated April 15, 2024, Valley Water responded in writing to the Amah Mutsun Land Trust and Amah Mutsun Tribal Band's March 21, 2024, comment letter. Subsequently, Valley Water held a virtual meeting with the Amah Mutsun Tribal Band on April 24, 2024, to discuss the proposed Project and Valley Water's responses to their March 21, 2024, letter. During this meeting, Valley Water explained that it would apply a 150-foot minimum buffer distance in all but two boring locations that could not be moved. Valley Water further explained that Valley Water would not permanently remove any plant materials from test pit locations that could potentially contain ethnobotanical materials and would be open to cooperating with the Amah Mutsun Tribal Band to collect local seeds as part of Valley

Water's ongoing consultation for the PREP project. Finally, Valley Water agreed to modify its standard Best Management Practice (BMP) CU-1, to reflect the Tribe's concerns. Specifically, pursuant to AMM CU-1, Valley Water would begin consulting with the Tribe to determine the significance of any inadvertent discovery at the same time as the consulting archaeologist rather than after. Additionally, Valley Water agreed that pre-activity cultural resources identification and sensitivity training could be provided to geotechnical personnel by an Amah Mutsun representative and/or archaeologist, as an alternative to the use of Tribal monitors. On April 30, 2024, Valley Water sent an email to Chair Lopez confirming these agreements and modifications and sending draft versions of AMM CU-1 and AMM CU-2 for his review. Valley Water's email stated that if no response or further comments were received by May 2, 2024, Valley Water would consider the informal consultation complete. Valley Water did not receive any further response from the Amah Mutsun Tribal Band and, therefore, has concluded the informal consultation.

4.18.4 Discussion

As discussed in detail in Section 4.5, Cultural Resources, the proposed Project study area has been entirely surveyed for both historic and Native American resources with an Ohlone representative present for portions of survey and all subsurface testing (Engbring and Byrd 2023). Only two known archaeological resources have been identified to occur within 150 feet[49] of designated work activity areas described in Section 2, Project Description (e.g., test pits, boring sites, and staging areas). The two resources that have been identified within 150 feet of work areas are still greater than 50 feet away from these work areas, and no impacts to cultural resources are anticipated. AMM CU-1 (Accidental Discovery of Archaeological Artifacts, Tribal Cultural Resources, or Burial Remains) would be implemented (see Table 2-7 for details).

a. **Less Than Significant Impact.** The cultural resources study conducted for the proposed Project and summarized in Section 4.5 Cultural Resources identifies the presence of historic-era[50] cultural resources within the proposed Project study area that are not considered tribal cultural resources as defined in Section 21074 of the Public Resources Code. With two exceptions, there are no known historic-era resources located within 150 feet of each work activity area described in Section 2. The two exceptions are well-defined cultural resources, greater than 50 feet away from the work activity areas, and would not be impacted by Project activities. 6 historic-era cultural resources have been identified as overlapping with or being immediately adjacent to existing proposed Project-associated equipment and vehicle access routes[51] (See Figures 2-2a through 2-2e). However, all of these six identified historic-era cultural resources have been evaluated as not being listed on or eligible for listing on the National Register of Historic Places (NRHP), California Register of Historical Resources (CRHR), or Santa Clara County Heritage Resources Inventory and therefore would require no further consideration. The proposed Project would consequently not cause a substantial adverse

[49] This is a standard buffer designed to protect resources through avoidance while allowing for margins of error in mapping and surface visibility at the time of resource recordation.

[50] The term "historic-era" is used in this report to describe Euro-American cultural resources that post-date the onset of the Spanish Colonial Period in 1769 CE (Thomas and Hyde 2021).

[51] Some of these existing access roads have been in use since 1870 and pre-date the construction of North Fork Dam in 1939. No access routes are publicly accessible.

change in the significance of a historical Tribal Cultural Resource as defined in Public Resources Code § 21074, and impacts would be less than significant.

b. **Less Than Significant Impact.** The cultural resources study conducted for the proposed Project, and summarized in Section 4.5 Cultural Resources, identifies the presence of Native American cultural resources within the proposed Project study area that may be considered tribal cultural resources as defined in Public Resources Code § 21074. Two resources are located within 50 feet of work areas, but no impacts to these two resources are anticipated as a result of Project-associated work. Five known archaeological resources have been identified as overlapping with or being immediately adjacent to existing proposed Project-associated equipment and vehicle access routes (see Figures 2-2a through 2-2e). Of these five known archaeological resources, three have been evaluated as not eligible for listing on the NRHP or CRHR and therefore would require no further consideration. The remaining two Native American habitation sites have been evaluated as eligible (Byrd et al. 2024). For this reason, Valley Water is treating these two prehistoric habitation sites as tribal cultural resources per Public Resources Code § 21074(a)(2), which states. "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 Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe." As noted in Section 4.5 Cultural Resources, the impacts associated with the continued use of these existing access roads are not anticipated to have a substantial adverse change in the significance of the cultural resources that they pass through. In the case of unanticipated inadvertent discoveries of cultural resources or human remains during project-associated work, AMM CU-1 (Accidental Discovery of Archaeological Artifacts, Tribal Cultural Resources, or Burial Remains) would be implemented. In addition, AMM CU-2: Pre-activity Cultural Resources Identification and Sensitivity Training would be implemented to educate geotechnical personnel regarding the inclusion of relevant information regarding sensitive cultural resources (including human remains and burials), applicable regulations, protocols for avoidance, and consequences of violating state laws and regulations. Therefore, no substantial adverse change in the significance of a tribal cultural resource would occur as a result of the continued use of existing access roads during proposed Project implementation. Impacts would be less than significant pursuant to Public Resources Code § 21074.

4.18.5 Best Management Practices

No BMPs are applicable.

4.18.6 Avoidance and Minimization Measures

The following AMMs described in Table 2-7 are applicable to tribal cultural resources:

CU-1: Accidental Discovery of Archaeological Artifacts, Tribal Cultural Resources, or Burial Remains

CU-2: Pre-activity Cultural Resources Identification and Sensitivity Training

4.18.7 Mitigation Measures

No mitigation measures are required.

4.19 Utilities and Service Systems

Would The Project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Require Or Result In The Relocation Or Construction Of New Or Expanded Water, Wastewater Treatment Or Storm Water Drainage, Electric Power, Natural Gas, Or Telecommunications Facilities, The Construction Or Relocation Of Which Could Cause Significant Environmental Effects?	☐	☐	☐	☒
b. Have Sufficient Water Supplies Available To Serve The Project And Reasonably Foreseeable Future Development During Normal, Dry And Multiple Dry Years?	☐	☐	☐	☒
c. Result In A Determination By The Wastewater Treatment Provider, Which Serves Or May Serve The Project That It Has Adequate Capacity To Serve The Project's Projected Demand In Addition To The Provider's Existing Commitments?	☐	☐	☐	☒
d. Generate Solid Waste In Excess Of State Or Local Standards, Or In Excess Of The Capacity Of Local Infrastructure, Or Otherwise Impair The Attainment Of Solid Waste Reduction Goals?	☐	☐	☐	☒
e. Comply With Federal, State, And Local Management And Reduction Statutes And Regulations Related To Solid Waste?	☐	☐	☐	☒

4.19.1 Environmental Setting

Water

The existing Pacheco Reservoir, formed by North Fork Dam, is located on North Fork Pacheco Creek in southwestern Santa Clara County (see Figure 2-1). North Fork Dam was completed in 1939 and retains approximately 5,500 acre-feet of water. North Fork Dam and existing Pacheco Reservoir are owned and operated by the PPWD. Water stored in existing Pacheco Reservoir originates from the North Fork Pacheco Creek watershed.

The proposed Project study area is within the jurisdiction of the CCRWQCB. Valley Water manages an integrated water resources system within Santa Clara County that includes the supply of clean, safe water, flood protection, and stewardship of streams on behalf of the County's 1.8 million residents (Valley Water 2019). Valley Water's water supply system consists of a network of water management facilities, which include ten reservoirs and dams (with a total capacity of 169,000 acre-feet), 17 miles of raw surface water canals, 393 acres of groundwater recharge ponds, 91 miles of controlled in-stream recharge, 142 miles of pipelines, three pumping stations, three drinking water treatment plants, and the Silicon Valley Advanced Water Purification Center. Valley Water also operates and maintains the Pacheco Conduit located immediately south of the proposed Project study area, which is part of the U.S. Department of the Interior, Bureau of Reclamation's (Reclamation) Central Valley Project, San Felipe Division. Valley Water does not deliver any potable (treated) water within the proposed Project study area for utilities and service systems.

A number of rural residences, CAL FIRE's Pacheco Fire Station and a commercial development (Bell Station Farmers Market) are within or in close proximity to the proposed Project study area. These properties are reliant on private, localized potable water sources, primarily using on-site wells and treatment systems. In some cases, these groundwater wells also serve as a source of irrigation water.

Wastewater

In addition to several rural residences within the proposed Project study area, additional residences, CAL FIRE's Pacheco Fire Station, and a commercial development (Bell Station Farmers Market) are in close proximity to the proposed Project study area adjacent to SR-152. These properties are reliant on private, localized wastewater treatment facilities (e.g., on-site septic systems).

Stormwater Drainage

In conjunction with the construction and improvement of SR-152 over time, Caltrans has developed and continues to maintain a comprehensive stormwater drainage system to protect the highway and ensure safe access and traffic conditions. Stormwater runoff from the paved surface is collected using surface drains and conveyed off-site into local drainages (e.g., Pacheco Creek). In some instances, the unpaved roads within the proposed Project study area (e.g., Kaiser-Aetna Road) have cross-drains and culverts to minimize impacts of stormwater runoff.

PG&E Electrical Transmission and Distribution

The Pacific Gas and Electric Company (PG&E) provides electrical transmission/distribution service to Santa Clara County. Unincorporated areas within Santa Clara County receive electrical service from Silicon Valley Clean Energy, a Community Choice Aggregation agency. PG&E currently maintains an electrical transmission/distribution network that crosses through the proposed Project study area essentially parallel to SR-152. This network provides electricity to its customers within and adjacent to the proposed Project study area.

Natural Gas

PG&E provides natural gas for customers in Santa Clara County; however, there is no natural gas service available to the residences, commercial, or institutional properties within or in close proximity to the proposed Project study area. Propane is an alternative fuel source that is used for heating, cooking, and in some cases electrical power via generators that are stored in vessels and refilled periodically from vendors via local delivery trucks to the east (Los Banos) or west (Gilroy) of the proposed Project study area.

Telecommunications

The proposed Project study area is served by multiple telecommunications companies, including AT&T, Xfinity/Comcast, and Verizon. The SR-152 corridor functions as a telecommunications corridor with both aerial and underground line and fiber optic cables and associated infrastructure (e.g., amplifiers, generators). A network of cellular towers continues to be developed to expand cellular coverage along the SR-152 corridor; however, there are areas throughout the proposed Project study area with little or no cellular phone coverage.

Solid Waste

Solid waste within the region is primarily collected and disposed of by contracted private waste handling companies. There is currently no solid waste pick-up service for residents within the proposed Project study area. In Santa Clara County, no burning of solid waste is permitted. Solid waste generated in the proposed Project study area is typically transported to commercial Class I, II, and III landfills. Class I sites may accept hazardous and nonhazardous wastes; Class II sites may accept "designated" and nonhazardous wastes; and Class III sites may accept nonhazardous wastes.

Multiple operating landfills and recycling facilities are located near the proposed Project study area. The three nearest the proposed Project study area include Billy Wright Landfill (located west of Los Banos), RJR Recycling (located just north of Hollister), and Recology South Valley Organic Composting Facility (Recology) located east of Gilroy, which only accepts waste that may be generated from vegetation removal activities (Recology 2021). The RJR Recycling facility accepts metal, wood, glass and plastic that can be recycled or repurposed (RJR Recycling 2021). The California Integrated Waste Management Board (CalRecycle) maintains facility information and waste stream profiles for all counties and jurisdictions in the state. Table 4.19-1 summarizes the permitted capacities of Billy Wright Landfill, RJR Recycling, and Recology South Valley Organic Composting Facility. The Billy Wright Landfill west of Los Banos is the only facility that has the capacity to accept Class III debris.

Table 4.19-1: Solid Waste Facility Permitted Capacities						
Facility	**Category**	**Permitted Daily Tonnage**	**Maximum Permitted Capacity**	**Remaining Capacity**	**Remaining as of Date**	**Estimated Permitted Closure**
Billy Wright Landfill	Disposal	1,500 tons/day	14,800,000 cubic yards	11,370,000 cubic yards	September 30, 2010	2054
RJR Recycling	Processing	100 tons/day	35,550 tons/year	N/A	N/A	N/A
Recology South Valley Organic Composting Facility	Composting	750 tons/day	N/A	N/A	N/A	N/A
Note: N/A = not applicable due to category of facility Source: CalRecycle 2021a, 2021b, 2021c						

4.19.2 Regulatory Setting

Federal Laws, Regulations, and Policies

No federal regulations related to utilities and service systems apply to the proposed Project.

State Laws, Regulations, and Policies

California Public Utilities Commission

The California Constitution vests the California Public Utilities Commission (CPUC) with the sole authority to regulate privately owned and investor-owned public utilities, such as PG&E. This exclusive power extends to all aspects of utility regulation, including facility location, design, construction, maintenance, and operation. The CPUC requires regulated utilities to work closely with local governments and give due consideration to local government concerns. The CPUC does not regulate publicly owned utilities such as Valley Water.

California Integrated Waste Management Act of 1989

The California Integrated Waste Management Act (CIWMA) of 1989 (Public Resources Code, Division 30), enacted through Assembly Bill (AB) 939 and modified by subsequent legislation, required all California cities and counties to implement programs to reduce, recycle, and compost at least 50 percent of wastes by the year 2000 (Public Resources Code § 41780). A jurisdiction's diversion rate is the percentage of its total waste that it diverts from disposal through reduction, reuse, and recycling programs. The state determines compliance with the mandate to divert 50 percent of generated waste through a complex formula. This formula requires cities and counties to conduct empirical studies to establish a "base year" waste generation rate against which future diversion is measured. The diversion rates in subsequent years are then determined by deduction rather than by direct measurement of material recycled and composted. Cities and counties track the amount of material disposed of at landfills, then subtract that amount from the base-year

amount, and the difference is assumed to be diverted (Public Resources Code § 41780.2). In 2010, the state legislature passed AB 341 which set a statewide recycling goal of 75 percent by 2020, which is anticipated to be achieved through source reduction, recycling, and continued diversion of materials such as organic wastes. Any solid waste and recyclable materials generated from proposed Project activities would be considered for tracking purposes in Santa Clara County where proposed Project waste would be disposed of or recycled.

Utility Notification Requirements

Title 8, Section 1541 of the California Code of Regulations (CCR) requires excavators to determine the approximate locations of subsurface installations such as sewer, telephone, fuel, electricity, and water lines (or any other subsurface installations that may reasonably be encountered during excavation work) prior to opening an excavation. California law (Government Code § 4216 *et seq*.) requires owners and operators of underground utilities to become members of and participate in a regional notification center, such as USA North. USA North receives reports of planned excavations from public and private excavators and transmits the information to all participating members that may have underground facilities at the location of an excavation. USA North members mark or stake their facilities, provide information, or give clearance to dig. Project activities within the SR-152 utility corridor would be subject to these notification requirements.

Nonhazardous Solid Waste Disposal Standards

Title 14, Chapter 3, of the CCR provides minimum standards for solid waste handling and disposal in California pertaining to nonhazardous solid waste management. The California Department of Resources Recycling and Recovery administers the programs formerly managed by CalRecycle, including the regulation of nonhazardous solid waste facilities in the state. These standards may apply to activities related to Project implementation.

Central Coast Regional Water Quality Control Board Basin Plan

The CC Basin Plan provides guidance for wastewater and stormwater facilities and development that could affect water quality in the basins (CCRWQCB et al. 2019). The CC Basin Plan may apply to activities during geotechnical investigations that have the potential to impact water quality in the basin.

Regional and Local Laws, Regulations, and Policies

Santa Clara County General Plan

The following General Plan (1994) resource conservation policies may be applicable to the proposed Project.

Resource Conservation

Policy C-RC 63: Santa Clara County shall strive to reduce the quantity of solid waste disposed of in landfills and to achieve or surpass the requirements of state law (the law currently specifies 25 percent reduction of landfilled wastes by 1995, and 50 percent by 2000).

Policy C-RC 64: Countywide solid waste management efforts shall be guided by the hierarchy of strategies outlined below, emphasizing resource recovery in accordance with state law:

a. Source reduction and reuse by seeking innovative and effective means of reducing solid waste,

b. Recycling and composting by considering efforts to increase markets for goods produced from recycled/reused materials as an essential feature of all efforts to manage solid waste and conserve landfill capacity,

c. Transformation by exploring potential applications for waste transformation and energy generation technologies, and

d. Landfilling as final option by acknowledging the need for long term disposal capacity and striving to maintain 20 to 30 years of ongoing collective disposal capacity.

Policy C-RC 65: All solid waste management services and facilities shall conform to applicable federal, state, and local regulations and standards.

Santa Clara County Integrated Waste Management Plan

In 1995, the California Integrated Waste Management Board approved the Santa Clara County Integrated Waste Management Plan. The plan was established to reduce waste in Santa Clara County, ensure that new disposal facilities are designed for effective and efficient operation, avoid environmental degradation and unnecessary expenditure, and ensure that the integrated waste management needs of the County are being met (Santa Clara County 1995). State law requires the County to review its Integrated Waste Management Plan every five years.

4.19.3 Discussion

a. **No Impact.** Water would be used during geotechnical investigations for the purposes of dust control on roadways and staging areas, for drilling, and in-situ jet testing. A water truck would be used to transport water to the proposed Project site. In addition, temporary portable toilets would be provided for workers at the proposed Project site. Geotechnical investigations are expected to require approximately 8 working months to complete. The proposed Project would not require or result in the relocation or construction of new or expanded wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities. Therefore, the proposed Project would have no impact.

b. **No Impact.** Implementation of the proposed geotechnical investigations would not require potable water since no development is being proposed. A water truck would be used to provide water to the proposed Project study area during geotechnical investigations for the purposes of dust control on roadways and staging areas, for exploratory drilling, and for in-situ jet testing. Water use would be temporary and would be provided by Valley Water through the Pacheco Conduit via a fire hydrant located at Casa de Fruta. Sufficient supplies would be available to serve the proposed Project and reasonably foreseeable future development during normal, dry and multiple dry years, Therefore, no impact would result from proposed Project implementation.

c. **No Impact.** The proposed Project does not include uses (e.g., residential, commercial, etc.) that would result in wastewater discharge requiring treatment. The proposed Project study area is not served by any existing wastewater treatment facility such as the San Jose/Santa Clara Regional Wastewater Facility. Temporary portable toilets would be provided for workers at the proposed Project study area. Therefore, the proposed Project would not result in a determination by any wastewater treatment provider that it has inadequate capacity to serve the proposed Project's projected demand in addition to the provider's existing commitments. As a result, the proposed Project would have no impact on wastewater treatment facilities.

d. **No Impact.** Implementation of the proposed Project would not generate a substantial amount of solid waste associated with geotechnical investigations. At the completion of drilling operations, a small amount of remaining drill fluids (drill water and soil/rock cuttings) would be pumped into a storage tank or 55-gallon drums and disposed of at an approved off-site disposal facility. This is not expected to produce a substantial amount of solid waste that would significantly impact the remaining landfill capacity. Therefore, the proposed Project would be consistent with state and local standards and would not impair the attainment of solid waste reduction goals. In addition, the proposed Project would not generate additional waste once completed. Therefore, no impact would occur from proposed Project implementation.

e. **No Impact.** The proposed Project would comply with all applicable federal, state, and local statutes and regulations related to solid waste, including recycling programs. Therefore, no impact would occur from proposed Project implementation.

4.19.4 Best Management Practices

No BMPs are applicable.

4.19.5 Avoidance and Minimization Measures

No AMMs are applicable.

4.19.6 Mitigation Measures

No mitigation measures are required.

4.20 Wildfire

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☒	☐	☐
b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☒	☐
d. Expose people or structures to significant risks, including downslope, or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

4.20.1 Environmental Setting

The environmental setting related to wildfire includes identification of very high fire hazard severity zones (HFSZ), fire history, and fire threat areas. Figure 4.20-1 presents the proposed Project study area for wildfire which includes the entirety of the existing Pacheco Reservoir and adjacent areas affected by the proposed geotechnical investigation activities. The proposed Project study area for wildfire also includes areas downstream of the existing North Fork Dam, including areas adjacent to SR-152 from the site entrance to Kaiser-Aetna Road at Bell Station.

Fire Hazard Severity Zones

CAL FIRE maps Fire Hazard Severity Zones (FHSZ) based on factors such as fuel, slope, and fire weather. The zones are classified as having moderate, high, and very high fire severity. The proposed Project study area for wildfire includes areas classified by CAL FIRE as moderate and high as shown in Figure 4.20-1. This figure also illustrates that all of the proposed Project study area is within CAL FIRE's State Responsibility Area (SRA) jurisdiction. Table 4.20-1 summarizes the acres of FHSZs within the proposed Project study area. The current SRA maps were adopted in 2007 and the data is hosted by the Office of the State Fire Marshal.

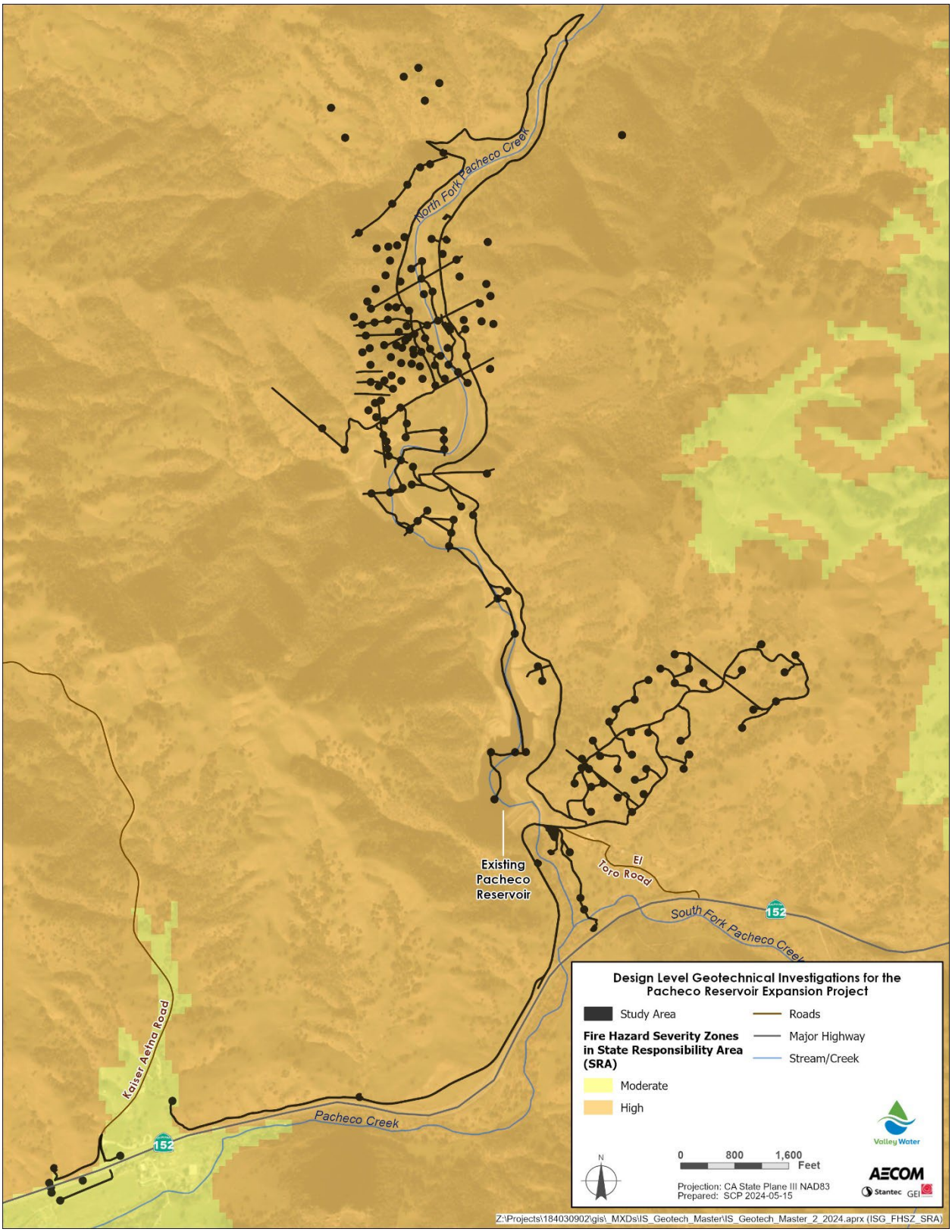


Figure 4.20-1: Fire Hazard Severity Zones in State Responsibility Area Lands

Table 4.20-1: Fire Hazard Severity Zone Acres Within the Proposed Project Study Area	
Fire Hazard Severity Zone Classification	**Acres**
Moderate	1.7
High	53.7
Very High	0
Unmapped (not within State Responsibility Area)	0
Source: CALFIRE 2023b	

The process used to map the FHSZ is described in a CAL FIRE Fact Sheet (CAL FIRE 2007) and more information is available on the Office of the State Fire Marshal web site (CAL FIRE 2023a).

FHSZ do not predict where wildfires occur, but they do indicate where the effects of a wildfire could be greater and have more impact to values at risk such as residences or watersheds. The goal of FHSZ mapping is to reduce the loss associated with wildfire by incorporating the risk of wildfire into planning, fire prevention, and fire mitigation measures.

Fire History

CAL FIRE's Fire and Resource Assessment Program (FRAP) compiles fire perimeters and has established an on-going fire perimeter data capture process within California. CAL FIRE, the United States Forest Service Region 5, the Bureau of Land Management, and the National Park Service jointly develop the fire perimeter GIS layer for public and private lands throughout California at the end of the calendar year. Upon release, the data is current as of the last calendar year. The current database was updated in 2022 (CAL FIRE 2023b).

The Pacheco Pass area has a history of moderate-sized fires that have started along SR-152. In 2009 the 1,700-acre Pacheco Fire burned west of Kaiser-Aetna Road. In 2015 the 200-acre Pacheco Fire burned just west of Pacheco Pass. Larger fires have occurred north of the proposed Project study area in and adjacent to the North Fork Pacheco Creek watershed. The 2007 Lick Fire burned approximately 18,000 acres primarily in Henry W. Coe State Park, and the 2003 Anne Fire burned over 18,000 acres in Stanislaus County, burning to the ridge that divides Stanislaus County from Santa Clara County. The most recent and largest fire was the 2020 Santa Clara Unit (SCU) Lightning Complex, which started as multiple lightning-caused fires in August that burned together over the span of 396,000 acres. The combined fires ranged from the upper part of the proposed Project study area north into Alameda County along the Diablo Range. Figure 4.20-2 shows the perimeters of these and other historic larger fires in the proposed Project study area.

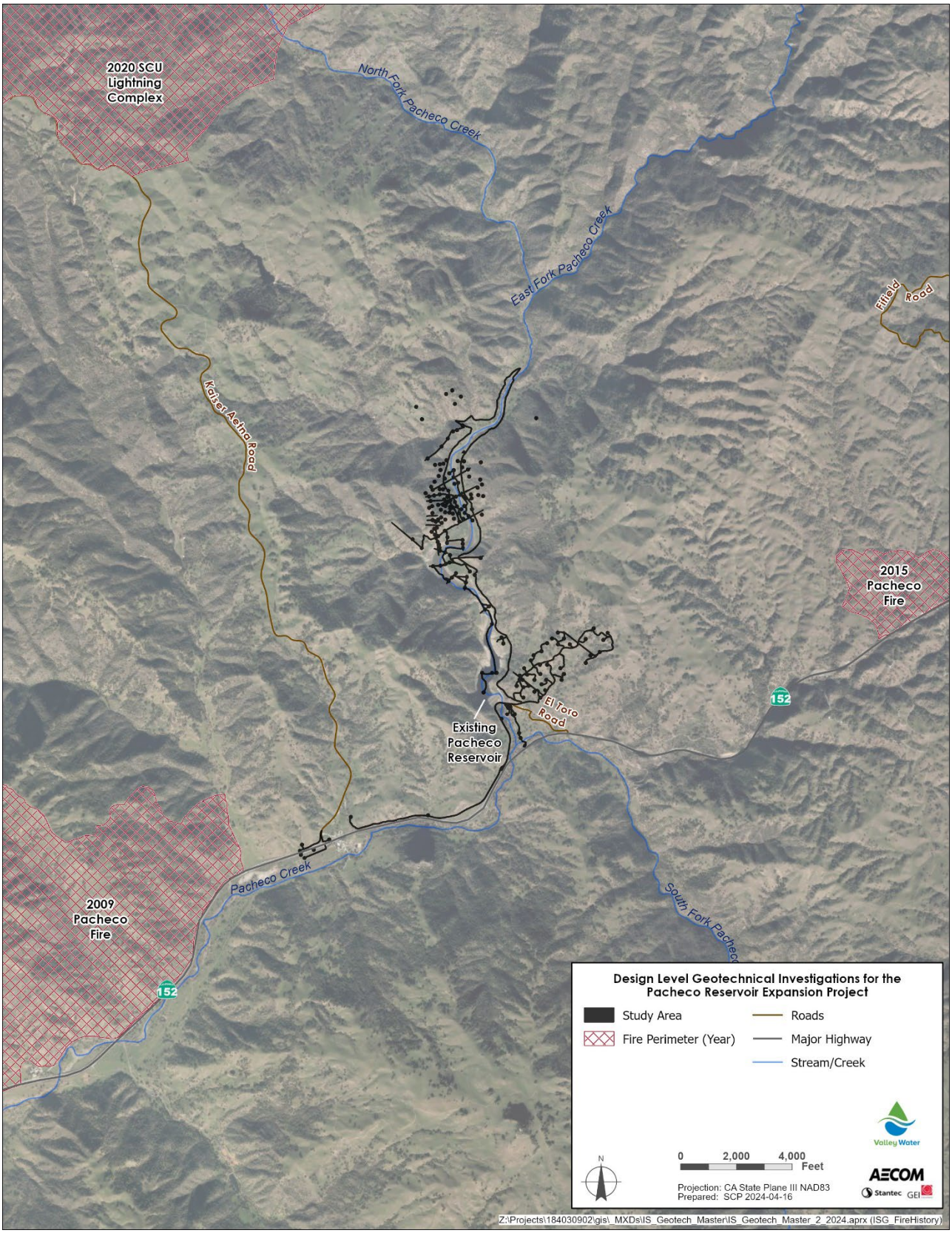


Figure 4.20-2: Fire History

Fire Threat (CAL FIRE)

As classified by the CAL FIRE's FRAP, Fire Threat is a combination of two factors: 1) fire frequency, or the likelihood of a given area burning, and 2) potential fire behavior (hazard). These two factors are combined to create four threat classes ranging from low to extreme. Fire Threat represents the relative likelihood of a damaging or difficult to control wildfire occurring in a given area. The proposed Project study area includes fire threat areas ranging from low to very high, as well as areas unmapped (e.g., SR-152) (Figure 4.20-3), indicating that fires that start within the proposed Project study area would be difficult to control and have the potential for impacts on various assets and values susceptible to fire. Acres of fire threat areas within the proposed Project study area summarized in Table 4.20-2.

Table 4.20-2: Fire Threat Classification Within the Proposed Project Study Area

Fire Threat Classification	Acres
Low	0.1
Moderate	0.4
High	9.9
Very High	32.3
Unmapped (not within State Responsibility Area)	12.7
Source: CALFIRE 2023b	

Fire Threat Areas (California Public Utilities Commission)

The CPUC adopted fire-safety regulations (Decision 17- 01-009, Decision 17-12-024) that map areas in California as "high fire-threat areas" where there is an elevated risk for power line fires igniting and spreading rapidly. Lands are classified into three areas based on two mapping schemes. The first area identified is Zone 1, which consists of Tier 1 High Hazard Zones on the map of Tree Mortality prepared jointly by the United States Forest Service and CAL FIRE. High Hazard Zones are zones in direct proximity to communities, roads, and utility lines, and are a direct threat to public safety. There are no Zone 1 lands mapped in the proposed Project study area.

Tier 2 consists of areas on the CPUC Fire-Threat Map where there is an elevated risk (including likelihood and potential impacts on people and property) from utility associated wildfires. Tier 3 consists of areas on the CPUC Fire-Threat Map where there is an extreme risk (including likelihood and potential impacts on people and property) from utility associated wildfires. Both Tiers 2 and 3 are mapped based on site characteristics and not based on the presence of utility infrastructure. The proposed Project study area is located entirely within the Tier 2 elevated fire-threat area.

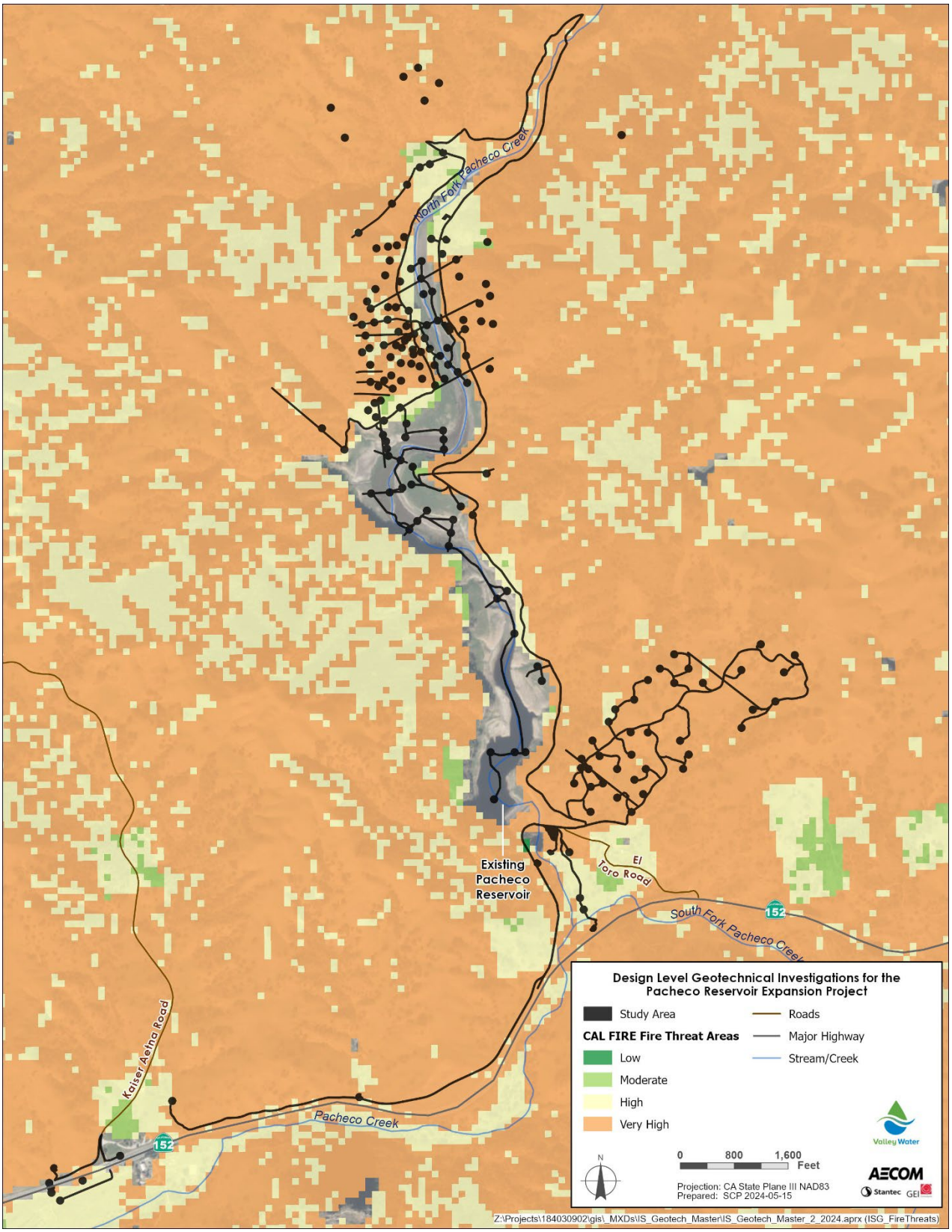


Figure 4.20-3: Fire Threat as Mapped by CAL FIRE

Fire Suppression Access/Evacuation Routes

Access and evacuation routes typically overlap, with fire crews traveling toward an advancing fire as residents and visitors to an area travel away from the fire. Existing access roads and potential evacuation routes within the proposed Project study area, as shown in Figure 4.20-4 are:

SR-152

This major route is the primary route for emergency vehicles responding to fires in the Pacheco Pass area. It would also serve as the collector route for evacuations from ranchlands north and south of SR-152.

Kaiser-Aetna Road

Intersecting SR-152, this road is the primary access road into the Bell Station entrance for Henry W. Coe State Park. Emergency vehicles could use this road to enter the Park while visitors and local property owners could use the road to evacuate the southern end of the park, depending on the specific wildfire behavior. It also provides an access and evacuation route for ranches within the North Fork Pacheco Creek watershed.

North Fork Pacheco Creek Road

This road begins at the existing North Fork Dam and follows North Fork Pacheco Creek through the proposed Project study area for approximately 6 miles. The road provides access through the North Fork Pacheco Creek Canyon to a residence and livestock operation and is suitable for fire engines, other firefighting equipment, and livestock trucks.

Fifield Road

This road intersects SR-152 at Pacheco Pass and travels north along the ridge that divides Santa Clara, Merced, and Stanislaus Counties. Fifield Road continues north to County Line Road, which eventually connects to SR-132 after traversing Henry W. Coe State Park. Fifield Road is the primary north-south access route for the county line area, serving scattered ranches in the area. Public access to Fifield Road is restricted by a locked gate just north of SR-152; first responders use Fifield Road during emergency situations (e.g., wildfires).

Property Owner Access Roads

Several existing native surface access roads traverse the canyon and ridges providing access to the properties on the east and west side of the North Fork Pacheco Creek watershed. These unimproved roads would be suitable for high clearance or off-highway vehicles.

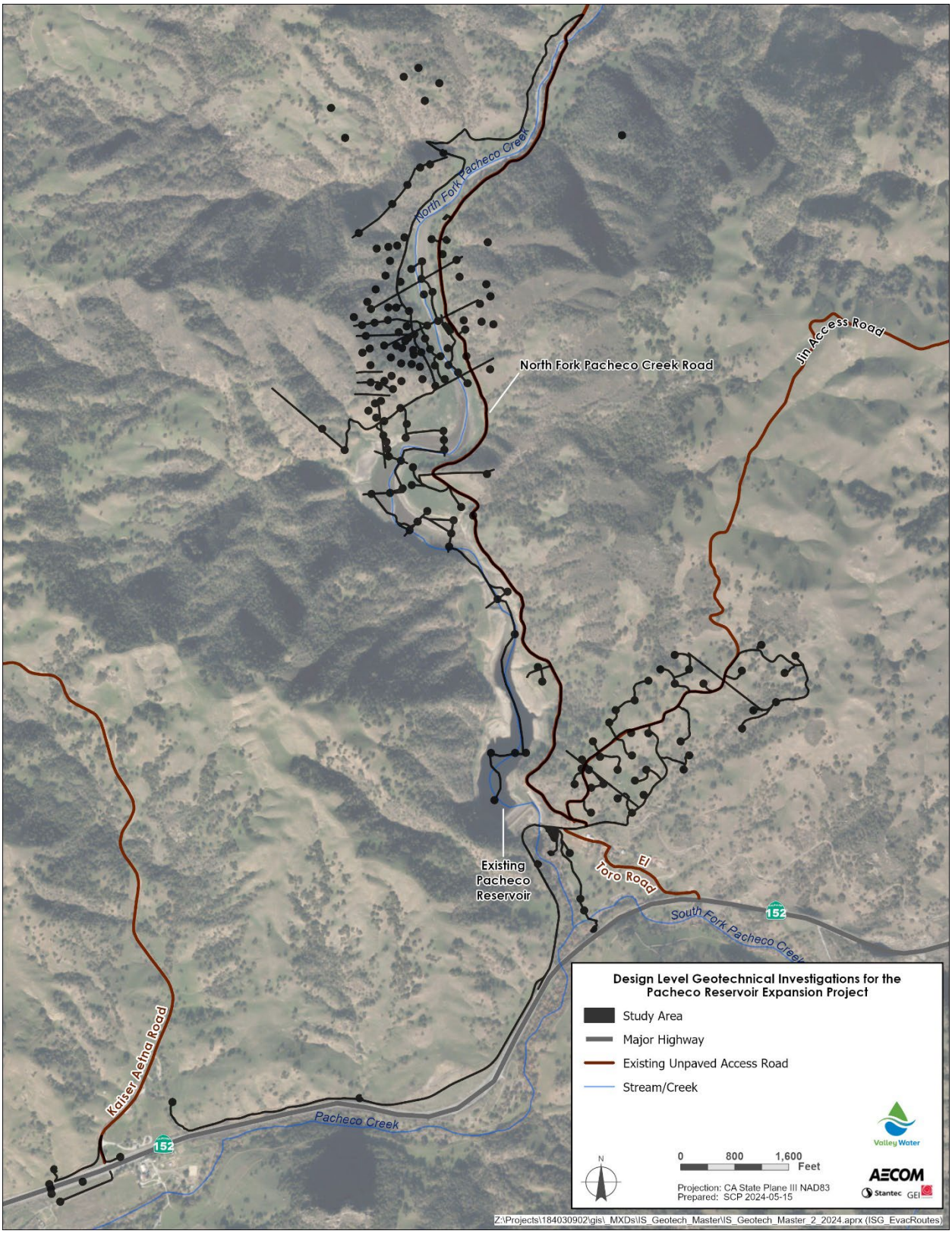


Figure 4.20-4: Access Roads Within the Vicinity of the Proposed Project Study Area

4.20.2 Regulatory Setting

Federal Laws, Regulations, and Policies

There are no federal laws, regulations, or policies pertaining to wildfire that regulate the proposed Project.

State Laws, Regulation, and Policies

California Department of Forestry and Fire Protection

CAL FIRE provides fire protection and stewardship of over 31 million acres of California's privately-owned wildlands. In addition, CAL FIRE provides varied emergency services in 36 of the state's 58 counties via contracts with local governments. The proposed Project study area is located within lands subject to an SRA designation. These are lands where the State of California bears financial responsibility for the prevention and suppression of wildfires.

California Fire Code

The California Fire Code (CFC) Title 24 Part 9 contains regulations consistent with nationally recognized and accepted practices for safeguarding life and property from the hazards of fire and explosion, dangerous conditions arising from the storage, handling, and use of hazardous materials and devices, and hazardous conditions in the use or occupancy of buildings or premises. The CFC also contains provisions to assist emergency response personnel. These fire-safety related building standards are referenced in other parts of Title 24 of the CFC.

Statutes Related to Wildfires

The California Public Resources Code—Division 4 - Forests, Forestry and Range, and Forage Lands, Part 2 - Protection of Forest, Range, and Forage Lands—contains requirements that cover prevention and control of forest fires (Chapter 1), establishment of fire hazard severity zones (Chapter 1 Article 9), and defensible space around structures and powerlines (Chapter 3). The Public Resources Code notes that local jurisdictions can adopt more stringent codes based on local conditions.

CAL FIRE Strategic Fire Plan

The 2019 Strategic Plan (CAL FIRE 2019) identifies CAL FIRE's Mission, Vision, and Values that are reflected in the four goals that CAL FIRE labors to accomplish. One of the core capabilities includes prevention and regulatory oversight, including direction for fire prevention and enforcement of the Public Resources Code within the SRA. This capability is accomplished using fire resource assessments, a variety of available data, mapping, and other tools. Pre-fire management activities, including prescribed burning, fuel breaks, forest health treatments, and the removal of hazardous vegetation are conducted at the unit level under the guidance of CAL FIRE program managers.

Santa Clara Unit Plan

The proposed Project is located within the CAL FIRE Santa Clara Unit (SCU). The SCU prepares an annual Strategic Fire Management Plan for the upcoming fire season. The plan documents an assessment of the fire situation in the SCU, includes stakeholder contributions and priorities, and identifies strategic targets for pre-fire solutions as defined by the people who live and work with the local fire problem area.

One of the priority areas identified in the 2020 SCU Strategic Fire Management Plan (CAL FIRE 2020) is the Santa Clara County Line Road Fuel Break and fire road maintenance, which includes Fifield Road. As described in the SCU Plan, the road runs from the San Antonio Valley at Highway 130 to SR-152 just east of CAL FIRE's Pacheco Fire Station and serves as a critical access route to fires in the North Fork Pacheco Creek and Orestimba Creek watersheds, as well as Henry W. Coe State Park.

Regional and Local Laws, Regulations, and Policies

Santa Clara Emergency Operations Plan

The Santa Clara Office of Emergency Services (OES) updated the County Emergency Operations Plan (EOP) in 2017 (Santa Clara OES 2017). The EOP provides a comprehensive, single source of guidance and procedure for the County to prepare for, respond to, and manage significant or catastrophic natural or man-made threats, crises, incidents, or events that produce situations requiring a coordinated response.

The Wildfire Annex was updated in 2019 (Santa Clara OES 2019)

The Wildfire Annex is intended as a reference guide for readers to consult at key moments during preparedness and response, as well as by organizational planners during annex review and revision. In addition, the Annex includes resources and tools available for use to successfully manage a wildfire event and includes a section on evacuation considerations. Under the procedures outlined in the Wildfire Annex, field-level Unified Command will act as the lead in evacuating the public from designated evacuation areas with support from the Santa Clara County Fire Department and other mutual aid partners.

Santa Clara County Fire Department/Fire Marshal

The Fire Chief serves as the County Fire Marshal and also provides management oversight for Santa Clara County's Office of Emergency Management and 9-1-1 Communications Center. The County Fire Marshal's Office is responsible for fire prevention activities in most unincorporated areas of Santa Clara County. The department also provides emergency response to over 226,000 residents in the communities of Campbell, Cupertino, Los Altos, Los Altos Hills, Los Gatos, Monte Sereno, Redwood Estates, Saratoga, and adjacent unincorporated areas including Pacheco Pass.

Santa Clara County Fire Marshal Standards & Specifications

Section A33-47 of the Santa Clara County Code and Section 101 of the California Fire Code give the County Fire Marshal the authority to make and enforce such rules and regulations for the prevention and control of fire and fire hazards as may be necessary to carry out the intent of the Code. Copies of Santa Clara County Fire Marshal Standards and the County Fire Code Amendments can be found on the Santa Clara County Department of Planning and Development website (Santa Clara County 2023).

Santa Clara County Community Wildfire Protection Plan

The Santa Clara County Community Wildfire Protection Plan (CWPP) was developed in 2016 (Santa Clara Fire 2016) to provide a countywide strategic plan with goals for creating a safer wildland urban interface community, accompanied by report annexes that address specific issues and projects by jurisdiction and stakeholder organizations to meet the strategic goals. Annex 13 addresses unincorporated areas without local fire protection. All lands within the proposed Project study area are subject to SRA and protected by CAL FIRE.

4.20.3 Discussion

a. **Less than Significant Impact with Mitigation.** The proposed Project would conduct various types of geotechnical investigations within the proposed Project study area over a period of approximately 8 working months. The proposed Project would not impair any adopted emergency response plans or emergency evacuation plans. The site access located at SR-152 and Kaiser-Aetna Road would remain open to emergency vehicles and for use as an evacuation route throughout the duration of the proposed Project. As discussed in Section 4.17, a traffic control plan shall be prepared according to Caltrans standard plans as required by Mitigation Measure TR-1 (Prepare Traffic Control Plan) to ensure all temporary safety hazards along SR-152 are avoided thereby enabling unimpeded access to the proposed Project site by emergency vehicles at all times. In addition, all existing onsite access roads (Figure 4.20-4) would also be kept clear of equipment and vehicles during the proposed Project duration to allow for emergency vehicle access, and as evacuation routes. Therefore, impacts of the proposed Project would be less than significant with the incorporation of MM-TR-1.

b. **No Impact**. The Project does not propose any new development, and would not exacerbate wildfire risks, exposing occupants to pollutant concentrations from a wildfire or uncontrolled spread of wildfire. In addition, BMP HM-12 (Incorporate Fire Prevention Measures) would require Valley Water to incorporate fire prevention measures which would further reduce wildfire risks, including equipping all earthmoving and portable equipment with internal combustion engines with spark arrestors, ensuring work crews have appropriate fire suppression equipment available at the work activity area, and prohibiting smoking except in designated staging areas and at least 20 feet from any combustible chemicals or vegetation. Therefore, no impact would occur from proposed Project implementation.

c. **Less than Significant Impact.** The proposed Project does not propose the construction of new roads, fuel breaks, emergency water sources, powerlines, or other utilities. Although drilling equipment would be driving off-road along designated access routes as shown on Figures 2-2a through 2-2e, no grading of the existing roadways or proposed access routes is proposed. Limited tree removal and trimming would be required for equipment activity at 12 boring locations accessed from temporary access routes as described in Table 2-3 and illustrated in 4.1-1. Access to these geotechnical investigation work activity areas would be temporary. In addition, BMP HM-12 (Incorporate Fire Prevention Measures) would require Valley Water to incorporate fire prevention measures which would further reduce wildfire risks, as described. Therefore, impacts from proposed Project implementation would be less than significant.

d. **No Impact.** The proposed Project does not propose any new development, and therefore would not expose people or structures to significant risks, including downslope, or downstream flooding or landslides as a result of runoff, post-fire slope instability, or drainage changes. As a result, no impact would occur from proposed Project implementation.

4.20.4 Best Management Practices

The following BMP described in Table 2-6 is applicable to wildfire:

HM-12: Incorporate Fire Prevention Measures

4.20.5 Avoidance and Minimization Measures

No AMMs are applicable.

4.20.6 Mitigation Measures

TR-1: Traffic Control Plan. As discussed in Section 4.17: Transportation, Valley Water shall prepare and implement a Traffic Control Plan to minimize traffic delays and safety hazards that may result from lane restrictions or closures in the work zone within and adjacent to the SR-152 Caltrans ROW. The Traffic Control Plan shall comply with Caltrans' standard lane closure requirements and shall be submitted to Caltrans for review and approval prior to commencement of investigations that require shoulder or lane closure within Caltrans' ROW.

4.21 Mandatory Findings of Significance

Would the Proposed Project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b. Have impacts that would be individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☒	☐	☐
c. Have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

4.21.1 Environmental Setting

Please refer to the environmental setting discussions presented in Section 3, Environmental Setting, and Section 4, Environmental Evaluation, subsections 4.1 through 4.20.

4.21.2 Regulatory Setting

Please refer to the regulatory setting discussions presented in Section 4, Environmental Evaluation, subsections 4.1 through 4.20.

4.21.3 Discussion

a. **Less than Significant Impact with Mitigation.** Please refer to the impact discussions presented in subsections 4.1 through 4.20, specifically the impact analysis for Biological Resources (subsection 4.4), Hazards and Hazardous Materials (subsection 4.9), Noise (subsection 4.13), Transportation (subsection 4.17), and Wildfire (subsection 4.20). While the proposed Project would result in potentially significant impacts on biological resources, implementation of applicable biological, cultural, hazardous materials, and water quality BMPs (see Table 2-6) and AMMs (see Table 2-7), in addition to biological mitigation measures as

proposed in this IS/MND would ensure that the proposed Project would not substantially degrade the quality of the environment. Specifically, the proposed Project would not substantially reduce the habitat, population, or range of a plant or animal species; cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community; or reduce the number or restrict the range or a rare or endangered plant or animal. In addition, the proposed Project would not eliminate important examples of the major periods of California history or prehistory, resulting in a less than significant impacts to cultural resources and tribal cultural resources given that the proposed Project has been designed to avoid all known cultural resources within the proposed Project study area. AMM CU-1 (Accidental Discovery of Archeological Artifacts, Tribal Cultural Resources, or Burial Remains) would be implemented to avoid or minimize any potential impacts to cultural resources by requiring work to stop in the area if previously unknown resources are discovered during implementation of the proposed Project. In addition, AMM CU-2 (Pre-activity Cultural Resources Identification and Sensitivity Training) would be implemented to educate geotechnical personnel regarding the inclusion of relevant information regarding sensitive cultural resources (including human remains and burials), applicable regulations, protocols for avoidance, and consequences of violating state laws and regulations. Therefore, impacts associated with the proposed Project are considered less-than-significant with mitigation incorporated.

b. **Less than Significant Impact with Mitigation.** As defined by the *CEQA Guidelines* §15355(b), "the change in the environment which results from the incremental impact of the proposed Project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time." This analysis of cumulative impacts need not be as in-depth as what is performed relative to the project, but instead is to "be guided by the standards of practicality and reasonableness." Past, present, and reasonably foreseeable future projects occurring in the vicinity of the proposed Project study site could result in cumulative impacts in combination with Project impacts. These potential projects have been identified by reviewing local and regional planning agencies' websites, general plans, and other planning documents for approved, ongoing, and proposed projects in the proposed Project vicinity. In accordance with *CEQA Guidelines*, the environmental analysis in the accompanying IS was conducted to determine if there were any project-specific effects as a result of the proposed Project in combination with other potential projects within the vicinity occurring at the same time. No direct project-specific significant effects were identified that could not be mitigated to a less-than-significant level. The BMPs incorporated into the description of the proposed Project, combined with mitigation measures mitigate any potential contribution to cumulative (as well as direct) impacts associated with these environmental issues. Therefore, the proposed Project does not have impacts that are individually limited, but cumulatively considerable. Impacts associated with the proposed Project are considered less-than-significant with mitigation incorporated.

c. **Less than Significant Impact with Mitigation.** The analysis shows that the proposed Project would not result in significant impacts with mitigation measures incorporated. While the analysis finds that the proposed Project would result in some adverse impacts, identified

mitigation measures would sufficiently reduce those impacts to less than significant levels. The proposed Project would not result in changes to existing land use, and there are few residents in the vicinity of the study area defined for the proposed Project. The majority of potential effects that could impact the human environment would be temporary. The impact would be less-than-significant with mitigation incorporated.

4.21.4 Best Management Practices

See Table 2-6 in Section 2 for a full description of the following BMPs incorporated into the proposed Project Description and their effectiveness discussed in the Discussion sections of each environmental resources section.

AQ-1: Use Dust Control Measures

BI-5: Avoid Impacts to Nesting Migratory Birds

BI-6: Avoid Impacts to Nesting Migratory Birds from Pending Construction

BI-7: Minimize Impacts to Vegetation from Survey Work

BI-8: Choose Local Ecotypes of Native Plants and Appropriate Erosion-Control Seed Mixes

BI-10: Avoid Animal Entry and Entrapment

BI-11: Minimize Predator-Attraction

HM-7: Restrict Vehicle and Equipment Cleaning to Appropriate Locations

HM-8: Ensure Proper Vehicle and Equipment Fueling and Maintenance

HM-9: Ensure Proper Hazardous Materials Management

HM-10: Utilize Spill Prevention Measures

HM-12: Incorporate Fire Prevention Measures

WQ-4: Limit Impacts from Staging and Stockpiling Materials

WQ-9: Use Seeding for Erosion Control, Weed Suppression, and Site Improvement

WQ-11: Maintain Clean Conditions at Work Sites

WQ-12: Manage Well or Exploratory Boring Materials

WQ-13: Protect Groundwater from Contaminates Via Wells or Exploratory Borings

WQ-14: Backfill Completed Exploratory Borings

WQ-15: Prevent Water Pollution

WQ-16: Prevent Stormwater Pollution

WQ-17: Manage Sanitary and Septic Waste

TR-1: Incorporate Public Safety Measures

4.21.5 Avoidance and Minimization Measures

See Table 2-7 in Section 2 for a full description of the following AMMs incorporated into the proposed Project Description and their effectiveness discussed in the Discussion sections of each environmental resources section.

CU-1: Accidental Discovery of Archaeological Artifacts, Tribal Cultural Resources, or Burial Finds.

CU-2: Pre-activity Cultural Resources Identification and Sensitivity Training.

VHP-1: Minimize the potential impacts on covered species most likely to be affected by changes in hydrology and water quality.

VHP-2: Reduce stream pollution by removing pollutants from surface runoff before the polluted surface runoff reaches local streams.

VHP-3: Maintain the current hydrograph and, to the extent possible, restore the hydrograph to more closely resemble predevelopment conditions.

VHP-6: Activities in the active (i.e., flowing) channel will be avoided. If activities must be conducted in the active channel, avoidance and minimization measures identified in this table will be applied.

VHP-7: Personnel shall prevent the accidental release of chemicals, fuels, lubricants, and non-storm drainage water into channels.

VHP-8: Spill prevention kits shall always be in close proximity when using hazardous materials (e.g., crew trucks and other logical locations).

VHP-9: Personnel shall implement measures to ensure that hazardous materials are properly handled and the quality of water resources is protected by all reasonable means when removing sediments from the streams.

VHP-11: Vehicles shall be washed only at approved areas. No washing of vehicles shall occur at job sites.

VHP-12: No equipment servicing shall be done in the stream channel or immediate flood plain, unless equipment stationed in these locations cannot be readily relocated (i.e., pumps, generators).

VHP-13: Personnel shall use the appropriate equipment for the job that minimizes disturbance to the stream bottom. Appropriately tired vehicles, either tracked or wheeled, shall be used depending on the situation.

VHP-14: If high levels of groundwater in a work area are encountered, the water is pumped out of the work site. If necessary to protect water quality, the water shall be directed into specifically constructed infiltration basins, into holding ponds, or onto areas with vegetation to remove sediment prior to the water re-entering a creek.

VHP-16: When work in a flowing stream is unavoidable, the entire streamflow shall be diverted around the work area by a barrier, except where it has been determined by a

qualified biologist that the least environmentally disruptive approach is to work in a flowing stream. Where feasible, water diversion techniques shall allow stream flows to gravity flow around or through the work site.

VHP-21: To the extent that stream bed design changes are not part of the project, the stream bed will be returned to as close to pre-project condition as appropriate.

VHP-26: Any sediment removed from a project site shall be stored and transported in a manner that minimizes water quality impacts.

VHP-29: Existing native vegetation shall be retained by removing only as much vegetation as necessary to accommodate the trail clearing width. Maintenance roads should be used to avoid effects on riparian corridors.

VHP-39: Minimize alterations to existing contours and slopes, including grading the minimum area necessary.

VHP-40: Maintain native shrubs, trees and groundcover whenever possible and revegetate disturbed areas with local native or non-invasive plants.

VHP-49: The project or activity must be designed to avoid the removal of riparian vegetation, if feasible. If the removal of riparian vegetation is necessary, the amount shall be minimized to the amount necessary to accomplish the required activity and comply with public health and safety directives.

VHP-58: Existing access routes and levee roads shall be used if available to minimize impacts of new construction in special status species habitats and riparian zones.

VHP-61: Minimize ground disturbance to the smallest area feasible.

VHP-62: Use existing roads for access and disturbed area for staging as site constraints allow. Off-road travel will avoid sensitive communities such as wetlands and known occurrences of covered plants.

VHP-63: Prepare and implement sediment erosion control plans.

VHP-65: Control exposed soil by stabilizing slopes (e.g., with erosion control blankets) and protecting channels (e.g., using silt fences or straw wattles).

VHP-66: Control sediment runoff using sandbag barriers or straw wattles.

VHP-67: No stockpiling or placement of erodible materials in waterways or along areas of natural stormwater flow where materials could be washed into waterways.

VHP-68: Stabilize stockpiled soil with geotextile or plastic covers.

VHP-69: Maintain construction activities within a defined project area to reduce the amount of disturbed area.

VHP-71: Preserve existing vegetation to the extent possible.

VHP-72: Equipment storage, fueling and staging areas will be sited on disturbed areas or non-sensitive habitat outside of a stream channel.

VHP-73: Avoid wet season construction.

VHP-74: Stabilize site ingress/egress locations.

VHP-75: Dispose of all construction waste in designated areas and prevent stormwater from flowing onto or off of these areas.

VHP-76: Prevent spills and clean up spilled materials.

VHP-78: In-stream projects occurring while the stream is flowing must use appropriate measures to protect water quality, native fish and covered wildlife species at the project site and downstream of the project site.

VHP-83: Sediments will be stored and transported in a manner that minimizes water quality impacts. If soil is stockpiled, no runoff will be allowed to flow back to the channel.

VHP-84: Appropriate erosion control measures (e.g., fiber rolls, filter fences, vegetative buffer strips) will be used on site to reduce siltation and runoff of contaminants into wetlands, ponds, streams, or riparian vegetation. Fiber rolls used for erosion control will be certified as free of noxious weed seed. Filter fences and mesh will be of material that will not entrap reptiles and amphibians. Erosion control measures will be placed between the outer edge of the buffer and the project site.

VHP-85: Seed mixtures applied for erosion control will not contain invasive nonnative species and will be composed of native species or sterile nonnative species. If sterile nonnative species are used for temporary erosion control, native seed mixtures must be used in subsequent treatments to provide long-term erosion control and slow colonization by invasive nonnatives.

VHP-86: Topsoil removed during soil excavation will be preserved and used as topsoil during revegetation when it is necessary to conserve the natural seed bank and aid in revegetation of the site.

VHP-87: Vehicles operated within and adjacent to streams will be checked and maintained daily to prevent leaks of materials that, if introduced to the water, could be deleterious to aquatic life.

VHP-88: Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas.

VHP-89: The potential for traffic impacts on terrestrial animal species will be minimized by adopting traffic speed limits.

VHP-90: All trash will be removed from the site daily to avoid attracting potential predators to the site. Personnel will clean the work site before leaving each day by removing all litter and construction-related materials.

VHP-92: To minimize the spread of pathogens all staff working in aquatic systems (i.e., streams, ponds, and wetlands)— including site monitors, construction crews, and surveyors—will adhere to the most current guidance for equipment decontamination provided by the Wildlife Agencies at the time of activity implementation. Guidance

may require that all materials that come in contact with water or potentially contaminated sediments, including boot and tire treads, be cleaned of all organic matter and scrubbed with an appropriate cleansing solution, and that disposable gloves be worn and changed between handling equipment or animals. Care should be taken so that all traces of the disinfectant are removed before entering the next aquatic habitat.

VHP-93: When accessing upland areas adjacent to riparian areas or streams, access routes on slopes of greater than 20% should generally be avoided. Subsequent to access, any sloped area should be examined for evidence of instability and either revegetated or filled as necessary to prevent future landslide or erosion.

VHP-94: Personnel shall use existing access ramps and roads if available. If temporary access points are necessary, they shall be constructed in a manner that minimizes impacts to streams.

VHP-95: To prevent inadvertent entrapment of animals during excavation, all excavated, steep-walled holes or trenches more than 2-feet deep will be covered at the close of each working day by plywood or similar materials or provided with one or more escape ramps constructed of earth fill or wooden planks.

VHP-96: Isolate the construction area from flowing water until project materials are installed and erosion protection is in place.

VHP-97: Erosion control measures shall be in place at all times during construction. Do not start construction until all temporary control devices (straw bales, silt fences, etc.) are in place downstream of project site.

VHP-98: When needed, utilize in-stream grade control structures to control channel scour, sediment routing, and headwall cutting.

VHP-100: Potential contaminating materials must be stored in covered storage areas or secondary containment that is impervious to leaks and spills.

VHP-101: Runoff pathways shall be free of trash containers or trash storage areas. Trash storage areas shall be screened or walled.

VHP-102: Immediately after project completion and before close of seasonal work window, stabilize all exposed soil with mulch, seeding, and/or placement of erosion control blankets.

4.21.6 Mitigation Measures

The following mitigation measures have been incorporated to reduce potentially significant impacts to less than significant levels for the following environmental resources subsections:

Biological Resources (Subsection 4.4)

MM BIO-1: Pre-Activity Biological Surveys

MM BIO-2: Worker Environmental Awareness Training, Pre-Activity Biological Check, Avoidance of Sensitive Biological Resources, Pathogen Prevention, and Biological Monitoring

MM BIO-3: Vehicle and Equipment Decontamination for Plant Pathogen and Weed Prevention

MM BIO-4: Aquatic Invasive Species (AIS) Decontamination

MM BIO-5: Nesting Golden Eagle and Bald Eagle Surveys and Avoidance of Active Eagle Nests (Bald and Golden Eagle Protection Act)

MM BIO-6: Biological Site Inspections and Summary Report

MM BIO-7: Site Rehabilitation

Hazards and Hazardous Materials (Subsection 4.9)

MM TR-1: Prepare Traffic Control Plan

Noise (Subsection 4.13)

MM NOI-1: Prepare Helicopter Flight Plan and Path to Avoid Sensitive Receptors.

MM NOI-2: Noise Reduction During Nighttime Geotechnical Investigation Activities

Transportation (Subsection 4.17)

MM TR-1: Prepare Traffic Control Plan

Wildfire (Subsections 4.20)

MM TR-1: Prepare Traffic Control Plan

Section 5 Report Preparation

Table 5-1 list those individuals who contributed to the preparation of this Initial Study/ Mitigated Negative Declaration.

Table 5-1: Report Preparation Contributors

Contributor	Position/Role
Santa Clara Valley Water District (Valley Water)	
Ryan McCarter, PE	Deputy Operating Officer, Dam Safety and Capital Delivery Division
Julianne O'Brien, PE	Unit Manager, Pacheco Project Delivery Unit
Victor Gutierrez, PE	Pacheco Project Manager/Senior Engineer
Wendy Young	Dam Safety and Capital Delivery Environmental Services Manager
Todd Sexauer	Senior Environmental Planner/Environmental Project Manager/Principal Author for Aesthetics, Agricultural & Forestry, Hazards and Hazardous Materials, Hydrology & Water Quality, Mineral Resources, Population & Housing, Public Services, Recreation, Transportation, Utilities & Service Systems, Wildfire, and Mandatory Findings of Significance
Mason Holmes	Senior Biologist/Biological Resources
Janell Hillman	Senior Biologist/Biological Resources
Shawn Lockwood	Senior Biologist/Biological Resources
AECOM Technical Services, Inc.	
Arul Arulnathan, PhD, PE, GE	IS/MND Contract Manager, Geotechnical Engineer/Geology and Soils
Robert Green, PE, GE	IS/MND Document Review
David Simpson, PG, CEG	Senior Engineering Geologist/Project Description/Geology and Soils
Kelly Bayer	IS/MND Document Review
Kate Zeiger, PG, CEG	Engineering Geologist/Geology and Soils
Douglas Wright	GIS/Mapping
Stantec Consultants, Inc.	
Mary Paasch, PE, PMP	IS/MND Document Review
Paul Uncapher	IS/MND Document Development and Review
Nick Eide	Biological Resources
Adam Witt, PhD, PE	Project Description
Mark Noyes	Biological Resources
Dynamic Geospatial Solutions, LLC	
Sam Price	GIS/Mapping

Table 5-1: Report Preparation Contributors	
Contributor	**Position/Role**
Ascent Environmental, Inc.	
Dimitri Antoniou	Air Quality/GHG/Noise
Far Western Anthropological Research Group, Inc.	
Laurel Engbring, MA, RPA	Cultural/Tribal Resources
Brian Byrd, PhD	Principal Investigator/Cultural/Tribal Resources
Mott McDonald	
Gabriel J. Alcantar, PE	Program Manager/Project Coordinator
Karen Saux	Technical Writing Support
Stacy Lehrer	Technical Writing Support
SMB Environmental, Inc.	
Steve Brown	IS/MND Document Development and Review

Section 6 References

Key Terminology

Santa Clara Valley Water District. 2014. Best Management Practices Handbook. Document No. W-751-037, Revision G.

Section 1

California Governor's Office of Planning and Research. California Environmental Quality Act (CEQA) Guidelines. 2024. https://opr.ca.gov/ceqa/guidelines/

Section 2

Santa Clara Valley Water District. 2014. Best Management Practices Handbook. Document No. W-751-037, Revision G.

Santa Clara Valley Habitat Agency (SCVHA). 2012. Final Santa Clara Valley Habitat Plan. Prepared for Santa Clara County, City of Gilroy, City of Morgan Hill, City of San Jose, Santa Clara Valley Transportation Authority, and Santa Clara Valley Water District. Prepared by ICF International. San Francisco, CA. August 2012. Available: http://scv-habitatagency.org/178/Final-Habitat-Plan. Accessed September 2023.

Section 4

4.1 Aesthetics

California Department of Transportation (Caltrans). 2023. California State Scenic Highways. Available at: https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways. Accessed October 31, 2023.

Santa Clara County. 1994. Santa Clara County General Plan. Santa Clara County Planning Department. San Jose, California. 1994.

_____. 2008. Santa Clara County General Plan, Regional Parks and Scenic Highways Map Element. Santa Clara County Planning Department. San Jose, California. 2008.

4.2 Agriculture and Forestry Resources

California Department of Conservation. 2023a. Santa Clara County Important Farmland 2020. Available at: https://www.conservation.ca.gov/dlrp/fmmp/Pages/SantaClara.aspx. Accessed: November 2, 2023.

_____. 2023b. California Williamson Act Enrollment Finder, Enrollment Year 2022, Santa Clara County. Available at: https://maps.conservation.ca.gov/dlrp/WilliamsonAct/. Accessed: November 15, 2023.

California Department of Forestry and Fire Protection (CAL FIRE). 2023. California Forest Practice Rules, 2023. Title 14, California Code of Regulations Chapters 4, 4.5 and 10.

Santa Clara County. 1994. Santa Clara County General Plan. Santa Clara County Planning Department. San Jose, California. 1994.

_____. 2022. From Farm to Fork, How Agricultural Products Reach Your Plate, Crop Report. County of Santa Clara, 2022.

Santa Clara Valley Water District (Valley Water). 2020. Santa Clara Valley Water District, Annual Groundwater Report, 2019.

4.3 Air Quality

Bay Area Air Quality Management District (BAAQMD). 2017. 2017 Bay Area Clean Air Plan. Available: http://www.baaqmd.gov/~/media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_-proposed-final-cap-vol-1-pdf.pdf?la=en. Accessed: December 14, 2023.

2022. BAAQMD 2022 CEQA Guidelines. Available: https://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines. Accessed: December 14, 2023.

California Air Resources Board (CARB). 2013. California Almanac of Emissions and Air Quality—2013 Edition. Available: http://www.arb.ca.gov/aqd/almanac/almanac13/almanac13.htm. Accessed January 4, 2024.

———. 2016. Ambient Air Quality Standards. Available: https://www.arb.ca.gov/research/aaqs/aaqs2.pdf. Accessed January 4, 2024.

———. 2022. Maps of State and Federal Area Designations. Available: https://ww2.arb.ca.gov/resources/documents/maps-state-and-federal-area-designations. Accessed: January 4, 2024.

———. n.d. Disel Exhaust and Health. Available: https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health. Accessed December 12, 2023.

Office of Health Hazard Assessment (OEHHA). 2015. Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessment. Air, Community, and Environmental Research Branch Office of Environmental Health Hazard Assessment, California Environmental Protection Agency. Sacramento, CA.

Santa Clara Valley Water District. 2014. Best Management Practices Handbook. Document No. W-751-037, Revision G.

U.S. Environmental Protection Agency (EPA). 2022. Eight-Hour Average Ozone Concentrations. Available: https://www3.epa.gov/region1/airquality/avg8hr.html#:~:text=Based%20on%20extensive%20scientific%20evidence,over%20an%208%2Dhour%20period. Accessed: December 12, 2023.

———. 2023a (February). Nonattainment Areas for Criteria Pollutants (Green Book). Available: https://www3.epa.gov/airquality/greenbook/anayo_ca.html. Accessed: December 12, 2023.

———. 2023b. Criteria Air Pollutants. Available: https://www.epa.gov/criteria-air-pollutants. Accessed: December 12, 2023.

4.4. Biological Resources

Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken (eds.). 2012. The Jepson Manual: Vascular Plants of California, Second Edition. Berkeley: University of California Press.

California Department of Fish and Wildlife (CDFW). 2014. California Wildlife Habitat Relationships System. California Interagency Wildlife Task Group. Available at: https://wildlife.ca.gov/Data/CWHR/Life-History-and-Range Last Accessed: December 2020.

_____. 2023a. California Natural Diversity Database. RareFind 5 [Internet]. California Department of Fish and Wildlife, Sacramento, California. Available at: https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Accessed September 2023.

_____. 2023b. State and Federally Listed Endangered, Threatened and Rare Plants of California. California Department of Fish and Wildlife, Biogeographic Data Branch, California Natural Diversity Database. List updated July 2023. Available online at https://www.wildlife.ca.gov/Data/ CNDDB/Plants-and-Animals.

_____. 2023c. Special Vascular Plants, Bryophytes, and Lichens List. California Department of Fish and Wildlife, Natural Diversity Database. Periodic publication. 51 pp. List updated July 2023. Available online at https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals.

_____. 2023d. Special Animals List. California Department of Fish and Wildlife, Natural Diversity Database. Periodic publication. 51 pp. Updated July 2023. Available online at https://www. wildlife.ca.gov/Data/CNDDB/Plants-and-Animals.

_____. 2023e. State and Federally Listed Endangered and Threatened Animals of California. California Department of Fish and Wildlife, Biogeographic Data Branch, California Natural Diversity Database. List updated July 2023. Available online at https://www.wildlife.ca.gov/Data/CNDDB/ Plants-and-Animals.

California Native Plant Society (CNPS). 2023. Inventory of rare and endangered plants of California (online edition, v8-03 0.39). Available at: http://www.rareplants.cnps.org/. Accessed September 2023.

Haas, Gerry Pers Comm, 2024. Conversation with Gerry Haas of the Santa Clara Valley Habitat Agency on April 18, 2024.

Jepson Flora Project. 2023. Jepson eFlora. Available at: http://ucjeps.berkeley.edu/eflora/. Accessed August 2023.

National Oceanic and Atmospheric Administration (NOAA). 2023. California Nevada River Forecast Center: Monthly Precipitation Summary Water Year 2023. Available: 32Thttps://www.cnrfc.noaa.gov/ monthly_precip.php32T. Accessed March 19, 2019, and November 1, 2023.

Santa Clara County. 1994. Santa Clara County General Plan. Santa Clara County Planning Department. San Jose, California. 1994.

Santa Clara Valley Habitat Agency (SCVHA). 2012. Final Santa Clara Valley Habitat Plan. Prepared for Santa Clara County, City of Gilroy, City of Morgan Hill, City of San Jose, Santa Clara Valley Transportation Authority, and Santa Clara Valley Water District. Prepared by ICF International. San Francisco, CA. August 2012. Available: http://scv-habitatagency.org/178/Final-Habitat-Plan. Accessed September 2023.

Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. A Manual of California vegetation, 2nd edition. California Native Plant Society, Sacramento, California.

State Water Resources Control Board (SWRCB). 2020. Implementation Guidance for the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State. April 2020.

U.S. Fish and Wildlife Service (USFWS). 2023a. Environmental Conservation Online System, Information for Planning and Consultation [Online]. Available at: https://ecos.fws.gov/ipac/. Accessed September 2023.

_____. 2023b. USFWS Designated Critical Habitat for California red-legged frog. USFWS Environmental Conservation Online System. Available at: <https://ecos.fws.gov/ecp/>. Accessed September 2023.

4.5 Cultural Resources

Byrd, Brian, John Berg, Eric Wohlgemuth, and Laurel Engbring. 2024. *Archaeological Testing Results for the Pacheco Reservoir Expansion Project, Santa Clara County, California.* Far Western Anthropological Research Group, Inc., Davis, California, on behalf of Valley Water.

Crespí, Juan. 1927. Fray Juan Crespí: Missionary Explorer on the Pacific Coast 1769–1774. University of California Press, Berkeley.

Engbring, Laurel and Brian Byrd, 2023. Addendum Archaeological Survey Report: Expanded APE and PG& Expanded APE for the Pacheco Reservoir Expansion Project. Far Western Anthropological Research Group, Inc., Davis, California, on behalf of Valley Water.

Kroeber, A. L., 1925. Handbook of the Indians of California. Dover, New York.

Levy, Richard S., 1978. Costanoan. In California, edited by Richard F. Heizer, pp. 485–495. Handbook of North American Indians, Vol. 8, William C. Sturtevant, general editor. Smithsonian Institution, Washington, DC.

Lightfoot, K. G., and W. S. Simmons, 1998. Culture Contact in Protohistoric California: Social Contexts of Native and European Encounters. Journal of California and Great Basin Anthropology 20(2):138–170.

Milliken, Randall, 1995. A Time of Little Choice: The Disintegration of Tribal Culture in the San Francisco Bay Area 1769–1810. Ballena Press Anthropological Papers 43. Ballena Press, Menlo Park, California.

——— 1999. The Moss Landing Hill Site: An Ethnohistory of the Calendaruc Ohlone of the Monterey Bay Area Volume II. Far Western Anthropological Research Group, Inc., Davis, California. Submitted to California State University, Seal Beach.

——— 2010. The Contact-Period Native California Community Distribution Model: A Dynamic Digital Atlas and Wiki Encyclopedia. Far Western Anthropological Research Group, Inc., Davis, California. Submitted to California Department of Transportation, District 6, Fresno.

Milliken, Randall, Julia G. Costello, Carina Johnson, Glory Anne Laffey, Ann-Marie Sayers, and Patrick Orozco. 1993. Archaeological Test Excavations at Fourteen Sites along Highways 101 and 152, Santa Clara and San Benito Counties, California Volume 2: History, Ethnohistory, and Historic Archaeology. Submitted to California Department of Transportation, District 4.

Parker, Patricia L., and Thomas F. King, 1998. Guidelines for Evaluating and Documenting Traditional Cultural Properties. National Register Bulletin 38. US Department of the Interior, National Park Service, Washington, DC.

Santa Clara County. 1994. Santa Clara County General Plan. Santa Clara County Planning Department. San Jose, California. 1994.

Thomas, Alexis, and David Hyde. 2021. Built Environment Evaluation Report: Giovanotto, Jin, Lawler, Moitozo, Pacheco Pass Water District, Upper Quinto, and Verdegaal Properties for the Pacheco Reservoir Expansion Project. Far Western Anthropological Research Group, Inc., Davis, California, on behalf of Valley Water.

4.6 Energy

California Energy Commission (CEC). 2019. 2019 California Energy Efficiency Action Plan (CEC-400-2019-010-CMF), December 17.

_____. 2021. 2021 Total System Electric Generation. Available at:https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2021-total-system-electric-generation

_____. 2023a. Supply and Demand of Natural Gas in California. Available at: https://www.energy.ca.gov/data-reports/energy-almanac/californias-natural-gas-market/supply-and-demand-natural-gas-california, accessed August 29, 2023.

_____. 2023b. Oil Supply Sources to California Refineries. Available at:http://www.energy.ca.gov/almanac/petroleum_data/statistics/crude_oil_receipts.html, accessed August 29, 2023.

Santa Clara Valley Water District (Valley Water). 2021. Santa Clara Valley Water District Climate Change Action Plan, July 2021.

4.7 Geology and Soils

AECOM. 2020. Geotechnical Data Report, Volume 1: Phase 1 Dam Explorations, Pacheco Reservoir Expansion Project. Santa Clara County, California. Prepared for the Santa Clara Valley Water District. December 31.

AECOM. 2021. Geotechnical Data Report, Volume 2: Phase 1 Other Explorations, Pacheco Reservoir Expansion Project. Prepared for the Santa Clara Valley Water District. February 12.

California Geological Society (CGS). 2002. Note 36 California Geomorphic Provinces. December 2.

_____. 2003. The Revised 2002 California Probabilistic Seismic Hazard Maps. Department of Conservation Geological Survey Introduction to the Revised 2002 California Hazard Maps. June.

_____. 2004. Recommended Criteria for Delineating Seismic Hazard Zones in California. California Department of Conservation Geological Survey Special Publication 118. April.

_____. 2008. Guidelines for Evaluating and Mitigating Seismic Hazards in California: Department of Conservation Geological Survey Special Publication 117a. September 11.

California Department of Water Resources (DWR). 2018. Division of Safety of Dams Inspection and Reevaluation Protocols. September 28.

Dibblee Jr., T.W. and J.A. Minch. (ed.). 2007a. Geologic Map of the Pacheco Peak Quadrangle, Santa Clara County, California: DF-337 Santa Clara Museum of Natural History.

_____. 2007b. Geologic Map of the Mississippi Creek and Mustang Peak Quadrangles, Santa Clara and Stanislaus Counties, California: DF – 339 Santa Clara Museum of Natural History.

Ernst, W.G., 1965, Mineral Paragenesis in Franciscan Metamorphic Rocks, Panoche Pass, California. Geological Society of America Bulletin, v. 76, p. 879-914, 7 figs., 4 pls., August 1965

_____. 1993. Metamorphism of Franciscan tectonostratigraphic assemblage, Pacheco Pass area, east-central Diablo Range, California Coast Ranges. Geological Society of America Bulletin, v. 105, p. 618-636, 8 figs., 4 tables, May 1993.

Harden, D.R. 2004. California Geology. 2nd ed. San Jose, California. San Jose State University.

Ingersoll, R.V., K. Ratajeski, A.F. Glazner, and M. Cloos. 1999. Mesozoic Convergent Margin of Central California. In: Geologic Field Trips in Northern California: Centennial Meeting of the Cordilleran Section of the Geological Society of America, Special Publication 119, p. 101-117.

Lambe, T.W., and Whitman, R.V. 1969. Soil Mechanics. New York, New York: John Wiley and Sons.

Miller, D.J., and. K.M. Burnett. 2007. A probabilistic model of debris-flow delivery to stream channels, demonstrated for the Coast Range of Oregon, USA. Elsevier Geomorphology v. 94, p. 184-205.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture (NRCS). 2021. Web Soil Survey. Available at: https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm. Accessed September 29, 2021.

U.S. Bureau of Reclamation (Reclamation). 1988. Unified Soil Classification System Test Procedures. U.S. Department of the Interior Bureau of Reclamation, Geotechnical Services Branch, Research and Laboratory Services Division, Denver, Colorado. October.

Santa Clara Valley Water District (Valley Water). 2021a. Assessment of Local and Site-Specific Faulting Pacheco Reservoir Expansion Project. Santa Clara County, California. January.

_____. 2021b. Reservoir Rim Landslide Inventory Mapping near the Proposed Pacheco Expansion Project. Santa Clara County, California. July.

Wakabayashi, J., 2011, Mélanges of the Franciscan Complex, California: Diverse structural settings, evidence for sedimentary mixing, and their connection to subduction processes. In: Mélanges Processes of Formation and Societal Significance. Geological Society of America Special Paper 480, p. 117-141.

Wentworth, C.M., M.C. Blake, Jr., R.J. McLoughlin, and R.W. Graymer. 1999. Preliminary Geologic Description of the San Jose 30 X 60 Minute Quadrangle, California. U.S. Geologic Survey Open File Report 98-795, 52 p.

4.8. Greenhouse Gas Emissions

Bay Area Air Quality Management District (BAAQMD). 2022. BAAQMD 2022 CEQA Guidelines. Available: https://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines. Accessed: December 14, 2023.

California Air Resources Board (CARB). 2022.Final 2022 Scoping Plan for Achieving Carbon Neutrality. . December 16, 2022.

___. 2023. 2000-2021 GHG Inventory (2023 Edition). Available: https://ww2.arb.ca.gov/ghg-inventory-data. Accessed: December 12, 2023.

California Natural Resources Agency (CNRA). 2018 (January). Safeguarding California Plan: 2018 Update. Available: http://resources.ca.gov/docs/climate/safeguarding/update2018/safeguarding-california-plan-2018-update.pdf. Accessed August 23, 2018.

Governor's Office of Planning and Research (OPR), California Energy Commission (CEC), and California Natural Resources Agency (CNRA). 2018. California's Fourth Climate Change Assessment. Available: https://www.energy.ca.gov/sites/default/files/2019-07/Statewide%20Reports-%20SUM-CCCA4-2018-013%20Statewide%20Summary%20Report.pdf. Accessed November 4, 2019.

Intergovernmental Panel on Climate Change (IPCC). 2014. Climate Change 2014 Synthesis Report: Summary for Policymakers. Available: https://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf. Accessed August 23, 2018.

Santa Clara County. 1994. Santa Clara County General Plan. Santa Clara County Planning Department. San Jose, California. 1994..

Santa Clara County. 2009. Climate Action Plan for Operations and Facilities. September 29, 2009.

Santa Clara Valley Water District. 2021. Climate Change Action Plan. July 13, 2021.

United Nations. 2015. Paris Agreement. Available: https://unfccc.int/sites/default/files/english_paris_agreement.pdf. Accessed September 24, 2018.

4.9 Hazards and Hazardous Materials

California Environmental Protection Agency (CalEPA). 2021. Unified Program. Available at: https://calepa.ca.gov/CUPA/. Accessed August 11, 2021.

California Governor's Office of Emergency Services (Cal OES). 2017. State of California Emergency Plan. October 1.

California Department of Transportation (Caltrans). 2014. Standard Environmental Reference Volume 1: Guidance for Compliance, Chapter 10 – Hazardous Materials, Hazardous Waste, and Contamination. August 27. Available at: https://dot.ca.gov/programs/environmental-analysis/standard-environmental-reference-ser/volume-1-guidance-for-compliance/ch-10-hazardous-materials-hazardous-waste-contamination. Accessed August 13, 2021.

Centers for Disease Control (CDC). 2021. Where Valley Fever (Coccidioidomycosis) Comes From. August 4. Available at https://www.cdc.gov/fungal/diseases/coccidioidomycosis/causes.html. Accessed August 11, 2021.

California Department of Public Health (CDPH). 2022. Epidemiologic Summary of Valley Fever (Coccidioidomycosis) in California, 2020-2021. Surveillance and Statistics Section, Infectious Diseases Branch Division of Communicable Disease Control, Center for Infectious Diseases, California Department of Public Health.

Duvergé, D. J., 2011. Establishing Background Arsenic in Soil of the Urbanized San Francisco Bay Region, Master's Thesis in Geoscience, San Francisco State University. December 2011.

Erskine, B. G. and Bailey, M. 2018. Characterization of asbestiform glaucophane-winchite in the Franciscan Complex blueschist, northern Diablo Range, California: Toxicology and Applied Pharmacology, Vol. 361, pp. 3–13. September 16.

Micko, J. 2021. Personal Communication. July 29, 2021.

San Benito County. 2019. Airport Land Use Compatibility Plan for the Frazier Lake Airpark. Adopted by the San Benito County Airport Land Use Commission December 19, 2019.

Santa Clara County. 1994. Santa Clara County General Plan. Santa Clara County Planning Department. San Jose, California. 1994.

Santa Clara County Department of Environmental Health (SCCDEH). 2019. Notice Regarding Revised Environmental Screening Levels. February 12.

Santa Clara County Office of Emergency Services (Santa Clara OES). 2017. Emergency Operations Plan. San Jose, California.

Santa Clara Valley Water District (Valley Water). 2020. Geotechnical Data Report Volume 1: Phase 1 Dam Explorations, Pacheco Reservoir Expansion Project. December 31.

_____. 2021. Geotechnical Data Report Volume 2: Phase 1 Other Explorations, Pacheco Reservoir Expansion Project. March 9.

San Francisco Bay Regional Water Quality Control Board (SFBRWQCB). 2007. Screening For Environmental Concerns at Sites with Contaminated Soil and Groundwater. INTERIM FINAL - November 2007. Oakland, California.

_____. 2019a. User's Guide: Derivation and Application of Environmental Screening Levels. INTERIM FINAL 2019 (Revision 1). Oakland, California.

_____. 2019b. Environmental Screening Levels – Summary Tables. 2019 (Revision 2)

Wentworth, C.M., M.C. Blake Jr., R.J. McLaughlin, and R.W. Graymer. 1999. Preliminary geologic map of the San Jose 30 x 60-minute quadrangle, California. U.S. Geol. Surv. Open File Rep., 98-795.

Wilcke, W. Small-Scale Variability of Metal Concentrations in Soil Leachates. 2000. Institute of Soil Science and Soil Geography, University of Bayreuth, D-95440 Bayreuth, Germany; Soil Sci. Soc. Am. J. 64:138–143. January.

4.10 Hydrology and Water Quality

California Department of Conservation. 2024. Santa Clara County Tsunami Hazard Areas. https://www.conservation.ca.gov/cgs/tsunami/maps/santa-clara. Access February 26, 2024.

Central Coast Regional Water Quality Control Board (CCRWQCB). 2019. Water Quality Control Plan for the Central Coast Basin, June 2019 Edition.

_____. 2024. Amendments to the Water Quality Control Plan for the Central Coast Basin. https://www.waterboards.ca.gov/centralcoast/publications_forms/publications/basin_plan/. Accessed February 6, 2024.

Chadwell, J. 2017. County officials meet with Lovers Lane residents, admit ability to stop flooding is limited. BenitoLink. Available at: https://benitolink.com/county-officials-meet-with-lovers-lane-residents-admit-ability-to-stop-flooding-is-limited/. Accessed August 16, 2021.

Federal Emergency Management Agency (FEMA). 2009. Flood Insurance Rate Map (FIRM) Map Number 06085C0700H Panel 0700H. Santa Clara County, California. May 18.

_____. 2021. FEMA Glossary Zone A definition. Available at: https://www.fema.gov/glossary/zone. Accessed June 27, 2021.

McKee, L., M. Lewicki, D. Schoellhamer, and N. Ganju. 2013. Comparison of sediment supply to San Francisco Bay from watersheds draining the Bay Area and the Central Valley of California. Marine Geology 345, pp. 47-62.

Moyle, P. 1976. Inland Fishes of California. Berkeley, California: University of California Press. 405 pp.

Multi-Resolution Land Characteristics Consortium (MRLC). 2021. NLCD Land Cover 2019 CONUS Land Cover. Available at: https://www.mrlc.gov/viewer/. Accessed June 4, 2021.

Pajaro Valley Water Management Agency (PV Water). 2014. Basin Management Plan Update.

Santa Clara County. 1994. Santa Clara County General Plan. Santa Clara County Planning Department. San Jose, California. 1994.

_____. 2021. Santa Clara County Ordinance Codes—Article 6 Variance Procedures. Available at: https://library.municode.com/ca/santa_clara_county/codes/code_of_ordinances?nodeId=TITCCODELAUS_DIVC12SULADE_CHVIIFLMA_ART6VAPR_SC12-824COVA. Accessed August 12, 2021.

San Benito County Water District (SBCWD). 2009. Annual Groundwater Report 2009.

_____. 2014. Salt and Nutrient Management Plan for Northern San Benito County.

_____. 2016. Annual Groundwater Report. December.

San Benito County Water District (SBCWD) and Santa Clara Valley Water District (Valley Water). 2021. North San Benito County Groundwater Sustainability Plan Draft.

Santa Clara Valley Water District (Valley Water). 2014a. Salt and Nutrient Management Plan. Llagas Subbasin.

_____. 2014b. Salt and Nutrient Management Plan. Santa Clara Subbasin.

_____. 2014c. Best Management Practices Handbook. Document No. W-751-037, Revision G. Effective Date September 25, 2014.

_____. 2016. Groundwater Management Plan, Santa Clara and Llagas Subbasins.

_____. 2021a. Draft Environmental Impact Report, Pacheco Reservoir Expansion Project, Attachment A of the Water Resources and Fisheries Numerical Modeling Appendix

_____. 2021b. Valley Water Well Information App. Available at: https://gis.valleywater.org/wellinfo/. Accessed July 27, 2021.

State Water Resources Control Board (SWRCB). 2017. A Compilation of Water Quality Goals 17th Edition. Available at: http://www.waterboards.ca.gov/water_issues/programs/water_quality_goals/index.shtm Accessed August 10, 2021.

_____. 2018a. 2018 Integrated Report for Clean Water Act Sections 305(b) and 303(d). Supporting Information, Regional Board 3 – Central Coast Region. Available at: https://www.waterboards.ca.gov/water_issues/programs/tmdl/2018state_ir_reports_final/apx_c_state_factsheets/00829.shtml. Accessed June 17, 2021.

_____. 2018b. 2018 Integrated Report for Clean Water Act Sections 305(b) and 303(d). Supporting Information, Regional Board 3 – Central Coast Region. Final Data File used for assessment: Marc Los Huertos Water Quality Data.

_____. 2019. Annual Groundwater Report.

U.S. Army Corps of Engineers (USACE). 1973. Flood Plain Information, San Felipe Lake and Pacheco Creek, San Benito County, California.

U.S. Department of Agriculture (USDA). 1954. Sedimentation Survey of North Fork Reservoir, Santa Clara County, Calif. Unpublished.

U.S. Environmental Protection Agency (EPA). 2016. Drinking Water Requirements for States and Public Water Systems – Surface Water Treatment Rules. Available at: https://www.epa.gov/dwreginfo/surface-water-treatment-rules. Accessed August 6, 2021.

U.S. Geologic Survey (USGS). 2021. National Hydrography Dataset. United States Geological Survey, United States Department of the Interior, Washington, DC. Available at: https://www.usgs.gov/core-science-systems/ngp/national-hydrography/national-hydrography-dataset. Accessed June 2021.

4.11 Land Use

Santa Clara County. 1994. Santa Clara County General Plan. Santa Clara County Planning Department. San Jose, California. 1994.

_____. 2016. Santa Clara County Zoning Code. San Jose, California, May 2016.

_____. 2022. From Farm to Fork, How Agricultural Products Reach Your Plate, Crop Report. County of Santa Clara, 2022.

Santa Clara Valley Habitat Agency (SCVHA). 2019. Project Memo for Pacheco Creek Restoration Project Feasibility. Santa Clara Valley Habitat Agency, Morgan Hill, California.

4.12 Mineral Resources

California Department of Conservation. 2000. California Surface Mining and Reclamation Policies and Procedures. Division of Mines and Geology, January 2000.

_____. 2021a. Update of the Mineral Land Classification for Construction Aggregate Resources in the Monterey Bay Production-Consumption Region. California Department of Conservation, California Geological Survey, 2021.

_____. 2021b. California Geological Survey Mineral Resource Zone Map for Construction Aggregate in the Monterey Bay Production-Consumption Region. https://www.conservation.ca.gov/cgs/documents/publications/special-reports/SR_251-MLC-MontereyBayPCR-2021-Plate01-MRZs-a11y.pdf

Santa Clara County. 1994. Santa Clara County General Plan. Santa Clara County Planning Department. San Jose, California. 1994.

4.13 Noise

Berger, Elliott H, Rick Neitzel, and Cynthia Kladden. 2010. Noise Navigator Sound Level Database. 3M Occupational Health & Environmental Safety Division. Indianapolis, IN.

California Department of Transportation (Caltrans). 2013 (September). Technical Noise Supplement to the Traffic Noise Analysis Protocol. California Department of Transportation Division of Environmental Analysis. Sacramento, CA. Prepared by ICF Jones & Stokes. Available: https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tens-sep2013-a11y.pdf. Accessed December 8, 2023.

Falzarano, Sarah and Levy, Laura. 2007. Sound levels of helicopters for administrative purposes at Grand Canyon National Park. Overflights and Natural Soundscape Program. NPS Report No. GRCA-07-05.

Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. Washington, D.C. Available: 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. Accessed December 7, 2023.

Federal Highway Administration (FHWA). 2006 (January). Roadway Construction Noise Model User's Guide. Washington, D.C. Prepared by the Research and Innovative Technology Administration, Cambridge, MA. Available: https://www.fhwa.dot.gov/environment/noise/construction_noise/rcnm/rcnm.pdf. Accessed December 2023.

National Institute for Occupational Safety and Health (NIOSH). 2019 (May). Evaluation of noise exposures at a precast concrete manufacturer. By Li JF, Brueck SE. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, Health Hazard Evaluation Report 2015-0133-3339. Available: https://www.cdc.gov/niosh/hhe/reports/pdfs/2015-0133-3339.pdf. Accessed November 27, 2023.

Santa Clara County. 1994. Santa Clara County General Plan. Santa Clara County Planning Department. San Jose, California. 1994..

———. 2023. Santa Clara County Code Chapter VIII. Available: https://library.municode.com/ca/santa_clara_county/codes/code_of_ordinances?nodeId=TITBRE_DIVB11ENHE_CHVIIICONOVI. Accessed December 11, 2023.

4.14 Population and Housing

Santa Clara County 2014. Santa Clara County General Plan Housing Element Update 2015-2022, July 25, 2014. Santa Clara County Planning Department. San Jose, California.

4.15 Public Service

California Department of Forestry and Fire Protection (CAL FIRE). 2023a. State Responsibility Areas and Facilities.

_____. 2023b. CAL FIRE GIS Data. Available at: https://frap.fire.ca.gov/mapping/gis-data/. Accessed December 21, 2023.

California Governor's Office of Emergency Services (Cal OES). 2019. California Master Mutual Aid Agreement.

_____. 2020. Santa Clara Unit 2020 Strategic Fire Plan. Santa Clara Unit, Morgan Hill, California.

Santa Clara County. 1994. Santa Clara County General Plan. Santa Clara County Planning Department. San Jose, California. 1994.

4.16 Recreation

California Department of Fish and Wildlife (CDFW). 2005. Cañada de los Osos Ecological Reserve Management Plan. Central Coast Region, Monterey, California.

_____. 2019a. Cañada de los Osos Ecological Reserve. Available at: https://www.wildlife.ca.gov/Lands/Places-to-Visit/Canada-de-los-Osos-ER. Accessed December 20, 2023.

_____.2019b. Cottonwood Creek Wildlife Area. Available at: https://www.wildlife.ca.gov/Lands/Places-to-Visit/Cottonwood-Creek-WA. Accessed December 20, 2023.

_____. 2021. San Luis Reservoir Wildlife Area. Available at: https://wildlife.ca.gov/Lands/Places-to-Visit/San-Luis-Reservoir-WA. Accessed December 20, 2023.

California State Parks (CSP). 1985. Henry W. Coe State Park General Plan. Sacramento, California.

_____. 2009. Henry W. Coe State Park Brochure. Sacramento, California.

_____. 2014a. FY 2013-2014 Statistical Report. Sacramento, California.

_____ 2014b. Henry W. Coe Interpretive Plan. Sacramento, California.

_____ 2015a. Pacheco State Park Brochure. Sacramento, California.

_____ 2017a. San Luis Reservoir State Recreation Area Brochure. Sacramento, California.

_____ 2021. Dowdy Ranch Visitor Center. Available at: https://coepark.net/planning-your-visit/visitor-centers-and-park-entrances/dowdy-ranch-visitor-center. Accessed December 20, 2023.

_____. 2021. Dowdy Ranch Visitor Center. Available at: https://coepark.net/planning-your-visit/visitor-centers-and-park-entrances/dowdy-ranch-visitor-center. Accessed December 20, 2023.

Friends of Cañada de los Osos Ecological Reserve (Friends). 2021. Our Mission. Available at: https://cdlo.org/content/leadership/mission.html. Accessed December 20, 2023.

Pine Ridge Association (Pine Ridge). 2021. Henry W. Coe State Park. Available at: https://coepark.net. Accessed December 20, 2023.

Santa Clara County. 1994. Santa Clara County General Plan. Santa Clara County Planning Department. San Jose, California. 1994.

_____. 2008. Santa Clara County General Plan, Regional Parks and Scenic Highways Map Element. Santa Clara County Planning Department. San Jose, California. 2008.

Santa Clara County Parks. 2018. Strategic Plan. San Jose, California.

U.S. Department of the Interior, Bureau of Reclamation (Reclamation). 2014. Record of Decision, San Luis Reservoir State Recreation Area Resource Management Plan/ General Plan. Fresno, California.

4.17 Transportation

California Department of Transportation (Caltrans). 2015. Project Study Report – Project Development Support to Request Programming for Capital Support on Route 152 between US Route 101 and Interstate 5. April.

_____2018. Caltrans Traffic Census Program. Available at: https Caltrans (California Department of Transportation). 2019. Caltrans Performance Measurement System (PeMS). Available at: https://pems.dot.ca.gov/. Accessed December 27, 2023.

_____2019. Caltrans Performance Measurement System (PeMS). Available at: https://pems.dot.ca.gov/. Accessed December 27, 2023.

_____2020. Caltrans Policy of Transportation Impact Analysis and CEQA Significance Determinations for Project on the State Highway System. September 10.

_____2021. Caltrans Traffic Census Program. Available at: https://dot.ca.gov/programs/traffic-operations/census. Accessed December 28, 2023.

Governor's Office of Planning and Research (OPR). 2018. Technical Advisory on Evaluating Transportation Impacts in CEQA, December 2018.

Metropolitan Transportation Commission (MTC). 2021. Plan Bay Area 2050. Available at: https://mtc.ca.gov/our-work/plans-projects/plan-bay-area-2050. Accessed May 21, 2021.

Santa Clara Valley Transportation Authority (VTA). 2014. VTP 2040.

_____2017. Congestion Management Program.

_____2018. Santa Clara Countywide Bicycle Plan.

4.18 Tribal Cultural Resources

Brian Byrd, John Berg, Eric Wohlgemuth, and Laurel Engbring, 2024. Archaeological Testing Results for the Pacheco Reservoir Expansion Project, Santa Clara County, California. Far Western Anthropological Research Group, Inc., Davis, California, on behalf of Valley Water.

Crespí, Juan, 1927. Fray Juan Crespí: Missionary Explorer on the Pacific Coast 1769–1774. University of California Press, Berkeley.

Kroeber, A. L., 1925. Handbook of the Indians of California. Dover, New York.

Engbring, Laurel and Brian Byrd, 2023. Addendum Archaeological Survey Report: Expanded APE and PG& Expanded APE for the Pacheco Reservoir Expansion Project. Far Western Anthropological Research Group, Inc., Davis, California, on behalf of Valley Water.

Thomas, Alexis, and David Hyde, 2021. Built Environment Evaluation Report: Giovanotto, Jin, Lawler, Moitozo, Pacheco Pass Water District, Upper Quinto, and Verdegaal Properties for the Pacheco Reservoir Expansion Project. Far Western Anthropological Research Group, Inc., Davis, California, on behalf of Valley Water.

4.19 Utilities and Service Systems

California Integrated Waste Management Board (CalRecycle). 2021a. SWIS Facility/Site Activity Details: Billy Wright Disposal Site (24-AA-0002). Available at: https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/2909?siteID=1864. Accessed December 19, 2023.

_____2021b. SWIS Facility/Site Activity Details: RJR Recycling (35-AA-0030). Available at: https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/5166?siteID=5294. Accessed December 19, 2023.

_____2021c. SWIS Facility/Site Activity Details: South Valley Organic Compositing Facility (43-AA-0017). Available at: https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/1355?siteID=3383. Centr Accessed December 19, 2023.

Central Coast Regional Water Quality Control Board, State Water Resources Control Board, and California Environmental Protection Agency (CCRWQCB et al.). 2019. Water Quality Control Plan for the Central Coast Basin. June 2019 Edition.

Recology. 2021. Recology—South Valley Organics. Available at: https://www.recology.com/recology-south-valley/south-valley-organics/. Accessed December 19, 2023.

RJR Recycling. 2021. RJR Recycling Facility website. Available at: https://rjrrecycling.com/.

Santa Clara County. 1995. Integrated Waste Management Plan: Summary Plan and Siting Element. November.

Santa Clara Valley Water District (Valley Water). 2019. 2019 Water Supply Master Plan. November.

4.20 Wildfire

California Department of Forestry and Fire Protection (CAL FIRE). 2007. Fact Sheet: Fire Hazard Severity Zone Model, A Non-technical Primer. California Department of Forestry and Fire Protection. Sacramento, California.

_____2019. Strategic Plan, California Department of Forestry and Fire Protection. California Department of Forestry and Fire Protection. Sacramento, California.

_____ 2020. Santa Clara Unit 2020 Strategic Fire Plan. Santa Clara Unit, Morgan Hill, California.

_____2023a. Fire Hazard Severity Zones—CAL FIRE Office of the State Fire Marshal webpage. Available at: https://osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones. Accessed December 21, 2023.

_____2023b. CAL FIRE GIS Data. Available at: https://frap.fire.ca.gov/mapping/gis-data/. Accessed December 21, 2023.

Santa Clara County. 2023. Fire Standards. Available at: https://plandev.sccgov.org/FMO. Accessed December 21, 2023.

Santa Clara County Fire Department (Santa Clara Fire). 2016. Community Wildfire Protection Plan. Los Gatos, California.

Santa Clara County Office of Emergency Services (Santa Clara OES). 2017. Emergency Operations Plan. San Jose, California.

_____ . 2019. Santa Clara County Emergency Operations Plan Wildfire Annex. San Jose, California.