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Preliminary Mitigated Negative Declaration

Date:	June 13, 2012
Case No.:	**2008.0386E**
Project Title:	**Geary Road Bridge Replacement Project**
BPA Nos.:	Not Applicable
Zoning:	Not Applicable (Watershed Land)
Block/Lot:	Not Applicable
Project Sponsor	San Francisco Public Utilities Commission (415) 934-5740
Lead Agency:	San Francisco Planning Department
Staff Contact:	Steve H. Smith – (415) 558-6373 Steve.Smith@sfgov.org

PROJECT DESCRIPTION:

The San Francisco Public Utilities Commission (SFPUC) proposes to replace the existing Geary Road Bridge with a new bridge at the existing location to accommodate current load requirements and eliminate the need for a low water crossing. The new bridge is of a similar scale to the existing bridge, and would include a single lane spanning approximately 150 feet over Alameda Creek. The proposed project is on SFPUC property in unincorporated Alameda County, within the Sunol Regional Wilderness. The existing bridge is located at the end of Geary Road, where it crosses Alameda Creek and connects to Camp Ohlone Road. The bridge alignment is approximately 6 miles south of the intersection of Calaveras Road and Interstate 680 (I-680), and approximately 3 miles south of the intersection of Calaveras Road and Geary Road. The nearest community is the town of Sunol, located approximately 7 miles north of the project site. Access to the existing bridge is controlled by locked gates.

The existing bridge was constructed with a load capacity of 10 tons, which precludes heavy vehicles such as fire trucks, construction equipment, and livestock trailers from using the bridge. When stream flow conditions allow, heavy vehicles currently cross the creek at a low-water crossing approximately 60 feet upstream of the existing bridge. The proposed project would accommodate a 63-ton load, result in improved bridge reliability and safety, and eliminate vehicles driving through Alameda Creek at the low-water crossing. The new bridge would continue to provide pedestrian access to the Sunol Regional Wilderness Area and accommodate vehicles of resident ranchers, staff from the East Bay Regional Park Department (EBRPD), SFPUC, fire department, and other authorized personnel, and vehicles accessing the EBRPD Camp Ohlone.

FINDING:

This project could not have a significant effect on the environment. This finding is based upon the criteria of the Guidelines of the State Secretary for Resources, Sections 15064 (Determining Significant Effect), 15065 (Mandatory Findings of Significance), and 15070 (Decision to prepare a Negative Declaration), and the following reasons as documented in the Initial Evaluation (Initial Study) for the project, which is attached.

Mitigation measures are included in this project to avoid potentially significant effects. See individual resource sections for mitigation measures.

cc: Craig Freeman, SFPUC
Distribution List

Initial Study

Planning Department Case No. 2008.0386E
Geary Road Bridge Replacement Project

Appendices

Appendix A **Air Quality and Climate Change Technical Appendix**

Appendix B **Preliminary Delineation of Waters of the United Station for the Geary Road Bridge Upgrade Project**

Appendix C **Special-Status Plants with Potential to Occur in the Geary Road Bridge Upgrade Study Area**

Appendix D **Phase I Environmental Site Assessment**

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List of Abbreviations and Acronyms

AASHTO	American Association of State Highway and Transportation Officials
AB	Assembly Bill
AC Transit	Alameda-Contra Costa Transit District
Alameda WMP	Alameda Watershed Management Plan
APE	area of potential effects
ARB	California Air Resources Board
BAAQMD	Bay Area Air Quality Management District
BART	Bay Area Rapid Transit
bgs	below the ground surface

BMPs	best management practices
CAAQS	California ambient air quality standards
CAL FIRE	California Department of Forestry and Fire Protection
Cal/OSHA	California Division of Occupational Safety and Health
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CCSF	City and County of San Francisco
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CH_4	methane
CHRIS	California Historical Resources Information System
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide-equivalent
CRHR	California Register of Historical Resources
cy	cubic yards
dB	decibel
dBA	A-weighted decibel
dbh	diameter at breast height
DOC	California Department of Conservation
DPM	diesel particulate matter
DPS	Distinct Population Segment
DSOD	Division of Safety of Dams
DTSC	California Department of Toxic Substance Control
EBRPD	East Bay Regional Park District
EDR	Environmental Data Resources, Inc.
EIR	environmental impact report

ESA	Endangered Species Act
FHWA	Federal Highway Administration
FMMP	Farmland Mapping and Monitoring Program
FR	Federal Register
General Construction Permit	NPDES General Permit for Stormwater Discharges Associated with Construction Activity
General Plan	San Francisco General Plan
GHG	greenhouse gas
HCP	Habitat Conservation Plan
HOT	High-Occupancy Toll
HWCA	Hazardous Waste Control Act
I-680	Interstate-680
L_{dn}	day-night level
L_{eq}	equivalent sound level
L_{max}	maximum sound level
L_{min}	minimum sound level
LOS	level of service
L_{xx}	percentile-exceeded sound level
Master Plan	EBRPD Master Plan
MLD	Most Likely Descendant
$MMTCO_2e$	million metric tons of CO_2e
MPO	Metropolitan Planning Organization
N_2O	nitrous oxide
NAAQS	national ambient air quality standards
NAHC	Native American Heritage Commission
NAVD	North American Vertical Datum
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service

NRHP	National Register of Historic Places
O_3	ozone
ohms-cm	ohms centimeters
OHWM	ordinary high-water mark
OPR	Office of Planning and Research
OSHA	Occupational Health and Safety Administration
PM	particulate matter
PM10	particulate matter less than 10 microns in diameter
PM2.5	particulate matter less than 2.5 microns in diameter
RCNM	Roadway Construction Noise Model
RCRA	Resource Conservation and Recovery Act
ROG	reactive organic gas
RTP	regional transportation plan
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
SB 375	Senate Bill 375
SB 97	Senate Bill 97
SFBAAB	San Francisco Bay Area Air Basin
SFPUC	San Francisco Public Utilities Commission
SFWD	San Francisco Water Department
SHPO	State Historic Preservation Officer
SO_2	sulfur dioxide
SPCC	Spill Prevention, Control, and Countermeasure Plan
Sunol and Ohlone Plan	Sunol and Ohlone Wilderness Regional Preserves Land Use Plan
SWPPP	Stormwater Pollution Prevention Plan
TAC	toxic air containment
TNM	Traffic Noise Model
To	Oursan sandstone
TWW	Treated Wood Waste
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

Glossary

100-year flood – A flood having a 1 percent chance of being equaled or exceeded in any given year.

A-weighted decibel (dBA) – Because the human ear is not equally sensitive to all sound frequencies within the entire spectrum, human response is factored into sound descriptions in a process called "A-weighting," expressed as dBA. The dBA, or A-weighted decibel, refers to a scale of noise measurement that approximates the range of sensitivity of the human ear to sounds of different frequencies.

Abutment – The part of a structure (e.g., an arch or a bridge) that directly receives thrust or pressure. The end foundation upon which a bridge superstructure rests.

Aestivation – Aestivation is a state of dormancy or inactivity during hot or dry months, typically characterized by a slower metabolism.

Alluvium – Unconsolidated mixtures of gravel, sand, clay, and silt typically deposited by streams.

Alquist-Priolo Earthquake Fault Zone – The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate impacts on structures for human occupancy related to surface faulting hazards. In accordance with this act, the state geologist established regulatory zones, called "earthquake fault zones," around the surface traces of active faults and published maps showing these zones. Within these zones, buildings for human occupancy cannot be constructed across the surface trace of active faults. Each earthquake fault zone extends approximately 200 to 500 feet on either side of the mapped fault trace.

Ambient air – Outside air; any portion of the atmosphere not confined by walls and a roof.

Ambient noise – The background noise in an area or environment; a composite of sounds from many sources near and far.

Anadromous fish –Fish hatch and mature (rear) in freshwater, migrate to the ocean (saltwater) to grow and mature, and then migrate back to freshwater to spawn.

Aqua Dam® – Typically composed of three or more polyethylene or woven geo-tech tubes that are filled with water.

Asbestos – A term used for several types of naturally occurring fibrous materials found in many parts of California, some of which have been found to be cancer-causing agents.

Attainment – A designation used when an area meets an air quality standard.

Backfill – Material used to refill an excavated area.

Bedrock units – The consolidated rock underlying the surface. It may be covered with deposits of unconsolidated material such as soil or broken and weathered rock.

Biological Opinion – Issued under the authority of the federal Endangered Species Act, this document presents the findings of the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service regarding a federal action's potential to result in the destruction or adverse modification of critical habitat or jeopardize the continued existence of a threatened or endangered species.

Best Management Practices (BMPs) – Methods or techniques that have been found effective and practical for achieving an objective (such as preventing or minimizing pollution).

California Environmental Quality Act (CEQA) – A state law, originally enacted in 1970, that requires public agencies to document and consider the environmental effects of a proposed action before a decision is issued.

Candidate species – Species of plants or animals that have been classified as candidates for possible listing as endangered or threatened by a government agency.

Carbon dioxide-equivalent – A measure used to compare emissions from various greenhouse gases based on their global warming potential.

Channel – A natural or artificial watercourse with a defined bed and banks to confine and convey continuously or periodically flowing water.

Colluvium – A loose deposit of rock debris accumulated through the action of gravity on a slope, e.g., at the base of a cliff.

Community Noise Equivalent Level (CNEL) – The A-weighted acoustical energy during 24 hours, with weightings of 5 dB for the evening hours (7 p.m. to 10 p.m.) and 10 dB for nighttime hours (10 p.m. to 7 a.m.).

Criteria air pollutant – Certain air pollutants for which the federal and state authorities have established specific standards of exposure to protect the public health and welfare.

Cultural resource – The nonrenewable remains of human activity that is valued by or significantly representative of a culture, or that contains significant information about a culture. Cultural resources encompass archaeological, traditional, and built environmental resources, including landscapes or districts, sites, buildings, structures, objects, or cultural practices that are usually greater than 50 years of age and possess architectural, historic, scientific, or other technical value.

Culvert – A drainage structure under a road or embankment.

Cumulatively considerable – A CEQA term used to indicate whether or not a cumulative impact is significant.

Day-night noise level (L_{dn}) – Similar to CNEL, this noise descriptor adds a 10 dBA penalty to all nighttime noise events between 10:00 p.m. and 7:00 a.m. However, L_{dn} does not add the evening 5 dBA penalty.

Decibel (dB) – A unit used to measure the intensity of a sound or the power level of an electrical signal by comparing it with a given level on a logarithmic scale.

Deck – The roadway portion of a bridge, including shoulders.

Dewatering – Process of removing groundwater from a trench or excavation during construction.

Diameter at breast height (dbh) – A standard means of tree measurement, with the diameter of the trunk measured at breast height, defined as 4.5 feet above the ground on the uphill side of the tree.

Discharge – The flow of surface water in a stream or canal or the outflow of groundwater from a flowing ditch or spring.

Disturbance – Any event or series of events that disrupt ecosystem, community, or population structures and alter the physical environment.

Early Holocene period – 11,600 – 7,700 years before present.

Easement – The right to use another's property for a particular purpose.

Endangered species – Any species or subspecies of bird, mammal, fish, amphibian, reptile, or plant that is in serious danger of becoming extinct throughout all or a significant portion of its range. Such species are officially designated by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service, with the designation published in the Federal Register. Species may also be listed under the California Endangered Species Act by the California Department of Fish and Game.

Enhancement – Measures that develop or improve the quality or quantity of existing conditions or resources beyond a condition or level that would have occurred without an action.

Ephemeral streams – Streams that flow briefly during and immediately following storm events.

Equivalent sound level (L_{eq}) – An average of the sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level with the same acoustical energy as the time-varying sound that actually occurs during the monitoring period. The 1-hour A-weighted equivalent sound level ($L_{eq}1[h]$) is the energy average of A-weighted sound levels occurring during a 1-hour period.

Expansive soils – Soils or rocks characterized by clayey material that shrinks and swells as it dries or becomes wet, respectively. Expansive soils are subject to changes in volume and settlement in response to wetting and drying, often resulting in severe damage to structures.

Fault – A fracture in the continuity of a rock formation caused by a shifting or dislodging of the earth's crust, with adjacent surfaces displaced relative to one another parallel to the plane of fracture.

Floodplain – Land adjacent to a watercourse over which water flows in times of flooding. The limits of the floodplain are typically defined by the peak level of a 100-year flood.

Flow – The volume of water passing a given point per unit of time.

Fugitive dust – Small airborne particles that are released to the atmosphere by some means other than through a stack or tailpipe (non-point source emissions).

Greenhouse gas – A gas that contributes to the greenhouse effect by absorbing or trapping heat from the sun as it is reflected back into the atmosphere, much like what a greenhouse does. By capturing heat in this manner, greenhouse gases (GHGs) contribute to global climate change. Some examples of greenhouse gases are carbon dioxide (CO_2), methane (CH_4), ozone (O_3), nitrous oxide (N_2O), and water vapor (H_2O).

Habitat – The specific area or environment in which a particular type of animal or plant lives**.**

Hazardous materials – According to Section 25501(h) of the California Health and Safety Code, 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 to the workplace or environment. Hazardous materials are used in commercial, agricultural, and industrial applications as well as residential areas to a limited extent.

Hazardous waste – Waste that poses substantial or potential threats to public health or the environment. Four factors are considered when determining if a substance is hazardous (i.e., ignitability, reactivity, corrosivity, toxicity).

Herbaceous – Having the texture, color, and other characteristics of ordinary foliage; not woody.

Historic resource – A term that is sometimes used to refer to architectural or archaeological resources from the historic era.

Hydrology – The scientific study of the properties, distribution, and effects of water on the earth's surface and in the atmosphere.

Hydrostatic pressure – The pressure exerted on a column of fluid as a result of the weight of the fluid above it.

Integrity (archaeological or architectural) – A resource's "intactness" and the extent to which it resembles its original form.

Lateral spreading – A permanent deformation of soil due to lateral movement of one location on the surface relative to another.

Lead agency – The public agency that has the principal responsibility for completing the required review (e.g., under CEQA or NEPA) for a proposed project that may have a Potentially Significant effect upon the environment.

Level of service (LOS) – A road's LOS in the transportation analysis is defined as a qualitative description of a facility's performance based on average delay per vehicle, vehicle density, or volume-to-capacity ratios. The operational characteristics associated with each LOS category are defined by descriptions from the Transportation Research Board's *Highway Capacity Manual* (2000). LOS ranges from LOS A, which indicates free-flow or excellent conditions with short delays, to LOS F, which indicates congested or overloaded conditions with extremely long delays.

Liquefaction – A phenomenon in which saturated granular sediments temporarily lose their shear strength during periods of earthquake-induced ground shaking. The susceptibility of a site to liquefaction is a function of the depth, density, and water content of the granular sediments and the magnitude of the earthquake-induced ground shaking.

Lithology – The gross physical character of a rock or rock formation.

Low-water Creek Crossing – An alternative to bridges for use when streamflow conditions are appropriate. Low-water creek crossings are constructed at relatively narrow, shallow stream locations, in areas with bedrock or coarse soil.

Maximum and minimum sound levels (L_{max}, L_{min}) – The maximum and minimum sound levels measured during a monitoring period.

Mitigation – Refers to one or all of the following:

1. Avoiding an impact altogether by not implementing a certain action or parts of an action.
2. Minimizing impacts by limiting the degree or magnitude of an action and its implementation.
3. Rectifying an impact by repairing, rehabilitating, or restoring the affected environment.
4. Reducing or eliminating an impact over time through preservation and maintenance operations during the life of the action.
5. Compensating for an impact by replacing or providing substitute resources or environments.

Modeling – A tool used to mathematically represent a process, which could be based on empirical or mathematical functions. Models can be computer programs, spreadsheets, or statistical analyses.

Native – Grown, produced, or originating from a particular geographic area.

Negative declaration – A form of environmental review documentation for projects that are subject to CEQA. It consists of a written statement, as well as supporting documentation issued by the lead agency responsible for CEQA implementation, regarding the determination that the proposed project will not have a significant effect on the environment.

Noise – Noise is defined as unwanted sound that adversely affects a receiver. In general, sound waves travel away from a ground-level noise source in a hemispherical pattern. As a result, the energy contained in a sound wave spreads over an ever-increasing area as it travels away from the source. This results in a decrease in loudness at greater distances from the noise source.

Nonnative – Not originating from the geographic area.

North American Vertical Datum (NAVD) – The official datum used for the primary geodetic network in North America. The primary geodetic network consists of stations separated by distances of tens of kilometers

OFFROAD2007 model – This model calculates CO_2 and CH_4 emissions from off-road mobile sources.

Ozone precursors – Ozone is not emitted directly but formed by the effect of the sun's energy on other chemicals, primarily volatile organic compounds (VOCs) and nitrogen oxides (NO_X). These chemicals are known as ozone precursors.

Particulate matter – Tiny solid or liquid particles, generally soot and aerosols.

Particulate matter (PM10 and PM2.5) – Refers to a class of air pollutants that consists of solid or liquid airborne particles in a small size range (i.e., PM10 for particles less than 10 micrometers in diameter and PM2.5, for particles less than 2.5 microns in diameter).

Passive recreation – Recreational activities that occur in a natural setting and require minimal site development or facilities. With passive recreation, the environment or setting for the activities is more important than it is in developed or active recreational settings.

Peak hour – The part of the day during which traffic congestion on roads is worse. Normally, this happens twice a day (i.e., when people are commuting).

Percentile-exceeded sound level (L_{xx}) – This represents the sound level exceeded some percentage of the time during a monitoring period. For example, L_{90} is the sound level exceeded 90 percent of the time, and L_{10} is the sound level exceeded 10 percent of the time.

Perennial – Lasting all year long, generally in reference to stream flow.

Pier – A supporting structure at the junction of connecting spans of a bridge.

Pile cap – A mass of reinforced concrete that has been fastened to the top of a group of piles, thereby enabling it to act as a single unit and support the load.

Proposed species – Candidate species that were found to warrant listing as either threatened or endangered and officially proposed as such in a Federal Register notice after the completion of a status review and consideration of other protective conservation measures.

Riffles – A stretch of choppy water caused by stones or other objects in a river or stream.

Right-of-way – The area of land (usually a strip) acquired for and devoted to the provision of utilities.

Riparian – The land adjacent to a natural watercourse such as a river or stream. Riparian areas contain vegetation that provides and supports important wildlife and fisheries habitat.

Riprap – An assemblage of stones erected in or adjacent to water to armor (protect) an embankment or like man-made structure.

Roadway capacity – The maximum traffic flow obtainable on a given roadway, using all available lanes, usually expressed in vehicles per hour or vehicles per day.

Salmonid – Salmon or trout.

Scour – The clearing and digging action of flowing water, especially the downward erosion caused by stream water in removing material (e.g., soil, rocks) from a channel bed or bank or around in-channel structures.

Scrub – Low trees or shrubs, collectively.

Sedimentation – The deposition of material suspended in a stream system, whether in suspension (suspended load) or on the bottom (bedload).

Seiche – An oscillation of a body of water. Seiches occur most frequently in enclosed or semi-enclosed basins, such as lakes, bays, or harbors, and may be triggered by strong winds, changes in atmospheric pressure, earthquakes, tsunamis, or tides. A seiche of approximately 4 inches occurred during the 1906 earthquake, an event of magnitude 8.3 on the Richter scale.

Sensitive receptors – People who are particularly susceptible to illness caused by environmental pollution. The term "sensitive receptors" includes the elderly, very young children, people who are already weakened by illness (e.g., asthmatics), and people who engage in strenuous exercise.

Serpentine – A naturally occurring group of minerals that can form when ultramafic rocks are metamorphosed during uplift to the earth's surface. Serpentinite is a rock consisting of one or more serpentine minerals. This rock type is commonly associated with ultramafic rock along earthquake faults. Small amounts of chrysotile asbestos, a fibrous form of serpentine minerals, are common in serpentinite.

Shoring – Refers to the process of supporting a structure to prevent collapse so that construction can proceed.

Siltation – Sediment influx from either erosion or sediment carried into a water body by inflowing rivers and tributaries.

Sloughing – Refers to the sliding of overlying material. Usually occurs when an underlying stratum is saturated.

Sound – Sound is caused by vibrations that produce pressure waves, which travel outward from the source of the disturbance. The human perception of sound varies according to the characteristics of the sound waves (e.g., period, amplitude, frequency, speed, wavelength) and the characteristics of the media through which the sound travels (e.g., air, water, solids).

Spark arrestor – A device that prevents exhaust gases from an internal combustion engine from creating a spark. A carbon trap is commonly used to retain carbon particles from the exhaust.

Spawning – Laying (and fertilizing) eggs in the process of reproduction.

Special-status species – Both plant and animal species that are officially listed as threatened or endangered or proposed for listing (or candidates for listing) under the provisions of the Endangered Species Act.

Spoil – Excess soil and rock from excavations.

Stringer – A long horizontal beam that is used for structural purposes.

Subsidence – The lowering, settling or sinking of the land surface.

Substrate – A substance or layer that underlies something or upon which some process occurs (e.g., the surface or material on or from which an organism lives, grows, or obtains its nourishment).

Superstructure – The bridge components that rest upon the abutments and piers.

Surface water – All water that is naturally open to the atmosphere (i.e., rivers, lakes, reservoirs, ponds, streams, impoundments, seas, estuaries, etc.).

Swales – Areas where winter rain collects but does not stand as long as it does in vernal pools.

Threatened species – Any species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

Topsoil – Surface soil. This usually includes the organic layer in which plants produce most of their roots. Also, the soil that a farmer turns over while plowing.

Traffic Noise Model – A state-of-the-art computer program for predicting noise impacts in the vicinity of highways. It uses advanced computer hardware and software to improve the accuracy and ease of highway noise modeling, including the design of effective, cost-efficient highway noise barriers.

Understory – The shrubs and plants growing beneath the main canopy of a forest or stand of trees.

Unique archaeological resource – An archaeological artifact, object, or site that has a high probability of meeting the following:

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

URBEMIS2007 model – Estimates air pollution emissions, including the greenhouse gas CO_2, from a wide variety of land use projects.

Viewshed – The landscape that can be seen under favorable atmospheric conditions.

Waters of the United States – A broad federal definition that describes U.S. Army Corps of Engineers jurisdiction over deep-water habitats and special aquatic sites, including wetlands, as follows:

1. The territorial seas, with respect to the discharge of fill material.
2. Coastal and inland waters, lakes, rivers, and streams that are navigable waters of the United States, including their adjacent wetlands.
3. Tributaries to navigable waters of the United States, including wetlands.
4. Interstate waters and their tributaries, including adjacent wetlands.

Watershed – An area or ridge of land that separates waters that flow to different rivers, basins, or seas. Also, an area or region drained by a river, river system, or other body of water.

Watershed management – The net result of numerous and varied actions in a watershed, which directly affect watershed function and productivity. Actions may include land use decision-making, restoration and enhancement projects, the monitoring and assessment of watershed conditions, natural resource allocation and use, parcel management techniques, and educational programs. Watershed management includes the protection of existing healthy conditions.

Weir – A small dam in a river that is used to divert or control water flow.

Wetland – A zone periodically or continuously submerged or having high soil moisture, which has aquatic and/or riparian vegetation components and contains soils suitable of supporting such vegetation.

Wing Wall – A short section of wall that is positioned at an angle to a bridge abutment; it is used as a retaining wall to stabilize the abutment.

INITIAL STUDY

Planning Department Case No. 2008.0386E
Geary Road Bridge Replacement Project

A. PROJECT SETTING

Introduction

The project sponsor, the San Francisco Public Utilities Commission (SFPUC), is proposing the Geary Road Bridge Replacement Project (project). Under the proposed project, the existing Geary Road Bridge would be replaced with a new bridge at the present location to accommodate current load requirements and eliminate use of an existing low-water creek crossing. The project site (assessor's parcel number 096-010002-402) occurs on land owned by the City and County of San Francisco (CCSF), managed by SFPUC, and leased to the East Bay Regional Park District (EBRPD). The existing bridge is located within the Alameda Creek watershed.[1] The nearest community is the town of Sunol, located approximately 7 miles north of the project site. This initial study has been prepared to support a proposed Mitigated Negative Declaration for the proposed project, consistent with the requirements of the California Environmental Quality Act (CEQA).

B. PROJECT DESCRIPTION

Project Location

The proposed project is located in unincorporated Alameda County, within the Sunol Regional Wilderness area. The existing bridge is located on Geary Road, approximately 6 miles south of the intersection of Calaveras Road and Interstate 680 (I-680), 3 miles south of the SFPUC Sunol Valley Water Treatment Plant, and approximately 3 miles north of the SFPUC Alameda Creek Diversion Dam (Figure 1). The existing bridge and proposed replacement bridge alignment are located where Geary Road crosses over Alameda Creek.

Project Background

The bridge was constructed in the 1930s and repaired and upgraded in 1961. Vehicle access across the bridge is restricted by locked gates; authorized vehicles include those of resident ranchers, emergency personnel, and public safety, U.S. Geological Service, EBRPD, and SFPUC staff. Pedestrian access to the bridge is limited to the hours of operation of the adjoining Sunol Regional Wilderness, typically 7 a.m. to dusk.

The original load capacity of the bridge when constructed was 10 tons, which precludes heavy vehicles such as fire trucks, construction equipment, and livestock trailers from using the bridge. When flow conditions in Alameda Creek allow, heavy vehicles cross the creek at a low-water crossing approximately 60 feet upstream (west) of the bridge. Low numbers of vehicles currently use the low-water crossing each year.

[1] The *Alameda Creek watershed* consists of approximately 440,000 acres and includes three sub-watersheds: Arroyo de la Laguna sub-watershed (approx 270,000 acres), Upper Alameda Creek sub-watershed (approximately 130,000 acres), and the Lower Alameda Creek sub-watershed (approximately 40,000 acres). The proposed project is located in the Upper Alameda Creek sub-watershed.

An inspection of the bridge in November 2005 found the structure to be deteriorated, which necessitated repairs to the decking and supports. SFPUC has determined that the bridge needs to be improved or replaced to accommodate heavy vehicle loads and eliminate the need for the low-water crossing.[2]

Purpose and Project Objectives

The purpose of the proposed project is to replace the existing wooden bridge with a new bridge that can accommodate pedestrian and vehicular usage, including vehicles that currently must bypass the existing bridge and drive through Alameda Creek because of load restrictions. The project would be designed and constructed per SFPUC Water Supply and Treatment Division maintenance requirements and would conform to American Association of State Highway and Transportation Officials (AASHTO) and California Department of Transportation (Caltrans) bridge design standards, including seismic and safety requirements.[3] The new bridge would improve reliability and safety and eliminate the need for the low-water crossing, thereby enhancing the existing condition of Alameda Creek. The new bridge would continue to provide pedestrian and vehicular access to the southeastern portion of the Upper Alameda Creek sub-watershed, including vehicles belonging to SFPUC, EBRPD, resident ranchers, the California Department of Forestry and Fire Protection (CAL FIRE), U.S. Geological Service, and others. The primary objectives of the proposed project are as follows:

- Construct a new bridge that can accommodate a 63-ton load (e.g., a large crane).
- Eliminate the need for vehicles to use a low-water crossing, thereby enhancing the condition of Alameda Creek in the area.
- Decrease long-term maintenance costs associated with the bridge.

Project Components

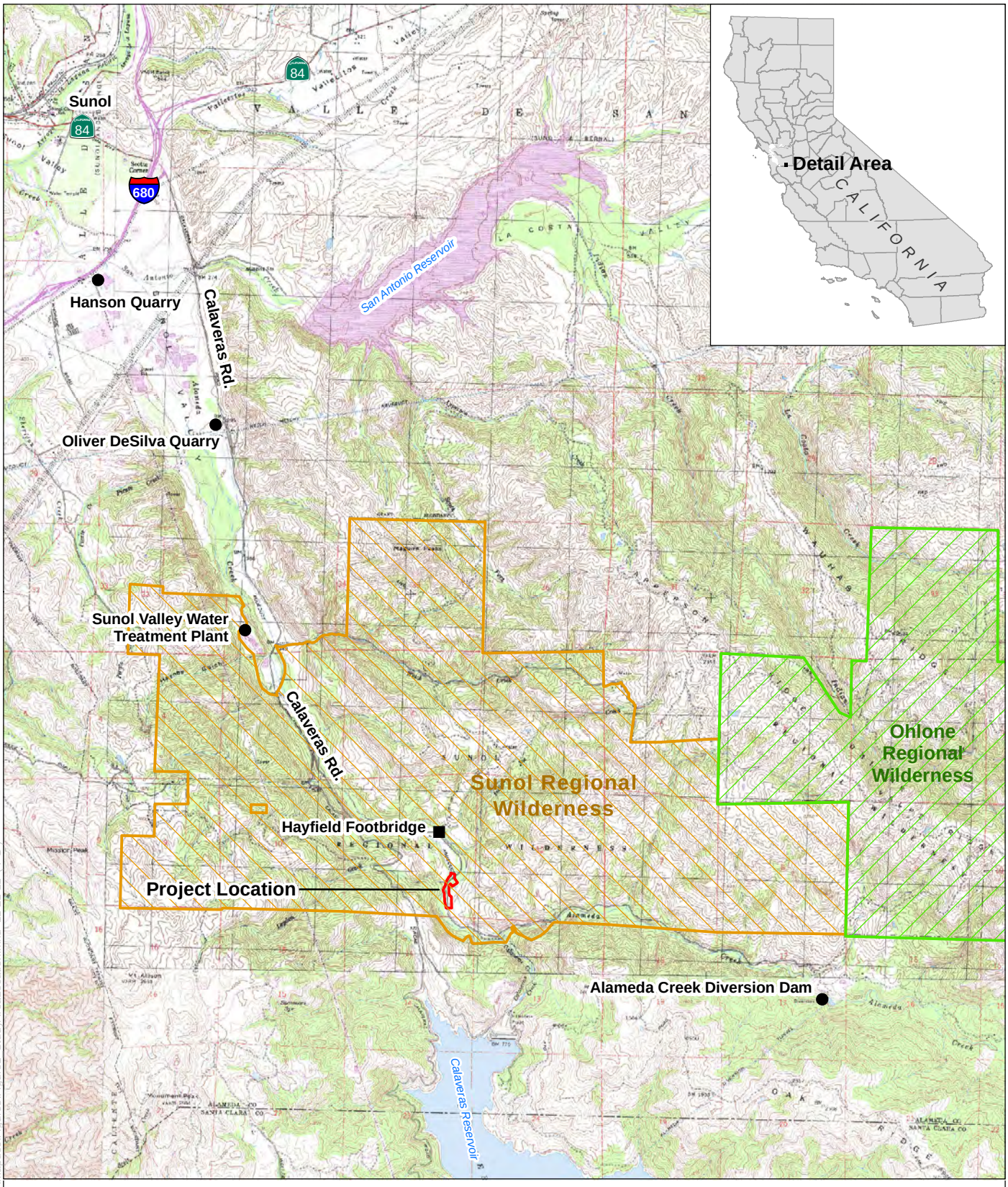
The proposed project would include the following components: bridge superstructure[4] (deck and girders), abutments and piers, new or refurbished access roads, culvert replacement, stormwater drainage facilities, and site restoration and habitat enhancement. The locations of these features, as well as the construction limits and staging areas, are shown in Figure 2**.** Figure 3 shows the proposed bridge profile and components (e.g., superstructure, abutments, piers), and Figure 4 shows the bridge plan. Figure 4a shows details associated with proposed habitat enhancement activities, which are described below.

The following sections describe the project components in detail. Construction activities associated with the proposed project are described below under Project Construction.

[2] San Francisco Public Utilities Commission. 2011a. *Amendment to Conceptual Engineering Report (August 2006) for the Geary Road Bridge Project,* CUW 264.03. Prepared by the Engineering Management Bureau. May; San Francisco Public Utilities Commission. 2006a. *Final Conceptual Engineering Report*. Prepared by the Engineering Management Bureau. August.

[3] American Association of State Highway and Transportation Officials. 2007. *Load and Resistance Factor Design Bridge Design Specifications, Fourth Edition*; California Department of Transportation. 2010. *Amendments to AASHTO Load and Resistance Factor Design Bridge Design Specifications, Fourth Edition.*

[4] *Superstructure* refers to bridge components resting on the abutments.



Geary Road Bridge Replacement Project

Figure 1
Project Vicinity

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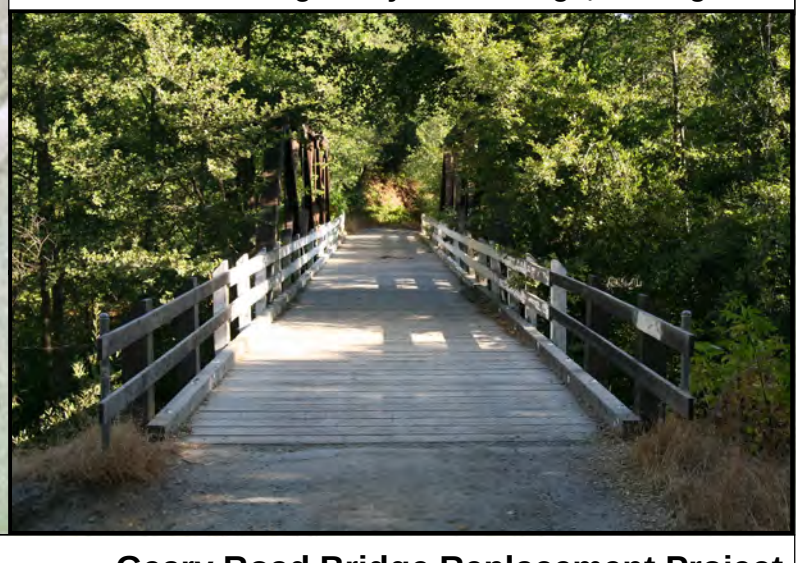
Existing low water crossing

Proposed Bridge Deck
Proposed Gravel Road
Proposed Paved Road
Proposed Staging Area (approximate)
Limit of Construction
Estimated Area Permanently Affected
Direction of Flow

Leyden Flats
Geary Road
Existing Parking Lot
Alameda Grove
Existing Entrance Gate
Proposed Culvert Replacement
Leyden Creek
Proposed Bridge Deck
Proposed Temporary Creek Crossing
Proposed Intermediate Piers
McCorkle Corral
Alameda Creek
McCorkle Trail
Geary Road

South end of existing Geary Road Bridge, looking north



N

0 25 50 100

Feet

Geary Road Bridge Replacement Project

Figure 2
Project Site

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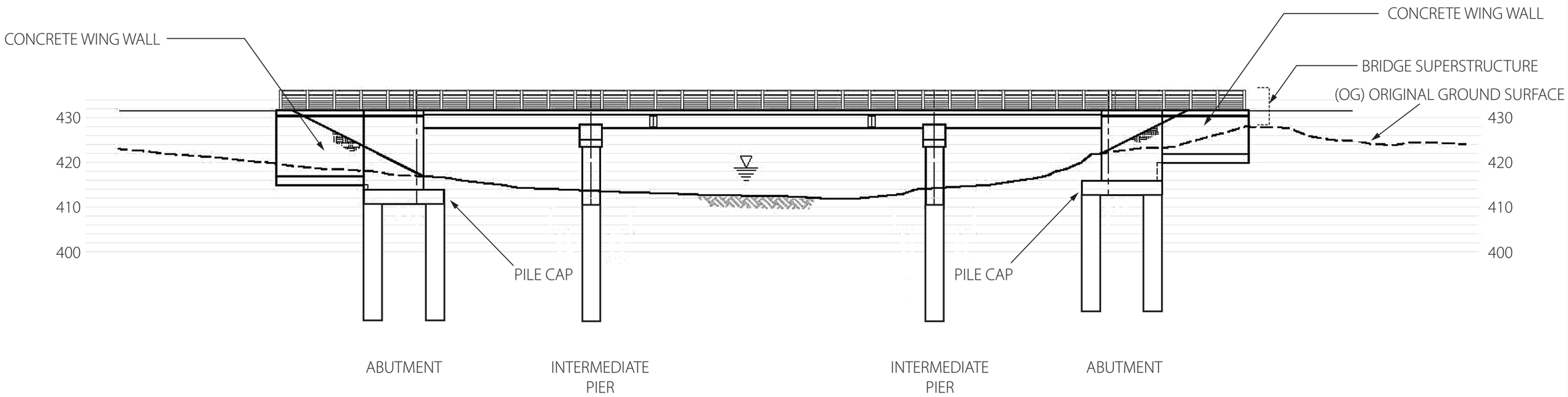

ELEVATION
1″ = 20′

Geary Road Bridge Replacement Project

Figure 3
Proposed Bridge Elevation

Source: SFPUC (50% Submittal), June 2011.

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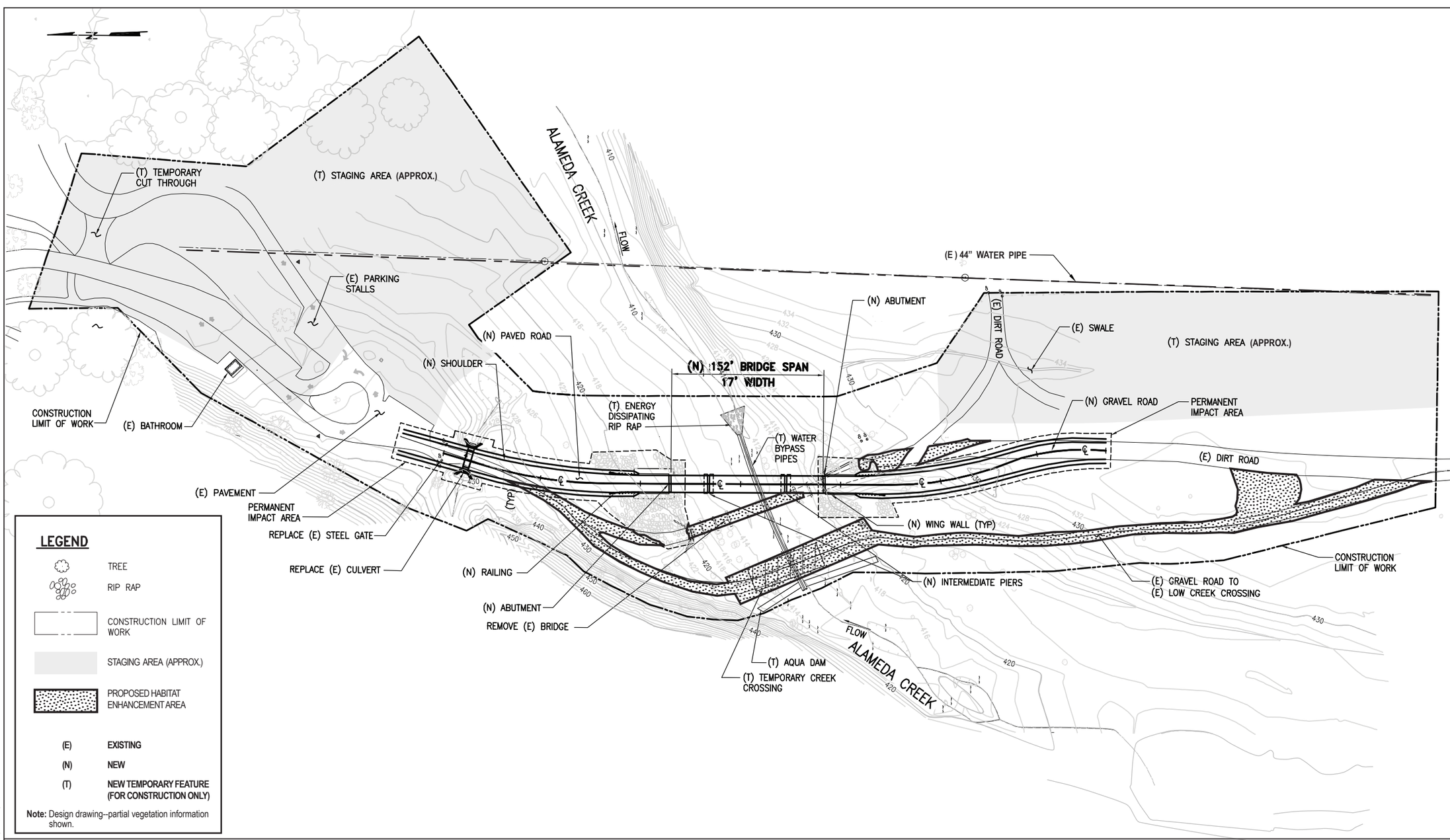

Source: SFPUC (95% Submittal), February 2012.

Geary Road Bridge Replacement Project

Figure 4
Proposed Bridge Plan and Construction Limit of Work

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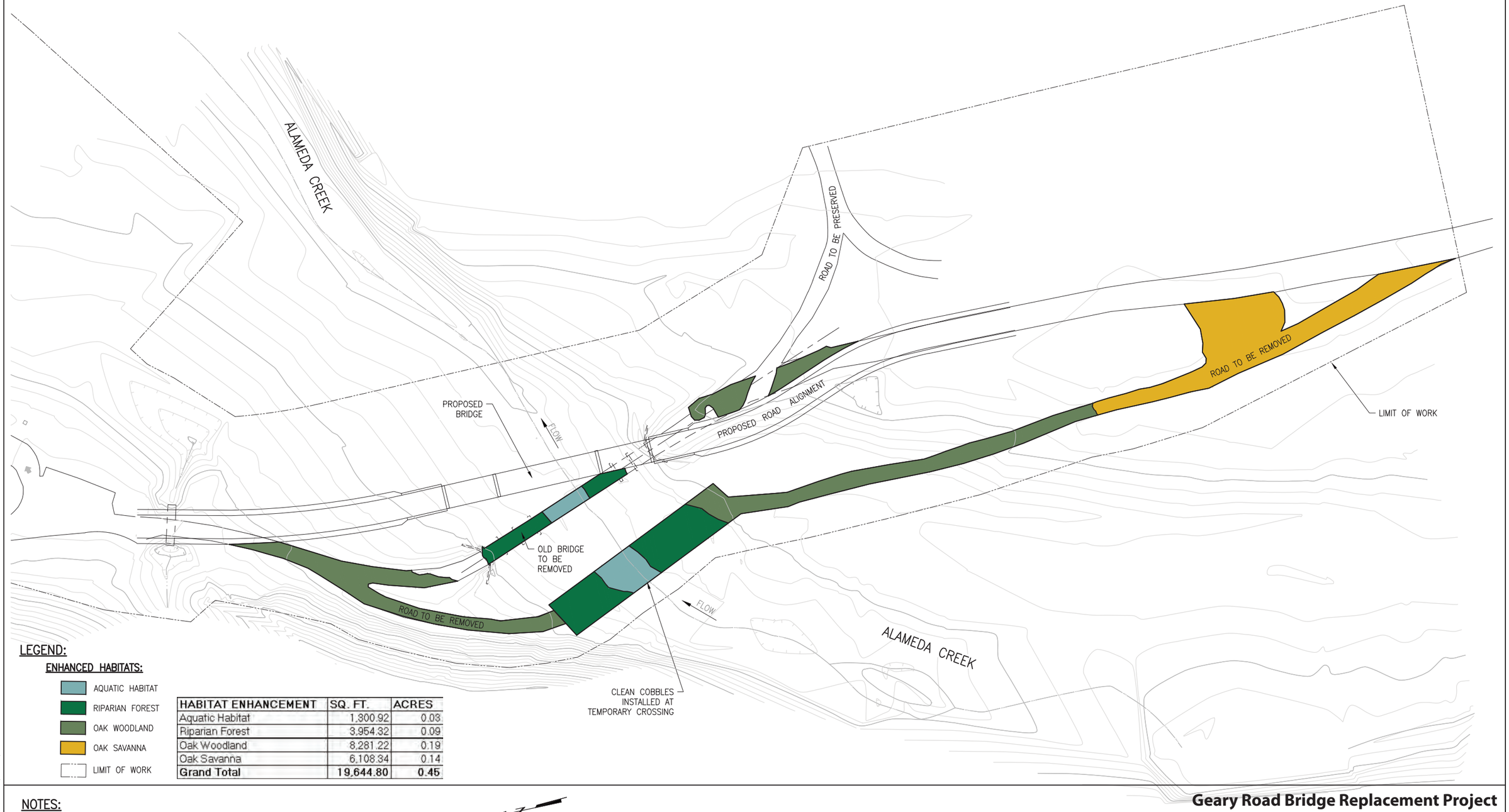

LEGEND:

ENHANCED HABITATS:

- AQUATIC HABITAT
- RIPARIAN FOREST
- OAK WOODLAND
- OAK SAVANNA
- LIMIT OF WORK

HABITAT ENHANCEMENT	SQ. FT.	ACRES
Aquatic Habitat	1,300.92	0.03
Riparian Forest	3,954.32	0.09
Oak Woodland	8,281.22	0.19
Oak Savanna	6,108.34	0.14
Grand Total	**19,644.80**	**0.45**

NOTES:

1. ENHANCED AREAS ARE AREAS THAT HAVE BEEN IMPACTED PRIOR TO THE PROJECT (E.G., LOW CREEK CROSSING AND ASSOCIATED APPROACH ROADS) WHERE THOSE IMPACT FEATURES WILL BE REMOVED BY THE PROJECT AND NEW HABITAT WILL BE CREATED.
2. AREA OF AQUATIC HABITAT IS BASED ON AERIAL INTERPRETATION OF STREAM CHANNEL LIMIT.
3. TREES WILL BE PLANTED IN A MANNER THAT FOLLOWS NATURAL TOPOGRAPHY AND EXISTING HABITATS; TREES WILL BE CLUSTERED IN SOME AREAS AND MORE WIDELY SPACED IN OTHERS.

35' 0 35' 75'

SCALE: 1"= 35'

Geary Road Bridge Replacement Project

Figure 4a
Proposed Habitat Enhancement

Design Considerations

A new one-lane bridge would be constructed near the existing wooden bridge. The existing bridge would be demolished, then recycled or disposed of at an appropriate off-site facility. By reusing the location and vicinity of the existing bridge, construction of the new bridge would limit encroachments (cuts) into hillsides and slopes and associated earthmoving. Because two bridges are not needed at this location, the existing bridge can be removed, thereby reducing future maintenance costs.

The new Geary Road Bridge superstructure would be made of steel or weathering steel. The structure would be supported on two intermediate piers and designed in accordance with AASHTO and Caltrans bridge design specifications.[5] The design vehicular load for the bridge would be 63 tons, which would accommodate SFPUC Water Supply and Treatment Division maintenance vehicles, emergency and fire vehicles and equipment, and local livestock trailers up to a maximum length of 65 feet (one-way traffic).

Bridge Superstructure

The proposed bridge superstructure would have an 8-inch-thick concrete deck supported by 36-inch-deep horizontal steel girders. The contractor will be given the option to bid and construct the bridge superstructure as defined in the final SFPUC design package or construct an alternative superstructure that conforms to the applicable standards. The contractor will not be allowed to alter any other element of the bridge other than the superstructure. The bridge span would be approximately 152 feet long and 17 feet wide. The horizontal girders would be designed to support the reinforced concrete deck, the structural steel floor beams, and the stringers.[6] The design of the proposed bridge would be prepared and approved by professional engineers licensed in the state of California.

Piers and Abutments

The new bridge would be supported on two intermediate piers and two abutments located within Alameda Creek and on the banks, as shown in Figures 3 and 4. The abutments and intermediate piers would be designed for the vertical and lateral loads of the bridge superstructure. The design would account for seismic and other geologic conditions specific to the site. The reinforced concrete piers and abutments, with associated wing walls,[7] would be supported on deep foundations that extend below the surface of the creek (i.e., drilled-in-place subsurface concrete piles).

Each abutment would extend downward approximately 20 feet and measure about 20 feet wide and 35 feet long, including the wing walls. The pile cap[8] under each abutment would be approximately 6 feet deep, 20 feet wide, and 23 feet long. To accommodate the anticipated loads, four large-diameter subsurface concrete piles would be installed beneath each abutment. Each subsurface pile would be 6 feet in diameter and extend to a depth of approximately 35 feet below the creek bottom elevation. The foundations for the abutments would require below-grade excavation, as described further below under Bridge Construction.

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[5] California Department of Transportation. 2004. *Bridge Design Specifications*. September. Accessed: <http://www.dot.ca.gov/hq/esc/techpubs/manual/bridgemanuals/bridge-design-specifications/bds.html>.

[6] A *stringer* is a long horizontal beam that is used for structural purposes.

[7] A *wing wall* is a short section of wall that is positioned at an angle to a bridge abutment; it is used as a retaining wall to stabilize the abutment.

[8] A *pile cap* is a mass of reinforced concrete that is fastened to the top of a group of piles, thereby enabling it to act as a single unit and support the load.

The two intermediate piers that support the bridge superstructure would be approximately 5 feet in diameter and about 23 feet in height. Approximately 5 feet below grade, each concrete pier would connect to one 7-foot-diameter concrete pile that would extend downward 30 feet to a total depth of approximately 35 feet below the creek bottom.

A drainage system would be constructed behind the wing walls using perforated pipe embedded in drain rock and filter fabric. This would allow water behind the wing walls to drain to Alameda Creek to alleviate hydrostatic pressure.[9] Stormwater on the bridge deck would drain to the creek from both sides of the bridge (see discussion under Stormwater Drainage and Temporary Features).

The abutments would be protected with riprap. Approximately 200 cubic yards (cy) of riprap would be placed along the abutments to prevent scour.

Approach Road

To improve safety during high creek flows, the new bridge would be built 4 feet higher than the existing bridge.[10] The elevation at the top of the bridge deck would be roughly 432 feet above the North American Vertical Datum (NAVD) of 1988,[11] and the elevation at the bottom of the bridge deck would be 427.52 feet. Given the anticipated 100-year flood[12] level of 424.9 feet,[13] 2.62 feet of freeboard clearance would be provided.[14]

The roadway on the southbound approach to the bridge would be straightened slightly to allow large vehicles to approach the bridge and eliminate the need to excavate into the hillside. The southbound approach would be raised from 429 feet to 432 feet to match the elevation of the new bridge; the northbound approach would also be straightened slightly and raised from 417 feet to 432 feet.

As part of the proposed project, the existing culvert beneath the access road would be replaced. The design, as well as all installation work, would be consistent with California Department of Fish and Game (CDFG) requirements for salmonid passage at stream crossings.[15] The existing culvert, which has a diameter of 6 feet, is located under Geary Road near the bridge gate (see Figure 2). It would be replaced with a concrete pipe or box culvert of the same diameter in the same location. The new culvert would have wing walls on both ends to prevent soil erosion.

The proposed bridge would have a minimum width of 17 feet to accommodate a 65-foot-long tractor with cattle trailer. Immediately adjacent to each end of the bridge would be a 17-foot-wide and 30-foot-long approach road segment made of reinforced concrete per Caltrans pavement design requirements.[16] The design for the approach roads would provide a more gradual transition from the existing roadway to the bridge. The posted vehicle speed would be 10 miles per hour.

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[9] Hydrostatic pressure results from the weight of the water, which is directly proportional to the height of the water column and the density of the water.

[10] The elevation at the top of the existing bridge deck is 428 feet North American Vertical Datum (NAVD).

[11] All elevations in this document are identified in feet above NAVD 1988. A datum is a line, point, or surface (such as sea level) that is used as a reference for elevation.

[12] The 100-year flood is defined as a flood having a 1 percent chance of being equaled or exceeded in any given year.

[13] Water Resources Engineering, Inc. 2011. *Hydraulic Analysis of Alameda Creek Crossings in the Sunol Regional Wilderness*. Draft report. Prepared for the San Francisco Public Utilities Commission. January.

[14] Ng, Yen. San Francisco Public Utilities Commission (personal communication). December 2, 2011, email to Craig Freeman, SFPUC.

[15] California Department of Fish and Game. 2003a. *California Salmonid Stream Habitat Restoration Manual.* Part IX, Fish Passage Evaluation at Stream Crossings. April.

[16] California Department of Transportation. 2008. *Highway Design Manual, Fifth Edition.*

Stormwater Drainage and Other Features

To ensure proper drainage, the paved surface of the roadway would be sloped 2 percent from the midpoint of the road to the edge of the road. This design would accommodate a 25-year storm.[17] Runoff would be immediately directed to upland areas adjacent to roadways and then to Alameda Creek by sloping the southern and northern approaches.

Permanent electric power facilities are not included under the proposed project. In addition, the proposed project would not include new permanent fencing, parking and/or loading spaces, or lighting elements.

Temporary features required during construction only, such as construction shoring, a temporary creek crossing structure, and a water bypass feature to route water past the work area, are described below under Project Construction.

Habitat Enhancement

Following removal of the existing bridge and completion of the new bridge, as well as decommissioning at the existing low-water crossing and approach roads, proposed habitat enhancements would be implemented along portions of the existing bridge alignment and the approach roads. Approximately 0.45 acre of habitat would be planted in these currently developed areas, including 0.14 acre of oak savanna, 0.19 acre of oak woodland, 0.09 acre of riparian forest, and 0.03 acre of aquatic habitat. Proposed habitat enhancement areas are shown in Figure 4a and further detailed under Project Construction, below.

Post-construction operation of the new bridge and the decommissioning of the low-water crossing would stop vehicles from driving through Alameda Creek and adjoining upland habitat areas.

Project Construction

Construction would occur primarily during the day, Monday through Friday, between the hours of 7 a.m. and 7 p.m. Nighttime construction may also occur between the hours of 7 p.m. and 7 a.m. No construction activities would occur on weekends or major holidays. Construction of the proposed project is expected to occur from approximately April 1 to December 31, 2013. Construction would generally involve the following types of activities: site clearing and grubbing, demolition, excavation, drilled pile construction, concrete and structural work, backfilling, soil compaction, paving, and site restoration. Approximately five to 20 construction workers (depending on the phase of work) would be employed at the project site. Worker parking would be provided within the staging areas. All construction activities (e.g., staging, excavation) would occur within the construction limits shown in Figure 2. The total acreage within the construction limits shown in Figure 2 is approximately 8 acres.

Pile driving would not be required as part of the proposed project. Standard best management practices (BMPs) for erosion control would be employed during construction (e.g., placing properly selected riprap) in accordance with the Stormwater Pollution Prevention Plan (SWPPP) for the project. Because of the high groundwater levels near the abutments, localized dewatering may be required during construction. Water collected from dewatering activities would be treated and discharged pursuant to state regulations and permit conditions.

The following types of equipment would be used during construction: cranes for the installation of the major bridge components; delivery trucks for the transport of materials and equipment; a tractor, backhoe, and excavator for site preparation and demolition work; a vibratory soil compactor, asphalt

[17] Ibid.

compactor, and dozer for new roadway construction; a drill rig and vibrator for temporary shoring and abutment foundation work; two office trailers; and a water truck. Generators would also be used to power construction equipment.

The existing bridge would be demolished in compliance with California Division of Occupational Safety and Health (Cal/OSHA) and other applicable legal and regulatory requirements. If contaminated materials are encountered, they will be disposed of in a manner consistent with the applicable regulations and permit conditions.

Standard construction measures established by SFPUC will be implemented as part of this project.[18] The main objective of these measures is to reduce impacts on existing resources to the extent feasible. Measures may include early identification of sensitive environmental resources in the project area and notifying businesses, property owners, and residents in adjacent areas about the nature, extent, and duration of construction activities. The SFPUC project manager, environmental compliance manager, and contract manager will ensure that the project has uniform provisions in place to address these issues.

Site Access

The project site, which is accessed from the I-680 interchange at Calaveras Road, is located approximately 6 miles south of I-680 on Geary Road. During project construction, crews and materials suppliers will have access to the work site, while other traffic (e.g., park users and limited local vehicle traffic) will transit through or around the work site, as detailed below. Bridge construction crews would require access to the work area from both sides of Alameda Creek to use large equipment. All construction vehicles would access the work site by Geary Road.

Prior to demolition of the existing bridge, the existing low-water crossing would be temporarily improved to provide suitable passage across Alameda Creek for pedestrian, equestrian, and vehicular traffic during the construction period of approximately April to December. The temporary creek crossing would be available for use by vehicles operated by EBRPD, emergency service providers, local residents, SFPUC, and others with authorization for access to the Upper Alameda Creek sub-watershed. All vehicles will be able to transit over the temporary crossing as needed, though possibly under the direction of a traffic coordinator (e.g., flag person) during construction hours. Once over the crossing, vehicles would continue to have access to Camp Ohlone and private lands, and equestrian and rancher vehicles could access the McCorkle Corral. The temporary creek crossing is further detailed in the section that follows.

Recreationists (hikers, bicyclists, and equestrians) would have access through the work site via the temporary creek crossing on weekends and holidays. Weekday access through the work site would be provided when construction may overlap with the wildflower season (assumed to be April 1 through May 31). Weekday access through the project site is otherwise anticipated to be closed to recreationists for the remainder of the construction period. When access for pedestrians and equestrians is not available at the temporary water crossing, access around the project work area would be provided by detour signage directing them to the existing Hayfield footbridge and Canyon View and McCorkle trails. However, these trails are not open to cyclists, who would be detoured to other areas of the park. Detour information will be posted at the entrance to the Sunol Regional Wilderness and at the work site. The McCorkle Corral (see Figure 2) would remain open throughout construction for use by equestrians and ranchers. The Family and School Campgrounds, located approximately 2,300 feet north of the project

[18] San Francisco Public Utilities Commission. 2007. *Standard Construction Measures.*

site, are closed for construction of the Calaveras Dam Replacement Project, which is scheduled to be completed in 2016. In addition, to allow park users continued use of the parking area and the one-way road located at the northern boundary of the project site, a temporary access route would be installed between the two existing paved roads at the northern portion of the project site (Figure 4 [see "Temporary Cut Through"]).

Temporary Water Bypass and Temporary Creek Crossing

Prior to demolition of the existing bridge, a temporary water bypass feature would be installed. The water bypass is anticipated to be composed of an Aqua Dam®-type[19] coffer dam to collect and direct surface water flows at the upstream edge of the work site (Figure 4); two 24-inch-diameter, high-density polyethylene pipes to bypass flows from the coffer dam to the downstream edge of the work site; and a riprap apron with geotextile fabric under-matting at the outlet of the pipes to reduce water flow velocity and minimize creek bed scouring. The pipes would be installed in a shallow excavated trench, and all features would be temporarily anchored with straps and rebar where necessary. The proposed bypass would accommodate a creek flow of 40 cubic feet per second (cfs); a storm event producing flows greater than 40 cfs, which is unlikely in the dry season (WRE 2012), would require work site contingency measures, such as temporarily closing and securing active work areas and installing water quality protection measures.

After the bypass is installed, the existing low-water crossing would be improved to provide suitable passage across Alameda Creek for pedestrian and authorized vehicular traffic. The temporary creek crossing would involve the installation of a decking system within the road alignment of the existing low-water crossing shown in Figure 4. It is anticipated that the temporary creek crossing would be made of large timbers (e.g., 18 inches by 18 inches by 12 feet) anchored to the ground. There would be minor grading of the creek bed at the deck location to provide a level surface. The temporary creek crossing would be designed to accommodate all existing vehicle loads, including cattle trucks.

Bridge Construction

Because of the length of the bridge and space constraints at the project site, the bridge superstructure may be pre-fabricated and/or erected in sections. A crane would facilitate installation. Construction of the superstructure, the intermediate piers, and the abutments may require two temporary shoring supports in Alameda Creek, which would be removed after construction.[20]

Select trees would be removed for bridge construction, along with limited limbing of trees to improve sight distance for drivers.

Demolition

Demolition of the existing bridge would be one of the initial tasks of the project and would involve disassembling the wooden structural components. Removal of the components would rely on wet methods wherever feasible (i.e., dismantling without cutting, sawing or dislodging debris to control dust). During demolition, Alameda Creek would be protected to prevent debris from infiltrating. Demolition debris would be disposed of off-site at a licensed facility per regulatory requirements or, as appropriate, recycled at an off-site facility.

[19] An Aqua Dam® is typically composed of three or more polyethylene or woven geo-tech tubes that are filled with water. In this application, the anticipated height is 5 feet above the ground surface (i.e., above creek bottom).
[20] *Shoring* refers to the process of supporting a structure to prevent collapse so that construction can proceed.

Piers and Abutments

Construction activities during this phase include the installation of piers and excavation for the abutment foundations and associated retaining walls. The piers are anticipated to be cast-in-drilled-hole piles. Because of the potential for sloughing near the surface, temporary casings may be used for the drilled subsurface piles. Drilling fluids, if used, would contain only water and bentonite or similar inert substances (i.e., contain no environmental pollutants) and be properly contained, consistent with applicable resource permitting requirements.

Construction of the abutment foundations would require excavation of approximately 7 feet of topsoil. This would be followed by drilling for the subsurface piles to approximately 35 feet below the creek bottom into the rock below. Excavation would be completed with excavators loading dump trucks to haul soil to stockpile areas for subsequent reuse as backfill around constructed facilities. All excavated soil would first be contained in a temporary spoils area inside the designated staging area.

Approach Road and Culvert

The roadway approach and adjoining embankment would require the placement of fill to a maximum of approximately 15 feet above the current ground surface. Prior to the placement of fill, all loose, uncompacted, or organic soils would be removed from the alignment. The fill would be compacted to a minimum of 95 percent.

The replacement culvert under the north approach road would be installed on a 12-inch layer of crushed rock, with at least 18 inches of cover between the top of the culvert and the roadway surface elevation. The trench for the new culvert would be at least 9 feet wide.

Excavation and Borrow Material

Construction activities would result in the excavation of about 3,500 cy of rock and soil, of which approximately 1,500 cy would be reused as backfill on-site for roadway construction. The remaining rock and soil would be hauled off-site for disposal at a licensed facility per regulatory requirements or, as appropriate, recycled (reused) at an appropriate off-site facility.

Approximately 12,500 cy of additional fill would be imported to the project site for placement in the immediate area of the new bridge. Potential sources of borrow material identified in the project area include the Hanson Sunol Quarry, located approximately 9.4 miles from the project site. The volume of available material would exceed any backfill volume requirements of the proposed project. Another potential source for material is the Oliver De Silva quarry on Calaveras Road, approximately 5.7 miles from the project site. Alternatively, the contractor may import material to the site from other regional sources via I-680 and Calaveras Road.

Construction Staging

Construction staging areas would be required for temporary office trailers as well as bridge materials, equipment, and stockpiles of fill and aggregate materials. Staging areas outside the construction limits include the SFPUC Sunol Yard, the SFPUC Sunol Valley Water Treatment Plant, or, with EBRPD concurrence, a previously developed area in the Sunol Regional Wilderness area. All staging areas within the construction limits (see Figure 2) would be buffered from wetlands and riparian habitat along Alameda Creek.

Post-construction Restoration and Habitat Enhancement

Upon completion of construction, equipment would be removed, and all areas of temporary disturbance would be restored to their approximate preconstruction condition. Restoration would include applying a native seed mix to promote revegetation. Both excavated and fill slopes would be hydroseeded. In addition, portions of the project area would be enhanced from the current developed condition. Specifically, the existing low-water crossing and associated approach roads would be removed and planted with native habitat. Portions of the existing bridge alignment and approach roads would also be enhanced with native habitat planting. Specific areas proposed for habitat enhancement include the existing north bridge approach road, a portion the south bridge approach road, the existing north and south roads down to the low-water crossing, and the existing low-water crossing (see Figure 4a).

Within the restoration and enhancement areas, vegetation planted along Alameda Creek and the adjacent upland areas would include a combination of native riparian and upland species appropriate to each zone. Plantings would maximize diversity and habitat value and minimize the potential for invasive species. Riparian trees and shrub species would include mule fat (*Baccharis salicifolia*), arroyo willow (*Salix lasiolepis*), Gooding's black willow (*Salix goodingii*), red willow (*Salix laevigata*), white alder (*Alnus rhombifolia*), California bay (*Umbellularia californica*), big-leaf maple (*Acer macrophyllum*), and western sycamore (*Platanus racemosa*), subject to resource agency review and approval. Willow pole and post plantings would be used to rapidly establish vegetation and provide shade canopy to the stream. In addition, topsoil would be added and soil compaction reduced, as appropriate, in the restoration and enhancement areas. Plantings would be installed in a manner that would provide long-term erosion control. The creek bed in the area of the low-water crossing would be enhanced by removing existing fill and adding clean cobbles, which provide substrates for benthic macroinvertebrates.

Additional post-construction restoration activities are detailed in Section E.13, Biological Resources (mitigation measure BIO-15).

Project Schedule

Construction of the proposed project is expected to occur from approximately April 1 to December 31, 2013. However, any in-creek work prior to April 15 or after October 15 would be subject to precipitation conditions and CDFG approval (i.e., a required Section 1602 Streambed Alteration Agreement). Substantive construction activities requiring the use of heavy equipment are expected to occur over a period of 6 consecutive months between April 15 and October 15; mobilization, demobilization, and other upland work would be completed during the remainder of the construction period. Timely completion of the new bridge would make it available for use before the arrival of the fall rains and avoid the need for a full-scale temporary bridge adjacent to the site. It should be noted that construction work during the summer months could be subject to fire closures in the area, which could impede the construction schedule. The frequency of fire closures is not predictable and varies yearly depending on the weather.

Greenhouse Gas Reduction Measures

SFPUC would include the following measures in all contractor specifications:

- SFPUC would require all contractors to maintain tire inflation to the manufacturers' specifications.
- SFPUC would implement an educational program for all construction workers connected with the proposed project.

Operation and Maintenance

Operation and maintenance of the new bridge would be similar to existing conditions. SFPUC would conduct periodic visual inspections to detect any signs of bridge or roadway deterioration. SFPUC would maintain the bridge as necessary to prevent deterioration. This would include making repairs to the approaches, the roadway, and the bridge structure.

Required Permits and Approvals

The proposed project would be subject to the permit requirements of the agencies listed below. The applicable regulations, codes, and standards are described in the context of the associated resource areas discussed in Section E (Evaluation of Environmental Effects) of this document.

Table 1 lists the anticipated permits required for the proposed project as well as the specific project activities subject to regulation.

TABLE 1: ANTICIPATED PERMITTING REQUIREMENTS

Agency	Type of Permit/Authority	Subject Project Activity
U.S. Army Corps of Engineers	Clean Water Act, Section 404, Nationwide Permit	Dredged and/or fill materials within wetlands or waters of the United States (for the proposed project, Alameda Creek).
U.S. Fish and Wildlife Service	Federal Endangered Species Act, Section 7, Biological Opinion	Potential impacts on species listed under the federal Endangered Species Act, such as the Alameda whipsnake, California red-legged frog, San Joaquin kit fox, and California tiger salamander.
State Historic Preservation Office	National Historic Preservation Act, Section 106	Concurrence is pending from the State Historic Preservation Officer (SHPO) on the finding of the Historical Resources Evaluation Report that the existing Geary Road Bridge is not eligible for listing in the National Register of Historic Places (NRHP) and California Register of Historical Resources (CRHR).
California Department of Fish and Game	• California Fish and Game Code, Section 1602, Streambed Alteration Agreement • California Endangered Species Act, Sections 2081 or 2080.1, Incidental Take Permit or Consistency Determination	Impacts on the bed and/or banks of state waters (for the proposed project, Alameda Creek). Potential impacts on species listed under the California Endangered Species Act, such as the California tiger salamander and Alameda whipsnake.
Regional Water Quality Control Board, San Francisco Region	Clean Water Act, Section 401; Water Quality Certification; Clean Water Act, Section 402; National Pollutant Discharge Elimination System Permit, including a Stormwater Pollution Prevention Plan (SWPPP)	Impacts on state wetlands or waters, including, for the proposed project, the discharge of groundwater or stormwater to Alameda Creek or nearby wetlands. Impacts on waters of the United States, including, for the proposed project, the discharge of pollutants to Alameda Creek.

C. COMPATIBILITY WITH EXISTING ZONING AND PLANS

	Applicable	*Not Applicable*
Discuss any variances, special authorizations, or changes proposed to the planning code or zoning map, if applicable.	☐	☒
Discuss any conflicts with any adopted plans or goals of the city or region, if applicable.	☒	☐
Discuss any approvals and/or permits from city departments, other than the planning department or the department of building inspection, or regional, state, or federal agencies.	☒	☐

This section identifies and discusses the regional and local land use plans and policies relevant to the proposed project and analyzes project consistency with such plans and policies.

The Geary Road Bridge Replacement Project is located in unincorporated Alameda County, within the Sunol Regional Wilderness area and the Alameda Creek watershed. The project site would be located on property owned by the CCSF, managed by SFPUC, and leased to EBRPD. As further discussed below, SFPUC is not legally bound by the planning and building laws of local jurisdictions for projects on CCSF-owned extraterritorial lands. However, non-CCSF land use plans are discussed in this section to the extent that they provide general land use planning information for the jurisdiction in which the project is located.

No variances, special authorizations, or changes to the San Francisco Planning Code are proposed as part of this project; therefore, these issues are not applicable and are not discussed further. Permitting requirements are discussed under Required Permits and Approvals. A discussion of plans and policies relevant to the proposed project is provided below.

Extraterritorial Lands

Under the San Francisco City Charter (Section 8B.121), SFPUC has authority over the management, use, and control of its extraterritorial lands, which are properties located outside San Francisco city limits that the CCSF owns or leases or over which it holds easements. Although the San Francisco General Plan (General Plan) and San Francisco Sustainability Plan were developed for lands within the jurisdictional boundaries of San Francisco, their underlying goals apply to SFPUC projects on extraterritorial lands. In addition, the SFPUC Alameda Watershed Management Plan (Alameda WMP) applies specifically to CCSF-owned extraterritorial lands in Alameda County and Santa Clara County.

California Government Code Section 53090 et seq. provides SFPUC with intergovernmental immunity from the planning and building laws of other cities and counties. SFPUC, however, seeks to work cooperatively with local jurisdictions whenever CCSF-owned facilities are sited outside of San Francisco to avoid conflicts with local land use plans as well as building and zoning codes. SFPUC is required under Government Code Section 65402(b) to inform local governments of its plans to construct projects or acquire or dispose of extraterritorial property. Local governments have a 40-day review period to determine project consistency with their general plans. Under this requirement, the cities' or counties' determinations of consistency are advisory to SFPUC rather than binding.

Plans and Policies

As an agency of the CCSF, SFPUC is guided by the City's charter and plans to the extent they are applicable to SFPUC activities. Such plans include the General Plan, the Accountable Planning Initiative, and the San Francisco Sustainability Plan. SFPUC has also developed or adopted various plans that direct its activities, including the SFPUC Alameda WMP. Local plans of Alameda County and EBRPD are discussed below for informational purposes.

CCSF Plans and Policies

San Francisco General Plan

The General Plan sets forth a comprehensive, long-term land use policy for the CCSF. One of the basic goals of the General Plan is "coordination of the growth and development of the city with the growth and development of adjoining cities and counties and the San Francisco Bay Region." The General Plan consists of 10 issue-oriented elements: Air Quality, Arts, Commerce and Industry, Community Facilities, Community Safety, Environmental Protection, Housing, Recreation and Open Space, Transportation, and Urban Design. The plan elements that may be relevant to the proposed project are described briefly below.

- **Air Quality Element** – This element promotes clean air through objectives and policies that adhere to air quality regulations.
- **Community Safety Element** – This element analyzes potential impacts from geologic, structural, and nonstructural hazards and the related effects on city-owned structures and critical infrastructure. The goal of this element is to protect human life and property from hazards.
- **Environmental Protection Element** – This element analyzes the impact of urbanization on the natural environment. It promotes the protection of plant and animal life, as well as freshwater resources, and speaks to the responsibility of San Francisco with respect to providing a permanent clean water supply that meets present and future needs and maintaining an adequate water distribution system.
- **Urban Design Element** – This element promotes the preservation of landmarks and structures with notable historical, architectural, or aesthetic value.
- **Recreation and Open Space Element** – This element contains objectives and policies related to maintaining, creating, and enhancing recreational and open space resources.

The General Plan provides policies and objectives that guide land use decisions. Conflicts between the proposed project and General Plan policies related to the physical environment are discussed in Section 1, Land Use and Land Use Planning. The compatibility of the proposed project with General Plan policies that are not related to the physical environment will be considered by decision makers as part of the process to approve or disapprove the project.

Accountable Planning Initiative Priority Policies

In November 1986, the voters of San Francisco approved Proposition M, the Accountable Planning Initiative, which added Section 101.1 to the San Francisco Planning Code, thereby establishing eight priority policies. These policies, as well as the related sections in this initial study, are as follows:

- Preserving and enhancing neighborhood-serving retail uses (not applicable to the proposed project).
- Protecting neighborhood character (not applicable to the proposed project).
- Preserving and enhancing affordable housing (not applicable to the proposed project).
- Discouraging commuter automobiles (not applicable to the proposed project).
- Protecting industrial and service land uses from commercial office development and enhancing resident employment and business ownership (not applicable to the proposed project).
- Maximizing earthquake preparedness (Geology and Soils, Section E, Questions 14ai–iv).
- Preserving landmarks and historic buildings (Cultural Resources, Section E, Question 4a).
- Protecting open space (Wind and Shadow, Section E, Questions 9a and 9b, and Recreation, Section E, Questions 10a and 10c).

Policies 6 through 8 are addressed in Section E, Evaluation of Environmental Impacts, under the initial study checklist questions identified above. The other policies would not be relevant for the following reasons:

- The project would be constructed in an undeveloped area.
- The project would be located outside of San Francisco and away from any neighborhoods.
- The project would not relocate or propose any housing.
- The project would not encourage the use of commuter automobiles.
- The project would not result in commercial office development.

San Francisco Sustainability Plan

The San Francisco Sustainability Plan was endorsed by the San Francisco Board of Supervisors in 1997, although the board has not committed the City to the actions discussed in the plan. The plan serves as a blueprint for sustainability, with many of its individual proposals requiring further development and public comment. The underlying goals of the plan are to maintain the physical resources and systems that support life in San Francisco and create a social structure that will allow such maintenance. It is divided into 15 topic areas, 10 that address specific environmental issues (air quality; biodiversity; energy, climate change, and ozone depletion; food and agriculture; hazardous materials; human health; parks, open spaces, and streetscapes; solid waste; transportation; and water and wastewater) and five that are broader in scope (economy and economic development, environmental justice, municipal expenditures, public information and education, and risk management). Each topic area includes a set of indicators. The indicators are to be studied over time to determine if San Francisco is moving in a sustainable direction with respect to a particular topic area.[21] The proposed project would be consistent with the goals of the sustainability plan because the project would maintain the physical resources or systems that support life in San Francisco.

SFPUC Plans and Policies

Alameda Watershed Management Plan

The Alameda WMP provides a policy framework for SFPUC that can be used to determine which activities, practices, and procedures are appropriate on CCSF-owned lands in the Alameda Creek watershed. The goals, policies, and management actions contained in the plan represent watershed management guidelines for SFPUC.[22]

[21] City and County of San Francisco. 1997. *San Francisco Sustainability Plan*.

[22] Watershed lands are managed by the SFPUC Natural Resources Division, Watershed Resource Management Section.

Prior to implementation, SFPUC reviews all plans, projects, and activities within the Alameda Creek watershed for conformity with the Alameda WMP and for compliance with environmental codes and regulations. The SFPUC project review team has members from various SFPUC departments as well as the City Attorney's Office. Appropriate SFPUC personnel review proposals for new facilities (e.g., structures, roads, trails) as well as improvements to existing facilities. Projects that are subject to review involve construction, digging or earthmoving, clearing, or other disturbances to watershed resources or the use of hazardous materials. In addition, projects that involve the issuance of new or revised leases and permits are also subject to review.

SFPUC considers the protection of water quality a primary goal. All other goals and policies are organized around this primary goal. The primary goal and the six secondary goals of the Alameda WMP are listed below, followed by policies that are pertinent to the proposed project.

The primary and secondary goals of the Alameda WMP are as follows:

Primary Goal

- Maintain and improve source water quality to protect public health and safety.

Secondary Goals

- Maximize the water supply.
- Preserve and enhance the ecological and cultural resources of the watershed.
- Protect the watersheds, adjacent urban areas, and the public from fire and other hazards.
- Continue existing compatible uses and provide opportunities for potential compatible uses on watershed lands, including educational, recreational, and scientific uses.
- Provide a fiscal framework that balances financial resources, revenue-generating activities, and overall benefits with an administrative framework that allows for implementation of the watershed management plans.
- Enhance public awareness of water quality, water supply, conservation, and watershed protection issues.

The Alameda WMP is designed to improve SFPUC's ability to protect the overall watershed as well as the specific resources that make up the watershed. The proposed project would enhance the ecological conditions in Alameda Creek by eliminating the need for vehicles to use the low-water crossing. The project would also preserve recreational opportunities in the watershed. The SFPUC Natural Resources Division would review the proposed project for conformity with the Alameda WMP as well as for compliance with environmental codes and regulations. It is assumed that the proposed project would be in conformance with the appropriate goals, policies, and implementation actions of the Alameda WMP, as determined by SFPUC.

Other Local Plans and Policies

East County Area Plan

Land use planning for eastern Alameda County is governed by the Alameda County East County Area Plan (ECAP). The planning area for the ECAP extends from the San Joaquin county line on the east to the city of Fremont on the west, an area that includes the project site. The ECAP provides planning and development guidance related to land use, transportation, and public services and facilities (including storm drainage and flood control, utilities, noise, air quality, water quality, and geologic hazards).

The ECAP includes a goal to protect watershed land from the direct and indirect effects of development. The project proposes construction of a replacement bridge to eliminate a low-water crossing and decrease long-term maintenance of the existing bridge. The project would incorporate measures to protect water quality and natural resources. Therefore, the project would not conflict with ECAP goals and policies.

East Bay Regional Park District Master Plan

EBRPD manages the regional park system for Alameda and Contra Costa counties. The EBRPD Master Plan (Master Plan) includes policies that guide the stewardship and development of current and future regional parks, including trails and related services, with particular emphasis on resource conservation (both natural and cultural resources), management, interpretation, public access, and recreation. The policies relevant to the proposed project pertain to natural and cultural resource management and protection, public access, and recreation.

The project site is located on CCSF-owned lands managed by SFPUC and leased to EBRPD. The proposed replacement bridge would allow vehicles and pedestrians to cross Alameda Creek and eliminate the need for a low-water crossing, thus enhancing the condition of the creek. The existing bridge was found not to be a historical resource for the purposes of CEQA.[23] (Refer to Section 4, Cultural Resources, for a discussion of project impacts on cultural and historical resources.) Development of the proposed project would not conflict with the policies and guidelines contained in the Master Plan.

D. SUMMARY OF ENVIRONMENTAL EFFECTS

The proposed project could affect the environmental factor(s) checked below. The following pages present a more detailed checklist and discussion of each environmental factor.

☐ Land Use	☒ Air Quality	☒ Biological Resources
☒ Aesthetics	☐ Greenhouse Gas Emissions	☒ Geology and Soils
☐ Population and Housing	☐ Wind and Shadow	☒ Hydrology and Water Quality
☒ Cultural and Paleo. Resources	☐ Recreation	☐ Hazards/Hazardous Materials
☒ Transportation and Circulation	☐ Utilities and Service Systems	☐ Mineral/Energy Resources
☐ Noise	☐ Public Services	☐ Agricultural and Forest Resources
		☒ Mandatory Findings of Significance

[23] JRP Historical Consulting, LLC. 2010. *Geary Road Bridge Replacement Project, Historic Resources Evaluation Report.* Prepared for SFPUC. June.

E. EVALUATION OF ENVIRONMENTAL EFFECTS

Topics:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
1.	**LAND USE AND LAND USE PLANNING—Would the project:**					
a)	Physically divide an established community?	☐	☐	☐	☒	☐
b)	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒	☐
c)	Have a substantial impact on the existing character of the vicinity?	☐	☐	☒	☐	☐

Environmental Setting

The proposed project is located in the SFPUC-managed portion of the Alameda Creek watershed in unincorporated Alameda County. SFPUC owns 36,000 acres of the 130,000-acre Upper Alameda Creek sub-watershed. The project site, which is located entirely within the Sunol Regional Wilderness area, is leased from the SFPUC to EBRPD. Typical land uses in the regional vicinity include private ranch lands, public open space, recreational facilities, rural commercial and residential development, and public water supply facilities.

In the immediate project vicinity, land uses include the McCorkle Corral, located approximately 200 feet east of the project site; the Sunol Regional Wilderness Visitors Center, approximately 0.25 mile north-northwest of the bridge alignment; Camp Ohlone Road Trail, which is accessed by crossing the Geary Road Bridge (Figure 2); Camp Ohlone, a disabled persons camp, located roughly 5 miles from the site; and ranch lands used by private landowners and ranchers. The closest residence (park ranger's residence) is 1,800 feet from the project site.

The project site, which would be accessed from the I-680 interchange at Calaveras Road, is located approximately 6 miles south of I-680 on Geary Road. Geary Road provides direct access to both the Sunol Regional Wilderness area and the project site (Figure 2). SFPUC personnel, resident ranchers, emergency personnel, etc., use a low-water crossing located east of the Hayfield footbridge to access Geary Road during the dry season. An alternative crossing is on Hayfield Road, which is an unpaved fire road.

The closest urbanized area is the unincorporated town of Sunol, located approximately 7 miles northwest of the project site. Sunol was a pre–World War II railroad town. Currently, it is home to single-family residences, some small-scale retail and commercial uses, and Sunol Glen Elementary School.

Impacts Discussion

a) Division of Established Community. The proposed project would not substantially disrupt or physically divide an established community because no established "community" exists in the immediate project vicinity. The Geary Road Bridge Replacement Project, including improvements to the roadway approaches, would occur on SFPUC-managed land within the Sunol Regional Wilderness area that is leased to EBRPD. No impact is anticipated.

b) Applicable Plans, Policy, or Regulations. Land use policy consistency is analyzed in Section C, Compatibility with Existing Zoning and Plans, of this document. As disclosed in that section, the project would be consistent with local plans, policies, and code requirements related to environmental effects. The proposed project would not substantially conflict with any adopted environmental plan or policy. No impact is anticipated.

c) Existing Character. The area surrounding the proposed project is watershed land, which, in general, can be characterized as open space and recreational lands. Existing residential uses in the project vicinity are limited; the nearest residential use is the EBRPD ranger's residence, located approximately 1,800 feet from the project site. There are no commercial areas in proximity to the proposed project.

The proposed project would allow existing land uses to continue.

Project construction would require construction equipment and materials to be used and staged in the project area. Although the equipment and materials would affect the open space and recreational character of the project area, construction equipment and materials would be staged within the construction limits shown in Figure 2. Further, construction would be temporary, and all construction equipment would be removed from the project area upon completion of construction, thereby restoring the visual character of the project site. Therefore, short-term construction impacts would be less than significant.

No new land uses would be introduced that would substantially change the existing character of the site or the surrounding area. No long-term operational impact is anticipated.

Topics:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
2.	**AESTHETICS—Would the project:**					
a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐	☐
b)	Substantially damage scenic resources, including, trees, rock outcroppings, and other features of the built or natural environment that contribute to a scenic public setting?	☐	☒	☐	☐	☐
c)	Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐	☐
d)	Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area or substantially affect people or other properties?	☐	☐	☒	☐	☐

Environmental Setting

The project site is located in the Sunol Regional Wilderness area and the 130,000-acre Upper Alameda Creek sub-watershed on lands managed by SFPUC and leased to EBRPD. The project is sited at the southern end of the Sunol Valley, which is generally broad and open and enclosed by relatively undisturbed hills and ridges. In the project vicinity, the dominant features of the landscape are rolling grass-covered hills with scattered forests and shrublands in upland areas, dense riparian forests that buffer the Alameda Creek corridor, and open grasslands interspersed with scattered trees and shrubs.

The area is relatively remote. It has few roads, utilities, or other facilities, except for those associated with the park entrance (e.g., the visitors' center), the Alameda Grove and Leyden Flats picnic areas, and the Camp Ohlone Road and McCorkle trailheads. The closest road with views of the project site is Geary Road, which terminates at the parking lot just north of the bridge. Although it is not a designated State Scenic Highway, Alameda County has designated Geary Road as a County Scenic Road.[24]

The existing setting is defined by uplands with steep grades that frame a fairly narrow valley floor with flat to gently rolling topography. The project area is relatively remote and has few roads, utilities, or other urban facilities and services. As described above, visual resources in the project area include prominent rocky outcrops, riparian forests that buffer the Alameda Creek corridor, and the bridge itself. Overall, views of meadows, distant hills/uplands, and dense vegetation with native trees give the area a strong rural character, with seasonal vegetation providing the predominant colors (green in the wet season and brown in the dry season). In contrast, limited man-made features are present. These include the recreational facilities (e.g., visitors' center, parking lots, picnic areas) and service roads (e.g., fire roads) in the Sunol Regional Wilderness area.

Geary Road Bridge crosses Alameda Creek with a generally northwest–southeast alignment. The timber and metal Howe truss bridge was originally constructed in the 1930s and later upgraded in the 1960s with alterations that retained the original design. Dense vegetation in the Alameda Creek corridor surrounds the bridge.

[24] Alameda County. 1994. *Scenic Route Element of the General Plan.* Alameda County, CA. Amended May 5, 1994.

Views of the Project Site

Scenic views of the surrounding hillsides and the Alameda Creek corridor are expansive and of high scenic value because of sparse development and the park's open character and varied topography. However, most views of Geary Road Bridge are obscured by topography, screened by vegetation, or limited by distance. Direct views of the project site are available from the parking lot north of Geary Road Bridge; Camp Ohlone Road, on the south side of the bridge; the Alameda Grove and Leyden Flats picnic areas; the McCorkle Corral; and various points along the McCorkle Trail. Views of the Alameda Creek corridor from the bridge are narrow and largely obstructed because of the winding and sinuous form of the creek at this location. Therefore, they are scenic but not expansive.

Existing viewers of the project site include recreationists (e.g., equestrians, hikers, backpackers) and motorists who use Camp Ohlone Road or Geary Road. The existing bridge provides limited public vehicle access to the southeast side of Alameda Creek; access to Geary Road at the bridge is restricted by locked gates within the Sunol Regional Wilderness area. Views of the project site are not available from any residence. Recreational users, particularly equestrians at the McCorkle Corral, are the primary group with direct views of the site. Their views occur over a longer period of time compared with motorists. Therefore, they would be more sensitive to visual changes.

Photographs of the project site were taken from several key observation points where project activities would be visible. Multiple locations were chosen to include various views of the project site and to consider the changing context of the observation points. Public views and areas where visual sensitivity is high were the primary focus in the selection process for the key observation points.

Figure 5 shows the approximate location of the key observation points, and Figures 6 through 8 provide representative views from these viewpoints. Views of the project site from the higher reaches of nearby scenic vista areas, such as the Cerro Este, east of the project site, are precluded because of intervening topography and vegetation.

Regulatory Setting

Alameda Watershed Management Plan

The Alameda WMP is the policy framework that guides SFPUC decisions about the appropriateness of activities on SFPUC Alameda Creek watershed lands.[25] Design guidelines for construction and policies for protecting and restoring watershed vegetation are included in the Alameda WMP.

The following guidelines and policies from the Alameda WMP are applicable to the proposed project's potential impacts on visual resources:

Action 5A: Where grading is necessary, slopes and landforms shall be contoured to mimic the surrounding environment as much as possible.

Action 5B: Design and site new roads and trails to minimize grading and the visibility of cut banks and fill slopes.

Action 5D: Incorporate architectural siting/design elements that are compatible with the applicable surrounds (i.e., style, scale, form, texture, color).

[25] San Francisco Public Utilities Commission. 2001. *Alameda Watershed Management Plan*. April.

Action 5E: Eliminate, wherever possible, the use of unpainted metallic surfaces and other sources that may cause increased levels of reflectivity.

Action 5F: Exterior lighting shall be directed downward and sited and shielded such that it is not highly visible or obtrusive.

Action 5G: The silhouettes of new structures shall remain below the skyline of bluffs, cliffs, or ridges.

Action 4: Prior to initiation of any construction project involving grading, a grading plan shall be prepared by the project proponent and approved by appropriate SFPUC staff. Revegetation of all graded areas shall be required to the maximum extent practicable.

East Bay Regional Park District Master Plan

Although most policies contained within the Master Plan are not directly related to aesthetics, the policies indicate an intention to connect regional parks and/or trails to each other or to connect areas of unusual scenic beauty, vista points, natural or historic resources, or similar areas of regional significance. General development and natural unit preservation policies as well as special land use designation classifications to preserve natural and historic resources indirectly address the issue of aesthetic quality. These policies include:

Acquiring and managing open space viewsheds to preserve the intrinsic natural and historic qualities of state and locally designated scenic highway corridors.

Designing structures and landscaping facilities to harmonize with adjacent historical structures and the surrounding natural environment.

Designing facilities to preserve the maximum amount of open space possible so that color, scale, style, and materials blend with the natural environment.

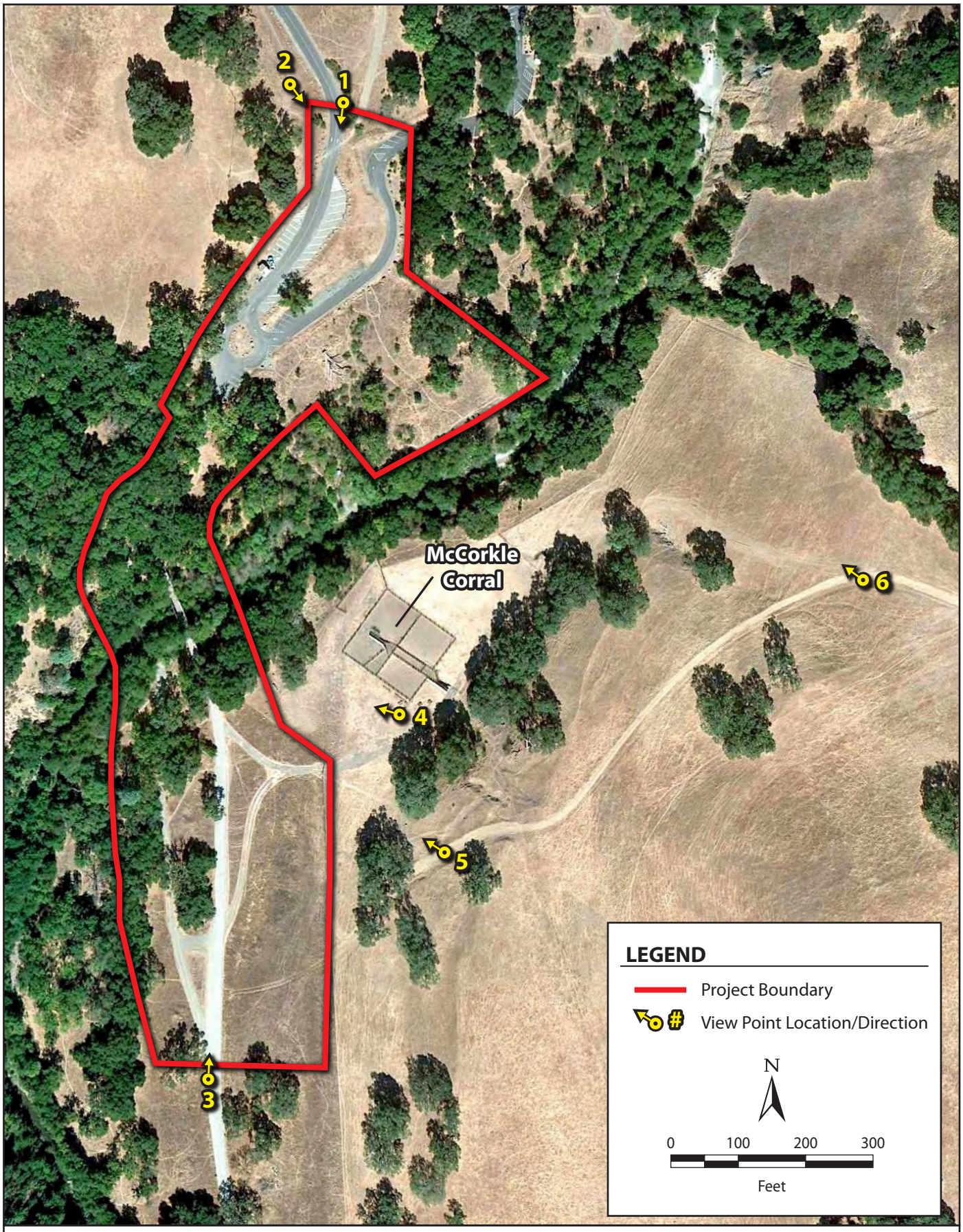
Reducing the "detrimental visual impact" of buildings, electrical towers, and access roads at existing communication facilities sites, prohibiting the construction of additional new communication facilities, and granting permits only for co-location and design changes that improve visual quality.

Impacts Discussion

a) Scenic Vista

Construction

Construction activities (e.g., vegetation removal, use of cranes) and equipment staging would temporarily alter views of the project site during the approximate 9-month construction period (April to December). Because recreationists would have access through the work area by way of the temporary creek crossing on weekends and holidays and also during the wildflower season in April and May, the quality of their view would be diminished for the period of construction. However, the construction site is relatively small (approximately 1,400 feet long), and once pedestrians are out of the immediate vicinity, views of the construction site would be limited. On weekdays outside the flowering season, recreational users would be routed around the construction site via the Hayfield footbridge, located north of the project site. Hikers routed to Canyon View Trail via Hayfield footbridge would not have expansive views of the site; given the undulating terrain in this area and canopy cover along the creek that shields views from areas above, the views would be largely obstructed. Because some trees would be removed to clear the site for construction, intermittent and fleeting views of the site may be available from portions of Canyon View Trail in the vicinity of the construction site. However, equestrians who



Geary Road Bridge Replacement Project

Figure 5
Key Observation Points

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View 1. Geary Road looking south towards parking lot.

View 2. Trail to Leyden Flats looking southeast towards parking lot.

Geary Road Bridge Replacement Project

Figure 6
Representative Views of the Project Site

View 3. Camp Ohlone Road looking north towards Geary Road Bridge.

View 4. Picnic Table at McCorkle Corral looking north towards Geary Road Bridge.

Geary Road Bridge Replacement Project

Figure 7
Representative Views of the Project Site

View 5. McCorkle Trail looking northwest towards Geary Road Bridge.

View 6. McCorkle Trail looking northwest towards parking lot.

Geary Road Bridge Replacement Project

Figure 8
Representative Views of the Project Site

access the McCorkle Corral and viewers in vehicles who use the temporary creek crossing would continue to have views of the site during construction. View durations for these viewers, with the exception of equestrians at the McCorkle Corral, would be limited. Furthermore, any changes to scenic views would be minimal in relation to the larger Sunol Regional Wilderness area. The McCorkle Corral, which is located 200 feet east of the proposed bridge site, would be temporarily affected by construction activities. However, because construction activities would be short term, any impacts would be less than significant. No mitigation is required.

Although views would be temporarily disrupted, views from off-site public vantage points (e.g., Cerro Este and Observation Hill) would remain largely intact because of the combination of distance, intervening topography, the scale of the project site in relation to the Sunol Regional Wilderness, and the duration of the exposure. Any temporary aesthetic effects on scenic vistas during construction would be less than significant. No mitigation is required.

Operation

The proposed bridge deck would be slightly higher than the existing bridge but otherwise similar in scale and size. The elevation at the top of the proposed bridge deck would be roughly 432 feet above NAVD88 versus 428 feet NAVD88 for the existing bridge. Portions of the southbound approach would be raised from 429 feet to 432 feet. Portions of the northbound approach would be raised to 432 feet; the northbound approach is currently 417 feet at the lowest point. In areas where vegetation is removed to accommodate permanent project features (e.g., the new bridge alignment, roadway approaches, associated abutments), a native seed mix would be applied to promote revegetation, and both excavated and fill slopes would be hydroseeded. Following construction, all areas that experienced temporary disturbances would be restored to their approximate preconstruction condition. Because the height and design of the new bridge would be similar to that of the existing bridge and the area would be restored to preconstruction conditions, long-term scenic views would not be affected. An increase in the height of the approach road by approximately 15 feet at certain locations would be consistent with the height of the proposed bridge and, therefore, would not appear visually discontinuous. As such, any impacts would be less than significant. No mitigation is required.

b) Scenic Resources. Scenic resources in the project area include prominent rocky outcrops and the dense riparian forests that buffer the Alameda Creek corridor. Overall, there would be limited vegetation removal (a few trees would be removed); mitigation measure BIO-13 would require the project applicant to replant all mature trees. As described in Section B, Project Description, in areas where vegetation is removed to accommodate permanent project features, a native seed mix would be applied to promote revegetation of temporary impact areas; this would include hydroseeding both excavated and fill slopes. All areas that experience temporary disturbances would be restored to their approximate preconstruction condition. In addition, there would be no changes to ridgelines, outcroppings, rocks, or other features (i.e., the principal scenic resources) that contribute to views in the vicinity. Therefore, the impact on scenic resources would be mitigated to a less-than-significant level.

c. Visual Character or Quality. The term *visual character* refers to the natural and artificial landscape features that define an area or view (e.g., land uses, the presence or absence of roads, the presence or absence of buildings, open space characteristics, landscape features, the range of colors, forms, and topographic characteristics). To identify and evaluate changes, the existing visual character or quality of the site and its surroundings are analyzed. Such analysis involves objectively identifying the visual features within the visual setting (visual resources), assessing the character and quality of those resources relative to overall visual character, and determining the importance of views of visual

resources in the visual setting to people (sensitivity). The aesthetic value of an area is gauged as a measure of its visual character and quality combined with viewer response.[26] Areas such as scenic vistas, public parks, public trails, or scenic roadways typically have high visual character and quality. In addition, viewer sensitivity is usually considered high in such areas because of the clarity offered by long-duration views in a natural setting.

The project would remove vegetation (i.e., a few mature trees) within the construction limits and construct new roadway approaches, abutments, and retaining walls. It would replace existing SFPUC infrastructure and add a minimal number of improvements, such as a raised approach road, abutments, and retaining walls, compared with the existing condition. The most substantial changes would be temporary and limited in nature (e.g., temporary vegetation removal). Only a small number of viewers (i.e., equestrians at the McCorkle Corral, recreationalists who use the temporary creek crossing during construction, weekend and flowering-season recreationalists) are likely to notice the changes resulting from the proposed project. Direct views of project construction would be temporary, lasting for approximately 9 months. As noted above, the project site would be closed to recreationalists on weekdays outside the flowering season during construction. Pedestrians would be able to access the site on weekends, holidays, and during the flowering season and would have views of construction equipment and materials staged at the site. However, the construction site is relatively small, and pedestrians would traverse only approximately 1,400 feet through the site. This would be a short distance compared with their hikes in the area. Therefore, pedestrians would not experience any substantial change to the visual quality of their surroundings because of the limited duration and scale of construction activities. Construction would not be directly visible from off-site public vantage points (e.g., Cerro Este) because of the distance from the project site, the overall expansiveness of the views from these public vantage points, and the lower elevation of the work areas in the valley below.

The proposed project would not substantially change the existing visual character and quality of the area. Permanent aboveground features include the replacement bridge, culvert, and entrance gate. After construction, views of the project site would appear similar to preconstruction conditions because of restoration and tree replanting. Although the proposed project would introduce a slightly higher bridge deck to the viewshed, the new bridge would be similar to the existing bridge in terms of scale and size. Railings and bridge superstructure would use steel or weathering steel. The approach road would be higher by approximately 15 feet at certain locations but would be consistent with the height of the new bridge; therefore, the approach road would not appear as a visually disparate element in the viewshed. Overall, the new bridge would not substantially alter the existing visual character or quality, and the impact would be less than significant. No mitigation is required.

d) Light or Glare. No lighting exists on the existing bridge, and none is proposed for the replacement bridge. Therefore, the post-construction level of lighting at the site would not change. The proposed steel or weathering-steel bridge superstructure and railings would not be a source of substantial glare given their scale and the amount of direct sunlight at the project site. A minimal amount of nighttime lighting may be required during construction to light the work area. This would not affect recreational users because the area is closed to visitors each day at dusk. Furthermore, the two campgrounds (Sunol Family and School Campgrounds), located approximately 2,300 feet northwest of the project site, are closed for construction of the Calaveras Dam Replacement Project, which is scheduled to take place between 2011 and 2016. Therefore, the impacts of light during construction would be temporary and less than significant. No mitigation is required.

[26] U.S. Department of Transportation. 1988. *Visual Impact Assessment for Highway Projects*. Federal Highway Administration. Publication No. FHWA-HI-88-054.

With respect to glare, the superstructure would be made of steel or weathering steel. Over time, weathering steel develops a coating of rust; therefore, there is no potential for glare from it. If steel is used in the superstructure, it would be painted. Given that the steel structure would be painted and no shiny surfaces would exist, the impact related to glare would be less than significant. No mitigation is required.

Topics:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporated*	*Less-than-Significant Impact*	*No Impact*	*Not Applicable*
3. POPULATION AND HOUSING— Would the project:					
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through the extension of roads or other infrastructure)?	☐	☐	☐	☒	☐
b) Displace substantial numbers of existing housing units or create demand for additional housing, necessitating the construction of replacement housing?	☐	☐	☐	☒	☐
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒	☐

Impacts Discussion

a) Induce Population Growth. The purpose of the proposed project is to replace the existing Geary Road Bridge with a new bridge that would allow vehicles and recreational users to cross Alameda Creek and eliminate the need to use a low-water crossing. No new homes or businesses are proposed as part of the project. The proposed project would not directly or indirectly induce substantial population growth in the short or long term because the current use would not change. The construction crew of five to 20 workers would be hired from the existing labor pool in the region and, therefore, would not induce short-term population growth in the area. Replacement of the existing bridge would not induce population growth in the short or long term. Therefore, there would be no impact.

b, c) Housing and People. Replacement of the existing bridge would not displace existing housing units or people or create a demand for additional housing. Construction of the bridge would require approximately five to 20 workers (depending on the phase of work). Therefore, it would result in temporary employment through the 9-month construction period. This temporary employment opportunity, however, would not substantially increase what is normally available to construction workers in the local labor pool. Most of these workers are presumably already residents of the San Francisco Bay Area and, therefore, would not create a demand for additional housing in the area. Therefore, there would be no impact.

Topics:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
4.	**CULTURAL AND PALEONTOLOGICAL RESOURCES—Would the project:**					
a)	Cause a substantial adverse change in the significance of a historical resource, as defined in Section 15064.5, including those resources listed in Article 10 or Article 11 of the San Francisco Planning Code?	☐	☐	☐	☒	☐
b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☒	☐	☐	☐
c)	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒	☐
d)	Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐	☐

Environmental Setting

Historic Context

The following paragraphs present a brief summary of the prehistoric, ethnographic, and historic context for the project area. More detailed background information regarding the prehistoric and ethnographic contexts is included in the archaeological survey report.[27] More detailed background information regarding the historic context is included in the historic resources evaluation report.[28] Both of these reports were prepared for the proposed project.

Prehistoric populations are known to have been present in the San Francisco Bay Area by at least the Early Holocene period (11,600–7,700 years before present), as evidenced by archaeological sites in Contra Costa (CA-CCO-637) and Santa Clara counties (CA-SCL-178). Wilson inferred that the marsh edge of the bay was first settled at the Patterson Mound (CA-ALA-328) at the end of the Early Period, about 600 years ago.[29] He viewed the Middle Period as a time of competition between two unrelated groups, a marsh-oriented people at site CA-ALA-328 and an inland people at site CA-ALA-343 who "began challenging CA-ALA-328 for area dominance."[30] Because of an increase in identified site components along the bayshore marsh and farther inland, Wilson considered the Late Period to be a time of peace and locality-wide integration.[31]

[27] ICF International. 2011. *Archaeological Survey Report for the Geary Road Bridge Upgrade Project, Alameda County, California.* Prepared for the San Francisco Public Utilities Commission, San Francisco, CA. June.

[28] JRP Historical Consulting Services. 2010. *Geary Road Bridge Replacement Project Historic Resources Evaluation Report.* Prepared for the San Francisco Public Utilities Commission, San Francisco, CA.

[29] Wilson, G. B. 1999. The Coyote Hills Area, Alameda County, California: A Settlement Pattern and Artifact Distribution Study. *Archives of California Prehistory,* 46. Salinas, CA: Coyote Press.

[30] Ibid.

[31] Milliken, R. A., R. T. Fitzgerald, M. G. Hylkema, R. Groza, T. Origer, D. G. Bieling, A. Leventhal, R. S. Wiberg, A. Gottsfield, D. Gillette, V. Bellifemine, E. Strother, R. Cartier, and D. A. Fredrickson. 2007. Punctuated Culture Change in the San Francisco Bay Area. In *California Prehistory: Colonization, Culture, and Complexity*, edited by T. L. Jones and K. A. Klar. Lanham, MD: Altamira Press.

At the time of European contact, the San Francisco Bay Area was occupied by a group of Native Americans whom ethnographers refer to as Costanoan or Ohlone. The Ohlone are a linguistically defined group, with several autonomous tribelets that spoke eight different but related languages. The Ohlone languages, together with Miwok, compose the Utian language family of the Penutian stock. The territory of the Ohlone people extended along the coast from the Golden Gate to just below Carmel and as far as 60 miles inland. The territory also encompassed several inland valleys.[32]

The tribelets that occupied the land from Richmond to Mission San Jose to the Livermore Valley are believed to have spoken Chochenyo, one of the eight linguistically separate groups within the Costanoan family.[33] Milliken's research of mission records and other ethnohistoric data indicate that at the time of contact the project area was most likely within the borders of the Taunan tribelet (1991, 1995).[34] This tribelet is suspected to have occupied the rugged portions of Alameda Creek.[35]

Settlement in the East Bay hills began during the Spanish and Mexican era. Mission San Jose, located southwest of the Geary Road Bridge, provided a settlement base in the adjoining hills and flatlands. The principal rancho in this area, the 64,000-acre Rancho el Valle de San Jose, occupied lands within the watershed for Alameda Creek and Calaveras Creek. This rancho, which was located north of the project area, encompassed the entire Sunol Valley.[36]

The steep terrain of the area initially limited agricultural development, but the abundant water supply in the valleys enticed settlers. Sunol Valley, as part of the Rancho el Valle de San Jose, was eventually broken up into several landholdings. At the same time, settlers began to move into the Calaveras Valley to the south.[37] However, in 1862, the Western Pacific Railroad, an offshoot of the San Francisco and San Jose Railroad, acquired the rights and land grants necessary to construct a route from San Jose to Sacramento. As the property of small landowners was acquired, the pattern of development in the area was affected.

In 1875, the Spring Valley Water Company, which had plans to export water to San Francisco, purchased much of the Calaveras Valley, including properties on Upper Alameda Creek, to solidify its control of water sources in the region and secure the land necessary to construct a future dam and reservoir.[38,39] Construction of Calaveras Dam began in the summer of 1913 and was completed in 1925.

In 1930, the CCSF acquired the Spring Valley Water Company. At that time, construction of the Upper Alameda Creek Tunnel was under way. Although the west end of the tunnel, adjacent to Calaveras Reservoir, was completed, construction of the east end, at Alameda Creek, had barely begun. The CCSF decided to expedite construction by tunneling from both ends. To facilitate this work, as well as

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[32] Levy, R. 1978. Costanoan. In *California*, edited by R. F. Heizer, pp. 485–495. Handbook of North American Indians, Vol. 8, W. C. Sturtevant, general editor. Washington, D.C.: Smithsonian Institution.

[33] Ibid.

[34] Milliken, Randall. 1991. *An Ethnohistory of the Indian People of the San Francisco Bay Area from 1770 to 1810.* Ph.D. dissertation, University of California, Berkeley. Ann Arbor, MI: University Microfilms.
Milliken, R. A. 1995. A Time of Little Choice: The Disintegration of the Tribal Culture in the San Francisco Bay Area, 1769–1810. In *Ballena Press Anthropological Papers No. 43*, edited by Thomas C. Blackburn. Novato, CA.

[35] Ibid.

[36] JRP Historical Consulting Services. 2010. *Geary Road Bridge Replacement Project Historic Resources Evaluation Report.* Prepared for the San Francisco Public Utilities Commission, San Francisco, CA.

[37] Ibid.

[38] Ibid.

[39] Ibid.

construction of a diversion dam, the Geary Road Bridge was constructed.[40] Therefore, the Geary Road Bridge represents a part of the infrastructure that was constructed to harness the local water supply.[41]

During the late 1890s and early 1900s, Geary Road had been rerouted to follow Alameda Creek. The road crossed Alameda Creek at the current location of the Geary Road Bridge.[42] The San Francisco Water Department (SFWD) used Geary Road to access the Upper Alameda Creek Diversion Dam and portions of the pipeline from Calaveras Dam (built in 1934). The road and bridge also served private property owners. In the late 1950s, SFWD raised concerns regarding potential roadway hazards and impacts related to access to SFPUC watershed land. In August 1961, the Geary Road Bridge failed. To repair the bridge, SFPUC blocked off both ends to prevent vehicular use. Without the bridge, it was impossible to access the eastern end of Upper Alameda Creek, the Alameda Creek Diversion Dam, and portions of the southern end of the pipeline from Calaveras Reservoir during the winter and spring months.[43] During the repair work, the trestles at the north and south ends of the bridge were reinforced, and the 72 foot-long central truss was reconstructed.

While the 1961 bridge improvements were taking place, EBRPD developed a park on the land north and east of the SFPUC watershed along Upper Alameda Creek. Originally known as the Sunol Valley Regional Park, it is now known as the Sunol Regional Wilderness. Through a lease arrangement, recreational uses are allowed on lands surrounding the SFPUC watershed property as well as agricultural activities and ranching.[44] Today, for the general public, vehicular access to areas across the creek ends just before the bridge, but Geary Road is still used as a hiking trail. Vehicular access is permitted for authorized personnel while en route to the city's water facilities to the east or the various EBRPD facilities as well as resident ranches.[45]

Methods and Results

Area of Potential Effects

As defined at 36 CFR 800.16(d), the area of potential effects (APE) for an undertaking includes the area or areas within which the undertaking may directly or indirectly cause changes to the character of a historic property, if any such properties exist. The term *historic property* means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization that meet the NRHP criteria (36 CFR 800.16[1][1]). The archaeological APE was determined for CEQA in consultation with the San Francisco Planning Department's Environmental Planning Division.

The horizontal and vertical extent of the APE conforms to the maximum extent or depth of construction activities that could occur during project implementation. The amount and depth of excavation would vary significantly with each project component.

[40] Ibid.
[41] Ibid.
[42] Ibid.
[43] Ibid.
[44] Ibid.
[45] Ibid.

No excavation is anticipated in the proposed staging and parking areas; however, a vertical APE of 1 foot below ground surface (bgs) is applied for these project components to account for any potential ground disturbances associated with heavy equipment and vehicular use in the area. Excavation for the new access road would not exceed 3 feet bgs. The maximum amount of excavation in the project area would be 35 feet bgs at the location for the proposed bridge piers.

Records Search

Bibliographic references, previous survey reports, historic maps, and archaeological site records pertaining to the study area were compiled through a records search of the California Historical Resources Information System (CHRIS) to identify prior studies and known cultural resources within a 0.5-mile radius of the project's APE. The records search and literature review identified two previously recorded archaeological resources within 0.5 mile of the APE. One resource contained both prehistoric (bedrock mortars) and historic (ranch complex) components. This resource is located about 0.5 mile north of the project area. The second resource consists of two separate loci, approximately 150 yards apart and about 0.5 mile south of the project area. Both loci consist of historic debris scatters. Neither of these resources has been evaluated for NRHP eligibility.

Twenty previous cultural resource studies were conducted within a 0.5-mile radius of the APE, including two studies within the APE. Those two studies are as follows:

- Chavez, D. 1992. Archaeological Monitoring Program for the San Francisco Water Department's Calaveras Replacement Pipeline Project, Alameda County, California.
- Busby, C. 2006. Archaeological Monitoring Closure Report, Vault Toilet Pit Excavations in the Vicinity of CA-ALA-428/H, Sunol Regional Wilderness, Alameda County, California.

No previously unidentified cultural resources were identified as a result of the studies listed above. In addition to these studies, ICF undertook an archaeological survey of the project APE on June 1, 2010. The entire APE, including the meadows, parking lots, hiking trails, and creek banks, was inspected (as much as possible because of limited visibility) by a professional qualified archaeologist who looked for indications of human activity, such as stained midden soils, stone artifacts, historic artifacts, dietary shell and bone, and unnatural depressions or mounds. River cobbles encountered were closely examined for evidence of deliberate battering or grinding by humans. No archaeological resources were observed in the APE during the field survey.

The Geary Road Bridge is the only structure within the APE. JRP Historical Consulting inventoried and evaluated the bridge for the proposed project to determine if it meets the criteria for listing in the NRHP or the CRHR.[46] The report concluded that the Geary Road Bridge does not meet the criteria for listing in the NRHP or the CRHR.[47] In addition to the Geary Road Bridge's lack of historic significance, the structure's historic integrity has also been diminished by reconstruction of the truss and other repairs to the structure over the years. Although the bridge is in its original location and the structure retains much of its original design, alterations to the bridge have removed historic materials, diminished the expression of original workmanship, and lessened any direct associations to its period of construction and initial use. Therefore, no built environment resources are found within the APE that can be considered historic properties for the purposes of Section 106 compliance or historical resources for the purposes of CEQA compliance.

[46] Ibid.
[47] Ibid.

Native American Consultation

ICF International contacted the California Native American Heritage Commission (NAHC) on February 23, 2010, to identify any areas of concern in the project area that may be listed in the NAHC's Sacred Lands File. The NAHC responded on February 25, 2010, saying that a search of its files failed to indicate the presence of Native American cultural resources in the immediate project area. The NAHC also provided a list of eight Native American contacts who might have information that would be pertinent to this project or concerns regarding the proposed actions. Letters that explained the proposed project and inquired about concerns were sent to NAHC's contacts on March 4, 2010. No responses to the letters were received.

To account for project changes that occurred after the mailing, updated letters, along with maps of the revised project footprint, were sent to the same group of Native American contacts on April 28, 2010. The following individuals were contacted:

- Jakki Kehl.
- Katherine Erolinda Perez.
- Irene Zwierlein, Chairperson, Amah/Mutsun Tribal Band.
- Jean-Marie Feyling, Amah/Mutsun Tribal Band.
- Ann Marie Sayers, Chairperson, Indian Canyon Mutsun Band of Costanoan.
- Andrew Galvan, Ohlone Indian Tribe.
- Rosemary Cambra, Chairperson, Muwekma Ohlone Tribe of the San Francisco Bay Area.
- Ramona Garibay, Representative, Trina Marine Ruano Family.

No responses were received following the second mailing. The contacts were then called on May 26, 2010. Ann Marie Sayers said that if waterways are within 300 yards of the project site, she would like a Native American monitor and an archaeological monitor on-site during ground-disturbing activities. Jean-Marie Feyling asked if Sonoma State University and local ranchers had been contacted about the project. Ms. Feyling was informed about the background research (e.g., correspondence with the Central California Information Center, other local Native Americans, and local historical societies) that was conducted to obtain as much information as possible about the cultural history of the project area and vicinity. Ms. Feyling also asked for a Native American monitor to be on-site during ground-disturbing activities. None of the other contacts voiced any concerns about the project, either on the phone or in writing.

Historical Society Correspondence

ICF International sent letters to local historical societies (i.e., Alameda County Historical Society, Amador-Livermore Valley Historical Society, California Historical Society) on May 26, 2010, asking if they have any information regarding the project area. To date, no responses have been received from any of the historical societies.

Impacts Discussion

Approach to Analysis

In accordance with the requirements of CEQA and Section 106 of the National Historic Preservation Act (NHPA), documentation regarding two project-specific cultural resource investigations was prepared for the preliminary evaluation and identification of legally significant archaeological resources that could be affected by the project. These documents are as follows:

- ICF International. 2011. *Archaeological Survey Report for the Geary Road Bridge Upgrade Project, Alameda County, California*. June. Prepared for the San Francisco Public Utilities Commission, San Francisco, CA.
- JRP Historical Consulting Services. 2010. *Geary Road Bridge Replacement Project Historic Resources Evaluation Report*. Prepared for the San Francisco Public Utilities Commission, San Francisco, CA.

The APE for this undertaking follows the final conceptual engineering report[48] and the additional information provided by SFPUC in subsequent design updates.[49] In May 2011, the 2006 conceptual engineering report was amended.[50] The amendment addressed changes pertaining to operational needs for the new Geary Road Bridge. After careful review of this document, it was determined that the modifications would not affect the cultural resources records search, Native American correspondence, background history, the area surveyed for cultural resources, or any of the conclusions previously reached with respect to the cultural resources portion of this project. The APE maps, however, were revised. All of the areas that were studied and surveyed previously are covered by the revised APE.

a) Historical Resources. As noted earlier, the Geary Road Bridge is not eligible for either the NRHP or the CRHR, and no historical resources were identified in the project area or within a 0.5-mile radius. The proposed project would not affect historic properties or cause a substantial adverse change to historical resources (historic architectural/engineering resources). Therefore, no impact would occur. No mitigation is required.

b) Archaeological Resources. No archaeological resources were identified in the project area. Much of the southern portion of the APE is within Holocene stream and terrace deposits. These deposits are associated with Alameda Creek and have a moderate potential to contain buried archaeological deposits. However, the potential for disturbing buried archaeological material is considered low because of the limited scope of ground-disturbing activities proposed under the project. There is always the possibility, however, that surficial or buried archaeological resources, which may meet the definition of historical resource or unique archaeological resource, exist in the project area. Damage to or destruction of such resources would be a significant impact. However, impacts would be reduced to a less-than-significant level by implementation of mitigation measure CUL-1.

> **Mitigation Measure CUL-1: Accidental Discovery of Archeological Resources.** The following mitigation measure is required to avoid any potential adverse effect from the proposed project on accidentally discovered buried or submerged historical resources, as defined in State CEQA Guidelines Section 15064.5(a)(c). The project sponsor shall distribute the planning department archeological resource "alert" sheet to the project prime contractor; any project subcontractor, including demolition, excavation, grading, foundation, pile driving, etc., firms; or utilities firm involved in ground-disturbing activities within the project site. Prior to any ground-disturbing activities being undertaken, each contractor is responsible for ensuring that the "alert" sheet is circulated to all field personnel, including machine operators, the field crew, pile drivers, and supervisory personnel. The project sponsor shall provide the Environmental Review Officer

[48] San Francisco Public Utilities Commission. 2006a. *Final Conceptual Engineering Report.* Prepared by the Engineering Management Bureau.
[49] San Francisco Public Utilities Commission. 2011. *Geary Road Bridge June 2011 50% Submittal Contract No. WD2649.* San Francisco Water Department. June.
[50] San Francisco Public Utilities Commission. 2011a. *Amendment to Conceptual Engineering Report (August 2006) for the Geary Road Bridge Project.* CUW 264.03.

(ERO) with a signed affidavit from the responsible parties (prime contractor, subcontractor(s), and utilities firm) to the ERO confirming that all field personnel have received copies of the "alert" sheet.

Should any indication of an archeological resource be encountered during any ground-disturbing activity of the project, the project head foreman and/or project sponsor shall immediately notify the ERO and shall immediately suspend any ground-disturbing activities in the vicinity of the discovery until the ERO has determined what additional measures should be undertaken.

If the ERO determines that an archeological resource may be present within the project site, the project sponsor shall retain the services of an archaeological consultant from the pool of qualified archaeological consultants maintained by the planning department archaeologist. The archeological consultant shall advise the ERO as to whether the discovery is an archeological resource that retains sufficient integrity and possesses potential scientific/historical/cultural significance. If an archeological resource is present, the archeological consultant shall identify and evaluate the archeological resource. The archeological consultant shall make a recommendation as to what action, if any, is warranted. Based on this information, the ERO may require, if warranted, specific additional measures to be implemented by the project sponsor. Measures might include preservation in situ of the archeological resource, an archaeological monitoring program, or an archeological testing program. If an archeological monitoring program or archeological testing program is required, it shall be consistent with the Environmental Planning (EP) division guidelines for such a program. The ERO may also require that the project sponsor immediately implement a site security program if the archeological resource is at risk from vandalism, looting, or other damaging actions.

The project archeological consultant shall submit a final archeological resources report (FARR) to the ERO that evaluates the historical significance of any discovered archeological resource and describes the archeological and historical research methods employed in the archeological monitoring/data recovery program(s) undertaken. Information that may put at risk any archeological resource shall be provided in a separate, removable insert within the final report.

Copies of the draft FARR shall be sent to the ERO for review and approval. Once approved by the ERO, copies of the FARR shall be distributed as follows: California Archaeological Site Survey Northwest Information Center (NWIC) shall receive one copy, and the ERO shall receive a copy of the transmittal of the FARR to the NWIC. The EP division of the planning department shall receive one bound copy, one unbound copy, and one unlocked, searchable pdf copy on CD; three copies of the FARR along with copies of any formal site recordation forms (CA DPR 523 series); and/or documentation for nomination to the NRHP/CRHR. In instances of high public interest or interpretive value, the ERO may require different content, along with a different format and distribution, for the final report than that presented above.

c) Paleontological Resources. The areas proposed for ground-disturbing activity during project construction and maintenance are situated on a substrate of Holocene age deposits and, therefore, not considered sensitive for paleontological resources. As a result, no impact on paleontological resources, including unique paleontological resources, is anticipated. No mitigation is required.

d) Human Remains. No human remains are known to be located on the project site or on adjacent lands. Therefore, no impacts are expected. Nevertheless, construction activities could result in the discovery of human remains that were not identified during the records search or the pedestrian survey. This would result in a significant impact. However, implementation of mitigation measure CUL-2 would reduce the impact to less than significant.

Mitigation Measure CUL-2: Comply with State Laws Related to Native American Remains. The treatment of human remains and associated or unassociated funerary objects discovered during any ground-disturbing activity shall comply with applicable state laws. In the event that human remains are discovered, the coroner of the county within which the project is located shall be notified immediately. If the remains are determined to be Native American, the coroner shall be responsible for notifying the NAHC, which shall appoint a Most Likely Descendant (MLD) (Public Resources Code Section 5097.98). The archaeological consultant, project sponsor, and MLD shall make all reasonable efforts to develop an agreement for the dignified treatment of human remains and associated or unassociated funerary objects (State CEQA Guidelines Section 15064.5(d)). The agreement should take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects. State law allows 24 hours to reach agreement on these matters. If the MLD does not agree to the reburial method, the project shall follow Section 5097.98(b) of the California Public Resources Code, which states "the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance."

Topics:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
5.	**TRANSPORTATION AND CIRCULATION—Would the project:**					
a)	Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and nonmotorized travel, and relevant components of the circulation system, including intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐	☐
b)	Conflict with an applicable congestion management program, including level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐	☐
c)	Result in a change in air traffic patterns, including either an increase in traffic levels, obstructions to flight, or a change in location, that results in substantial safety risks?	☐	☐	☐	☐	☒
d)	Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses?	☐	☒	☐	☐	☐
e)	Result in inadequate emergency access?	☐	☐	☒	☐	☐
f)	Conflict with adopted policies, plans, or programs regarding public transit or bicycle or pedestrian facilities or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☐	☒

Environmental Setting

Existing Conditions

Regional Roadways

Regional access to the project area is provided by I-680, located approximately 6 miles north of the Geary Road Bridge. I-680 is a four- to eight-lane freeway that extends between Interstate 280 and U.S. 101 in San Jose and Interstate 80 in Fairfield. I-680 serves as a primary north/south regional route, connecting the Livermore-Amador Valley with Contra Costa County and the Santa Clara Valley. In the vicinity of the project site, southbound I-680 has a High-Occupancy Toll (HOT) lane. Access to I-680 in the project area is provided by on ramps at Calaveras Road and Paloma Way.

Weekday traffic on I-680 consists primarily of commuter traffic during the peak traffic periods (generally between the hours of 7 a.m. and 9 a.m. and 4 p.m. and 6 p.m.), with a mix of residential, commercial, and industrial traffic throughout the day. Caltrans' most recent data (2009) indicate that average daily traffic on the segment of I-680 in the project area is about 142,000 vehicles per day at Calaveras Road and Paloma Way.[51] Trucks represent about 8 percent of the traffic.[52] The volume of AM and PM peak-hour[53] traffic amounts to approximately 9,200 and 8,820 vehicles, respectively.[54]

[51] California Department of Transportation. 2009a. *2009 All Traffic Volumes on California State Highways.*

Local Roadways

The physical characteristics (e.g., access, travel lanes, sidewalks, bicycle lanes, parking) of the roadways that serve the project area and vicinity are described below.

Calaveras Road is a two-lane paved road (one lane in each direction), with shoulders on both sides. Between I-680 and Geary Road, a distance of approximately 5 miles, Calaveras Road is relatively flat and straight, with a posted speed limit of 50 mph. Vehicles would use this section of Calaveras Road to haul materials to the Geary Road Bridge construction site. Average daily traffic on Calaveras Road between I-680 and Geary Road (both directions) ranges from 1,100 to 1,300 vehicles. Peak-hour traffic (both directions) amounts to approximately 80 vehicles during the AM peak hour and 100 vehicles during the PM peak hour.[55]

Geary Road is a two-lane road (one lane in each direction), with shoulders on both sides in most locations. The road provides access to the Sunol Regional Wilderness area. It also provides access to the project site, which is just east of Calaveras Road. The existing bridge is located at the end of Geary Road where it crosses Alameda Creek and connects to Camp Ohlone Road in the Sunol Regional Wilderness area.

Transit Network

The Alameda-Contra Costa Transit District (AC Transit) is the principal bus service provider in Alameda County. AC Transit does not provide regularly scheduled bus service along Calaveras Road or Geary Road.

Pedestrian and Bicycle Circulation

Bikeways are typically classified as Class I, Class II, or Class III facilities. Class I bikeways have exclusive rights-of-way for use by bicyclists and pedestrians. Class II bikeways, which have striped lanes within the paved areas of roadways, are provided for the preferential use of bicyclists. Class III bikeways are signed routes that allow bicycles to share streets or sidewalks with vehicles or pedestrians. Calaveras Road is not part of the designated Alameda Countywide Bicycle Network.[56] However, the East Bay Bicycle Coalition recommends Calaveras Road, between I-680 and Milpitas, for bicycle travel.

A considerable number of recreational bicyclists use Calaveras Road on weekends. The volume of riders is generally lower on weekdays. There are no pedestrian facilities on Calaveras Road. Therefore, the number of pedestrians who use the road is very low throughout the day. The predominant mode of travel in the area is by automobile.

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[52] California Department of Transportation. 2009b. *2009 Annual Average Daily Truck Traffic Volumes on California State Highways.*

[53] A peak hour is the part of the day during which traffic congestion on roads is the worse. Normally, this happens twice a day (i.e., when people are commuting). The peak hours considered in the analysis were 7 a.m. to 8 a.m. and 5 a.m. to 6 p.m.

[54] California Department of Transportation. 2011. *California Freeway Performance Measurement System.* Available: <http://pems.dot.ca.gov/>.

[55] San Francisco Planning Department. 2011. *Calaveras Dam Replacement Project Final Environmental Impact Report.* January 27.

[56] Alameda County Congestion Management Agency. 2006. *Final 2006 Alameda Countywide Bicycle Plan.* October.

Impacts Discussion

Trip Generation

The number of construction-related trips in the project area would vary on a daily basis, depending on the planned construction activity and the need for material deliveries. These trips would stem from workers traveling to and from the project site, equipment and material deliveries, and the transport of spoils (rock and soil). The number of daily trips[57] by construction vehicles was estimated for each construction activity by considering the number of workers, the number of deliveries, and the number of haul trucks. It is assumed that construction activities would not overlap but, rather, would occur sequentially. Table 2 estimates the number of daily vehicle trips that would be generated by the proposed project during each phase of construction activity.

TABLE 2: DAILY VEHICLE TRIP GENERATION

Construction Activity[a] (duration)	Trips by Construction Workers	Trips by Equipment/ Material Delivery Trucks	Trips by Haul Trucks	Total Trips
Mobilization (5 days)	8	8	--	16
Environmental fence construction (3 days)	10	2	--	12
Install temporary crossing and demolish wooden bridge (12 days)	28	4	--	32
Site clearing and grubbing (3 days)	4	2	--	6
Abutment, retaining wall, and intermediate pier foundation excavation (10 days)	8	--	24	32
Drilled pier construction (7 days)	12	--	--	12
Abutment, retaining wall, and intermediate pier construction (45 days)	16	2	--	18
Pre-assembled section assembly (45 days)	8	2	--	10
Backfill and compaction (8 days)	8	2	50	60
New road construction (5 days)	12	4	188	204
Corrugated metal pipe culvert replacement (2 days)	8	2	--	10
Steel gate replacement (1 day)	4	2	--	6
Site restoration (5 days)	6	2	--	8
Demobilization (5 days)	8	10	--	18
Daily Average[b]	**12**	**4**	**10**	**26**

Notes:

[a] It is assumed that construction activities would not overlap with each other.

[b] The daily average calculation is based on a weighted average that accounts for the estimated number of days for each phase of construction activity.

[57] In this document, "daily trips" refers to one-way trips to or from the site. Because daytime and nighttime work is proposed, "daily" refers to trips within a 24-hour period.

Vehicles trips were summarized separately for three categories (i.e., Trips by Construction Workers, Trips by Material and Equipment Delivery Trucks, Trips by Haul Trucks) using the following assumptions:

- Trips by Construction Workers: The number of trips by construction workers was estimated by determining the number of construction workers needed for each activity. Daily trips were estimated by multiplying the number of construction workers by two to account for both inbound and outbound vehicle traffic. Under the typical scenario for a construction day, workers arrive on-site during the AM peak period and depart during the PM peak period. Therefore, it can be assumed that half of the daily construction workers' vehicle trips are inbound trips during the AM peak hour, and the remaining half are outbound trips during the PM peak hour.
- Trips by Material and Equipment Delivery Trucks: The number of daily trips by material and equipment delivery trucks was estimated by dividing the total number of expected deliveries by the number of working days for each activity, then multiplying by two to account for inbound and outbound traffic. The number of peak-hour trips by material and equipment delivery trucks was estimated by distributing the total number of trips evenly over a 12-hour working day.
- Trips by Haul Trucks: Haul trucks would be used for moving soil between on-site excavation and staging areas, disposing of excavation spoils off-site, and delivering clean backfill materials from off-site locations. The number of off-site trips was doubled to account for inbound and outbound traffic. The total number of truck trips was divided by the number of working days for each task to determine daily trip generation. The number of peak-hour trips by haul trucks was estimated by distributing the total number of trips evenly over a 12-hour working day.

The highest number of construction trips, 204 per day, would occur over a 1-week period during new road construction. The average number of construction trips over the 8-month construction period would be about 26 per day. As a contingency measure, construction work may need to be extended one additional month. Because the total number of construction trips would not increase substantially with construction extended to 9 months, the number of daily average and peak-hour trips presented in this analysis provides a conservative estimate.

Table 3 estimates the number of AM and PM peak-hour vehicle trips generated by the proposed project. Given the analytical assumptions described above, the project would generate a maximum of 30 vehicle trips per hour, with an average 10 trips per hour during the AM and PM peak periods. Construction vehicles would access the project site from I-680, Calaveras Road, and Geary Road.

TABLE 3: PEAK-HOUR VEHICLE TRIP GENERATION

	Worker Vehicle Trips		Equipment/ Material Delivery Truck Trips		Hauling Truck Trips		Total Trips	
	IB	OB	IB	OB	IB	OB	IB	OB
AM Peak Hour								
Average	6	0	1	1	1	1	8	2
Maximum	12	0	1	1	8	8	21	9
PM Peak Hour								
Average	0	6	1	1	1	1	2	8
Maximum	0	12	1	1	8	8	9	21

Notes:
IB = inbound; OB = outbound.

Approach to Analysis

This section describes transportation impacts associated with proposed project construction in the vicinity.

Following the approximate 8-month construction period, traffic operations in the project area would revert to existing conditions. Once construction of the new bridge is completed, SFPUC would conduct periodic visual inspections, similar to the inspections SFPUC conducts under current conditions, to detect signs of bridge or roadway deterioration. This would generate a negligible number of vehicle trips and is not expected to increase the number of vehicle trips associated with existing conditions. The project would not permanently change the existing or planned transportation network or existing traffic patterns in the area. Furthermore, it would not conflict with policies, plans, or programs related to mass transit, bicycle use, or pedestrian travel. Therefore, post-construction traffic in the project area would revert to existing conditions; no operational traffic impacts would occur, and no further analysis of project operations is provided.

a, b) Increase in Traffic. Construction of the proposed project could result in short-term increases in the volume of traffic, which could cause added delays in the immediate vicinity of the project and along haul routes. In addition, the slower speeds and larger turning radii of the types of trucks that are typically used for construction could temporarily increase traffic delays. As described above, the maximum number of construction-related trips generated by project activities would be about 204 per day, with 30 trips during the AM and PM peak hours.

A recent final environmental impact report (EIR)[58] identifies Calaveras Road and I-680 as currently operating at an acceptable level of service (LOS) of D or better. Construction vehicles under the proposed project would use I-680 and Calaveras Road to travel to and from the project site throughout the day. These project trips would represent less than one-quarter of 1 percent of the daily volume of freeway traffic and less than one-third of 1 percent of the peak-hour volume of freeway traffic. This increase in traffic would be within the range of daily traffic fluctuations. Therefore, it would not adversely affect traffic flow on I-680 or be noticeable to the average driver. Although the volume of traffic on Calaveras Road and Geary Road would increase, average peak-hour traffic would increase by 10 vehicles (Table 3). Therefore, traffic along Calaveras Road is expected to remain at an acceptable LOS of D or better, and the temporary increase in traffic during construction would result in a less-than-significant impact.

Construction activity would occur primarily between the hours of 7 a.m. and 7 p.m. on weekdays, with potential nighttime work while demolishing the existing bridge, importing fill, exporting debris, or mobilizing/demobilizing large equipment. Generally, the volume of nighttime traffic along streets in the area is lower than the average weekday AM or PM peak-hour volume of traffic. Therefore, potential construction-related impacts related to nighttime traffic would be less than significant.

Geary Road and the Sunol Regional Wilderness would be open to the public during the construction period. Vehicle access through the project area would be maintained throughout construction. As detailed in Section B, Project Description – Site Access, the existing low-water crossing would be temporarily improved at the start of construction to provide suitable passage across Alameda Creek for vehicles. Vehicles would be able to transit over the crossing as needed, though possibly under the direction of a traffic coordinator (e.g., flag person) during construction hours. Once over the temporary

[58] San Francisco Planning Department. 2011. *Calaveras Dam Replacement Project Final Environmental Impact Report.* January 27.

crossing, vehicles would have customary access to lands in the upper watershed. Because access would be maintained for local residents' vehicles and other authorized vehicles, and because of the temporary nature of construction activity, the impacts would be considered less than significant.

c) Air Traffic Patterns. The project area is not within an airport land use plan area or in the vicinity of a private airstrip; therefore, this criterion is not applicable to the proposed project.

d) Increased Hazards. No unusual design features or uses that would substantially increase traffic hazards are proposed as part of the project. Therefore, traffic hazards due to a design feature or incompatible use would not occur. However, construction vehicles delivering materials to the project site would share roadways with other vehicles, bicyclists, and pedestrians. Construction vehicles with slower speeds and wider turning radii traveling along Calaveras Road and Geary Road could increase traffic safety hazards because of potential conflicts with automobiles, bicyclists, and pedestrians. This increase in potential traffic safety hazards during construction is considered a significant impact. The greatest potential for conflicts between construction vehicles and other vehicles would occur during new road construction, which is expected to last 5 days. During this period, haul trucks would use Calaveras Road to transport excavated spoils and backfill materials to and from the site.

To avoid potential traffic safety hazards during construction, mitigation measure TR-1 would require SFPUC or its contractors to prepare and implement a traffic control plan. The traffic control plan would include provisions such as posting signs to warn motorists, bicyclists, and pedestrians about construction; notifying pedestrians about detour routes; and, as applicable, using flaggers, illuminated signs, a temporary stop sign, a flashing yellow light, or a combination of these methods to slow approaching traffic at project site access points and reduce traffic hazards during construction. By minimizing potential conflicts and associated traffic safety hazards, implementation of mitigation measure TR-1 would reduce impacts to less than significant.

> **Mitigation Measure TR-1: Traffic Control Plan.** SFPUC will require the construction contractor to prepare and implement a traffic control plan. The traffic control plan shall include appropriate project-specific measures to reduce potential traffic safety hazards and ensure adequate access for emergency responders. SFPUC and the construction contractor will coordinate development and implementation of this plan with the local jurisdiction, as appropriate. To the extent applicable, the traffic control plan will conform to the state's *Manual of Traffic Controls for Construction and Maintenance Work Areas*.[59] The traffic control plan will include the following:
>
> - Identify detour routes, where applicable, for bicyclists, equestrians and ranchers on horseback, and pedestrians in all areas affected by project construction. Signage shall be posted to direct recreational users (e.g., pedestrians) to the Hayfield footbridge to minimize potential safety hazards during construction.
> - Use flaggers and/or signage to guide emergency vehicles, tenant vehicles, vehicles accessing Camp Ohlone, and equestrian and rancher vehicles accessing the McCorkle Corral through and/or around the construction site.
> - Store all equipment and materials in designated construction staging areas to minimize traffic obstructions.

[59] California Department of Transportation. 2006. *California Manual on Uniform Traffic Control Devices for Street and Highways: Part 6, Temporary Traffic Controls.* September 26.

- Use on-site inspectors to control and monitor construction vehicles through the enforcement of standard construction specifications.
- Schedule truck trips outside the peak morning and evening commute hours to the extent possible.
- Repair and restore roadway rights-of-way to their original condition after construction is completed.
- During periods of peak construction traffic, maintain warning signs on Calaveras Road prior to where construction trucks enter or exit onto Geary Road.
- Use flaggers, illuminated signs, a temporary stop sign, a flashing yellow light, or a combination of these methods to slow approaching traffic at the intersection of Geary Road and Calaveras Road and reduce traffic hazards during construction.

e) Emergency Access. Access to the project site by emergency vehicles would be maintained at all times during construction. Therefore, this temporary impact would be considered less than significant. No mitigation is required.

f) Alternative Transportation. There is no transit service along Calaveras Road or Geary Road, and the proposed project would not cause a demand for public transit during construction because most workers would drive private vehicles to the work site. Furthermore, the project would not result in an increase in population that would create a need for transit services. During construction, a maximum of 12 parking spaces per day would be required to meet the temporary demand from construction workers. Approximately 32 parking spaces are available at the proposed staging area on the north side of Alameda Creek (see Figure 4).

Implementation of the project would not permanently change the existing or planned transportation network in Alameda County and, therefore, would not conflict with policies, plans, or programs related to mass transit, bicyclists, or pedestrian travel. After the project is completed, operations and maintenance activities are expected to be similar to the existing conditions. Therefore, this criterion is not applicable to the proposed project.

Topics:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporated*	*Less-than-Significant Impact*	*No Impact*	*Not Applicable*
6. NOISE—Would the project:					
a) Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies?	☐	☐	☒	☐	☐
b) Result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐	☐
c) Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒	☐
d) Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐	☐

Topics:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
e)	For a project located within an airport land use plan area or, where such a plan has not been adopted, in an area within 2 miles of a public airport or public use airport, would the project expose people residing or working in the area to excessive noise levels?	☐	☐	☐	☐	☒
f)	For a project located in the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☐	☒
g)	Be substantially affected by existing noise levels?	☐	☐	☐	☒	☐

Environmental Setting

Terminology

Below are brief definitions for the noise terminology used in this section.

- **Sound.** Sound is caused by vibrations that produce pressure waves, which travel outward from the source of the disturbance. The human perception of sound varies according to the characteristics of the sound waves (e.g., period, amplitude, frequency, speed, wavelength) and the characteristics of the media through which the sound travels (e.g., air, water, solids).
- **Noise.** Noise is defined as unwanted sound that adversely affects any given receiver. In general, sound waves travel away from a ground-level noise source in a hemispherical pattern. As a result, the energy contained in a sound wave spreads over an increasing area as it travels away from the source. This results in a decrease in loudness at greater distances from the noise source.
- **Decibel (dB).** Sound level meters measure the air pressure fluctuations caused by sound waves, with separate measurements made for different sound frequency ranges. The dB scale used to describe sound is a logarithmic scale that accounts for the large range of audible sound intensities.
- **A-Weighted Decibel (dBA).** Most sounds consist of a broad range of sound frequencies. The dBA scale, which is a measure of sound intensity, is weighted to take into account human perception of different frequencies of sound. The typical A-weighted noise levels for various types of sound sources are summarized in Table 4.
- **Equivalent 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 that would contain the same acoustical energy as the time-varying sound that actually occurs during the monitoring period. The 1-hour A-weighted equivalent sound level (L_{eq} 1[h]) is the energy average of A-weighted sound levels occurring during a 1-hour period.
- **Percentile-Exceeded Sound Level (L_{xx}).** This represents the sound level exceeded some percentage of the time during a monitoring period. For example L_{90} is the sound level exceeded 90 percent of the time, and L_{10} is the sound level exceeded 10 percent of the time.
- **Maximum and Minimum Sound Levels (L_{max}, L_{min}).** These represent the maximum (L_{max}) and minimum (L_{min}) sound levels measured during a monitoring period.
- **Day-Night Level (L_{dn}).** This represents the energy average of the A-weighted sound levels occurring during a 24-hour period, with a 10 dB penalty added to sound levels between 10 p.m. and 7 a.m.

TABLE 4: TYPICAL A-WEIGHTED SOUND LEVELS

Sound Source	dBA	Typical Response
Carrier deck jet operation	140	
Limit of amplified speech	130	Painfully loud
Jet takeoff (200 feet) Automobile horn (3 feet)	120	Threshold of feeling and pain
Riveting machine Jet takeoff (2,000 feet)	110	
Shout (0.5 foot) New York subway station	100	Very annoying
Heavy truck (50 feet) Pneumatic drill (50 feet)	90	Hearing damage (8-hour exposure)
Passenger train (100 feet) Helicopter (in flight, 500 feet) Freight train (50 feet)	80	Annoying
Freeway traffic (50 feet)	70	Intrusive
Air-conditioning unit (20 feet) Light automobile traffic (50 feet)	60	
Normal speech (15 feet)	50	Quiet
Living room Bedroom Library	40	
Soft whisper (15 feet)	30	Very quiet
Broadcast studio	20	
	10	Just audible
	0	Threshold of hearing

Because of the logarithmic decibel scale, sound levels from different noise sources cannot be added directly to give a combined noise level. Instead, the combined noise level produced by multiple sources is calculated logarithmically. For example, if one bulldozer produces a noise level of 80 dBA, then two bulldozers would generate a combined noise level of 83 dBA, not 160 dBA. For another example, if a steady stream of cars on a roadway causes an L_{eq} noise level of 60 dBA at the nearest home and occasional trucks (by themselves) cause 50 dBA, then the noise caused by the combined traffic (cars plus trucks) would be 60.4 dBA.

People generally perceive a 10 dBA increase in a noise source as a doubling of loudness. For example, an average person would perceive a 70 dBA sound level as being twice as loud as a 60 dBA sound. People generally cannot detect differences of 1 to 2 dBA between noise levels of a similar nature (e.g., an increase in traffic noise compared with existing traffic noise). However, under ideal listening conditions, some people can detect differences of 2 or 3 dBA. Under normal listening conditions, most people would be likely to perceive a 5 dBA change in sounds of a similar nature. When the new sound is different from the background sound (e.g., backup alarms compared with quiet residential sounds), most people can discern the new noise, even if it increases the overall L_{eq} noise by less than 1 dBA.

When distance is the only factor considered, sound levels from isolated point sources typically decrease by about 6 dBA for every doubling of distance from the noise source. When the noise source is a continuous line (e.g., vehicular traffic on a highway), sound levels decrease by about 3 dBA for every

doubling of distance. The attenuation rate is used to describe the rate at which the intensity of a sound signal declines as it travels outward from its source. For traffic noise studies, an attenuation rate of 4.5 dBA per doubling of distance is often used when the roadway is at ground level and the intervening topography is effective in absorbing sound (e.g., when ground vegetation, scattered trees, or clumps of bushes are present).[60] When the roadway is elevated, 3 dBA of noise attenuation per doubling of distance is used because the sound-absorbing effects of the intervening topography are limited.

Noise levels can be affected by factors other than the distance from the noise source. Topographic features and structural barriers that absorb, reflect, or scatter sound waves can affect noise levels. Atmospheric conditions (e.g., wind speed and direction, humidity levels, temperatures) can also affect the degree to which sound is attenuated over distance.

Echoes off of topographical features or buildings can sometimes result in higher sound levels (lower sound attenuation rates) than normally expected. Temperature and wind conditions can also refract and focus sound waves toward a location at a considerable distance from the noise source. These effects are usually noticeable only for very intense noise sources, such as blasting operations. As a result, the existing noise environment can be highly variable depending on local conditions.

Ambient Noise Environment

Population density and ambient noise levels tend to be closely correlated. Areas that are not urbanized are relatively quiet, while areas that are more urbanized are subjected to higher noise levels because of roadway traffic, industrial activities, and other human activities. The project site is located in a wilderness area and, therefore, expected to have relatively low ambient noise levels.

The existing noise environment in the project area is governed primarily by occasional vehicular traffic on Geary Road and Camp Ohlone Road. Other sources of noise are the recreationists who use the nearby trails, picnic sites, campground, and nature center.

Noise-Sensitive Land Uses

Noise-sensitive land uses are generally defined as locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Noise-sensitive land uses typically include residences, hospitals, schools, guest lodgings, and libraries that have outdoor seating areas as well as certain types of recreational uses.

The project site is located in unincorporated Alameda County, within the Sunol Regional Wilderness area. The closest noise-sensitive land uses are the EBRPD ranger's residence, located approximately 1,800 feet from the north end of the construction area, and the recreational uses in the vicinity of the project site, including the Sunol Family and School Campgrounds, located approximately 2,300 feet north of the site; the McCorkle Corral, located approximately 200 feet east of the site; and the Leyden Flats and Alameda Grove picnic sites, located roughly 400 feet northwest of the site. The Sunol Family and School Campgrounds are closed for construction of the Calaveras Dam Replacement Project, which is scheduled to take place between 2011 and 2016. Therefore, the campgrounds will be closed while the proposed project is under construction.

Several hiking and equestrian trails are near the project site, including Indian Joe Nature Trail, Camp Ohlone Road Trail, McCorkle Trail, and Canyon View Trail. Trail uses in the project area are not considered noise-sensitive land uses for this analysis because recreationalists are mobile throughout the open space and along the trails. Thus, trail users would be exposed to noise levels from project sources or roadways only for a short period of time at any one location and then would experience attenuated noise levels as they move away from the noise source.

[60] Federal Highway Administration. 2011. *Highway Traffic Noise: Analysis and Abatement Policy and Guidance.* January.

The closest noise-sensitive land uses along the haul routes for construction vehicles are the SFPUC watershed keeper's residence, located about 200 feet from Calaveras Road and approximately 2 miles south of I-680, and the EBRPD ranger's residence, located about 200 feet from Geary Road and 1,800 feet from the construction site. Figure 9 shows the residential receptors along haul routes.

Regulatory Setting

Federal

There are no federal noise regulations that apply to the proposed project.

State

California requires each local government to implement a noise element as part of its general plan. California Administrative Code, Title 4, has guidelines for evaluating the compatibility of various land uses as a function of community noise exposure. Table 5 lists the state land use compatibility guidelines.[61]

TABLE 5: STATE LAND USE COMPATIBILITY STANDARDS FOR THE COMMUNITY NOISE ENVIRONMENT

	Community Noise Exposure – L_{dn} or Community Noise Equivalent Level (CNEL) (db)							
Land Use Category	**50**	**55**	**60**	**65**	**70**	**75**	**80**	
Residential (Low-Density Single-Family Homes, Duplex Units, Mobile Homes)								
Residential (Multifamily Homes)								
Transient Lodging (Motels, Hotels)								

[61] California Governor's Office of Planning and Research. 2003. *General Plan Guidelines, Appendix C Guidelines for the Preparation and Content of the Noise Element of the General Plan*. October.

Land Use Category	Community Noise Exposure – L_{dn} or Community Noise Equivalent Level (CNEL) (db)							
	50	55	60	65	70	75	80	
Schools, Libraries, Churches, Hospitals, Nursing Homes								
Auditoriums, Concert Halls, Amphitheaters								
Sports Arenas, Outdoor Spectator Sports Fields								
Playgrounds, Neighborhood Parks								
Golf Courses, Riding Stables, Water Recreation Areas, Cemeteries								
Office Buildings (Business, Commercial, and Professional)								
Industrial, Manufacturing, Utilities, Agriculture								

Land Use Category	Community Noise Exposure – L_{dn} or Community Noise Equivalent Level (CNEL) (db)						
	50	55	60	65	70	75	80
	Normally Acceptable. Specified land use is satisfactory (based on the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements).						
	Conditionally Acceptable. New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction but with closed windows and fresh air supply systems or air conditioning will normally suffice.						
	Normally Unacceptable. New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.						
	Clearly Unacceptable. New construction or development generally should not be undertaken.						

Local

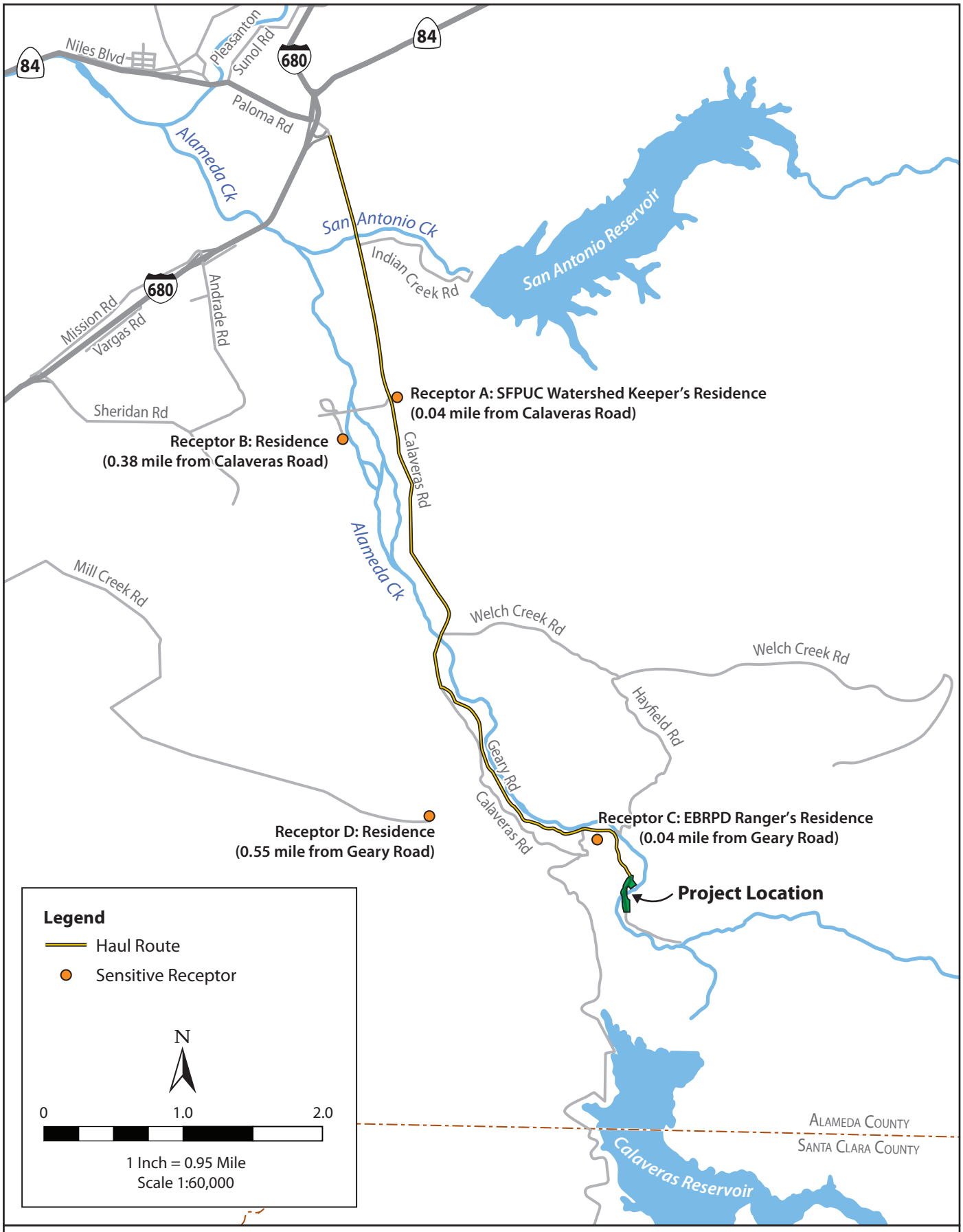
The Alameda County Noise Ordinance, Chapter 6.60 of the County Code of Ordinances, establishes exterior noise level standards for any location in the unincorporated area of the county. These standards are provided in Tables 6 and 7, below.

TABLE 6: EXTERIOR NOISE LEVEL STANDARDS FOR SINGLE-FAMILY OR MULTIFAMILY RESIDENTIAL, SCHOOL, HOSPITAL, CHURCH, OR PUBLIC LIBRARY PROPERTIES

Category	Cumulative Number of Minutes in any 1-hour Time Period	Daytime dBA (7 a.m. to 10 p.m.)	Nighttime dBA (10 p.m. to 7 a.m.)
1	30	50	45
2	15	55	50
3	5	60	55
4	1	65	60
5	0	70	65

TABLE 7: EXTERIOR NOISE LEVEL STANDARDS FOR COMMERCIAL PROPERTIES

Category	Cumulative Number of Minutes in any 1-hour Time Period	Daytime dBA (7 a.m. to 10 p.m.)	Nighttime dBA (10 p.m. to 7 a.m.)
1	30	65	60
2	15	70	65
3	5	75	70
4	1	80	75
5	0	85	80



Geary Road Bridge Replacement Project

Figure 9
Sensitive Receptors along Haul Routes

Graphics ... 00806.09 (2-2012) tm

Noise ordinance Section 6.60.070 provides exceptions for daytime construction activities between 7 a.m. and 9 p.m. on weekdays and between 9 a.m. and 8 p.m. on Saturday and Sunday. Noise ordinance Section 6.60.110 also specifies the procedure for applying for a variance. The owner or operator of a noise source that violates any of the provisions of the ordinance may file an application with the development services director for a variance.

The noise element of the Alameda County General Plan identifies land use compatibility standards related to noise for various types of land uses. It identifies 60 to 75 L_{dn} as normally acceptable for residential uses and 65 to 80 L_{dn} as normally acceptable for outdoor recreational areas.

Impacts Discussion

The proposed project would have no operational noise impacts because operation of the bridge would be the same as the existing condition. Construction impacts are discussed below.

a) Noise Standards

On-Site Construction Noise

Construction of the proposed project would result in temporary, localized increases in noise from construction equipment operating at the site. According to the Alameda County Noise Ordinance, temporary daytime construction activities between 7 a.m. and 9 p.m. on weekdays and between 9 a.m. and 8 p.m. on Saturday and Sunday are exempt from the ordinance. However, the project would include nighttime construction activities as well. The EBRPD ranger's residence is the closest noise-sensitive land use that could be subject to noise impacts during nighttime construction.

As described in the project description, the proposed project would be constructed in phases over 9 months. The construction schedule and required equipment for each phase are provided in Appendix A. Table 8 presents typical noise levels for the various types of construction equipment that would be used for this project.[62] The noise levels listed represent the A-weighted L_{max} measured at a distance of 50 feet from the construction equipment. The table also lists typical utilization factors for the equipment, defined as the fraction of time that the equipment typically runs at maximum capacity.[63]

For each phase, noise generated by the construction equipment was estimated using the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM).[64] With the RCNM, a geometric attenuation rate of 6 dB per doubling of distance is assumed. Additional attenuation resulting from ground absorption is also included. This includes point-source attenuation of 6 dB per doubling of distance, molecular absorption of 0.7 dB per 1,000 feet, anomalous excess attenuation of 1 dB per 1,000 feet,[65] and ground attenuation.[66] Any shielding effects that may result from local barriers (e.g., topography, fences) are not included. This results in a conservative, or worst-case, estimation.

[62] Federal Highway Administration. 2006. *Federal Highway Administration Roadway Construction Noise Model User's Guide.* FHWA-HEP-05-054. January.

[63] Ibid.

[64] Ibid.

[65] Hoover, R. M., and R. H. Keith. 2000. *Noise Control for Buildings, Manufacturing Plants, Equipment, and Products.* Houston, TX: Hoover & Keith, Inc.

[66] Federal Transit Administration. 2006. *Transit Noise and Vibration Impact Assessment*. FTA-VA-90-1003-06. Office of Planning and Environment.

TABLE 8: TYPICAL MAXIMUM NOISE LEVELS BY CONSTRUCTION EQUIPMENT (AT 50 FEET)

Equipment	Utilization Factor (%)	Typical Maximum Noise Level (dBA) at 50 feet from Source
Auger Drill Rig	20	84
Backhoe	40	78
Ground Compactor	20	83
Chain Saw	20	84
Crane	16	81
Excavator	40	81
Front-end Loader	40	79
Generator	50	81
Grader	40	85
Paver	50	77
Pickup Truck	40	75
Roller	20	80
Slurry Trenching Machine	50	80
Welder	40	74

The estimated construction noise levels at the EBRPD ranger's residence are summarized in Table 9. The data indicate that nighttime construction activities would not exceed the residential nighttime noise standard of 45 dBA L_{eq}. The calculations assume simultaneous and continuous operation of the three loudest pieces of equipment. The estimated construction noise levels reflect a very conservative condition, with the loudest pieces of equipment assumed to be operating continuously for a 1-hour period. In reality, construction activities would be intermittent. Therefore, actual noise levels could be somewhat lower than the estimated noise levels shown in Table 9. Nevertheless, the project would not result in a nighttime construction noise impact that would exceed the county nighttime noise standard of 45 dBA L_{eq}. Therefore, the nighttime noise impact would be less than significant.

Construction Traffic Noise

Construction-related traffic would travel on Calaveras Road and Geary Road to access the project site. The closest noise-sensitive land uses are the SFPUC watershed keeper's residence, located 200 feet from Calaveras Road, and the EBRPD ranger's residence, located 200 feet from Geary Road (Receptors A and C, respectively, in Figure 9). Therefore, the traffic noise impact analysis uses these distances.

The proposed project would generate approximately 204 construction-related trips per day during the peak construction period, with a maximum of 30 trips during the AM and PM peak hours (see Section 5, Transportation and Circulation). Existing daily background traffic along Calaveras Road and Geary Road amounts to 1,130 vehicles and 240 vehicles, respectively (see Section 7, Air Quality).

FHWA's Traffic Noise Model (TNM), version 2.5, was used to estimate peak-hour noise levels (L_{eq}) and daily noise levels (L_{dn}) resulting from construction-related traffic. It was assumed that 10 percent of the daily background traffic would be peak-hour traffic. Table 10 provides data regarding traffic noise from construction-related traffic and background traffic.

TABLE 9: ESTIMATED NOISE LEVELS AT NOISE-SENSITIVE LAND USE (RANGER'S RESIDENCE) AND AT 50 FEET

Phase	Modeled Distance between Construction Area and Ranger's Residence (feet)	Estimated Maximum Construction L_{eq} (dBA) at Ranger's Residence	Estimated Construction L_{eq} (dBA) at 50 feet from Construction Area	Modeled Equipment (up to three loudest pieces of equipment)
1. Mobilization	2,250	32[a]	80	Front-end loader, generator
2. Environmental fence construction	2,000	35[a]	80	Trencher, generator
3. Temporary crossing installation and wooden bridge demolition	2,400	33[a]	82	Excavator, front-end loader, generator
4. Site clearing and grubbing	2,100	35[a]	82	Chain saw, front-end loader, generator
5. Abutment, retaining wall, and intermediate pier foundation excavation	2,250	33[a]	81	Excavator, pickup truck, generator
6. Drilled pier construction	2,400	33[a]	82	Auger, front-end loader, generator
7. Abutment, retaining wall, and intermediate pier construction	2,250	33[a,b]	80	Front-end loader, generator
8. Pre-assembled section assembly	2,400	31[a]	80	Crane, welder, generator
9. Backfill and compaction	2,250	34[a]	82	Compactor, excavator, generator
10. New road construction	2,000	39[a]	84	Excavator, grader, generator
11. Corrugated metal pipe (culvert) replacement	2,400	33[a]	81	Crane, excavator, generator
12. Steel gate replacement	2,000	32[a]	78	Generator
13. Site restoration and temporary crossing removal	2,000	35[a]	81	Excavator, pickup truck (hydroseeder), generator
14. Demobilization	2,250	32[a]	80	

Notes:

Alameda County nighttime noise standards between the following hours: 10 p.m. to 7 a.m. daily = 45 dBA.

[a.] Two generators, listed as needed for power tools.

[b.] One generator, listed as needed for dewatering.

There is no county regulation that would be applicable to traffic noise generated by construction activities. To evaluate the traffic noise impact, the county's land use compatibility standards, as identified in the Alameda County General Plan Noise Element, were used. According to the standards, 60 to 65 L_{dn} is normally acceptable for residential uses, and 65 to 80 L_{dn} is normally acceptable for outdoor recreational uses. As shown in Table 10, the estimated traffic noise levels at the sensitive receivers would be lower than the acceptable levels in the land use compatibility standards. Therefore, impacts from construction traffic noise would be less than significant. No mitigation is required.

TABLE 10: ESTIMATED TRAFFIC NOISE LEVELS

	Watershed Keeper's Home (200 feet from Calaveras Road)		Ranger's Residence (200 feet from Geary Road)	
Scenario	**L_{eq} (dBA)**	**L_{dn} (dBA)**	**L_{eq} (dBA)**	**L_{dn} (dBA)**
Background Traffic	53	52	34	35
With Average Construction Traffic	54	53	45	43

b) Groundborne Vibration and Noise. The operation of heavy equipment may generate localized groundborne vibration. Under the proposed project, construction activities associated with bridge construction would not involve high-impact activities such as pile driving. Vibrations from non-impact construction activity and truck traffic are typically below the threshold of perception when the activity is more than approximately 50 feet from the receiver.[67] Because the project would not involve high-impact equipment, any impacts related to groundborne vibration and noise would be expected to be less than significant. No mitigation is required.

c) Permanent Noise Increase. Any increase in noise associated with the proposed project would occur during temporary construction activities. Operational noise would be similar to existing conditions. Although the project would result in a temporary increase in ambient noise levels during construction, the noise would cease after project construction is completed. Therefore, the project would not result in any substantial permanent increase in ambient noise levels. No impact would result, and no mitigation is required.

d) Temporary and Periodic Increase in Noise Levels. Construction of the proposed project would result in a temporary, localized increase in noise from construction equipment. Given the rural character of the project area (i.e., an environment with low ambient noise levels), construction activities could temporarily result in noise levels that would be higher than the ambient noise levels. Potentially affected areas would include the McCorkle Corral, picnic areas, and other recreational areas in the vicinity. For recreational areas adjacent to the project site, the increase in noise is anticipated to be perceptible (a 5 dBA increase is generally considered to be the threshold of a perceptible change) and thus potentially significant. However, recreationalists would generally have limited exposure to construction noise because park visitors (e.g., hikers) typically disperse to areas away from where project construction would occur. In addition, their exposure would be limited to daytime hours because overnight camping is currently not allowed. Further, the noise standards from the Alameda County General Plan Noise Element, discussed above, indicate that a *long-term* noise level of up to 80 dBA L_{dn} is acceptable for outdoor recreational uses. Most of the temporary *short-term* noise generated by project

[67] Federal Transit Administration. 2006. *Transit Noise and Vibration Impact Assessment*. FTA-VA-90-1003-06. Office of Planning and Environment.

construction would fall within this limit when adjusted for distance. For example, the highest instantaneous noise level from a single piece of equipment, 85 dBA L_{max} (Table 8), would fall to about 73 dBA L_{max} at the McCorkle Corral, located approximately 200 feet from the construction limits. Similarly, the maximum estimated combined noise level over a 1-hour period of 84 dBA L_{eq} (Table 9) would fall to about 72 dBA L_{eq} at 200 feet. Thus, given the limited exposure for most recreational users and the noise standards established in the county general plan, the impact of short-term construction noise on nearby recreational areas would be less than significant.

e and f) Exposure of People within an Airport Area or Airstrip. The project is not located within 2 miles of a public airport or in the vicinity of a private airstrip. Therefore, these impacts are not applicable to the project.

g) Existing Noise Levels. The project site is located in a wilderness area, which is expected to have relatively low ambient noise levels. Therefore, the project would not be affected by existing noise levels. No impact would occur.

Topics:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
7.	**AIR QUALITY—Would the project:**					
a)	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐	☐
b)	Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐	☐
c)	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal, state, or regional ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐	☐
d)	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐	☐
e)	Create objectionable odors that would affect a substantial number of people?	☐	☐	☒	☐	☐

Environmental Setting

This section describes existing air quality conditions in the vicinity of the project area and assesses air quality impacts associated with proposed project construction.

The proposed project is located within the San Francisco Bay Area Air Basin (SFBAAB). The climate in the SFBAAB is characterized by moderately wet winters and dry summers. The climate in the southwest portion of Alameda County, which encompasses the project area, is affected by marine airflow and the county's proximity to the San Francisco Bay. Bay breezes push air onshore during the day and draw air from the land offshore at night. During the summer months, the bay helps to cool the warm onshore flows, while during the winter months, it warms the air. This mediating effect keeps temperatures relatively consistent throughout the year. However, the bay's wind patterns can concentrate and carry pollutants from other cities to the area, adding to the local pollutant mix.[68]

The air quality management agencies of direct importance in the project area are the U.S. Environmental Protection Agency (EPA), the California Air Resources Board (ARB), and the Bay Area Air Quality Management District (BAAQMD). EPA and ARB have established national ambient air quality standards (NAAQS) and California ambient air quality standards (CAAQS), respectively, for the following six pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), ozone (O_3), lead, and particulate matter, including particulate matter less than or equal to 10 microns in diameter (PM10) and particulate matter less than or equal to 2.5 microns in diameter (PM2.5). ARB and BAAQMD are responsible for ensuring that these standards are met. Please refer to Table 11 for a summary of the NAAQS and CAAQS and the respective attainment status of Alameda County.

[68] Bay Area Air Quality Management District. 2011a. *California Environmental Quality Act Air Quality Guidelines.* May. San Francisco, CA.

TABLE 11: AMBIENT AIR QUALITY STANDARDS APPLICABLE IN CALIFORNIA AND ALAMEDA COUNTY

Pollutant	Symbol	Average Time	Standard (parts per million)		Standard (micrograms per cubic meter)		Violation Criteria		Attainment Status of Alameda County	
			California	National	California	National	California	National	California	National
Ozone*	O_3	1 hour	0.09	NA	180	NA	If exceeded	NA	Serious Nonattainment	NA
		8 hours	0.070	0.075	137	147	If exceeded	If fourth-highest 8-hour concentration in a year, averaged over 3 years, is greater than the standard	Nonattainment	Marginal Nonattainment
Carbon monoxide	CO	8 hours	9.0	9	10,000	10,000	If exceeded	If exceeded on more than 1 day per year	Attainment	Moderate Maintenance
		1 hour	20	35	23,000	40,000	If exceeded	If exceeded on more than 1 day per year	Attainment	Moderate Maintenance
(Lake Tahoe only)		8 hours	6	NA	7,000	NA	If equaled or exceeded	NA	NA	NA
Nitrogen dioxide	NO_2	Annual arithmetic mean	0.030	0.053	57	100	If exceeded	If exceeded on more than 1 day per year	Attainment	Attainment
		1 hour	0.18	0.100	339	NA	If exceeded	NA	Attainment	NA
Sulfur dioxide	SO_2	24 hours	0.04	0.14	105	–	If exceeded	–	NA	NA
		1 hour	0.25	0.075	655	196	If exceeded	If exceeded on more than 1 day per year	Attainment	Attainment
		Annual arithmetic mean	–	0.030	–	–	–	If exceeded on more than 1 day per year	NA	NA
		3 hours	–	0.5[a]	–	1,300[a]	If exceeded	–	NA	NA
Hydrogen sulfide	H_2S	1 hour	0.03	NA	42	NA	If equaled or exceeded	NA	Unclassified	NA
Vinyl chloride	C_2H_3Cl	24 hours	0.01	NA	26	NA	If equaled or exceeded	NA	NA	NA

Pollutant	Symbol	Average Time	Standard (parts per million)		Standard (micrograms per cubic meter)		Violation Criteria		Attainment Status of Alameda County	
			California	National	California	National	California	National	California	National
Inhalable particulate matter	PM10	Annual arithmetic mean	NA	NA	20	NA	If exceeded	NA	Nonattainment	NA
		24 hours	NA	NA	50	150	If exceeded	If exceeded on more than 1 day per year	Nonattainment	Attainment
	PM2.5	Annual arithmetic mean	NA	NA	12	15.0	If exceeded	If 3-year average of the weighted annual mean from single or multiple community-oriented monitors exceeds the standard	Nonattainment	Nonattainment
		24 hours	NA	NA	NA	35	NA	If less than 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard	NA	Nonattainment
Sulfate particles	SO_4	24 hours	NA	NA	25	NA	If equaled or exceeded	NA	Attainment	NA
Lead particles	Pb	Calendar quarter	NA	NA	NA	1.5	NA	If exceeded no more than 1 day per year	NA	NA
		30-day average	NA	NA	1.5	NA	If equaled or exceeded	NA	Attainment	NA
		Rolling 3-month average	NA	NA	NA	0.15	NA	Averaged over a rolling 3-month period	NA	NA

Notes:

National standards shown are the primary (public health) standards. All equivalent units are based on a reference temperature of 25°C and a reference pressure of 760 torr; parts per million (ppm) in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

NA = not applicable or data unavailable.

[a] Refers to a secondary standard only.

Sources: California Air Resources Board 2012.

Approach to Analysis

This section discusses the thresholds for determining whether a project would result in a significant air quality impact. Table 12, below, summarizes the air quality thresholds of significance, followed by a discussion of each threshold.

TABLE 12: AIR QUALITY SIGNIFICANCE THRESHOLDS

Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/day)	Annual Average Emissions (tons/year)
Criteria Air Pollutants			
ROG	54	54	10
NO_X	54	54	10
PM10	82	82	15
PM2.5	54	54	10
CO	Not Applicable	9.0 ppm (8-hour average) or 20.0 ppm (1-hour average)	
Fugitive Dust	Best Management Practices	Not Applicable	
Health Risks and Hazards for New Sources			
Excess Cancer Risk	10 per 1 million	10 per 1 million	
Chronic or Acute Hazard Index	1.0	1.0	
Incremental annual average PM2.5	0.3 $\mu g/m^3$	0.3 $\mu g/m^3$	
Health Risks and Hazards for Sensitive Receptors (cumulative from all sources within 1,000-foot zone of influence) and Cumulative Thresholds for New Sources			
Excess Cancer Risk	100 per 1 million		
Chronic Hazard Index	10.0		
Annual Average PM2.5	0.8 $\mu g/m^3$		

Ozone Precursors. The SFBAAB is currently designated as a nonattainment area for ozone and particulate matter (PM10 and PM2.5). Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving ROG and NO_X. BAAQMD, as the primary regulatory agency in the SFBAAB, is charged with ensuring that the region attains applicable federal and state ambient air quality standards. The potential for a project to result in a cumulatively considerable net increase in criteria air pollutants, which may contribute to an existing or projected air quality violation, are based on the emissions limits for stationary sources of the state and federal Clean Air Acts. The federal New Source Review (NSR) program was created by the federal CAA to ensure that stationary sources of air pollution are constructed in a manner that is consistent with attainment of federal health-based ambient air quality standards. Similarly, to ensure that new stationary sources do not cause or contribute to a violation of an air quality standard, BAAQMD Regulation 2, Rule 2, requires any new source that emits criteria air pollutants above a specified emissions limit to offset those emissions. For ozone precursors, ROG and NO_X, the offset emissions level is an annual average of 10 tons per year (or 54 pounds per day).[69] At that level, new emission sources are not anticipated to contribute to an air quality violation or result in a considerable net increase in criteria air pollutants.

[69] Bay Area Air Quality Management District. 2009. *Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance,* p. 17. October.

Although this regulation applies to new or modified stationary sources, land use development projects also result in ROG and NO_X emissions from an increased number of vehicle trips, architectural coatings, and construction activities. Therefore, the above thresholds can be applied to the construction and operational phases of land use projects. Those projects that result in emissions below the thresholds would not be considered to be projects that would contribute to an existing or projected air quality violation or result in a considerable net increase in ROG and NO_X emissions. Because construction activities are temporary in nature, only the average daily thresholds are applicable to construction-phase emissions.

Particulate Matter (PM10 and PM2.5). BAAQMD has not established an offset limit for PM2.5, and the current federal Prevention of Significant Deterioration (PSD) offset limit of 100 tons per year for PM10 is too high and would not be an appropriate significance threshold for the SFBAAB considering the nonattainment status for PM10. However, the emissions limits provided in the federal NSR, which applies to stationary sources that emit criteria air pollutants in areas that are currently designated as nonattainment areas, are appropriate significance thresholds. For PM10 and PM2.5, the emissions limits under the NSR are 15 tons per year (82 pounds per day) and 10 tons per year (54 pounds per day), respectively. These emissions limits represent levels at which a source is not expected to have an impact on air quality.[70] Similar to the ozone precursor thresholds identified above, land use development projects typically result in particulate matter emissions from an increased number of vehicle trips, space heating and natural gas combustion, landscape maintenance, and construction activities. Therefore, the above thresholds can be applied to the construction and operational phases of a land use project. Those projects that result in emissions below the NSR emissions limits would not be considered to be projects that would contribute to an existing or projected air quality violation or result in a considerable net increase in PM10 and PM2.5 emissions. Because construction activities are temporary in nature, only the average daily thresholds are applicable to construction-phase emissions.

Other Criteria Pollutants. Regional concentrations of CO in the SFBAAB have not exceeded the CAAQS in the past 11 years, and SO_2 concentrations have never exceeded the standards. The primary source of CO impacts from land use projects is vehicular traffic. Construction-related SO_2 emissions represent a negligible portion of total basin-wide emissions, and construction-related CO emissions represent less than 5 percent of total basin-wide CO emissions in the SFBAAB.[71] The SFBAAB is designated as an attainment area for both CO and SO_2. Furthermore, BAAQMD has demonstrated that to exceed the CAAQS of 9.0 ppm (8-hour average) and 20.0 ppm (1-hour average) for CO, project traffic in addition to existing traffic would need to exceed 44,000 vehicles per hour at affected intersections (or 24,000 vehicles per hour where vertical and/or horizontal mixing is limited). Therefore, given the SFBAAB's attainment status and the limited level of CO and SO_2 emissions that could result from land use projects, land use projects would not result in a cumulatively considerable net increase in CO or SO_2, and quantitative analysis is not required.

Fugitive Dust. Fugitive dust emissions are typically generated during construction phases. Studies have shown that the application of best management practices (BMPs) at construction sites significantly control fugitive dust.[72] Individual measures have been shown to reduce fugitive dust by anywhere from 30 to 90 percent.[73] BAAQMD has identified a number of BMPs to control fugitive dust emissions from construction activities.[74]

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[70] Ibid., p. 16.

[71] Ibid., p. 27.

[72] Western Regional Air Partnership. 2006. *WRAP Fugitive Dust Handbook*. September 7. Available: <http://www.wrapair.org/forums/dejf/fdh/content/FDHandbook_Rev_06.pdf>. Accessed: February 16, 2012.

[73] Bay Area Air Quality Management District. 2009. *Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance,* p. 27. October.

[74] Bay Area Air Quality Management District. 2011a. California Environmental Quality Act Air Quality Guidelines. May. Available: <http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Updated-CEQA-Guidelines.aspx>. Accessed: February 27, 2012.

Health Risks and Hazards from New or Modified Sources. Construction activities typically require the use of heavy-duty diesel vehicles and equipment, which emit diesel particulate matter (DPM). ARB identified DPM as a toxic air contaminant (TAC) in 1998, based on evidence demonstrating cancer effects in humans.[75] The exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Mobile sources such as trucks and buses are among the primary sources of diesel emissions, and concentrations of DPM are higher near heavily traveled highways. Other sources of health risks and hazards include gas stations, stationary diesel engines (i.e., backup generators), dry cleaners, crematories, spray booths, diesel-fueled railroads, major ports, rail yards, airports, oil refineries, power plants, and cement plants.[76] Land use projects that require a substantial amount of heavy-duty diesel vehicles and equipment, as well as projects that require stationary sources, such as a diesel backup generator, would result in emissions of DPM and possibly other TACs that may affect nearby sensitive receptors. Construction-phase TACs, however, would be temporary, and current health risk modeling methodologies are associated with longer term exposure periods of 9, 40, and 70 years, which do not correlate well with the temporary and highly variable nature of construction activities, resulting in difficulties with producing accurate modeling results.[77] Nevertheless, DPM is a known TAC. Therefore, appropriate thresholds have been identified to ensure that a project does not expose sensitive receptors to substantial pollutant concentrations.

Similar to the criteria pollutant thresholds identified above, BAAQMD Regulation 2, Rule 5, sets cancer risk limits for new and modified sources of TACs at the maximally exposed individual (MEI). In addition to cancer risk, some TACs pose non-carcinogenic chronic and acute health hazards. Acute and chronic non-cancer health hazards are expressed in terms of a hazard index, or HI, which is a ratio of the TAC concentration to a reference exposure level (REL), a level below which no adverse health effects are expected, even for sensitive individuals.[78] In accordance with Regulation 2, Rule 5, the BAAQMD Air Pollution Control Officer shall deny any permit to operate a source that results in an increased cancer risk of 10 per 1 million or an increased chronic or acute HI of 1.0 at the MEI. This threshold is designed to ensure that the source does not contribute to a cumulatively significant health risk impact.[79]

Particulate matter, primarily particulate matter associated with mobile sources (vehicular emissions), is strongly associated with mortality, respiratory diseases, and impairment of lung development in children as well as hospitalization for cardiopulmonary disease. Toxicological and epidemiological research indicate that smaller particles and those associated with traffic appear more closely related to health effects.[80] Therefore, estimates of PM2.5 emissions from a new source can be used to approximate broader potential adverse health effects. The U.S. Environmental Protection Agency (EPA) has proposed a Significant Impact Level (SIL) for PM2.5. For developed urban areas, including much of San Francisco,

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[75] California Air Resources Board. 1998. *Fact Sheet*. The Toxic Air Contaminant Identification Process: Toxic Air Contaminant Emissions from Diesel-fueled Engines. October. Available: <http://www.arb.ca.gov/toxics/dieseltac/factsht1.pdf> Accessed: February 27, 2012. This document is also available for review at the Planning Department, 1650 Mission Street, Suite 400, in Case File No. 2004.0093E.

[76] Bay Area Air Quality Management District. 2011b. *Recommended Methods for Screening and Modeling Local Risks and Hazards,* p. 11. May.

[77] Bay Area Air Quality Management District. 2009. *Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance,* p. 29. October.

[78] Ibid., p. D-35.

[79] Bay Area Air Quality Management District. 2011a. California Environmental Quality Act Air Quality Guidelines, p. D-40. May. Available: <http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Updated-CEQA-Guidelines.aspx>.

[80] San Francisco Department of Public Health. 2008. *Assessment and Mitigation of Air Pollutant Health Effects for Intra-Urban Roadways*: *Guidance for Land Use Planning and Environmental Review*, p. 5. May.

EPA has proposed a SIL of between 0.3 μg/m^3 and 0.8 μg/m^3. The SIL is the level of incremental PM2.5 emissions that represents a significant contribution to regional nonattainment.[81] BAAQMD has determined that, on balance, the annual average PM2.5 threshold of 0.3 μg/m^3 will afford the same health protections as required by San Francisco's Health Code, Article 38.[82] Therefore, the lower range of the EPA-recommended SIL of 0.3 μg/m^3 is an appropriate threshold for determining the significance of a source's PM2.5 impact.

With respect to determining the distance at which emissions from a new source (construction sources or operational sources) may affect nearby sensitive receptors, the summary of research findings in ARB's *Land Use Compatibility Handbook* suggests that air pollutants from high-volume roadways are substantially reduced or even indistinguishable from upwind background concentrations at a distance of 1,000 feet downwind from the source.[83] Given the scientific data on the dispersion of TACs from a source, BAAQMD recommends assessing the impacts of TACs on nearby receptors within a 1,000-foot radius of the source.[84] This radius is also consistent with ARB's *Land Use Compatibility Handbook* and Health and Safety Code Section 42301.6 (Notice for Possible Source near School).[85]

In summary, potential health risks and hazards from new sources on existing or proposed sensitive receptors are assessed within a 1,000-foot zone of influence, and risks and hazards from new sources that exceed any of the following thresholds at the MEI are determined to be significant: excess cancer risk of 10 per 1 million, chronic or acute HI of 1.0, or an annual average PM2.5 increase of 0.3 μg/m^3.

Cumulative Air Quality Impacts. Regional air quality impacts are by their very nature cumulative impacts. Emissions from past, present, and future projects contribute to adverse regional air quality impacts on a cumulative basis. No single project by itself would be large enough to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulative adverse air quality impacts.[86] As described above, the project-level thresholds for criteria air pollutants are based on levels at which new sources are not anticipated to contribute to an air quality violation or result in a considerable net increase in criteria air pollutants. Therefore, if a project's emissions are below the project-level thresholds, the project would not be considered to be a project that would result in a considerable contribution to cumulative regional air quality impacts.

With respect to localized health risks and hazards, as described above, the significance thresholds for new receptors represent a cumulative impact analysis because this analysis considers all potential sources that may result in adverse health impacts within a receptor's zone of influence. Similarly, new sources that contribute to health risks and hazards at nearby sensitive receptors that exceed these cumulative thresholds would result in a significant health risk and hazards impact on existing sensitive receptors.

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[81] Bay Area Air Quality Management District. 2011a. California Environmental Quality Act Air Quality Guidelines, p. D-36. May. Available: <http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Updated-CEQA-Guidelines.aspx>.

[82] Ibid., p. 41.

[83] Bay Area Air Quality Management District. 2011a. California Environmental Quality Act Air Quality Guidelines, p. D-38. May. Available: <http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Updated-CEQA-Guidelines.aspx>.

[84] Ibid., p. D-40.

[85] Ibid., p. 40.

[86] Bay Area Air Quality Management District. 2010b. *California Environmental Quality Act Air Quality Guidelines,* p. 2-1. June; adopted *Thresholds of Significance*. June. Available: <http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Updated-CEQA-Guidelines.aspx>.

Consistency with Applicable Air Quality Plan. BAAQMD has published the 2010 Clean Air Plan, representing the most current applicable air quality plan for the SFBAAB. Consistency with this plan is the basis for determining whether the proposed project would conflict with or obstruct implementation of an applicable air quality plan.

Impacts Discussion

As discussed in the project description, the proposed project would require demolition of the existing bridge, construction of a new bridge superstructure, installation of reinforced piers and abutments, elevation of access roads, and construction of minor facilities. Emissions associated with these activities were estimated using the URBEMIS2007 model (version 9.2.4)[87] and ARB's OFFROAD2007 model.[88] Both are accepted models for estimating emissions within the Bay Area. It was assumed that construction will proceed in phases between April and December 2013. Truck trip and equipment usage assumptions were based on information supplied by the project sponsor.[89] Please refer to Appendix A for more information regarding specific modeling procedures and assumptions.

Once construction of the new bridge is completed, SFPUC will conduct periodic visual inspections to detect any signs of bridge or roadway deterioration. These inspections will be similar to inspections conducted on the existing bridge under current conditions. In addition, as described in Section E.5, Transportation and Circulation, operation for the facility would neither generate a significant number of new vehicles trips nor add additional capacity to the roadway. This assessment therefore focuses exclusively on construction-related emissions, because there would be no impact related to project operations.

a) Air Quality Plans. BAAQMD's 2010 Clean Air Plan is the current regional air quality plan that would be applicable to the project.[90] The 2010 Clean Air Plan updates the Bay Area 2005 Ozone Strategy and requires the implementation all feasible measures to reduce ozone; the development of a single, integrated control strategy to reduce ozone, particulate matter, air toxics, and greenhouse gases (GHGs); and the adoption of emission control measures during the 2010 through 2012 timeframe.

A project is deemed inconsistent with air quality plans if it would result in population and/or employment growth that exceeds the growth estimates included in the applicable air quality plan, which, in turn, would generate emissions not accounted for in the applicable air quality plan's emissions budget. Therefore, the proposed project is evaluated to determine if it would generate population and employment growth and, if so, if that growth would exceed the growth rate included in the 2010 Clean Air Plan.

The purpose of the proposed project is to replace the existing Geary Road Bridge with a facility that meets current design requirements and safety regulations. As discussed above, the proposed project would not permanently change the existing or planned transportation network or existing traffic patterns in the area. The project also would not add any additional capacity to Geary Road. Likewise, as described in Section 1, Land Use and Land Use Planning, the project would be consistent with the Alameda County General Plan and would not conflict with any applicable land use plan or policy. The

[87] ICF Jones and Stokes. 2007. *Software Users Guide: URBEMIS2007 for Windows, version 9.2.* November.

[88] California Air Resources Board. 2007. *User's Guide for OFFROAD2007*. November.

[89] Freeman, Craig. San Francisco Public Utilities Commission. August 1, 2011—email message to Shilpa Trisal, ICF International.

[90] Bay Area Air Quality Management District. 2010a. *Bay Area 2010 Clean Air Plan*. Adopted September 15, 2010. Available: <http://www.baaqmd.gov/Divisions/Planning-and-Research/Plans/Clean-Air-Plans.aspx>. Accessed: August 2, 2011.

proposed project would generate emissions during construction. These emissions would be short term and would not impede attainment or maintenance of the NAAQS or CAAQS. Consequently, the project would not conflict with or obstruct implementation of the 2010 Clean Air Plan. Therefore, the impact would be less than significant.

b) Air Quality Violation. Construction activities associated with the proposed project would generate short-term emissions of ROG, NO_X, CO, PM10, and PM2.5 (refer to Section 8, Greenhouse Gas Emissions, for a discussion of GHG impacts). Emissions would originate from mobile and stationary construction equipment exhaust, employee vehicle exhaust, and dust from site clearing. Construction-related emissions would vary substantially depending on the level of activity, the specific construction operations, and wind and precipitation conditions.

Construction emissions from heavy-duty equipment and worker and haul trips were estimated using the URBEMIS2007 (version 9.2.4) model and ARB's OFFROAD2007 model. It is anticipated that construction would require 14 phases, requiring approximately 8 months in 2013. Given the information provided by SFPUC, it is assumed that construction activities would occur sequentially (i.e., there would be no overlap amongst the phases). Construction could be extended for an additional month, resulting in a 9-month construction period; however, the total amount of construction activity and associated emissions would not change substantially. Therefore, the assumption of an 8-month construction period results in a conservative estimate of daily construction emissions.

Table 13 presents the daily construction emissions associated with each phase of the proposed project.[91] Please refer to Appendix A for additional construction modeling assumptions. The criteria pollutant emissions summarized in Table 13 are based on the air quality modeling data provided in Appendix A. Emissions presented in Table 13 represent average daily emissions, which were calculated by averaging the daily emissions anticipated to occur during each phase listed in Table A-1 in Appendix A over the estimated project construction period of 156 days. Table 13 also lists the applicable threshold of significance for each criteria pollutant.

TABLE 13: SUMMARY OF DAILY CONSTRUCTION EMISSIONS (POUNDS PER DAY)

	ROG	NO_X	PM10	PM2.5
Daily Average	1.67	13.24	0.92	0.67
Significance Threshold	54	54	82	54

According to the data presented in Table 13, criteria pollutant emissions generated during construction would not exceed the significance thresholds.

Specific to fugitive dust, BAAQMD recommends basic control measures to limit fugitive dust emissions and ensure that no significant air quality impact results. Mitigation measure AQ-1 would be implemented for all construction phases in compliance with this recommendation. Therefore, the impact of fugitive dust emissions would be less-than-significant with mitigation.

[91] ICF Jones and Stokes. 2007. *Software Users Guide: URBEMIS2007 for Windows, Version 9.2.* November; California Air Resources Board. 2007. *User's Guide for OFFROAD2007*. November; Freeman, Craig. San Francisco Public Utilities Commission. August 1, 2011—email message to Shilpa Trisal, ICF International.

Mitigation Measure AQ-1: Implement BAAQMD Basic Control Measures to Control Construction-Related Fugitive Dust. SFPUC will require the construction contractor to implement the following BAAQMD-recommended basic control measures to reduce particulate matter emissions from construction activities:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) will be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off-site will be covered.
- All visible mud or dirt track-out onto adjacent public roads will be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads will be limited to 15 mph.
- All roadways, driveways, and sidewalks that are to be paved will be completed as soon as possible. Building pads will be laid as soon as possible after grading unless seeding or soil binders are used.
- A sign will be posted with the telephone number and name of the contact person at the lead agency to call regarding dust complaints. This person will respond and take corrective action within 48 hours. The sign will be visible to the public. The air district's phone number will also be visible to ensure compliance with applicable regulations.
- Idling times will be minimized by shutting off equipment when it is not in use or by reducing the maximum idling time to 5 minutes (as required by the California Airborne Toxics Control Measure, Title 13, Section 2485, of the California Code of Regulations [CCR]). Clear signage will be provided for construction workers at all access points.
- All construction equipment will be maintained and properly tuned in accordance with manufacturers' specifications. All equipment will be checked by a certified mechanic and determined to be running in proper condition prior to operation.

c) Cumulative Emissions. The emissions thresholds summarized in Table 12 were developed in consideration of the levels at which individual projects contribute to a cumulative impact on air quality. Therefore, if a project exceeds the significance thresholds identified in Table 12, its emissions would be cumulatively considerable.[92] Implementation of the proposed project would not exceed the applicable thresholds (see Table 13) and thus would not result in a significant local or cumulative air quality impact. Therefore, the proposed project, in combination with other projects in the area, would not result in a significant cumulative impact on air quality.

d) Pollutant Concentrations. In 1998, ARB classified DPM as a carcinogenic TAC. TACs are pollutants that may result in an increase in mortality or serious illnesses or pose a present or potential hazard to human health. Health effects related to TACs include cancer, birth defects, neurological damage, damage to the body's natural defense system, and diseases that lead to death. Heavy-duty construction equipment and haul trucks represent sources of DPM from project construction.

[92] Bay Area Air Quality Management District. 2011a. *California Environmental Quality Act Air Quality Guidelines.* May. San Francisco, CA.

Cancer health risks associated with exposure to diesel exhaust are usually linked to chronic exposure (i.e., over a 70-year exposure period). In addition, DPM concentrations, and thus cancer health risks, dissipate as a function of distance from the emissions source. Construction activities occurring more than 1,000 feet from a sensitive receptor are not considered to pose a significant health risk.

Sensitive receptors are defined as those "occupying or residing in residential dwellings, schools, colleges or universities, day care facilities, hospitals, and senior care facilities."[93] There are no residences within 1,000 feet of the construction site; the nearest residence (park ranger's residence) is approximately 1,800 feet to the north. No other facilities have been identified as sensitive receptors within the project area. Recreationists who use the Sunol Regional Wilderness, including hikers, picnickers, and equestrians, may come within 1,000 feet of the construction zone. However, given BAAQMD's definition, hikers and picnickers would not be considered sensitive receptors. Furthermore, hikers and picnickers would be near construction activities for short periods of time and infrequently (probably not more than once a week). Because of the short period of exposure to construction activities, relative to a 70-year period of chronic exposure, recreationists would not be exposed to levels of TACs in excess of BAAQMD's significance levels.

TAC Impact from Truck Traffic on Roads

Diesel trucks used during construction to transport materials and equipment would release DPM along haul routes. BAAQMD's Recommended Methods for Screening and Modeling Local Risks and Hazards[94] identifies roadways with fewer than 10,000 vehicles per day and 1,000 trucks per day as "minor, low-impact sources" that "do not pose a significant health impact even in combination with other nearby sources" and recommends excluding sources that meet this criteria from the CEQA process.

The primary haul routes that would be used to access the project site are Calaveras Road and Geary Road. Figure 9 indicates that there are two receptors along Calaveras Road and two receptors within 3 miles of the road. The figure also shows one receptor (ranger's residence) adjacent to Geary Road. These five receptors may be exposed to DPM from passing trucks during construction.

According to a recently completed final EIR, the daily volume of traffic on Calaveras Road amounts to 1,130 vehicles, of which 610 are trucks.[95] The final EIR does not include an estimate of vehicle trips on Geary Road because the road is rural and serves primarily local traffic. Vehicle trips on Geary Road were therefore calculated in this section using the methodology outlined in the Sunol and Ohlone Wilderness Regional Preserves Land Use Plan (Sunol and Ohlone Plan).[96] Given that methodology, approximately 120 vehicles use Geary Road, which is equal to 240 vehicle trips per day. Truck trips would make up a small fraction of these trips (if any) because Geary Road serves primarily local traffic traveling to the parking area for the Sunol Regional Wilderness.

[93] Bay Area Air Quality Management District. 2011b. *Recommended Methods for Screening and Modeling Local Risks and Hazards.* May. San Francisco, CA.

[94] Ibid.

[95] County of San Francisco, Planning Department. 2011. *Calaveras Dam Replacement Project*. Final Environmental Impact Report (SCH: 2005102102). January.

[96] East Bay Regional Park District. 2003. *Initial Study Mitigated Negative Declaration for Sunol and Ohlone Wilderness Regional Preserves Land Use Plan*. September.

During construction, the project would generate a maximum of approximately 204 daily vehicle trips, including 188 daily truck trips (see Section E.5, Transportation and Circulation). Table 14 summarizes daily project trips and background trips along Calaveras Road and Geary Road. As shown in Table 14, traffic associated with the project, when combined with traffic from other sources in the Sunol Valley, would not cause the roadways to exceed BAAQMD's criteria for a "minor, low-impact source." Residences along Calaveras Road and Geary Road will not be exposed to levels of TAC in excess of BAAQMD's screening levels. Therefore, this impact would be less than significant.

TABLE 14: SUMMARY OF DAILY TRAFFIC ON CALAVERAS AND GEARY ROAD DURING PROJECT CONSTRUCTION

Scenario	Total Vehicles	Total Trucks
Maximum Daily Project Traffic[a]	204	188
Daily Background Traffic on Calaveras Road[b]	1,130	610
Daily Background Traffic on Geary Road[c]	240	—[d]
Sum of Project Traffic and Background Traffic[e]		
Calaveras Road	1,352	808
Geary Road	462	188
BAAQMD Screening Level	*10,000*	*1,000*

Notes:

[a] Refer to Section E.5, Transportation and Circulation. This value represents a conservative assumption because it is for peak traffic during an estimated 5-week period of roadwork; average project daily traffic is estimated to be a combined total of 24 vehicle and truck trips per day.

[b] County of San Francisco. 2011. *Calaveras Dam Replacement Project*. Final EIR (SCH: 2005102102). Planning Department. January.

[c] East Bay Regional Park District. 2003. *Initial Study Mitigated Negative Declaration for Sunol and Ohlone Wilderness Regional Preserves Land Use Plan.* September.

[d] Truck trips expected to be negligible because Geary Road serves primarily local traffic.

[e] Sum of maximum project trips and background trips.

e) Odors. The generation and severity of odors is dependent on a number of factors, including the nature, frequency, and intensity of the source; wind direction; and the location of the receptor(s). Typical facilities known to produce odors include landfills, wastewater treatment plants, manufacturing plants, and certain agricultural facilities. Implementation of the proposed project would not result in the introduction of any of these facilities.

Diesel fuel used during construction may emit temporary and localized odors. These would cease once construction activities are completed. Moreover, there are no sensitive receptors within 1,000 feet of the construction area. Although recreationists who use the Sunol Regional Wilderness during construction may be exposed to localized odors, these occurrences would be temporary and transitory. Thus, it is not anticipated that construction of the project would create objectionable odors. This impact would be less than significant.

Topics:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
8.	**GREENHOUSE GAS EMISSIONS—Would the project:**					
a)	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐	☐
b)	Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐	☐

Environmental Setting

Gases that trap heat in the atmosphere are referred to as GHGs because they capture heat radiated from the sun as it is reflected back into the atmosphere, much like a greenhouse does. The accumulation of GHGs has been implicated as the driving force for global climate change. The primary GHGs are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), O_3, and water vapor.

Although the presence of the primary GHGs in the atmosphere are naturally occurring, CO_2, CH_4, and N_2O are emitted largely from human activities, accelerating the rate at which these compounds occur within the earth's atmosphere. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results from off-gassing associated with agricultural practices and landfills. Other GHGs include hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, which are generated in certain industrial processes. GHGs are typically reported in carbon dioxide-equivalent (CO_2e) measures.[97]

There is international scientific consensus that human-caused increases in GHGs have and will continue to contribute to global warming. Potential global warming impacts in California may include a loss of snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years. Secondary effects are likely to include a global rise in sea level, impacts on agriculture, changes in disease vectors, and changes in habitat and biodiversity.[98]

ARB estimated that in 2009 California produced about 453 million metric tons of CO_2e ($MMTCO_2e$), or about 499 million U.S. tons.[99] ARB found that transportation represents 38 percent of the state's GHG emissions, followed by electricity generation (both in state and out of state) at 23 percent and industrial sources at 18 percent. Commercial and residential fuel use (primarily for heating) accounted for 9 percent of GHG emissions.[100] In the Bay Area, fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) and the industrial and commercial sectors are the two largest sources of GHG emissions, each accounting for approximately 36 percent of

[97] Because of the differential heat absorption potential of various GHGs, GHG emissions are frequently measured in carbon dioxide equivalents, which present a weighted average based on each gas's heat absorption (or "global warming") potential.

[98] California Climate Change Portal. 2010. *Frequently Asked Questions about Global Climate Change*. Available: <*http://www.climatechange.ca.gov/publications/faqs.html*>. Accessed: November 8, 2010.

[99] California Air Resources Board. 2011a. *California Greenhouse Gas Inventory for 2000–2009 - by Category as Defined in the Scoping* Plan. Available: < http://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_00-09_2011-10-26.pdf >. Accessed: May 7, 2010.

[100] Ibid.

the Bay Area's 95.8 MMTCO$_2$e emitted in 2007.[101] Electricity generation accounts for approximately 16 percent of the Bay Area's GHG emissions, followed by residential fuel usage at 7 percent, off-road equipment at 3 percent, and agriculture at 1 percent.[102]

Regulatory Setting

In 2006, the California legislature passed Assembly Bill 32 (California Health and Safety Code Division 25.5, Sections 38500, et seq., or AB 32), also known as the Global Warming Solutions Act. AB 32 requires ARB to design and implement emission limits, regulations, and other measures so that feasible and cost-effective statewide GHG emissions are reduced to 1990 levels by 2020.

Pursuant to AB 32, ARB adopted a scoping plan in December 2008 that outlined measures to meet the 2020 GHG reduction limits.[103] To meet these goals, California must reduce its GHG emissions to a level 30 percent below projected 2020 business-as-usual emissions levels, or about 15 percent below today's levels.[104] The scoping plan estimates a reduction of 174 MMTCO$_2$e (about 191 million U.S. tons) from the transportation, energy, agriculture, forestry, and "high global warming potential" sectors (see Table 15, below).

TABLE 15: GHG REDUCTIONS FROM THE AB 32 SCOPING PLAN SECTORS [105]

GHG Reduction Measures by Sector	GHG Reductions (MMT CO_2e)
Transportation Sector	50.6
Electricity and Natural Gas	36.5
Industry	1.1
Landfill Methane Control Measure (Discrete Early Action)	1.5
Forestry	5.0
"High Global Warming Potential" GHGs	6.5
Cap and Trade	18.0
Total	119.2

ARB has identified an implementation timeline for the GHG reduction strategies in the scoping plan.[106] Some measures may require new legislation to implement, some will require subsidies, some have already been developed, and some will require additional effort to evaluate and quantify. In addition, some emissions reduction strategies may require their own environmental review under CEQA or the National Environmental Policy Act (NEPA).

[101] Bay Area Air Quality Management District. 2010c. *Source Inventory of Bay Area Greenhouse Gas Emissions: Base Year 2007.* Last Revised: February 2010. Available: <http://www.baaqmd.gov/~/media/Files/Planning-and-Research/Emission-Inventory/regionalinventory2007_2_10.ashx>. Accessed: March 2, 2010.
[102] Ibid.
[103] Note that ARB published a scoping plan update in July 2011.
[104] California Air Resources Board. 2010. *California's Climate Plan: Fact Sheet*. Available: <*http://www.arb.ca.gov/cc/facts/scoping_plan_fs.pdf*>. Accessed: March 4, 2010.
[105] California Air Resources Board. 2011b. *Status of Scoping Plan Recommended Measures.* Available: <http://www.arb.ca.gov/cc/scopingplan/status_of_scoping_plan_measures.pdf>. Accessed: August 2, 2011.
[106] California Air Resources Board. 2008. AB 32 Scoping Plan. Available: <*http://www.arb.ca.gov/cc/scopingplan/sp_measures_implementation_timeline.pdf*> Accessed: March 2, 2010.

AB 32 also anticipates that local government actions will result in reduced GHG emissions. ARB has identified a GHG reduction target of 15 percent from current levels for local governments and notes that successful implementation of the plan will rely on the land use planning and urban growth decisions of local governments, which have primary authority to plan, zone, approve, and permit land development to accommodate population growth and the changing needs of their jurisdictions.

The scoping plan relies on the requirements of Senate Bill 375 (SB 375) to implement the carbon emission reductions anticipated from land use decisions. SB 375 was enacted to align local land use and transportation planning and achieve the state's GHG reduction goals. SB 375 requires regional transportation plans, developed by Metropolitan Planning Organizations (MPOs), to incorporate a "sustainable communities strategy" in their regional transportation plans (RTPs) that achieve GHG emission reduction targets set by ARB. SB 375 also includes provisions for streamlined CEQA review for some infill projects such as transit-oriented development. SB 375 would be implemented over the next several years, and the Metropolitan Transportation Commission's 2013 RTP would be the first plan subject to SB 375.

Senate Bill 97 (SB 97) required the Office of Planning and Research (OPR) to amend the State CEQA Guidelines to address the feasible mitigation of GHG emissions or the effects of GHGs. In response, OPR amended the State CEQA Guidelines to provide guidance for analyzing GHG emissions.

The 2011 State CEQA Guidelines include a new section (Section 15064.4) that specifically addresses the significance of GHG emissions. Section 15064.4 calls for a good-faith effort to describe, calculate, or estimate GHG emissions. Section 15064.4 further states that the significance of GHG impacts should include consideration of the extent to which the project would increase or reduce GHG emissions, exceed a locally applicable threshold of significance, or comply with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. The revisions also state that a project may be found to have a less-than-significant impact if it complies with an adopted plan that includes specific measures to reduce GHG emissions (Section 15064(h)(3)). However, the revised guidelines do not require or recommend a specific analysis methodology or provide quantitative criteria for determining the significance of GHG emissions.

Impacts Discussion

a) Generation of GHGs**.** The most common GHGs resulting from human activity are CO_2, CH_4, and N_2O.[107] State law defines GHGs to include hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. These latter GHG compounds are usually emitted in industrial processes and, therefore, are not applicable to the proposed project.

Individual projects contribute to the cumulative effects of climate change by directly or indirectly emitting GHGs during construction and operational phases. Direct operational emissions include GHGs from new vehicle trips and area sources (e.g., natural gas combustion). Indirect emissions include emissions from electricity providers; emissions related to the energy required to pump, treat, and convey water; and emissions associated with landfill operations.

As discussed in Section 7, Air Quality, operation of the proposed project would neither generate a significant number of new vehicles trips nor add additional capacity to the roadway. Likewise, the project would not use any electricity or natural gas for increased lighting or operational/maintenance

[107] Governor's Office of Planning and Research. 2008. *Technical Advisory, CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act Review*. June 19. Available: *<http://www.opr.ca.gov/ceqa/pdfs/june08-ceqa.pdf>.* Accessed: March 3, 2010.

requirements. Consequently, the project would not generate any direct long-term operational emissions or contribute to indirect emissions. This assessment therefore focuses exclusively on direct emissions generated during project construction.

Construction activities would generate short-term emissions of CO_2, CH_4, and N_2O. Generation of these emissions would result from the use of heavy equipment, such as cranes and generators; employee vehicle trips; and haul truck trips. Table 16[108] presents a summary of construction-related emissions, expressed in metric tons per year. As discussed in Section 7, Air Quality, it is anticipated that construction would require 14 phases, beginning in April 2013 and ending in December 2013.[109] Please refer to Appendix A for detailed information regarding emission modeling and quantification methods.

TABLE 16: SUMMARY OF CONSTRUCTION EMISSIONS (2013) (METRIC TONS)

	Diesel Equipment			Gasoline Equipment		
Phase	**CO_2**	**CH_4**	**N_2O**	**CO_2**	**Other**	**CO_2e**
Mobilization	1	0.00	0.00	0	0.01	2
Environmental fence construction	1	0.00	0.00	0	0.00	1
Install temporary crossing and demolish wooden bridge	9	0.00	0.00	1	0.04	10
Site clearing and grubbing	1	0.00	0.00	0	0.00	1
Abutment, retaining wall, and intermediate pier foundation excavation	12	0.00	0.00	0	0.01	12
Drilled pier construction	2	0.00	0.00	0	0.01	2
Abutment, retaining wall, and intermediate pier construction	26	0.00	0.00	2	0.10	28
Pre-assembled section assembly	32	0.00	0.00	1	0.05	33
Backfill and compaction	9	0.00	0.00	0	0.01	9
New road construction	18	0.00	0.00	0	0.01	19
Corrugated metal pipe (culvert) replacement	1	0.00	0.00	0	0.00	1
Steel gate replacement	0	0.00	0.00	0	0.00	0
Site restoration	1	0.00	0.00	0	0.02	2
Demobilization	2	0.00	0.00	0	0.01	2
Total Emissions Generated in 2013	115	0	0	5	0	122

As shown in Table 16, construction of the proposed project would result in 122 metric tons of CO_2e. This is equivalent to adding 24 typical passenger vehicles to the road during the construction period.[110] Construction emissions would come primarily from the use of diesel-powered construction equipment and heavy-duty haul trucks. The emissions are considered short-term because they would cease once construction is complete.

[108] ICF Jones and Stokes. 2007. *Software Users Guide: URBEMIS2007 for Windows, Version 9.2.* November.

[109] Freeman, Craig. San Francisco Public Utilities Commission. August 1, 2011—email message to Shilpa Trisal, ICF International.

[110] U.S. Environmental Protection Agency. 2011. *Emission Facts: Greenhouse Gas Emissions from a Typical Passenger Vehicle.* Available: <http://www.epa.gov/oms/climate/420f05004.htm>. Accessed: August 2, 2011.

The emission of 122 metric tons of CO_2e during project construction, when compared with annual GHG emissions in California (484,000,000 metric tons of CO_2e) and the Bay Area (98,500,000 metric tons of CO_2e), does not represent a substantial increase in GHGs. As a further comparison, the amounts of CO_2e emitted during project construction would fall well below the amounts determined to be operationally significant in Appendix D of the BAAQMD CEQA Guidelines,[111] namely, 1,100 tons of CO_2e per year for new land sources or 10,000 tons of CO_2e per year for new stationary sources. Therefore, the impact is considered less than significant. However, project construction would be subject to Mitigation Measure AQ-1, which would limit the idling time of equipment and reduce construction-related GHGs.

b) Climate Change Plan. The state has adopted several policies and regulations for the purpose of reducing GHG emissions (discussed above). The most stringent of these is AB 32, which is designed to reduce statewide GHG emissions to 1990 levels by 2020. As discussed above, the project would not generate any long-term operational GHG emissions. Therefore, the project would not conflict with the state goals listed in AB 32 or in any preceding state policies adopted to reduce GHG emissions. This impact would be considered less than significant.

Topics:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporated*	*Less-than-Significant Impact*	*No Impact*	*Not Applicable*
9. WIND AND SHADOW—Would the project:					
a) Alter wind in a manner that would substantially affect public areas?	☐	☐	☐	☒	☐
b) Create new shadows in a manner that would substantially affect outdoor recreational facilities or other public areas?	☐	☐	☐	☒	☐

Impacts Discussion

a, b) Wind and Shadow. Impacts related to wind and shadows are associated with buildings in an urban setting. The new bridge would be constructed in a rural regional park that supports passive recreational activities. Therefore, the proposed project would not alter wind patterns or create shadows in a manner that would affect public areas or outdoor recreational facilities substantially. There would be no impact.

Topics:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporated*	*Less-than-Significant Impact*	*No Impact*	*Not Applicable*
10. RECREATION—Would the project:					
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated?	☐	☐	☐	☒	☐
b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	☒	☐
c) Physically degrade existing recreational resources?	☐	☐	☒	☐	☐

[111] Bay Area Air Quality Management District. 2011a. California Environmental Quality Act Air Quality Guidelines. May. Available: <http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Updated-CEQA-Guidelines.aspx>. Accessed: February 27, 2012.

Environmental Setting

The proposed project is located in the Sunol Regional Wilderness area, within the Alameda Creek watershed (see Figure 10). The land where the project site is located is owned by SFPUC and leased to EBRPD. The Sunol Regional Wilderness, with 6,859 acres of open space and recreational lands, offers hiking, horseback riding, picnicking, back-packing, camping, rock climbing, bird watching, and general wilderness exploration. Directly to the east is the Ohlone Regional Wilderness area, with approximately 9,737 acres of land and more than 42 miles of hiking and equestrian trails. The Ohlone Regional Wilderness can be accessed from the Sunol Regional Wilderness by using either Calaveras Road or the Ohlone Wilderness Trail. Combined, the Sunol Regional Wilderness and the Ohlone Regional Wilderness are commonly referred to as the Sunol-Ohlone Regional Wilderness area. The Sunol-Ohlone Regional Wilderness area includes approximately 3,800 acres of SFPUC watershed lands that are leased to EBRPD.

Recreational uses in the project vicinity include the visitor center (located roughly 0.25 mile [1,320 feet] north-northwest of the project site), the Leyden Flats and Alameda Grove picnic sites (600 feet north of the site), McCorkle Corral (200 feet east of the site), and McCorkle Trail and Camp Ohlone Road Trail (Figure 10). McCorkle Trail and Camp Ohlone Road Trail are accessed via the existing Geary Road Bridge. Camp Ohlone is a disabled persons camp, located roughly 5 miles south of the project site. Little Yosemite, a series of scenic rock outcrops and small waterfalls on Alameda Creek, is located approximately 0.25 mile (1,320 feet) southeast (upstream) of the site. Flag Hill Trail, Canyon View Trail, Shady Glen Trail, and Hayfield Road Trail are accessed via the Hayfield footbridge, located approximately 0.5 mile north of the existing bridge.

SFPUC prohibits public access to and recreational use of Alameda Creek watershed lands not included in the EBPRD lease. Public access to existing internal watershed roads and fire roads is also not permitted. Access to internal SFPUC roads requires permit authorization.

Vehicular access to Geary Road Bridge is restricted and generally limited to local landowners, tenants, authorized government personnel (e.g., EBRPD and SFPUC vehicles, emergency vehicles), visitors to Camp Ohlone, and ranchers and equestrians accessing the McCorkle Corral. Vehicle access is controlled by a locked gate. Pedestrian and equestrian access to the bridge is not restricted.

Impacts Discussion

a, b) Physical Deterioration and Construction/Expansion of Recreational Facilities. No new growth or residential development is planned as part of the proposed project. The proposed project would not require new recreational facilities to be built. Furthermore, the project would not require the expansion of existing recreational facilities or increase their use. The project would replace an existing bridge so that recreationists and vehicles can cross Alameda Creek. Therefore, there would be no impact on existing recreational facilities.

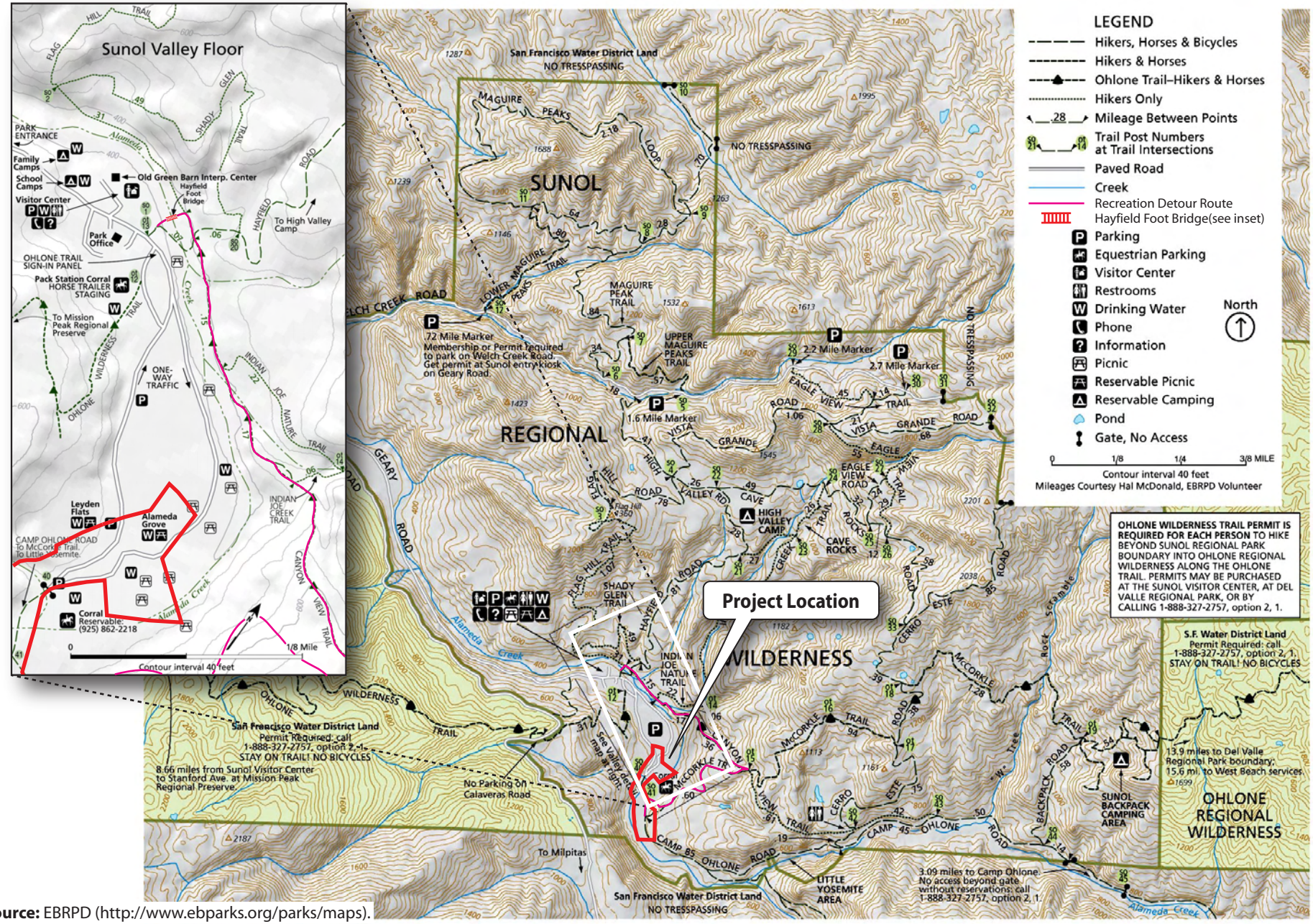
c) Degradation of Existing Resources. Construction of the bridge, which would occur within the Sunol Regional Wilderness area, would temporarily (April to December) affect recreation in the area. Recreationists (hikers, bicyclists, and equestrians) would have access through the work site by way of the temporary creek crossing on weekends and holidays throughout construction as well as on weekdays during the period when construction is expected to overlap with wildflower season (assumed to be April 1 through May 31). The project site is otherwise anticipated to be closed to recreationists during weekdays for the remainder of the construction period.

When access for pedestrians and equestrians is not available at the temporary water crossing, access around the construction site would be provided, with detour signage directing them to the Hayfield footbridge (Figure 10), located approximately 0.5 mile north of the existing bridge, and the connecting Canyon View and McCorkle trails. The proposed temporary detour route would be configured in consultation with EBRPD. Bicyclists would not have alternative access to the detour route during construction because bicycles are not allowed on the Canyon View trail and portions of the McCorkle trail, which connect to the proposed detour over the Hayfield footbridge. During construction, bicyclists would be detoured to other areas of the park through detour information posted at the entrance to the Sunol Regional Wilderness and at the work site. Figure 10 shows the proposed detour route.

Vehicles authorized to use Geary Road Bridge would cross Alameda Creek through the construction area by using the temporary creek crossing proposed as part of project construction (Section B – Project Description).

Following construction, equipment would be removed, and all areas of temporary disturbance would be restored to approximate preconstruction conditions. Because recreationists would be only temporarily affected during construction and alternative access and facilities would generally be available, impacts on recreational resources would be less than significant. No mitigation is required.

Topics:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporated*	*Less-than-Significant Impact*	*No Impact*	*Not Applicable*
11. UTILITIES AND SERVICE SYSTEMS— Would the project:					
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒	☐
b) Require or result in the construction of new water or wastewater treatment facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒	☐
c) Require or result in the construction of new stormwater drainage facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒	☐
d) Have insufficient water supply available to serve the project from existing entitlements and resources or require new or expanded water supply resources or entitlements?	☐	☐	☐	☒	☐
e) Result in a determination by the wastewater treatment provider that serves the project area that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒	☐
f) Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐	☐
g) Not be able to comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒	☐



Source: EBRPD (http://www.ebparks.org/parks/maps).

Geary Road Bridge Replacement Project

Figure 10
EBRPD Recreation Facilities

Graphics... 00806.08 Recreation (11-2011) JD

Impacts Discussion

a, e) Wastewater Treatment Requirements. During construction of the proposed project, the contractor(s) would be responsible for providing portable toilet facilities for use by workers and ensuring appropriate off-site sewage disposal in accordance with local, state, and federal requirements. The proposed project would not require the expansion of any sewer collection or wastewater treatment facilities. Therefore, there would be no impact on wastewater treatment requirements or the capacity of existing wastewater treatment facilities as a result of the proposed project.

b) Water and Wastewater Treatment Facilities and Wastewater Demand. The proposed project would not require or result in the construction of new water or wastewater treatment facilities or the expansion of existing facilities. There would be no impact.

c) Construction/Expansion of Stormwater Drainage Facilities. The project's stormwater runoff would be directed to Alameda Creek by sloping the southern and northern roadway approaches. The design would accommodate a 25-year storm. The project does not involve the construction of new permanent storm drain facilities. Standard BMPs would be implemented during construction to manage stormwater runoff as part of the SWPPP to be prepared for the project (refer to Section B, Required Permits and Approvals). The potential impacts of the proposed project on stormwater drainage are discussed further in Section 15, Hydrology and Water Quality. No impact would occur.

d) Water Supply. The proposed project is a bridge replacement project and does not require water supply entitlements. Therefore, no impact would occur.

f) Landfill Capacity. Construction activities associated with the proposed project would generate approximately 2,000 cy of rock and soil that would need to be disposed of. All disposal material would be trucked to a permitted facility or fill site. Solid waste generated in Alameda County may be transported to and disposed of at one or more locally approved licensed landfills. Alternatively, the excavated material, if free of contamination and suitable from a geotechnical standpoint, may be deposited through prior arrangement at one of the clean fill sites in the Bay Area. Therefore, landfills would have sufficient capacity for project-generated solid waste. SFPUC would dispose of all solid waste in accordance with all applicable laws and regulations. The disposal of potentially contaminated materials encountered during construction (i.e., demolition) is discussed in Section 16, Hazards and Hazardous Materials. Following construction, no solid waste would be generated by the project. Therefore, impacts would be less than significant. No mitigation is required.

g) Solid Waste. The project would comply with all applicable federal, state, and local statues and regulations regarding the disposal of solid waste generated by construction activities. Therefore, no impact would occur.

Topics:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
12. PUBLIC SERVICES— Would the project:					
a) Result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, to maintain acceptable service ratios, response times, or other performance objectives for any public services, such as fire protection, police protection, schools, parks, or other services?	☐	☐	☐	☒	☐

Impacts Discussion

a) New/Altered Government Facilities. The proposed project would not result in any substantial increase in demand for emergency services (including police, fire, and emergency medical services) during construction or operation. Furthermore, new or expanded emergency service infrastructure would not need to be built to maintain acceptable service ratios, response times, or other performance objectives. Emergency service access to the upper sub-watershed would be improved through installation of a replacement bridge capable of supporting large vehicles, such as firefighting equipment (which currently must cross the creek at the low-water crossing).

A small number of people (approximately five to 20 workers) would be brought to the area for construction of the proposed project, and their stay would be limited to the construction period. Accidents, as well as potential worker injuries, could occur during construction, but the number and types of injuries would not substantially affect emergency response times or other performance objectives; any increase in the number of accidents would not exceed the capacity of existing local medical facilities or other service providers. No new or expanded facilities would be required. Long-term maintenance of the bridge would be substantially similar to existing conditions. Therefore, the project would not necessitate the construction of new public service facilities, which could result in impacts on the environment. As such, there would be no impact.

Topics:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
13. BIOLOGICAL RESOURCES— Would the project:					
a) Have a substantial adverse effect, either directly or through habitat modification, on any species identified as a candidate, sensitive, or a special-status species in local or regional plans, policies, or regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐	☐

Topics:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
c)	Have a substantial adverse effect on federally protected wetlands, as defined by Section 404 of the Clean Water Act (including marshes, vernal pools, coastal waters, 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?	☐	☐	☒	☐	☐

Environmental Setting

This section is based on the results of pre-field investigations and on-site biological surveys. The following sources of information were consulted prior to conducting the field surveys:

- List of endangered, threatened, proposed, or candidate species covered under the federal Endangered Species Act (ESA) that could occur in the project vicinity (Mt. Day, Calaveras Reservoir, Milpitas, Mendenhall Spring, Livermore, Dublin, Niles, and La Costa Valley 7.5-minute quadrangles) or be affected by the proposed project (list provided by the U.S. Fish and Wildlife Service [USFWS] 2012).[112]
- The California Natural Diversity Database (CNDDB) (2012), covering the project area (defined as the approximately 8 acres within the limit of construction shown in Figures 2 and 12) and a 5-mile radius (Figure 11).[113]
- The California Native Plant Society's (CNPS's) online Inventory of Rare and Endangered Plants for the same quadrangles (project area and a 5-mile radius).[114]
- The Geary Road Bridge Replacement Preconstruction Wildlife Survey.[115]
- The Sunol Valley Water Treatment Plant Expansion and Treated Water Reservoir EIR.[116]
- The Calaveras Dam Replacement Project EIR.[117]

[112] U.S. Fish and Wildlife Service. 2012. *Species Lists*. Available: <http://fws.gov/sacramento/es_species_list/es_species_lists.cfm>. Accessed: February 20, 2012.

[113] California Natural Diversity Database. 2012. RareFind 3, Version 3.1.0 (February 28, 2012, update). Accessed: February 28, 2012. Sacramento, CA: California Department of Fish and Game.

[114] California Native Plant Society. 2010. *Inventory of Rare and Endangered Plants* (online edition, v7-10a 1-19-10). Available: <http://cnps.site.aplus.net/cgi-bin/inv/inventory.cgi>. Accessed March 30, 2010. Sacramento, CA: California Native Plant Society.

[115] Darnell Shaw Environmental. 2010. *Geary Road Bridge Replacement Preconstruction Wildlife Survey*. Prepared for the San Francisco Public Utilities Commission. May.

[116] San Francisco Planning Department. 2009. *Sunol Valley Water Treatment Plant Expansion and Treated Water Reservoir Environmental Impact Report.* MEA Case No. 2006.0137E. December.

The following biological surveys were conducted in the project area for the proposed project:

- Delineation of waters of the United States and waters of the state on March 10 and April 14, 2010 (Appendix B).
- Floristic surveys and vegetation community mapping on March 10, April 14, and June 23, 2010.
- Reconnaissance wildlife surveys on March 10 and June 23, 2010.

This information was used to develop lists of special-status plant and wildlife species that might be present in the project area because of known occurrence in the region and the presence of suitable habitats within the limits of construction. The special-status plant table is presented in Appendix C.

Natural Communities

The project area shown in Figure 12 is approximately 8 acres in extent. Four vegetated natural communities (white alder riparian forest, oak woodland, oak savanna, and annual grassland) and two unvegetated natural communities (seasonal stream and perennial stream) were observed in the project area (see Figure 12 and Table 17). The riparian forest, oak woodland, and oak savanna communities are considered sensitive natural communities by state and federal regulatory agencies, and the seasonal and perennial streams are waters of the United States and regulated by the U.S. Army Corps of Engineers (USACE) and the California Department of Fish and Game (CDFG). Developed/paved areas are also present in the project area.

TABLE 17: NATURAL COMMUNITIES IN THE PROJECT AREA

Natural Community	Area (Acres)
White alder riparian forest	0.25
Oak woodland	1.83
Oak savanna	1.62
Annual grassland	1.95
Seasonal stream (Leyden Creek, D-1 and D-2)	0.02
Perennial stream (Alameda Creek)	0.41
Total Acreage [a]	6.08

Note:
[a] The total acreage does not include 1.99 acres of existing developed/paved area.

Sensitive natural communities are characterized by high species diversity, high productivity, limited distribution, or declining status. Compensation for loss of sensitive communities is generally required by resource agencies.

The locations, dominant plant species, and typical wildlife species found in the natural communities within the project area are described below.

White Alder Riparian Forest

White alder riparian forest occurs along Alameda Creek and includes approximately 0.25 acre within the 8-acre project area. This vegetation community is dominated by white alder (*Alnus rhombifolia*) and red willow (*Salix laevigata*) but also includes western sycamore (*Platanus racemosa*), California bay

[117] City and County of San Francisco. 2011. *Calaveras Dam Replacement Project.* Planning Department. Final environmental impact report. San Francisco Planning Department File No, 2005.016E. January 27.

Alameda whipsnake: 7 occurrences

Project Site

Niles

La Costa Valley

Milpitas

Calaveras Reservoir

Mendenhall Springs

Mount Day

CNDDB Wildlife Occurrences, June 2011

- Alameda whipsnake
- American peregrine falcon
- Berkeley kangaroo rat
- California red-legged frog
- California tiger salamander
- Cooper's hawk
- Townsend's big-eared bat
- Yuma myotis
- foothill yellow-legged frog
- golden eagle
- great blue heron
- pallid bat
- prairie falcon
- sharp-shinned hawk
- western pond turtle

N

0 1 2

Miles

- Project Site
- Five-Mile Project Site Radius
- USGS 7.5-minute Quad Coverage

Geary Road Bridge Replacement Project

Figure 11
CNDDB Wildlife Occurrences

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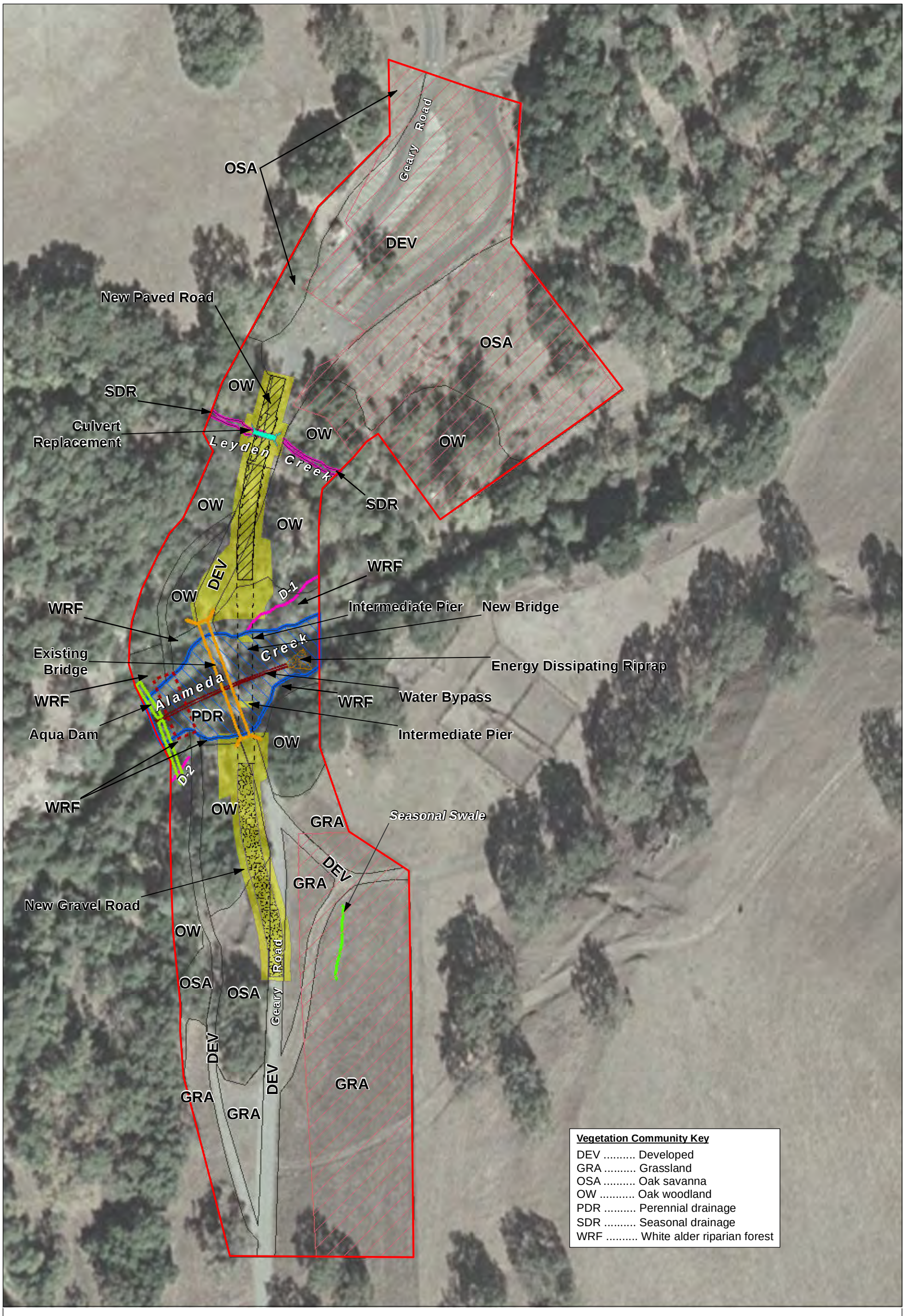

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Geary Road Bridge Replacement Project

Figure 12
Vegetation Communities

(*Umbellularia californica*), and coast live oak (*Quercus agrifolia*). The understory includes mugwort (*Artemesia douglasii*), common snowberry (*Symphoricarpos albus*), and Himalayan blackberry (*Rubus armeniacus*).

Common wildlife species typically associated with riparian forests include amphibians such as Sierra tree frog (*Pseudacris sierra*); reptiles such as western aquatic garter snake (*Thamnophis couchii*) and western pond turtle (*Actinemys marmorata*); birds such as Wilson's warbler (*Wilsonia pusilla*), Swainson's thrush (*Catharus ustulatus*), black-headed grosbeak (*Pheucticus melanocephalus*), wood duck (*Aix sponsa*), and red-shouldered hawk (*Buteo lineatus*); and mammals such as raccoon (*Procyon lotor*), long-tailed weasel (*Mustela frenata*), dusty-footed woodrat (*Neotoma fuscipes*), gray fox (*Urocyon cinereoargenteus*), and species of bats.

Riparian communities are considered sensitive because of their habitat value and the decline in extent. CDFG has adopted a no-net-loss policy for riparian habitat values, and the Streambed Alteration Agreement (SAA) required for the project would include mitigation requirements for net loss of riparian vegetation. USFWS mitigation policy identifies California's riparian habitats in Resource Category 2, which recommends no net loss of existing habitat value (46 Federal Register [FR] 7644).

Oak Woodland

Approximately 1.83 acres of oak woodland occurs in the project area upslope of the riparian forest. This community has a nearly 100 percent canopy cover. The dominant tree species is coast live oak, with lesser numbers of western sycamore, California bay, valley oak (*Quercus lobata*), and California buckeye (*Aesculus californica*). The understory includes toyon (*Heteromeles arbutifolia*) and other species described for the riparian forest.

Typical wildlife species that occur in oak woodlands include western rattlesnake (*Crotalus viridis*), wild turkey (*Meleagris gallopavo*), acorn woodpecker (*Melanerpes formicivorus*), tree swallow (*Tachycineta bicolor*), oak titmouse (*Baeolophus inornatus*), western bluebird (*Sialia mexicana*), western gray squirrel (*Sciurus griseus*) and black-tailed deer (*Odocoileus hemionus*). Several species of bats are also known to roost in oak woodlands.

Oak Savanna

Approximately 1.62 acres of oak savanna occurs outside of the riparian corridor within the project area. This community supports a sparse cover of mature coast live oak, with some valley oak, California bay, and western sycamore. Most of the cover in oak savanna is annual grassland, which is dominated by nonnative species but also capable of supporting a variety of native and nonnative broadleaf herbaceous plants (forbs). In the project area, the dominant grasses that were identifiable in the early spring included wild oat (*Avena barbata*), hedgehog dogtail (*Cynosurus echinatus*), blue wildrye (*Elymus glaucus*), hare barley (*Hordeum murinum* ssp. *leporinum*), Italian ryegrass (*Lolium multiflorum*), annual bluegrass (*Poa annua*), and foxtail fescue (*Vulpia myuros*). In addition to grasses, oak savanna supports native and nonnative forb species, such as common fiddleneck (*Amsinckia menziesii*), blue dicks (*Dichelostemma capitatum*), padre's shootingstar (*Dodecatheon clevelandii*), filarees (*Erodium botrys*, *E. cicutarium*, and *E. moschatum*), bicolor lupine (*Lupinus bicolor*), clover (*Trifolium* ssp.), and vetch (*Vicia* sp.).

An 88-foot-long seasonal swale occurs in the project area within the annual grassland south of Alameda Creek. The swale, which is a linear natural depression, is vegetated with grasses, including blue wildrye and hedgehog dogtail, and a variety of forbs, including broadleaf filaree, vetch, dock (*Rumex* sp.), dovefoot geranium (*Geranium molle*), fiddleneck (*Amsinckia* sp.), and yarrow (*Achillea millefolium*). The swale, which averages 2 feet in width, was dry at the time of the surveys (March 10, April 14, June 23).

Although the swale is in a depression, there was no obvious evidence of flow. The seasonal swale is unlikely to be considered a water of the United States and thus unlikely to be under the jurisdiction of USACE because it lacks a connection to Alameda Creek.

Common wildlife species occurring in oak savanna include western fence lizards (*Sceloporus occidentalis*), western skink (*Eumeces skiltonianus*), gopher snake (*Pituophis catenifer*), and western rattlesnake (*Crotalus viridis oreganus*). Bird species that occur in oak savanna include western bluebirds, western kingbirds (*Tyrannus verticalis*), and western meadowlark (*Sturnella neglecta*). Oak savannas also provide foraging habitat for wide-ranging species such as red-tailed hawks (*Buteo jamaicesis*), turkey vultures (*Cathartes aura*), American kestrels (*Falco sparverius*), and northern harriers (*Circus cyaneus*). Mammals typically found in this habitat include California vole (*Microtus californicus*), western harvest mouse (*Reithrodontomys megalotis*), California ground squirrel (*Spermophilus beecheyi*), black-tailed jackrabbit (*Lepus californicus*), and coyote (*Canis latrans*).

The Alameda County Tree Ordinance[118] requires an encroachment permit for planting, pruning, or removing trees and replacement of removed trees in the right-of-way of a county road. This ordinance does not apply to the proposed project because none of the trees that would be removed by project implementation is located in the county right-of-way.

CDFG recognizes oak woodland types as rare natural communities with a high priority for inventory in the CNDDB. This includes oak savanna (specifically the valley oak-coast live oak/grass series).[119] The California State Board of Forestry and Fire Protection oak conservation policy supports a statewide program of research and education known as the Integrated Hardwood Range Management Program. In addition, the State Wildlife Conservation Board enacted the Oak Woodlands Conservation Act of 2001 to recognize the importance of oak woodlands and provide financial support for oak woodland conservation activities. California Senate Concurrent Resolution 17 requires state agencies to preserve and protect native oak woodlands to the maximum extent feasible and provide replacement plantings for removed oaks, including coast live oaks and valley oaks in woodlands that contain five or more oak trees per acre.

Annual Grassland

The approximately 1.95 acre of annual grassland that occurs in the southern portion of the project area contains mostly nonnative grasses and forbs (the same species described above for the oak savanna community). In general, annual grasslands support lower wildlife diversity than woodland-dominated habitats but are valuable to a number of grassland-dependent species. A great diversity and abundance of insects rely on grasslands. Reptiles found in annual grasslands include western fence lizard (*Sceloporus occidentalis*) and common gopher snake (*Pituophis melanoleucus*). Birds that are common in this habitat include western meadowlark (*Sturnella neglecta*) and savannah sparrow (*Passerculus sandwichensis*). Annual grasslands also provide important foraging habitat for turkey vulture, northern harrier, American kestrel, and red-tailed hawk. Mammals known to use this habitat include California ground squirrel, black-tailed jackrabbit, and Botta's pocket gopher (*Thomomys bottae*).

[118] Alameda County Ordinance 0 2004 23, Chapter 12.11 of the Alameda County General Ordinance Code.

[119] California Department of Fish and Game. 2003b. *The Vegetation Classification and Mapping Program*. List of Terrestrial Natural Communities Recognized by the California Natural Diversity Database (September 2003 edition). Prepared by the Wildlife and Habitat Data Analysis Branch.

Perennial Stream (Alameda Creek)

A 220-foot-long section of Alameda Creek crosses the project area at the Geary Road Bridge, which equates to an area of about 0.41 acre of perennial stream. This reach of the creek is relatively straight. The white alder riparian forest that covers the banks is dominated by white alder, willow, and coast live oak. The streambed substrate consists of sand, gravel, and cobbles. The ordinary high-water mark (OHWM) of the channel is approximately 125 feet wide beneath the existing bridge but narrows to approximately 60 feet in width immediately upstream and downstream of the bridge. In the area downstream of the bridge, a vegetated island of large cobbles occupies the center of the stream channel. The island supports small white alders and sedge. The creek, which was flowing at the time of the survey, varied from approximately 1 to 3 feet deep. The creek is bordered on the south by a low, relatively broad floodplain terrace. On the north bank, the floodplain terrace, which is narrower, merges with a hill.

Alameda Creek provides suitable aquatic habitat for Sierran tree frog, foothill yellow-legged frog (*Rana boylii*), California red-legged frog (*Rana draytonii*), and western pond turtle (*Clemmys marmorata*). Several native fish species have been recorded in the Alameda Creek watershed. These include rainbow trout (*Oncorhynchus mykiss*), Sacramento sucker (*Catostomus occidentalis*), Sacramento pikeminnow (*Ptychocheilus grandis*), California roach (*Lavinia symmetricus*), Pacific lamprey (*Lampetra tridentate*), and prickly sculpin (*Cottus asper*).[120] At this location, none of these fish species is a special-status species.[121]

Alameda Creek flows directly into San Francisco Bay, a traditional navigable waterway and under the jurisdiction of USACE. Therefore, the section of Alameda Creek in the project area is a water of the United States. In addition, the bed, bank, and riparian habitat of Alameda Creek are under the jurisdiction of CDFG.

Seasonal Stream

The project area includes three seasonal streams (i.e., Leyden Creek and two unnamed streams [labeled D-1 and D-2 in Figure 12]) totaling approximately 0.02 acre. Leyden Creek is a tributary that connects to Alameda Creek approximately 200 feet downstream (east) of the project area. A 169-foot-long section of Leyden Creek crosses the project area north of Alameda Creek, including a 30-foot-long section that is contained in an existing 5-foot-wide culvert under Geary Road. Leyden Creek averages 6 feet in width and was 3 to 6 inches deep at the time of the March 2010 survey. The banks of Leyden Creek support an oak woodland forest that is dominated by white alder, bay, coast live oak, and buckeye (*Aesculus californica*). The streambed substrate is cobble.

Two unnamed drainages that are tributaries to Alameda Creek are present in the project area (D-1 and D-2 in Figure 12). A 112-foot-long section of D-1, an overflow channel, splits from the north side of Alameda Creek. This drainage is located within the riparian community adjacent to Alameda Creek. The channel bed is primarily soil vegetated with annual grasses and blackberry. The stream channel averages 4 feet in width and was dry at the time of the March 2010 survey.

[120] San Francisco Public Utilities Commission. 2006c. *Alameda Creek Aquatic Resource Monitoring Report 2004,* 96 pp. Sunol, CA: Natural Resources Division, Fish and Wildlife Group.

[121] The final listing determination by the National Marine Fisheries Service stated "under our final approach of delineating steelhead-only DPS of *O. mykiss*, the resident populations, including those in Upper Alameda Creek and the Livermore-Amador Valley, are not considered part of the listed DPSs" (71 FR 841, January 5, 2006). Restoration of steelhead to the Alameda Creek watershed is ongoing.

A 37-foot-long section of D-2 is approximately 25 to 30 feet south of Alameda Creek. This drainage is also located within the riparian community, but the channel bed consists of cobbles, with some sediment deposition in between them. Some willows are present in the channel as well. The channel averages 3 feet in width and was dry at the time of the March 2010 survey.

The three seasonal streams all connect to Alameda Creek and, therefore, are considered waters of the United States and under the jurisdiction of USACE. In addition, the beds, banks, and riparian habitats of the seasonal streams are under the jurisdiction of CDFG.

Developed Land

About 2 acres of developed land is present within the project area, and includes all the paved roads and parking areas. Developed areas typically provide low habitat value for many wildlife species, although there are exceptions, as is the case with California ground squirrel and burrowing owls. California ground squirrels often colonize disturbed areas, and their burrows often provide habitat for other wildlife species. Other wildlife species that commonly use disturbed areas include mourning dove (*Zenaida macroura*), house sparrow (*Passer domesticus*), American crow (*Corvus branchyrhynchos*), Brewer's blackbird (*Euphagus cyanocephalus*), raccoon, and Virginia opossum (*Didelphis virginiana*).

Special-Status Species

Special-status species are legally protected under the California Endangered Species Act (CESA), the federal ESA, or other regulations (i.e., California Native Plant Protection Act, CEQA). They also include species that are considered sufficiently rare by the scientific community to qualify for such listing. Special-status species are defined as:

- Species listed or proposed for listing as threatened or endangered under the ESA (Title 50, Code of Federal Regulations [CFR], Section 17.12 for listed plants; 50 CFR 17.11 for listed animals; and various notices in the Federal Register for proposed species).
- Species that are candidates for possible future listing as threatened or endangered under the ESA (74 FR 57804, November 9, 2009).
- Species that are listed or proposed for listing by the state of California as threatened or endangered under CESA (Title 14, CCR, Section 670.5).
- Plants listed as rare under the California Native Plant Protection Act of 1977 (California Fish and Game Code Section 1900, et seq.).
- Plants considered by CNPS to be "rare, threatened, or endangered in California and elsewhere" (List 1B and 2) (California Native Plant Society 2011).
- Species that are not state or federally listed but under the State CEQA Guidelines, Section 15380, meet the definition of rare (species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range) or endangered (species' survival and reproduction in the wild are in immediate jeopardy).

Special-Status Plants

The sources of information consulted as part of the pre-field investigation were used to develop a list of 42 special-status plant species that, on the basis of their known occurrence in the region, might be present in the project area (Appendix C). The pre-field investigation also included visiting a known occurrence of one special-status plant on the target list, most beautiful jewelflower (*Streptanthus albidus* ssp. *peramoenus*), which was documented in the CNDDB (Occurrence No. 22) as occurring in or adjacent to the project area. This location was surveyed on June 23, 2010, when the plant would be evident and identifiable. However, the plant could not be found in the area within 500 feet of the project area

boundary. This may be the result of erosion on a hillside above Leyden Creek where the nearest part of the population was most likely located. The exact distance of Occurrence No. 22 from the project site could not be verified but was confirmed to be more than 500 feet.

An ICF botanist conducted surveys on March 10, April 14, and June 23, 2010, coinciding with the identification periods for special-status species with potential to occur in the project area. Surveys were conducted in accordance with guidelines established by CNPS (2001)[122] and CDFG (2000)[123] and were floristic in nature, identifying all observed plants to a taxonomic level sufficient to indicate whether they were special-status species or species with unusual or significant range extensions. The botanist traversed the project area on foot, observing and sampling vegetation throughout the project area. The area west of the project area was also surveyed for the presence of the reference population of most beautiful jewelflower.

No special-status plant species were observed within the project area during any floristic survey or reconnaissance field visit. The June 23, 2010, survey was conducted slightly early for the blooming period of big tarplant (*Blepharizonia plumosa* ssp. *plumosa*) (July to October). Vegetative parts and possible flower buds of the plant would have been present at the time of the survey; however, none was found.

Special-Status Wildlife

The sources of information consulted as part of the pre-field investigation were used to develop a list of 19 special-status wildlife species that, on the basis of their known occurrence in the region, might be present in the project area (Table 18). Of the species in the table, 17 wildlife species were identified as having the potential to occur within or in proximity to the project area based on habitat conditions and habitat requirements of the species. A summary of the status, distribution, and extent of habitat in the project area for these 16 special-status wildlife species is provided below.

California Red-Legged Frog

The California red-legged frog is listed as threatened under the federal ESA and is a California species of special concern. Critical habitat for California red-legged frog was designated on March 17, 2010. The entire project area is located within Critical Habitat Unit ALA-2**.** The historical range of California red-legged frog extended from the vicinity of Point Reyes National Seashore in Marin County and from the vicinity of Redding southward to northwestern Baja California. Its current range consists of isolated locations in the Sierra Nevada and the North Coast Ranges and the northern Transverse Ranges. It is relatively common in the San Francisco Bay Area and along the central coast and is still present in Baja California.[124]

Red-legged frogs use a variety of aquatic, riparian, and upland habitat types. However, some individuals may complete their entire life cycle in a pond or other aquatic site that is suitable for all life stages. Red-legged frogs require habitats with cool water, including pools, streams, and ponds, and emergent and submergent vegetation. Red-legged frogs are found in habitats with deep (at least 2.3 feet) and still or slow-moving water and vegetation consisting of willows, tules, or cattails. Juvenile frogs seem to favor open, shallow aquatic habitats with dense submergent vegetation. Although red-legged frogs can inhabit either ephemeral or permanent streams or ponds, populations probably cannot persist in ephemeral streams in which all surface water disappears.[125]

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[122] California Native Plant Society. 2001. CNPS Botanical Survey Guidelines, pp. 38–40. In D. P. Tibor (ed.), *Inventory of Rare and Endangered Plants of California* (sixth edition). Rare Plant Scientific Advisory Committee. Sacramento, CA: California Native Plant Society.

[123] California Department of Fish and Game. 2000. *Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities* (revision of 1983 guidelines). Sacramento, CA.

[124] U.S. Fish and Wildlife Service. 2002a. *Recovery Plan for the California Red-Legged Frog (*Rana aurora draytonii*).* Portland, OR.

[125] Jennings, M. R., and M. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California.* Sacramento, CA: California Department of Fish and Game.

TABLE 18: SPECIAL-STATUS WILDLIFE SPECIES WITH POTENTIAL TO OCCUR IN STUDY AREA

Species	Status[a] Federal/State	Geographic Distribution	Habitat Requirements	Potential Occurrence in the Planning Area
Amphibians				
California tiger salamander *Ambystoma californiense*	T/T	Central Valley, including Sierra Nevada foothills, up to approximately 1,000 feet, and coastal region from Butte County south to northeastern San Luis Obispo County.	Small ponds, lakes, or vernal pools provide breeding habitat. Adults use rodent burrows, rock crevices, or fallen logs in grasslands and oak woodlands for cover during non-breeding season.	California tiger salamanders are not known to occur within the project area. The closest CNDDB record is in a stock pond approximately 0.5 mile west of the project area. This pond and other ponds within 1.24 miles of the project area provide suitable breeding habitat. The riparian forest, oak woodland, oak savanna, and annual grassland in the project area provide suitable upland habitat.
Foothill yellow-legged frog *Rana boylii*	–/SSC	Occurs primarily in Klamath Mountains, Cascades, North and South Coast and Transverse Ranges, and Sierra Nevada, up to approximately 6,000 feet.	Creeks or rivers in woodland, forest, mixed chaparral, and wet meadow habitats with rock and gravel substrate and low overhanging vegetation along edge. Usually found near riffles with rocks and sunny banks nearby.	Foothill yellow-legged frogs are known to occur in Alameda Creek.
California red-legged frog *Rana draytonii*	T/SSC	Found along coast and coastal mountain ranges of California from Marin County to San Diego County and in Sierra Nevada from Tehama County to Fresno County.	Permanent and semipermanent aquatic habitats, such as creeks and coldwater ponds, with emergent and submergent vegetation provide breeding habitat. Adults aestivate in rodent burrows or leaf litter in annual grassland and oak woodland habitats during dry periods.	California red-legged frogs are known to occur in Alameda Creek, less than 1 mile upstream from the project area. The riparian forest, oak woodland, oak savanna, and annual grassland in the project area provide suitable upland habitat.

Species	Status[a] Federal/State	Geographic Distribution	Habitat Requirements	Potential Occurrence in the Planning Area
stern spadefoot *Spea hammondii*	–/SSC	Sierra Nevada foothills, Central Valley, Coast Ranges, coastal counties in Southern California.	Shallow streams with riffles and seasonal wetlands such as vernal pools in annual grasslands and oak woodlands provide breeding habitat. Adults aestivate in grassland and oak woodland.	Western spadefoots are not known to occur within the project area, though the project is within the range of the species. Ponds in the vicinity of the project area provide suitable breeding habitat, and the oak savanna and annual grassland in the project area provide suitable upland habitat.
Reptiles				
Western pond turtle *Actinemys marmorata*	–/SSC	Occurs from the Oregon border of Del Norte and Siskiyou counties, south along coast to San Francisco Bay, inland through Sacramento Valley, and on the western slope of Sierra Nevada.	Occupies ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with watercress, cattails, water lilies, or other aquatic vegetation in woodlands, grasslands, and open forests.	Alameda Creek provides suitable aquatic habitat, and the upland areas in the vicinity of the creek provide suitable nesting habitat.
California horned lizard *Phrynosoma coronatum frontale*	–/SSC	Sacramento Valley, including foothills, south to Southern California. Coast Ranges south of Sonoma County. Below 4,000 feet in Northern California.	Grasslands, brushlands, woodlands, and open coniferous forest with sandy or loose soil. Requires abundant ant colonies for foraging.	Oak savanna and annual grassland habitat occurring within the project area provide suitable habitat.
Alameda whipsnake *Mastcophis lateralis euryxanthus*	T/T	Restricted to Alameda and Contra Costa counties; fragmented into five disjunct populations throughout its range.	Valleys, foothills, and low mountains associated with northern coastal scrub or chaparral habitat; requires rock outcrops for cover and foraging.	Oak savanna and annual grassland habitat occurring within the project area provide suitable habitat.
Birds				
Golden eagle *Aquila chrysaetos*	--/FP	Foothills and mountains throughout California; uncommon non-breeding visitor to lowlands such as the Central Valley.	Nest on cliffs and escarpments or in tall trees overlooking open country; forages in annual grasslands, chaparral, and oak woodlands with plentiful medium- and large-sized mammals.	Larger trees in the project area provide potential nesting habitat, and oak savannah and annual grassland provide suitable foraging habitat.

Species	Status[a] Federal/State	Geographic Distribution	Habitat Requirements	Potential Occurrence in the Planning Area
Bald eagle *Haliaeetus leucocephalus*	--/E, FP	Reintroduced into central coast. Winter range includes most of California, except southeastern deserts, very high altitudes in Sierra Nevada, and east of Sierra Nevada south of Mono County.	Usually occurs near lakes, rivers, and the coast where prey is abundant and prominent trees afford nest sites and unobstructed views of surroundings.	Known to nest near Calaveras Reservoir, approximately 2.5 miles south of the project area. No stick nests of suitable size observed within 500 feet of project area. Bald eagles may soar over project area but are unlikely to nest in the project area.
Grasshopper sparrow *Ammodramus savannarum*	–/SSC	Summer resident and breeder in foothills and lowlands west of the Cascade-Sierra Nevada crest.	Occurs in dry, dense grasslands, especially those with a variety of grasses and tall forbs and scattered shrubs for singing perches. Nests in slight depressions in dense grasslands.	Oak savanna and annual grassland areas located within the project area provide suitable nesting habitat.
Loggerhead shrike *Lanius ludovicianus*	–/SSC	Resident and winter visitor in lowlands and foothills throughout California. Rare on coastal slope north of Mendocino County, occurring only in winter.	Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches.	Trees and shrubs located within the project area provide suitable nesting habitat.
Tricolored blackbird *Agelaius tricolor*	–/SSC	Permanent resident in the Central Valley from Butte County to Kern County. Breeds at scattered coastal locations from Marin County south to San Diego County and at scattered locations in Lake, Sonoma, and Solano counties. Rare nester in Siskiyou, Modoc, and Lassen counties.	Nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grain fields. Habitat must be large enough to support 50 pairs. Probably requires water at or near the nesting colony.	No suitable nesting habitat within the project area.
Western burrowing owl *Athene cunicularia*	–/SSC	Lowlands throughout California, including Central Valley, northeastern plateau, southeastern deserts, and coastal areas. Rare along South Coast.	Level, open, dry, heavily grazed, or low-stature grassland or desert vegetation with available burrows.	Burrows in the oak savanna and annual grassland located within the project area provide suitable nesting habitat.
White-tailed kite *Elanus leucurus*	–/FP	Lowland areas west of Sierra Nevada from head of Sacramento Valley south, including coastal valleys and foothills to western San Diego County at Mexican border.	Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging.	Large trees occurring within the project area provide suitable nesting habitat, and oak savanna and annual grasslands provide foraging habitat.

Species	Status[a] Federal/State	Geographic Distribution	Habitat Requirements	Potential Occurrence in the Planning Area
Mammals				
Pallid bat *Antrozous pallidus*	–/SSC	Occurs throughout California from Shasta County to Kern County, primarily at lower and mid-elevations.	Occurs in a variety of habitats, from desert to coniferous forest; most closely associated with oak, yellow pine, redwood, and giant sequoia habitats in Northern California and oak woodland, grassland, and desert scrub in Southern California.	Has the potential to roost under the existing bridge and within the riparian woodland within the project area.
Western red bat *Lasiurus blossivillii*	–/SSC	Occurs throughout California, except the high Sierra Nevada from Shasta County to Kern County and the northwest coast; primarily at lower and mid-elevations.	Occurs in a variety of habitats, from desert to coniferous forest; most closely associated with oak, yellow pine, redwood, and giant sequoia habitats in Northern California and oak woodland, grassland, and desert scrub in Southern California.	Has the potential to roost within the riparian woodland and oak woodland within the project area.
Townsend's Big-eared bat *Corynorhinus townsendii*	–/SSC	Occurs throughout California.	Roosts in caves, mines, tree hollows, and buildings; also, under bridges. Very sensitive to disturbance of roosting sites.	Has the potential to roost under the existing bridge and within the riparian woodland and oak woodland within the project area.
American badger *Taxidea taxius*	–/SSC	Found throughout most of California, except the northern North Coast area.	Occurs in most habitats in California, except alpine and montane habitats. Suitable habitat is characterized by herbaceous, shrub, and open stages of most habitats with dry, friable soils. Digs burrows in friable soils for cover; frequently uses old burrows.	The oak savanna and annual grassland areas occurring within the project area provide suitable habitat.

Species	Status[a] Federal/State	Geographic Distribution	Habitat Requirements	Potential Occurrence in the Planning Area
San Joaquin kit fox *Vulpes macrotis mutica*	E/T	Occurs principally in the southern San Joaquin Valley and adjacent open foothills to the west.	Saltbush scrub and grassland habitats.	Given the information contained in the East Alameda County Conservation Strategy (2010), San Joaquin kit foxes would not occur within the project area.

Notes (Table 18):

[a] Status explanations:

– = no listing.

Federal

E = listed as endangered under federal Endangered Species Act (ESA).

T = listed as threatened under ESA.

State

E = listed as endangered under California Endangered Species Act (CESA).

T = listed as threatened under CESA.

FP = fully protected under California Fish and Game Code.

SSC = species of special concern in California.

As adults, red-legged frogs are highly aquatic when active but less dependent on permanent water bodies than other frog species. Adults may take refuge during dry periods in rodent holes or leaf litter in upland riparian and grassland habitats. Although red-legged frogs typically remain near streams or ponds, marked and radio-tagged frogs have been observed to move more than 2 miles through upland habitat.[126] These movements are typically along riparian corridors. However, some individuals move directly from one site to another through normally inhospitable habitats, such as heavily grazed pastures or oak-grassland savannas, especially on rainy nights.[127] Suitable habitat for red-legged frogs potentially includes all aquatic, riparian, and upland areas within the range of the species and any landscape features that provide cover, such as existing animal burrows, boulders or rocks, organic debris such as downed trees or logs, or industrial debris. Accessibility to sheltering habitat is essential for the survival of red-legged frogs within a watershed and can be a factor in limiting frog population numbers and survival.[128]

There have been 14 occurrences of California red-legged frog within 5 miles of the project area[129] (Figure 11), with one occurrence less than 1 mile upstream in Alameda Creek. However, none was observed during field surveys for this project. Within the project area, Alameda Creek and seasonal drainages provide suitable aquatic habitat. Upland habitats within the project area that could be used by California red-legged frog include annual grassland, oak savanna, oak woodland, and riparian forest.

Foothill Yellow-Legged Frog

The foothill yellow-legged frog is a California species of special concern. The foothill yellow-legged frog occurs in the Coast Ranges from the Oregon border south to the Transverse Ranges in Los Angeles County and along the western flank of the Sierra Nevada south to Kern County.[130]

Foothill yellow-legged frogs require shallow flowing water in small to medium-sized streams, with at least some cobble-sized substrate.[131] Occupied streams are found in a variety of habitat types, including valley-foothill hardwood, hardwood-conifer, valley-foothill riparian, mixed conifer, coastal scrub, and mixed chaparral. Breeding and egg laying occur mid-March to May, after the end of the spring floods. The egg masses are deposited on the downstream side of cobbles and boulders in flowing water. The tadpoles are cryptic in coloration and are infrequently observed. Tadpoles graze on algae and diatoms along the rocky stream bottoms and require 3 to 4 months to complete their metamorphosis. Adults feed on both aquatic and terrestrial invertebrates. Predators include garter snakes, bullfrogs, and centrachid fishes. Foothill yellow-legged frogs may be active all year in warmer locations but may become inactive or hibernate in colder areas.[132]

[126] U.S. Fish and Wildlife Service. 2002a. *Recovery Plan for the California Red-Legged Frog* (Rana aurora draytonii). Portland, OR.

[127] Fellers, Gary M., and Patrick M. Kleeman. 2007. California Red-Legged Frog (*Rana draytonii*) Movement and Habitat Use: Implications for Conservation. *Journal of Herpetology*, 41(2):276–286.

[128] Ibid.

[129] California Natural Diversity Database. 2012. RareFind 3, Version 3.1.0 (February 28, 2012, update). Accessed: February 28, 2012. Sacramento, CA: California Department of Fish and Game.

[130] Jennings, M. R., and M. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California.* Sacramento, CA: California Department of Fish and Game.

[131] Ibid.

[132] Ibid.

There have been five occurrences of foothill yellow-legged frog within 5 miles of the project area[133] (Figure 11), with one occurrence less than 1 mile upstream in Alameda Creek; however, none was observed during field surveys. Within the project area, Alameda Creek provides suitable aquatic habitat.

California Tiger Salamander

The central distinct population of California tiger salamander (*Ambystoma californiense*) is listed as threatened under the federal ESA. Distinct population segments in Santa Barbara and Sonoma counties are listed as endangered under the federal ESA. Critical habitat was designated on August 23, 2005, but the project area does not fall within any designated critical habitat. The California tiger salamander is also listed as threatened under the CESA. The species is endemic to the San Joaquin–Sacramento River valleys and bordering foothills as well as the coastal valleys of central California. The species' range is from Sonoma County and the Colusa-Yolo county line south to Santa Barbara County in the Coast Ranges and from southern Sacramento County south to Tulare County in the Central Valley.[134] The proposed project occurs within the range of the central distinct population.

The California tiger salamander is a lowland species that is restricted to annual grasslands and foothill oak savanna regions where its breeding habitat occurs. Breeding habitat consists of temporary ponds or pools, some permanent waters, and, rarely, slower portions of streams. Permanent aquatic sites are unlikely to be used for breeding unless they lack predators. California tiger salamanders also require dry-season refuge sites in the vicinity of breeding sites. California ground squirrel burrows are important dry-season refuge sites for adults and juveniles.[135] Other types of small mammal burrows, logs, and shrink-swell cracks also are used for dry-season refuge.

Adult California tiger salamanders move from subterranean burrow sites to breeding pools from November to February after warm winter rains. Eggs are laid in January and February, at the height of the rainy season. Nine to 12 weeks are needed to complete development through metamorphosis. During winter, California tiger salamanders take refuge in damp places near the surface of the ground during the day and emerge at night to forage. During dry weather, these salamanders take refuge in ground squirrel burrows, crevices in the soil, or in other burrows. California tiger salamanders are known to travel large distances from breeding ponds into upland habitats. One study found that 20 to 25 percent of individuals captured at one pond were recaptured at ponds approximately 1,900 to 2,200 feet away.[136] In addition to traveling long distances during migration to or from ponds, tiger salamanders may reside in burrows that are a far distance from ponds. Dry-season refuge sites within approximately 1 mile of suitable breeding habitat are most likely a necessary requirement because this species is absent from sites with seemingly suitable breeding habitat where surrounding upland habitats are lacking small mammal burrows.[137]

[133] California Natural Diversity Database. 2012. RareFind 3, Version 3.1.0 (February 28, 2012, update). Accessed: February 28, 2012. Sacramento, CA: California Department of Fish and Game.

[134] Jennings, M. R., and M. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California.* Sacramento, CA: California Department of Fish and Game.

[135] Ibid.

[136] Trenham, P. C, W. D. Koenig, and H. B. Shaffer. 2001. Spatially Autocorrelated Demography and Interpond Dispersal in the Salamander (*Ambystoma californiense*). *Ecology* 82:3,519–3,530.

[137] Jennings, M. R., and M. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California.* Sacramento, CA: California Department of Fish and Game.

There have been 20 occurrences of California tiger salamander within 5 miles of the project area[138](Figure 11). However, none was observed during field surveys. There is no suitable breeding habitat within the project area, although there are several ponds that provide suitable breeding habitat within 1.24 miles of the project area. This distance is based on the observed mobility of the species (USFWS 2003). Riparian woodland, oak woodland, oak savanna, and annual grassland habitat within the project area provide suitable upland habitat.

Western Spadefoot

The western spadefoot (*Spea hammondii*) is a California species of special concern. The western spadefoot is distributed among the Sierra Nevada foothills, Central Valley, Coast Ranges, and coastal counties in Southern California.[139]

The western spadefoot can be found in dry grassland habitat close to seasonal wetlands such as vernal pool complexes, typically near extensive areas of friable (but usually not sandy) soil. The species requires seasonal wetlands for reproduction and metamorphosis. Adult western spadefoots spend most of the year in self-excavated underground retreats and possibly in mammal burrows.[140] They emerge from underground retreats during heavy rains in autumn and winter and spawn in seasonal wetlands (e.g., vernal pools) in late winter or early spring.[141] Western spadefoots are known to co-occur with California tiger salamander and California red-legged frog.[142]

There have been no western spadefoot occurrences within 5 miles of the project area, although the project area is within the range of the species.[143] None was observed during field surveys. Seasonal wetlands that occur in the vicinity of the project area provide suitable breeding habitat. Oak savanna and annual grassland in the project area provide suitable aestivating habitat.

Western Pond Turtle

The western pond turtle is a California species of special concern. The western pond turtle is the only turtle native to California.[144] It was found historically in most Pacific slope drainages between the Oregon and Mexican borders. It is still found in suitable habitats west of the Sierra-Cascade crest.[145]

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[138] California Natural Diversity Database. 2012. RareFind 3, Version 3.1.0 (February 28, 2012, update). Accessed: February 28, 2012. Sacramento, CA: California Department of Fish and Game.

[139] Jennings, M. R., and M. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California.* Sacramento, CA: California Department of Fish and Game.

[140] Stebbins, Robert C. 2003. *A Field Guide to Western Reptiles and Amphibians.* Third edition. Boston, MA, and New York, NY: Houghton Mifflin Company.

[141] Jennings, M. R., and M. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California.* Sacramento, CA: California Department of Fish and Game.

[142] U.S. Fish and Wildlife Service. 2002b. *Draft Recovery Plan for Chaparral and Scrub Community Species East of San Francisco Bay, California.* Region 1, Portland, OR.

[143] California Natural Diversity Database. 2012. RareFind 3, Version 3.1.0 (February 28, 2012, update). Accessed: February 28, 2012. Sacramento, CA: California Department of Fish and Game.

[144] Duke, R. (ed.). 2011. Western Pond Turtle (*Actinemys marmorata*). In *California Habitat Relationships System*. Sacramento, CA: California Department of Fish and Game. Prepared by S. Morey. Available: <http://www.dfg.ca.gov/biogeodata/cwhr/cawildlife.aspx>. Accessed: June 2011.

[145] Jennings, M. R., and M. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California.* Sacramento, CA: California Department of Fish and Game.

Western pond turtles require slow-water aquatic habitat and are uncommon in high-gradient streams.[146] The banks of inhabited waters usually have thick vegetation, but basking sites such as logs, rocks, or open banks must also be present.[147] Depending on the latitude, elevation, and habitat type, the western pond turtle may become inactive over winter or remain active year-round. Nest sites typically are found on slopes that are unshaded, with high clay or silt composition. Eggs are laid from March to August, depending on local conditions, and incubation lasts from 73 to 80 days. Western pond turtles are omnivorous and feed on aquatic plant material, aquatic invertebrates, fish, frogs, and even carrion.[148]

There have been three occurrences of western pond turtle within 5 miles of the project area[149] (Figure 11), including one occurrence in Alameda Creek, approximately 2 miles downstream from the project area. However, none was observed during field surveys. Alameda Creek provides suitable aquatic habitat, and associated uplands provide suitable nesting habitat.

Alameda Whipsnake

The Alameda whipsnake (*Mastcophis lateralis euryxanthus*) is listed as threatened under the federal ESA and listed as threatened under the CESA. Critical habitat for Alameda whipsnake was designated on October 2, 2006. The entire project area is located within Critical Habitat Unit 5B. The distribution of the Alameda whipsnake is restricted to the inner Coast Range in western and central Contra Costa and Alameda counties. The historic range of the Alameda whipsnake has been fragmented into five distinct populations: Tilden-Briones, Oakland-Las Trampas, Hayward-Pleasanton Ridge, Mount Diablo-Black hills, and Sunol-Cedar Mountain.[150]

The distribution of Alameda whipsnakes is closely associated with chaparral and scrub communities, including coastal sage scrub and northern coastal scrub. Alameda whipsnake are also known to occur in annual grassland and oak savanna habitats adjacent to chaparral and scrub habitats. Home ranges are typically centered on areas of scrub habitats with open to partially open canopies, exposed rock outcrops, and woody debris. These areas provide basking areas, shelter from predators, and an abundance of lizards, which are a major prey item of this snake.[151]

There have been seven occurrences of Alameda whipsnake within 5 miles of the project area, all approximately 3.5 miles to the north (Figure 11).[152] None was observed on-site during field surveys. The oak savanna and annual grassland habitat found within the project area provide suitable habitat.

[146] Ibid.

[147] Duke, R. (ed.). 2011. Western Pond Turtle (*Actinemys marmorata*). In *California Habitat Relationships System*. Sacramento, CA: California Department of Fish and Game. Prepared by S. Morey. Available: <http://www.dfg.ca.gov/biogeodata/cwhr/cawildlife.aspx>. Accessed: June 2011.

[148] Jennings, M. R., and M. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California.* Sacramento, CA: California Department of Fish and Game.

[149] California Natural Diversity Database. 2012. RareFind 3, Version 3.1.0 (February 28, 2012, update). Accessed: February 28, 2012. Sacramento, CA: California Department of Fish and Game.

[150] U.S. Fish and Wildlife Service. 2002b. *Draft Recovery Plan for Chaparral and Scrub Community Species East of San Francisco Bay, California.* Region 1, Portland, OR.

[151] Ibid.

[152] California Natural Diversity Database. 2012. RareFind 3, Version 3.1.0 (February 28, 2012, update). Accessed: February 28, 2012. Sacramento, CA: California Department of Fish and Game.

California Horned Lizard

The California horned lizard (*Phrynosoma coronatum frontale*) is a California species of special concern. This species occurs throughout the Central Valley and Coast Ranges from Shasta County south to Los Angeles, Ventura, and Santa Barbara counties.[153] California horned lizards occur in a variety of habitats, including clearings in riparian woodlands, chamise chaparral, and grasslands with loose, friable soils. During periods of inactivity, California horned lizards use small mammal burrows or burrow into loose soils under surface objects.[154]

There have been no occurrences of California horned lizard[155] within 5 miles of the project area, and none was observed during the field surveys. Oak savanna and annual grassland habitat in the project area provide potential habitat for California horned lizards.

Golden Eagle

Golden eagles (*Aquila chrysaetos*) are a fully protected species under California Fish and Game Code Section 3511, a California species of special concern, and protected by both the Migratory Bird Treaty Act and the Bald Eagle and Golden Eagle Protection Act. Golden eagles typically inhabit open grassland areas in foothills surrounding the Central Valley. Golden eagle nests are commonly built on cliff ledges as well as in large trees in open areas. They typically forage in open grasslands where they prey on California ground squirrels and black-tailed jackrabbits.[156]

There have been two occurrences of golden eagle within 5 miles of the project area (Figure 11);[157] however, none was observed during field surveys. Large trees occurring in or near the project area provide suitable nesting habitat for this species, and oak savanna and annual grassland habitat provide suitable foraging habitat.

White-Tailed Kite

The white-tailed kite (*Elanus leucurus*) is a fully protected species under California Fish and Game Code Section 3511. The species has a restricted distribution in the United States, occurring only in California and western Oregon and along the Texas coast. The species is common in California's Central Valley lowlands. Since the 1980s, many white-tailed kite populations have been declining, apparently because of loss of habitat and increased disturbance of nests.[158]

The breeding season generally extends from early February through early August. White-tailed kites usually nest in large native trees, although nonnative trees also are used occasionally. Nest trees are generally at the edge of wooded habitat next to open fields. Large trees in developed areas also may be used, although the trees need to be close to open fields for foraging.[159] White-tailed kites feed primarily on small mammals.[160]

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[153] Stebbins, Robert C. 2003. *A Field Guide to Western Reptiles and Amphibians*. Third edition. Boston, MA, and New York, NY: Houghton Mifflin Company.

[154] Jennings, M. R., and M. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California.* Sacramento, CA: California Department of Fish and Game.

[155] California Natural Diversity Database. 2012. RareFind 3, Version 3.1.0 (February 28, 2012, update). Accessed: February 28, 2012. Sacramento, CA: California Department of Fish and Game.

[156] Kochert, M. N., K. Steenhof, C. L. Mcintyre, and E. H. Craig. 2002. Golden Eagle (Aquila chrysaetos). In A. Poole and F. Gill (eds.), *The Birds of North America Online.* Ithaca, NY: Cornell Lab of Ornithology. Available: <http://bna.birds.cornell.edu/bna/species/684>.

[157] California Natural Diversity Database. 2012. RareFind 3, Version 3.1.0 (February 28, 2012, update). Accessed: February 28, 2012. Sacramento, CA: California Department of Fish and Game.

[158] Dunk, J. R. 1995. White-Tailed Kite (*Elanus leucurus*). In A. Poole and F. Gill (eds.), *The Birds of North America,* No. 178. Philadelphia, PA: Academy of Natural Sciences; Washington, D.C.: American Ornithologists' Union.

[159] Ibid.

[160] Ibid.

There have been no occurrences of white-tailed kite[161] within 5 miles of the project area, and none was observed during field surveys. Large trees occurring in or near the project area provide suitable nesting habitat for this species, and oak savanna and annual grassland habitat provide suitable foraging habitat.

Loggerhead Shrike

The loggerhead shrike (*Lanius ludovicianus*) is a California species of special concern, and its nests are protected under the Migratory Bird Treaty Act. It is a common year-round resident throughout the lowlands and foothills of California. Loggerhead shrikes prefer open habitats with shrubs, fences, utility poles and lines, or other perches. They tend to avoid urbanized areas but often frequent open croplands and rangelands. Nests are usually hidden in densely foliaged shrubs or trees. The breeding season is from March through August.[162]

There have been no occurrences of loggerhead shrike[163] within 5 miles of the project area, and none was observed during field surveys. Shrubs and trees in the study area provide suitable nesting habitat for the species.

Grasshopper Sparrow

The grasshopper sparrow (*Ammodramus savannarum*) is a California species of special concern. In California, grasshopper sparrows are summer residents from March to September. The species' nesting range includes the Coast Range in eastern Alameda and Santa Clara counties.[164] Grasshopper sparrow occurs in dry grasslands, especially those with a variety of grasses and forbs. This species prefers moderately open grasslands with patchy bare ground and shrubs. The grasshopper sparrow feeds primarily on the ground. A large proportion of its diet includes grasshoppers, although its diet also includes seeds. Nests are built of grasses and forbs in a slight depression in the ground and often are concealed with overhanging grasses.[165]

There have been no occurrences of grasshopper sparrow[166] within 5 miles of the project area, and none was observed during field surveys. Oak savanna and annual grassland occurring within the project area provide suitable nesting habitat.

Western Burrowing Owl

The western burrowing owl (*Athene cunicularia*) is a California species of special concern. Western burrowing owls are year-round residents throughout much of California, especially in the Central Valley, San Francisco Bay region, Carrizo Plain, and Imperial Valley. Migrants from other parts of western North

[161] California Natural Diversity Database. 2012. RareFind 3, Version 3.1.0 (February 28, 2012, update). Accessed: February 28, 2012. Sacramento, CA: California Department of Fish and Game.
[162] Yosef, R. 1996. Loggerhead Shrike (*Lanius ludovicianus*). In A. Poole and F. Gill (eds.), *The Birds of North America.* (No. 231.) Philadelphia, PA: Academy of Natural Sciences; Washington, D.C.: American Ornithologists' Union.
[163] California Natural Diversity Database. 2012. RareFind 3, Version 3.1.0 (February 28, 2012, update). Accessed: February 28, 2012. Sacramento, CA: California Department of Fish and Game.
[164] Shuford, W. D., and T. Gardali (ed.). 2008. Western burrowing owl (*Athene cunicularia*) In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concerns in California*. Studies of Western Birds 1. Prepared by Jennifer A. Gervais, Daniel K. Rosenberg, and Lyann A. Comrack. Camarillo, CA: Western Field Ornithologist; Sacramento, CA: California Department of Fish and Game.
[165] Ibid.
[166] California Natural Diversity Database. 2012. RareFind 3, Version 3.1.0 (February 28, 2012, update). Accessed: February 28, 2012. Sacramento, CA: California Department of Fish and Game.

America can augment local populations in lowland areas in the winter.[167] The breeding season in California is February 1 to August 31.[168] Western burrowing owls prefer open, dry, short grassland habitats with few trees and often are associated with burrowing mammals such as California ground squirrels. They occupy burrows, typically abandoned by ground squirrels or other burrowing mammals, but also use artificial burrows such as abandoned pipes, culverts, and debris piles. Burrowing owls have adapted to landscapes that have been highly altered by human activity. Prey includes arthropods, amphibians, small reptiles, and small mammals.[169]

There have been no occurrences of western burrowing owl[170] within 5 miles of the project area, and none was observed during field surveys, although ground squirrels were observed within the project area. Suitable nesting habitat within the project area occurs where there are California ground squirrel burrows in the oak savanna and annual grassland habitat.

Non-Special-Status Migratory Birds

Migratory birds and raptors, such as red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), and great horned owl *(Bubo virginianus*), have the potential to nest in the project area and vicinity. The breeding season for migratory birds and raptors generally extends from early February through early August, although specific nesting timeframes vary by species. Forested nesting habitat may include riparian and woodland areas, although nonnative trees and electrical towers also are used. Riparian areas often support a diverse assemblage of nesting species. The main prey species for raptors include California ground squirrels, black-tailed jackrabbits, voles, pocket mice, and harvest mice. Non-active nests were observed throughout the project area during the 2010 surveys.

Cliff swallows (*Petrochelidon pyrrhonota*) build mud nests on the undersides of artificial structures such as bridges and roof overhangs on barns and other buildings. Cliff swallows are colonial nesters, often nesting in colonies with hundreds of birds. The species is migratory and winters in South America. It returns to California in March and April to breed. Nesting occurs from April to August, and southward migration occurs in September and October. Several non-active cliff swallow nests were observed on top of the timber beams beneath the surface of the bridge during the March 10, 2010, survey; the nests were also not active during the June 23, 2010, survey.

Pallid Bat

The pallid bat (*Antrozous pallidus*) is a California species of special concern. Pallid bats are found in a variety of habitats below elevations of 6,000 feet throughout California but have been recorded up to 10,000 feet in the Sierra Nevada. Pallid bats are associated with oak woodlands, ponderosa pine, mixed

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[167] Shuford, W. D., and T. Gardali (ed.). 2008. Western burrowing owl (*Athene cunicularia*) In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concerns in California*. Studies of Western Birds 1. Prepared by Jennifer A. Gervais, Daniel K. Rosenberg, and Lyann A. Comrack. Camarillo, CA: Western Field Ornithologist; Sacramento, CA: California Department of Fish and Game.

[168] California Department of Fish and Game. 1995. *Staff Report on Burrowing Owl Mitigation.* October 17, 1995. California Department of Fish and Game, Environmental Services Division. Sacramento, CA.

[169] Shuford, W. D., and T. Gardali (ed.). 2008. Western burrowing owl (*Athene cunicularia*) In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concerns in California*. Studies of Western Birds 1. Prepared by Jennifer A. Gervais, Daniel K. Rosenberg, and Lyann A. Comrack. Camarillo, CA: Western Field Ornithologist; Sacramento, CA: California Department of Fish and Game.

[170] California Natural Diversity Database. 2012. RareFind 3, Version 3.1.0 (February 28, 2012, update). Accessed: February 28, 2012. Sacramento, CA: California Department of Fish and Game.

conifer, rock crevices, and giant sequoia habitats. Roosting has been documented in large conifer snags, basal hollows of redwoods and giant sequoias, and cavities in oaks. Pallid bats also commonly roost under bridges. Roost temperatures are important and must be below 100°F. The pallid bat forages close to the ground, preying on large ground-dwelling arthropods such as beetles, scorpions, and Jerusalem crickets.[171]

One pallid bat occurrence was recorded approximately 3.5 miles north of the project area[172] (Figure 11). None was observed during field surveys, nor was any sign observed. The existing bridge over Alameda Creek and the riparian forest and oak woodland occurring in the project area provide suitable roosting habitat.

Townsend's Big-Eared Bat

Townsend's big-eared bat (*Corynorhinus townsendii*) is a California species of special concern. Townsend's big-eared bats are found throughout California in a variety of habitats below elevations of 10,000 feet. Townsend's big-eared bats are associated with conifer forests, mixed woodlands, riparian forests, coastal habitat types, and desert communities. This species roosts mostly in caves and abandoned mines, although it has also been reported to roost in buildings, under bridges, and in hollow trees. Townsend's big-eared bats are very sensitive to roost disturbance and can be negatively affected by human activities such as recreational caving and renewed mining in closed mines.[173]

One Townsend's big-eared bat occurrence was recorded approximately 0.75 mile south of the project area[174] (Figure 11); however, none was observed during field surveys, nor was any sign observed. The existing bridge over Alameda Creek and the riparian forest along Alameda Creek occurring in or near the project area provide suitable roosting habitat.

Western Red Bat

The western red bat (*Lasiurus blossevillii*) is a California species of special concern. Western red bats occur throughout much of California at lower elevations. This bat is a primarily solitary species that roosts in the foliage of trees and shrubs in woodland habitats. It occurs in streamside habitats dominated by cottonwood, oaks, sycamore, and walnut. Day roosts are usually within the foliage of trees. This species also has been known to use cave-like structures for roosting. Roost sites often are shaded and open below, enabling bats to drop into flight.[175] Prey includes a wide variety of insects that are taken on the wing high over the tree canopy.[176]

[171] Sherwin, Rick. 2005. *Western Bat Working Group Species Account, Pallid Bat* (Antrozous pallidus). Available: <http://www.wbwg.org/speciesinfo/species_accounts/vespertilonidae/anpa.pdf>. Accessed July 6, 2011.
[172] California Natural Diversity Database. 2012. RareFind 3, Version 3.1.0 (February 28, 2012, update). Accessed: February 28, 2012. Sacramento, CA: California Department of Fish and Game.
[173] Piaggio, Antoinette. 2005. *Western Bat Working Group Species Account, Townsend's Big-Eared Bat* (Corynorhinus townsendii). Available: <http://www.wbwg.org/speciesinfo/species_accounts/vespertilonidae/anpa.pdf>. Accessed: July 6, 2011.
[174] California Natural Diversity Database. 2012. RareFind 3, Version 3.1.0 (February 28, 2012, update). Accessed: February 28, 2012. Sacramento, CA: California Department of Fish and Game.
[175] Brown, P. E., and E. D. Pierson. 1996. *Natural History and Management of Bats in California and Nevada.* Sacramento, CA: Western Section of the Wildlife Society.
[176] Ibid.

There have been no occurrences of western red bat[177] within 5 miles of the project area, and none was observed during field surveys, nor was any sign observed. The riparian forest and oak woodland occurring in the project area provide suitable roosting habitat.

American Badger

The American badger (*Taxidea taxus*) is a California species of special concern. The species is found throughout the state, except in the North Coast region. Badgers are most abundant in drier areas with friable soils and sparse vegetation. Other fossorial (burrowing) animals often use burrows made by badgers. Badgers are carnivorous and prey upon fossorial rodents, especially ground squirrels and pocket gophers as well as reptiles, insects, earthworms, eggs, and carrion.[178]

There have been no occurrences of American badger[179] within 5 miles of the project area, and none was observed during field surveys, nor was any sign observed. Oak savanna and annual grassland occurring within the project area provide suitable habitat.

Special-Status Fish

No special-status fish occur in the project area. Fish surveys conducted by SFPUC (2006)[180] found California roach, Sacramento pikeminnow, and Sacramento sucker in the project area; however, rainbow trout may occur in the project area during the spring and winter months. *O. mykiss* is known as steelhead when it is migratory and as rainbow trout when it resides exclusively in fresh water. Migratory steelhead are born in fresh water, migrate to the ocean, and then return to fresh water to spawn. Rainbow trout complete their life cycle entirely in fresh water. Migratory steelhead in the San Francisco Bay Area are listed as threatened by the National Marine Fisheries Service (NMFS). However, this listing does not include rainbow trout upstream of barriers in Alameda Creek. Impassible barriers along Alameda Creek in the lower watershed have blocked migratory steelhead for many decades, preventing them from entering the Upper Alameda Creek watershed in the Sunol Valley to spawn. SFPUC has removed two barriers, the Niles and Sunol dams. Efforts to establish fish passage facilities at barriers to upstream anadromous fish migration in the lower watershed, including at the Bay Area Rapid Transit (BART) weir, are ongoing. However, anadromous fish passage in the lower watershed will continue to remain impaired during project construction. The landlocked resident rainbow trout found in the upper watershed are related to steelhead of the central California Distinct Population Segment (DPS) but are not considered part of the DPS (71 FR 834 January 5, 2006). The project area may provide rearing and spawning habitat for rainbow trout.

Impacts Discussion

Table 19 provides a summary of the estimated acreage impacts on sensitive habitat and habitat known to support sensitive species.

[177] California Natural Diversity Database. 2012. RareFind 3, Version 3.1.0 (February 28, 2012, update). Accessed: February 28, 2012. Sacramento, CA: California Department of Fish and Game.

[178] White, M., and G. Ahlborn (ed.). 2010. American badger (*Taxidea taxus*). In *California Habitat Relationships System*. Sacramento, CA: California Department of Fish and Game. Prepared by G. Ahlborn. Available: <http://www.dfg.ca.gov/biogeodata/cwhr/cawildlife.aspx>. Accessed: June 2011.

[179] California Natural Diversity Database. 2012. RareFind 3, Version 3.1.0 (February 28, 2012, update). Accessed: February 28, 2012. Sacramento, CA: California Department of Fish and Game.

[180] San Francisco Public Utilities Commission. 2006c. *Alameda Creek Aquatic Resource Monitoring Report 2004*, 96 pp. Sunol, CA: Natural Resources Division, Fish and Wildlife Group.

TABLE 19: ESTIMATED HABITAT IMPACTS

Affected Habitat	Permanent Project Impact (acres)	Temporary Project Impact (acres)
Aquatic Habitat for Special-Status Wildlife[a]	0.01	0.41
Upland Habitat for Special-Status Wildlife[b]	0.38	5.27
Riparian Forest	0.06	0.20
Oak Woodland	0.26	1.56
Oak Savanna	0.05	1.57
Annual Grassland	0.01	1.94
Total	0.39	5.68

Notes:

[a] Includes Alameda Creek and seasonal streams that provide suitable aquatic habitat for California red-legged frog.

[b] Oak savanna, annual grassland, oak woodland, and riparian forest provide suitable upland habitat for California tiger salamander and California red-legged frog. Oak savanna and annual grassland provide suitable habitat for Alameda whipsnake.

Source: ICF International, 2012.

The estimated permanent-impact acreage in Table 19 corresponds to the permanent construction and habitat areas shown in Figure 12. For this analysis, the estimated temporary habitat impacts are assumed to result within all non-permanent impact areas within the limit of construction, thus providing a conservative estimate.

As detailed in the Project Description, the project will enhance currently developed areas along the current bridge alignment and at the existing low-water crossing, resulting in the creation of 0.45 acre of new habitat, including 0.19 acre of oak woodland, 0.14 acre of oak savanna, 0.09 acre of riparian forest, and 0.03 acre of aquatic habitat. The proposed enhancement activities would result in an overall increase in native habitat in the project area (0.45 acre created versus 0.39 permanently affected), including a net increase in riparian forest and oak savannah habitat types. However, there would be a small permanent reduction of 0.07 acre of oak woodland habitat (0.19 acre created versus 0.26 acre permanently affected) and 0.01 acre of annual grassland.

a) Special-status Species

Special-Status Plant Species

Annual grassland habitat in the project area has low potential to support several of the special-status plant species (see Appendix C). Floristic surveys were conducted during the identification period for special-status plants with the potential to occur in the project vicinity. No special-status plants were observed in the project area. Therefore, the project would have no impact on special-status plants.

Special-Status Wildlife Species

Based on reconnaissance-level surveys of the project area conducted by wildlife biologists, it was determined that Alameda Creek, seasonal drainages, the riparian forest, oak woodland, oak savanna, and annual grassland provide suitable habitats for several special-status wildlife species. These habitats would be affected by the proposed project. Therefore, special-status wildlife species occurring in these habitats could also be affected. Although the project has the potential to affect special-status wildlife species adversely and result in potentially significant impacts, these impacts would be reduced to a less-than-significant level through the implementation of mitigation measures, as discussed below.

Potential Impacts on California Tiger Salamander

Suitable aquatic breeding habitat would not be affected by the project, though suitable aquatic breeding habitat was identified within 1.24 miles of the project area. Proposed construction activities, such as the construction of new approach roads, grading of staging areas, or transportation or staging of materials and equipment, could have a substantial adverse effect on California tiger salamander, either through direct impacts on individuals or indirect impacts through habitat modification. Such effects could include mortality, injury, temporary habitat modification, or disruption of migration or movement patterns. Construction activities could also impede the dispersal movement of adults or juveniles (though construction would generally occur outside the dispersal period). Oil or fuel spills from construction equipment or hazardous materials could degrade habitat for California tiger salamander and cause injury or mortality.

Given the current project design, 0.38 acre of suitable upland habitat would be permanently affected and up to 5.27 acres would be temporarily affected. Because construction activity is not expected to require the use of all areas within the limits of construction (Figure 12), these acreages represent maximum values. Compensation for permanent habitat impacts would be provided by removing the existing bridge and the approach roads to the low-water crossing; subsequent enhancement of these developed areas with native habitat would create 0.42 acre of suitable upland habitat. However, because of the uncertainty related to the ultimate success of the proposed habitat enhancement and minor difference in habitat types enhanced/created, both temporary and permanent impacts on suitable habitat for the California tiger salamander would be considered significant.

Implementation of mitigation measures BIO-1 through BIO-5, described below, would serve to reduce impacts on the California tiger salamander to a less-than-significant level through avoidance and minimization (e.g., worker awareness training, biological monitors, exclusionary fencing, and general construction measures). In addition, mitigation measure BIO-5 would require the implementation of a Habitat Restoration Plan, which would address both temporary and permanent habitat impacts. Mitigation measure BIO-5 requires that the Habitat Restoration Plan detail the provision of additional oak woodland habitat to offset permanent project impacts on oak woodland. To ensure the viability of proposed habitat enhancement at the existing bridge, low-water crossing, and approach roads, the Habitat Restoration Plan would require its success criteria to be monitored and specific actions to be implemented if the success criteria are not met, including the restoration of additional habitat. Thus, impacts on the California tiger salamander, including those resulting from temporary and permanent habitat impacts, would be less than significant with mitigation.

Potential Impacts on California Red-Legged Frog

California red-legged frogs are known to occur within Alameda Creek, and the riparian forest, oak woodland, oak savanna, and annual grassland areas within the project area provide suitable upland habitat. The section of Alameda Creek that flows through the project area is too shallow and too fast moving to provide suitable breeding habitat. Proposed construction activities, such as removal of the existing bridge, construction of the new bridge, removal of riparian vegetation, grading of staging areas, or transportation or staging of materials and equipment, could have a substantial adverse effect on California red-legged frogs through direct impacts on individuals as well as permanent and temporary habitat modification. Sedimentation resulting from construction within and adjacent to Alameda Creek could cause reduced water quality and result in degradation of aquatic habitat for California red-legged frogs. Sediment could also be transported by site runoff from stormwater and water for dust control. Direct and indirect effects on California red-legged frogs, including mortality, injury, temporary and permanent habitat modification, and disruption of migration or movement patterns, could be caused by

construction activities. Construction activities could also impede the dispersal movement of adults or juveniles. Oil or fuel spills from construction equipment into Alameda Creek could degrade habitat for California red-legged frogs and cause injury or mortality.

Given the current project design, 0.38 acre of suitable upland habitat would be permanently affected and up to 5.27 acres would be temporarily affected; approximately 0.01 acre of suitable aquatic habitat would be permanently affected and 0.41 acre would be temporarily affected. Because construction activity is not expected to require the use of all areas within the limits of construction (Figure 12), these acreages represent the maximum values. Compensation for permanent habitat impacts would be provided by removing the existing bridge and approach roads to the low-water crossing; subsequent enhancement of these developed areas with native habitat would create 0.42 acre of suitable upland habitat and 0.03 acre of suitable aquatic habitat. However, because of the uncertainty related to the ultimate success of the proposed habitat enhancement and minor difference in habitat types enhanced/created, both temporary and permanent impacts on suitable habitat for the California red-legged frog would be considered significant.

Implementation of mitigation measures BIO-1 through BIO-5, described below, would serve to reduce impacts on the California red-legged frog to a less-than-significant level through avoidance and minimization (e.g., worker awareness training, biological monitors, exclusionary fencing, general construction measures). In addition, mitigation measure BIO-5 would require the implementation of a Habitat Restoration Plan, which would address both temporary and permanent habitat impacts. Mitigation measure BIO-5 requires that the Habitat Restoration Plan detail the provision of additional oak woodland habitat to offset permanent project impacts on oak woodland. To ensure the viability of proposed habitat enhancement at the existing bridge, low-water crossing, and approach roads, the Habitat Restoration Plan would require its success criteria to be monitored and specific actions to be implemented if the success criteria are not met, including the restoration of additional habitat. Thus, impacts on the California red-legged frogs, including those resulting from temporary and permanent habitat impacts, would be less than significant with mitigation.

Potential Impacts on Foothill Yellow-Legged Frog and Western Pond Turtle

Foothill yellow-legged frogs and western pond turtles are known to occur within Alameda Creek, and the section that flows through the project area provides suitable aquatic habitat. The proposed construction activities could have substantial adverse effects on foothill yellow-legged frog and western pond turtle if habitat within Alameda Creek is degraded and/or individuals are harmed or killed. Western pond turtles nest in upland habitat, and adults, eggs, or hatchlings could be injured or killed by removal of the existing bridge, construction of the new bridge, removal of riparian vegetation, grading of staging areas, or transportation or staging of materials and equipment. Oil or fuel spills into Alameda Creek from construction equipment could cause injury or mortality for foothill yellow-legged frogs or western pond turtles. Sedimentation resulting from construction within and adjacent to Alameda Creek could cause reduced water quality and result in degradation of aquatic habitat for foothill yellow-legged frogs and western pond turtles. Sediment could also be transported by site runoff from stormwater and water for dust control.

Direct and indirect impacts on foothill yellow-legged frogs and western pond turtles would be considered a significant impact. Implementation of mitigation measures BIO-1 through BIO-4, described below, and implementation of BIO-5, though not specifically for foothill yellow-legged frogs or western pond turtles, would reduce these potential impacts to a less-than-significant level because these measures would require avoidance and minimization of impacts (through worker awareness and general construction measures), the installation of exclusionary fencing, erosion/sedimentation BMPs, minimization measures for impacts on suitable aquatic and upland habitat, and habitat restoration of temporary impact areas in uplands and aquatic habitat.

Potential Impacts on Alameda Whipsnake

The proposed construction activities could have a substantial adverse effect on Alameda whipsnake through potential direct impacts on individuals and habitat modification. Proposed construction activities, such as construction of the new approach roads, grading of staging areas, or transportation or staging of materials and equipment, could have a substantial adverse effect on Alameda whipsnakes through direct impacts on individuals and through temporary habitat modification. Construction activities could also impede dispersal movements. Noises and vibrations from construction activities and the presence of human activity may disturb or disorient Alameda whipsnake.

Given the current project design, 0.06 acre of suitable upland habitat would be permanently affected and up to 3.51 acres would be temporarily affected; because construction activity is not expected to require the use of all areas within the limits of construction (Figure 12), these acreages represent the maximum values. Compensation for permanent habitat impacts would be provided by removal of the existing bridge and approach roads to the low-water crossing; subsequent enhancement of these developed areas with native habitat would create 0.14 acre of suitable upland habitat. However, because of the uncertainty related to the ultimate success of the proposed habitat enhancement, both temporary and permanent impacts on suitable habitat for the Alameda whipsnake would be considered significant.

Implementation of mitigation measures BIO-1 through BIO-5, described below, would serve to reduce impacts on the Alameda whipsnake to a less-than-significant level through avoidance and minimization (e.g., worker awareness training, biological monitors, exclusionary fencing, general construction measures). In addition, mitigation measure BIO-5 would require the implementation of a Habitat Restoration Plan, which would address both temporary and permanent habitat impacts. To ensure the viability of proposed habitat enhancement at the existing bridge, low-water crossing, and approach roads, the Habitat Restoration Plan would require its success criteria to be monitored and specific actions to be implemented if the success criteria are not met, including restoration of additional habitat. Thus, impacts on the Alameda whipsnake, including those resulting from temporary and permanent habitat impacts, would be less than significant with mitigation.

Potential Impacts on Western Spadefoot, California Horned Lizard, and American Badger

Proposed construction activities, such as grading of staging areas or transportation or staging of materials and equipment, in annual grassland habitat could have a substantial adverse effect on California horned lizard and American badger through direct impacts on individuals and through temporary habitat modification. Direct impacts on Western spadefoot, California horned lizards, and American badgers would be considered a significant impact. Implementation of mitigation measures BIO-1 through BIO-4, described below, and implementation of BIO-5, though not specifically for western spadefoot, California horned lizard, or American badger, would also minimize impacts on these species and help reduce the impact to a less-than-significant level because these measures would require avoidance and minimization of impacts (through worker awareness and general construction measures), installation of exclusionary fencing, minimization measures for impacts on suitable upland habitat, and habitat restoration of temporary impact areas in uplands.

Potential Impacts on Nesting Special-Status and Other Migratory Birds

The proposed construction activities could have a substantial adverse effect on special-status or other migratory birds through direct impacts on individuals and from the loss of suitable nest trees. Construction activities could result in injury, adult or juvenile mortality, loss of eggs, disruption of daily activities, nest destruction or abandonment, or loss of reproductive potential. Noise, dust, vibration, the presence of human activity, and lighting during nighttime construction may disturb or disorient nesting birds.

Construction of the project would result in the removal of isolated oak trees and the permanent loss of approximately 0.32 acre of riparian forest and oak woodland. Oak savanna and annual grassland, which

provide suitable nesting habitat for nesting birds, including ground-nesting birds, would also be permanently and temporarily affected during construction. Riparian forest, oak woodland, and oak savanna would also be created by the project through removal of the existing approach roads to the low-water crossing and habitat enhancement activities, though the establishment of mature trees and associated potential nesting habitat would take many years. The bridge that would be removed during construction provides nesting habitat for cliff swallows; the potential for use of the superstructure of the replacement bridge as nesting habitat is unknown. Potential injury to birds or mortality, as well as the removal of active nests and the loss of suitable nest trees, would be considered a significant impact. Implementation of mitigation measures BIO-1 through BIO-4 and BIO-6 through BIO-9, described below, would reduce these potential impacts to a less-than-significant level because these measures would require avoidance and minimization of impacts (through worker awareness and general construction measures), preconstruction surveys, and buffers around active nests. Additionally, restoration planting of riparian habitat under mitigation measure BIO-5, below, would help to offset the loss of nesting habitat.

Potential Impacts on Western Burrowing Owl

The proposed construction activities could have a substantial adverse effect on western burrowing owl through direct impacts on individuals and through habitat modification. Western burrowing owl utilizing annual grassland habitat for foraging, nesting, and breeding could be disturbed, injured, or killed by construction activities. Noises and vibrations, the presence of human activity, and lighting during nighttime construction may disturb or disorient western burrowing owls, if present. In addition, construction of the proposed project would result in temporary losses of suitable habitat for western burrowing owl. Approximately 3.57 acres of oak savanna and annual grassland, which provide suitable foraging, nesting, and wintering habitat for burrowing owl, occur within the project area; of those 3.57 acres, a maximum of approximately 3.51 acres would be temporarily affected by construction activities, and 0.06 acre would be permanently affected by construction of the new approach roads. Direct impacts on western burrowing owl, including mortality, injury, or disruption of movement patterns because of construction activities, and temporary and permanent losses of habitat would be considered a significant impact. Implementation of mitigation measures BIO-1 through BIO-4, BIO-10, and BIO-11, described below, would reduce these potential impacts to a less-than-significant level because these measures would require avoidance and minimization of impacts (through worker awareness and general construction measures), preconstruction surveys, and buffers around active burrows. Proposed enhancement of upland habitat in conjunction with the removal of the approach roads to the low-water crossing would help to offset the loss of upland habitat.

Potential Impacts on Pallid Bat, Townsend's Big-eared Bat, and Western Red Bat

The existing bridge, riparian forest, and oak woodland that occur within the project area provide daytime roosting habitat for bats, including pallid bat, Townsend's big-eared bat, and western red bats. Potential impacts on roosting bats include the removal of roosting habitat while bats are roosting as well as noise and vibrations associated with construction activities. The loss of active roosting pallid bats, Townsend's big-eared bats, and western red bats would be considered a significant impact. Implementation of mitigation measures BIO-1 through BIO-4 and BIO-12, described below, would reduce these potential impacts to a less-than-significant level because these measures would require avoidance and minimization of impacts (through worker awareness and general construction measures) and the humane eviction of bats from project area. Additionally, restoration planting of riparian habitat under mitigation measure BIO-5, below, would help to offset the loss of roosting habitat.

Mitigation Measure BIO-1: Conduct Mandatory Biological Resources Awareness Training for All Project Personnel. A worker education program shall be implemented to familiarize all construction workers about the importance of avoidance of harm to special-status species and sensitive natural communities. The training shall be provided to all personnel before working at the site and include information regarding the importance of maintaining speed limits, preventing the spread of noxious weeds, appropriate disposal of trash and waste materials, and respecting exclusion zones. SFPUC and its construction contractor shall confirm that all workers have been trained appropriately.

Mitigation Measure BIO-2: Retain an On-site Environmental Monitor during Construction Activities near Sensitive Biological Resources. A qualified biological monitor will be on-site during initial ground-disturbing construction activities near sensitive biological resources to ensure implementation of and compliance with mitigation measures. Following the initial ground-disturbing activities, the environmental monitor will conduct weekly or twice-weekly check-ins.

The biological monitor will have authority to stop construction activities and develop alternative work practices, in consultation with construction personnel and resources agencies, if construction activities are likely to affect special-status species or other sensitive biological resources.

Mitigation Measure BIO-3: Install Exclusionary Fencing along and within Construction Work Area and Implement General Measures to Avoid Impacts on Special-Status Species and Sensitive Natural Communities. To prevent special-status species from moving through the project area, SFPUC or its contractors shall install temporary exclusionary fencing around key project boundaries, including applicable portions of access roads, staging areas, etc. Fencing shall be installed immediately prior to the start of construction activities. SFPUC shall ensure that the temporary exclusionary fencing is continuously maintained until all construction activities are completed. The fence shall be made of suitable material to prevent the terrestrial animals listed above from entering the work area. The fence shall be buried to a depth of at least 4 inches such that applicable species cannot crawl under the fence and include escape funnels to allow species to exit work areas. The exclusionary fencing shall not cross Alameda Creek but shall be installed around construction work areas on both sides of Alameda Creek to confine California red-legged frogs and foothill yellow-legged frogs to the creek channel and discourage them from moving into the work area from the creek.

A qualified biological monitor shall be on-site during installation of the fencing to survey and relocate animals outside the work area boundaries. Federally and state listed species shall be relocated only if authorized by USFWS and CDFG. The exclusionary fencing shall be removed only after construction of the project is entirely completed.

Exclusionary construction fencing and explanatory signage shall be placed around the perimeter of sensitive vegetation communities that could be affected by construction activities throughout the period during which such impacts occur. Signage shall state, “Sensitive Resource – Keep Out.” All exclusionary fencing shall be maintained in good condition throughout the construction period.

Mitigation Measure BIO-4: Implement General Mitigation Measures while Working in the Project Area during Construction. SFPUC shall ensure that the following general measures are implemented by the contractor to prevent and minimize impacts on special-status species and sensitive natural communities:

- Project-related vehicles shall observe a 15 mph speed limit on unpaved roads in the project area.
- No firearms or pets shall be allowed in the project area.
- The contractor shall provide closed garbage containers for the disposal of all food-related trash items (e.g., wrappers, cans, bottles, food scraps). All garbage shall be collected daily from the project site and placed in a closed container from which garbage shall be removed weekly. Construction personnel shall not feed or otherwise attract fish or wildlife to the project area.
- If vehicle or equipment maintenance is necessary, it shall be performed in the designated staging areas, and spill kits and cleanup materials shall be available on-site. The project SWPPP will stipulate the distance from waters of the United States.
- Project personnel shall be required to report immediately harm, injury, or mortality of a listed species (federal or state) during construction, including entrapment, to the construction foreman or biological monitor. The construction foreman or monitor shall immediately notify SFPUC. SFPUC shall provide verbal notification to the USFWS Endangered Species Office in Sacramento, California, and/or to the local CDFG warden or biologist (as applicable) within 1 working day of the incident. SFPUC shall follow up with written notification to USFWS and/or CDFG (as applicable) within 5 working days of the incident. All observations of special-status species shall be recorded on CNDDB field sheets and sent to CDFG by SFPUC.
- The spread of invasive nonnative plant species and plant pathogens shall be avoided or minimized by implementing the following measures:
    - Construction equipment shall arrive at the project clean and free of soil, seed, and plant parts to reduce the likelihood of introducing new weed species.
    - Any imported fill material, soil amendments, gravel, etc., required for construction and/or restoration activities that will be placed within the upper 12 inches of the ground surface shall be free of vegetation and plant material.
    - Certified weed-free imported erosion control materials (or rice straw in upland areas) shall be used exclusively, if possible.
    - To reduce the movement of invasive weeds into uninfested areas, the contractor shall stockpile topsoil removed during excavation and shall subsequently reuse the stockpiled soil for re-establishment of disturbed project areas.

Mitigation Measure BIO-5: Implement Avoidance, Minimization, and Habitat Restoration and Enhancement Measures for California Tiger Salamander, California Red-Legged Frog, and Alameda Whipsnake. The following conservation measures are proposed to minimize or eliminate potential adverse impacts on California tiger salamander, California red-legged frog, and Alameda whipsnake during project-related activities.

- Disturbed project areas shall be revegetated, at the direction of a qualified botanist or restoration specialist, with an appropriate assemblage of native vegetation suitable for the area.
- As necessary, erosion control measures will be implemented to prevent any soil or other materials from entering any nearby aquatic habitat. Erosion control measures will be installed adjacent to suitable aquatic habitat to prevent soil from eroding or falling into the area.

- Locations of erosion control measures and the types of appropriate sediment control measures will be specified in the SWPPP. Sediment control measures will be furnished, constructed, maintained, and later removed as shown in the SWPPP. Plastic monofilament netting will not be used.
- All trenches of a depth of 2 feet or greater will be covered at the end of each workday, or escape ramps will be installed in the trench at regular spaced intervals to allow animals that fall in a means of escape.
- Construction activities in suitable California tiger salamander and California red-legged frog upland habitat should ideally be conducted in the dry season, April 15 through October 31.
- A preconstruction survey will be conducted within 14 days prior to ground-disturbing construction activity that occurs in designated suitable upland habitat. The survey will include a careful inspection of all potential hiding spots, such as large downed woody debris, the perimeter of wetlands, and riparian areas. Any California tiger salamander or California red-legged frog found will be captured and held for a minimum amount of time necessary to relocate the animal to a suitable location a minimum of 300 feet outside of the work area. Vehicles parked overnight will be inspected each morning before they are moved.
- A qualified biologist will use best practices for capture, storage, and transport of California tiger salamanders and California red-legged frogs, including not using latex gloves to handle amphibians; having clean hands that are free of lotions, soaps, and insect repellents; and keeping individuals in a cool, moist, aerated environment while in captivity.

Habitat Restoration Plan

SFPUC will prepare a Habitat Restoration Plan to be implemented by the contractor for the project. The Habitat Restoration Plan will be subject to resource agency review and implemented in coordination with applicable resource agency permit requirements. The Habitat Restoration Plan will detail restoration activities required for any aquatic and upland habitats temporarily affected by project construction-related activities to restore the areas to pre-project conditions. Site-specific restoration measures and success criteria will be outlined in the restoration component of the plan, which will be part of the overall habitat mitigation plan developed for the project. The annual monitoring reports shall be submitted to applicable resource agencies and include photo-documentation, including pre- and post-project photos and other information specified in the Habitat Restoration Plan.

The restoration plan shall also detail habitat enhancements to be completed at the project site as part of the project, including removal of pre-project permanent impact areas, such as the low-water crossing and associated approach roads, and subsequent establishment of associated suitable habitat improvements for the California red-legged frog, California tiger salamander, and Alameda whipsnake. The restoration plan will include success criteria for monitoring habitat restoration and enhancement activities as well as response actions to be implemented if the success criteria are not be met. These actions may include preservation of additional habitat for California tiger salamander, California red-legged frog, and Alameda whipsnake within a CDFG- and/or USFWS-approved conservation area.

The restoration plan shall be submitted to applicable resource agencies such as USACE, the Regional Water Quality Control Board, CDFG, and USFWS. SFPUC shall ensure that a qualified biologist, botanist, or restoration specialist reviews the restoration efforts in all vegetation communities. Described below are the minimum restoration and compensation measures that shall be included in the restoration plan.

Invasive Weed Control Measures

To avoid or minimize the introduction or spread of invasive weeds such as yellow star-thistle, purple star-thistle, Italian thistle, bull thistle, barb goat grass, and medusa head grass into uninfested areas, SFPUC shall incorporate the measures to control invasive weeds outlined in mitigation measures BIO-1 and BIO-4.

Minimum Restoration Measures for Temporarily Affected Areas

Temporarily disturbed areas located within the limits of construction but outside of the permanent impact area would be restored to their baseline conditions, as defined by the success criteria described below. To restore these areas, SFPUC shall ensure that the contractor implements the following:

- For annual grassland vegetation areas within the annual grassland and oak savanna, reseed the affected areas with a noninvasive native grass and forb seed mix.
- For native riparian and oak trees that have a diameter at breast height (dbh) of 6 inches, or 10 inches aggregate for multi-tree trunks, replant affected areas with the same species on an anticipated inch-by-inch basis for re-establishment of native mature trees or as otherwise agreed to with USFWS and CDFG.

Measures for Permanently Affected Areas

- The project proposes to enhance the project area by creating new native vegetation communities in currently developed areas at the existing low-water crossing, existing bridge, and approach roads. The Habitat Restoration Plan, which will be subject to resource agency review, will detail all required habitat enhancement/creation activities, including planting and irrigation methods, vegetation types and sources, success and monitoring criteria, and potential response actions if success criteria cannot be met. Whereas the conceptual enhancement plan provides an excess of 1:1 mitigation for oak savanna (0.14 acre of enhancement for 0.05 acre of permanent impact) and less than 1:1 mitigation for oak woodland (0.19 acre of enhancement for 0.26 acre of permanent impact), the SFPUC shall ensure that Habitat Restoration Plan includes:

  (i) a reduction in the proposed oak savanna enhancement by 0.07 acre and an increase in oak woodland enhancement by 0.07 acre; or
  (ii) creation of no less than 0.07 acre of oak woodland in other existing developed portions of the project area or vicinity; or
  (iii) other feasible methods to fully compensate for loss of oak woodlands, including a combination of items (i) and (ii) above, as determined in consultation with applicable permitting agencies.

Minimum Success Criteria

The success criteria for restoring temporarily disturbed areas and compensation planting areas shall be as follows:

- All areas of riparian forest, oak woodland, oak savanna, and annual grassland not permanently disturbed shall be restored to their baseline condition. Percent cover and vegetation composition (other than nonnative annual grassland) shall meet or exceed the baseline cover and composition condition.

- All plantings for permanent losses shall result in at least a 1:1 acreage replacement ratio (or greater ratio, as determined in consultation with applicable permitting agencies). Percent cover and vegetation composition for permanent new plantings shall be similar to a nearby reference site condition, defined as a variation of no more than 30 percent from the reference site cover and composition condition.
- Temporarily affected and restored areas shall be monitored at least once a year for at least 5 years or greater, as determined in consultation with applicable permitting agencies and/or as needed, to verify whether the vegetation is fully established and self-sustaining.
- If full maturity of slow-growing vegetation takes longer than 5 years, such species shall be fully established and self-sustaining to meet the criteria, and the monitoring period shall be extended accordingly to verify if the vegetation is fully established and self-sustaining.
- Riparian forest, oak woodland, oak savanna, and annual grassland shall be monitored for the first 5 years for invasive species. The relative cover of invasive plant species shall not exceed 10 percent in any year. Invasive plant species shall be defined as any high- or moderate-level species on the California Invasive Plant Inventory or as A or B level species, as applicable, on the California Department of Food and Agriculture pest rating list.
- The earliest that success criteria can first be met is 5 years after restoration. Maintenance and monitoring shall continue until the success criteria are met.
- Alternatively, if success criteria cannot be met within 5 years, SFPUC may explore alternative mitigation options with the applicable resource agencies, such as off-site compensation or mitigation credits.

Mitigation Measure BIO-6: Conduct Tree Clearing and Trimming and Removal of Other Vegetation during the Non-nesting Season. Birds have the potential to nest in the annual grassland, riparian woodland, and trees located within the project area. To avoid impacts on or the removal of active nests, tree clearing and trimming and the removal of other vegetation shall be conducted during the nonbreeding season (generally August 16 to February 14). If this is not possible, mitigation measures BIO-7 and BIO-8 will be implemented.

Mitigation Measure BIO-7: Conduct Preconstruction Surveys for Nesting Birds. SFPUC will retain a qualified wildlife biologist to conduct preconstruction surveys for nesting birds prior to the commencement of construction activities that occur within or near suitable breeding habitat during the nesting season (February 15 to August 15). The surveys will be conducted a minimum of 14 days prior to the start of construction during nesting season. Surveys will be conducted within and adjacent to the work areas, staging areas, and areas of access road improvements where ground disturbance or vegetation clearing is required. A 500-foot survey area in addition to the work area will be monitored for nesting raptors. If no active nests are detected, no additional mitigation measures will be required.

Mitigation Measure BIO-8: Implement Buffer Zones for Active Nests. If surveys indicate that migratory bird or raptor nests do occur in areas where construction activities will take place, a no-work buffer will be established around the nest site to avoid disturbance or destruction of the nest site until after a qualified biologist determines that the young have fledged. Generally, the buffer zones are 50 feet for nesting passerine birds, 250 feet for nesting raptors other than golden eagles, and 500 feet for golden eagles. However, the extent of these buffers and monitoring will be determined through coordination with applicable resource agencies and depend on the level of noise

or construction disturbance, line of sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. These factors will be analyzed to make an appropriate decision on buffer distances. Active nests occurring in the buffered study area will be monitored during construction by the on-site monitor. If construction activities have the potential to threaten the viability of an active nest discovered during the survey, then either a minimum buffer will be flagged around the active nest and designated a construction-free zone until the nest is no longer active or other appropriate avoidance measures, approved by CDFG, will be implemented to ensure that the nest is adequately protected. Exact implementation of this measure shall be based on specific information at the project site and in coordination with CDFG.

Mitigation Measure BIO-9: Implement Measures to Prevent Cliff Swallows from Establishing Nests on Underside of Bridge. Old nests of cliff swallows were observed on the underside of the existing bridge. If the removal of the bridge is planned during the cliff swallows' nesting season, SFPUC will implement the following measures:

- SFPUC or its contractor will hire a qualified wildlife biologist to remove any old nests on the underside of the bridge during the swallows' nonbreeding season (August 16 to February 15). To avoid damaging active nests on the bridge that will be removed, the nests must be removed before the breeding season begins (March 1).
- After nests are removed, the underside of the bridge will be covered with a 0.5- to 0.75-inch mesh net by a qualified contractor to avoid new nest establishment prior bridge removal. All net installation will occur before March 1 and will be monitored by a qualified biologist. The netting will be anchored so that swallows cannot attach their nests to the bridge through gaps in the net.

Mitigation Measure BIO-10: Conduct Preconstruction Surveys for Active Burrowing Owl Burrows. CDFG (2012) recommends that preconstruction surveys be conducted at all work areas within the project area (except paved areas and riparian forests) and in a 250-foot-wide buffer zone around the work areas to locate active burrowing owl burrows. SFPUC will retain a qualified biologist to conduct preconstruction surveys for active burrows according to CDFG guidelines (2012) within 2 weeks of the start of construction. If no burrowing owls are detected, a letter report documenting survey methods and findings will be completed, and no further mitigation will be required. If burrowing owls are detected, mitigation measure BIO-11 will be implemented.

Mitigation Measure BIO-11: Implement Avoidance and Minimization Measures to Avoid Active Burrowing Owl Burrows. Disturbance of active burrowing owl burrows will be avoided to the maximum extent feasible. Disturbance is generally defined as activities occurring within 250 feet of active burrowing owl burrows during the breeding season (February 1 to August 31) or within 160 feet of occupied burrows in the nonbreeding season (September 1 to January 31).

During the nonbreeding season, if direct impacts on an occupied burrow are unavoidable, passive relocation techniques may be considered after all other alternatives have been exhausted. Relocation may involve installing one-way doors at occupied burrow entrances and ensuring that alternative suitable burrows are available. Any relocation effort will be implemented in coordination with CDFG and in accordance with standard burrowing owl guidelines. Any burrowing owl exclusion process will be coordinated by a qualified biologist.

SFPUC will support site-specific mitigation measures for any burrowing owls with the potential to be affected by construction activities. Measures may include on-site burrow restoration or artificial burrow installation, in coordination with CDFG, in restored areas. In the event that site-specific burrowing owl relocation is implemented, SFPUC will consult with CDFG regarding suitable replacement of foraging and burrow habitat.

Mitigation Measure BIO-12: Implement Avoidance and Minimization Measures to Minimize Impacts on Active Bat Roosts. Prior to construction, a qualified biologist will conduct a visual inspection of the bridge and trees that will be removed to assess their suitability to provide day-roost habitat. At least 2 weeks prior to construction, a 2-night emergence survey of the bridge and trees, using a bat echolocation recording device, will be conducted to determine if the bridge or trees are occupied by bats and, if so, which species of bats are using the project area. Night emergence surveys to determine absence cannot be done when bats are inactive (generally between October 31 and February 15). This effort will be used to identify potential and known roosts and determine appropriate measures, including avoidance of roosts or roost-removal procedures, which are described below. The presence of roosting bats will be presumed at roost areas that cannot be verified to be unoccupied during this survey effort.

If roosting bats are present under the existing bridge or within trees that are to be removed and those bats need to be evicted, an eviction plan will be prepared by a qualified bat biologist and submitted to SFPUC and CDFG for review and approval. Eviction measures for each of the specific roosts will be included in the eviction plan, along with potential eviction methods such as passive eviction, active eviction, two-step tree trimming/removal process, and corresponding bat roost types (colonial, solitary, etc.). A qualified bat biologist will determine which methods are appropriate for each roost, either passive or active. To avoid mortality of infant and juvenile bats, humane eviction shall occur between February 15 and April 15 or between August 15 and October 31. Passive and active eviction shall be conducted either by or under supervision of a qualified bat biologist.

These measures may be refined during the USFWS and CDFG review process because USFWS and CDFG have final authority over the Biological Opinion and Incidental Take Permit.

b) Riparian Habitat and Sensitive Natural Communities. The project area supports white alder riparian forest, oak woodland, and oak savanna, which are sensitive natural communities. Construction of the project would require building a new approach road and bridge within the riparian forest along Alameda Creek, and approach roads in the adjacent oak woodland and oak savanna. In addition, the existing bridge would be removed during construction, resulting in temporary disturbance of the riparian vegetation around the bridge. Temporary disturbance would also result from the staging of construction activities within oak savanna habitat.

As shown on Table 19, construction activities would result in: a permanent loss of 0.06 acre and a temporary disturbance of 0.20 acre of white alder riparian forest; a permanent loss of 0.26 acre and temporary disturbance of 1.56 acre of oak woodland; and a permanent loss of 0.05 acre and temporary disturbance of 1.57 acre of oak savanna within the project area. The loss or disturbance of riparian, oak woodland, and oak savanna habitats is considered adverse because they provide important wildlife habitat and other ecological functions and values.

Permanent impacts on sensitive biological communities would be offset by the proposed enhancement of habitat following removal of the existing bridge, low-water crossing, and associated approach roads (see Section B, Project Description). Specifically, the proposed project would result in the planting of new habitat that includes 0.09 acre of riparian habitat, 0.19 acre of oak woodland habitat, and 0.14 acre of oak savanna. Because the success of the proposed habitat enhancement is not assured, and because of the slight difference in habitat types created versus affected, the project's permanent impact on sensitive communities is considered significant. However, implementation of Mitigation Measure BIO-5 would apply success criteria to promote the viability of proposed habitat enhancement, and would modify

proposed habitat enhancement/compensation activities as necessary to ensure no net loss any habitat type. Therefore, the project's permanent impact on sensitive communities is less than significant with mitigation.

Temporary impacts would be limited through implementation of mitigation measures BIO-1 through BIO-4 and BIO-13, which require worker awareness training, the presence of an on-site environmental monitor during construction activities near sensitive biological resources, exclusionary fencing, implementation of general construction measures, and avoidance and minimization measures for native trees. Temporary disturbance of sensitive communities would be addressed through implementation of Mitigation Measure BIO-5, which requires the restoration of all areas of temporarily disturbed habitat. Thus, temporary impacts would be less than significant with mitigation.

Mitigation Measure BIO-13: Implement Avoidance and Minimization Measures for Native Trees. SFPUC shall avoid and minimize impacts on native mature trees (defined as trees with a dbh of 6 inches or an aggregate 10-inch dbh for multi-trunk trees) within areas of temporary impacts by ensuring the contractor implements the following measures:

- A qualified arborist (defined as an International Society of Arboriculture–certified arborist or a consulting arborist who is a member of the American Society of Consulting Arborists) or a qualified biologist shall identify the location of fencing to be installed around trees to be retained.
- Prior to the start of construction, SFPUC or its contractors shall install a work exclusion fence at the limits of construction, outside the dripline of all trees that are to be retained that are within 50 feet of any grading, road improvements, underground utilities, or other development activity (identified in the field via flagging by the qualified arborist or biologist). The fence shall be clearly visible. Also prior to construction, SFPUC shall verify that the (temporary) work exclusionary fencing is installed and approved by a qualified arborist or biologist. Any encroachment within these areas must first be approved by a qualified arborist or biologist and SFPUC.
- For native trees on slopes, a silt fence shall be installed at the upslope base of the work exclusionary fencing to prevent soil from drifting down over the root zone where feasible (defined as the extent of the tree dripline) if ground-disturbing work shall be performed upslope of any such trees.
- The contractor shall be required to perform any necessary pruning using the pruning guidelines set forth in the American National Standards Institute (ANSI) A300 standards for pruning (2008).
- Prior to removing or limbing trees within the project site, the contractor shall visually inspect trees for symptoms of sudden oak death and the potential presence of *Phytophthora ramorum*. If diseased trees are identified within the work area, site controls shall be used to minimize the spread of infected plant and soil material. After controlled felling, affected trees will be segregated by the contractor for appropriate off-site disposal in coordination with the San Francisco or Alameda county forester or authorized agricultural inspector. Soil removed from the immediate vicinity of an infected tree shall not be used for site restoration and may require disposal at a landfill.

Implementation of these measures during construction and site restoration shall be verified by a qualified arborist or biological monitor.

c) Wetlands. The project area supports perennial and seasonal aquatic communities: Alameda Creek (perennial stream) and Leyden Creek and drainage D-1 (seasonal stream) are federally protected by USACE as waters of the United States, subject to regulation under Clean Water Act Section 404. Both permanent and temporary placement of material in these features would be considered fill within waters of the United States that require Section 404 authorization from USACE and Clean Water Act Section 401 water quality certification from the Regional Water Quality Control Board. Proposed fill placement for the bridge piers and the installation of the new culvert in Leyden Creek could be authorized under Nationwide Permit No. 14 (Linear Transportation Projects). Proposed enhancement of the low-water crossing could be authorized under Nationwide Permit No. 27 (Aquatic Habitat Restoration, Establishment, and Enhancement Activities). An SAA from CDFG would also be required for construction activity within the creek bed and bank.

Perennial Stream

Construction of the project would involve removal of the existing bridge structures and placement of new bridge structures within Alameda Creek, resulting in direct disturbance of a jurisdictional perennial stream. Dewatering of the creek would be required during construction, resulting in temporary disturbance in the creek.

Project construction would result in 0.01 acre of permanent impact and up to 0.41 acre of temporary impact on the perennial stream. The impact acreages are based on the preliminary wetland delineation (see Appendix B). The 0.01 acre of permanent impact on the perennial stream would result from the new intermediate piers for the new bridge structure within the OHWM of Alameda Creek, which would be permanent fill. However, the project would also remove the trestles and associated concrete foundations of the existing bridge, resulting in a reduction of permanent fill of 0.007 acre; thus, project implementation would result in a net reduction of permanent fill in Alameda Creek of 0.005 acre.

Temporary impacts on the perennial stream would result from construction activities outside of the new bridge footprint. Construction activities are anticipated to be conducted during the dry season, but the creek is a perennial waterway and would require dewatering for construction through use of a cofferdam, water bypass, or energy dissipating riprap at the outfall of the bypass. In addition, a temporary low-water crossing, consisting of a timber mat decking system, would be installed in the creek at the existing low-water crossing site for use during construction. Installation of the flow bypass and temporary crossing structures would result in a total of 0.05 acre of temporary fill in the creek; the remainder of the total 0.41-acre temporary impact area would result from construction activities in the creek, but would not include placement of fill material.

Potential temporary impacts on water quality during construction could result from the release of hazardous construction-related materials (e.g., gasoline, oils, grease, lubricants, or other petroleum-based products) into Alameda Creek. As part of this project, all construction contractors would implement measures to minimize construction effects on water quality. These measures would include preparation of a SWPPP (see Table 1 in Section B, Project Description), as applicable, and implementation of the BMPs included in the SWPPP, which would avoid this potential impact.

Installation of the new bridge would eliminate the low-water crossing and vehicles that drive through the creek. Following removal, the creek bed within the low-water crossing of Alameda Creek would be enhanced by removing any existing fill and adding clean cobbles that provide substrates for benthic macroinvertebrates. The removal of cobbles and placement of fresh cobble to restore the low-water crossing in Alameda Creek would temporarily affect approximately 0.02 acre of the creek. Although this work would involve placing fill in a water of the United States, this would be considered a restoration activity and a beneficial impact.

The permanent and temporary fill in Alameda Creek would be a significant impact. However, the proposed project's removal of structures in the creek would result in a net decrease of 0.005 acre of fill. In addition, proposed habitat enhancements would add a total of 0.03 acre of aquatic habitat following removal of the existing low-water crossing and bridge structures. Therefore, permanent impacts would be less than significant. Temporary impacts would be reduced to a less-than-significant level through implementation of mitigation measures BIO-1 through BIO-4 and BIO-14. These mitigation measures would require avoidance and minimization of impacts through worker awareness training, the presence of an on-site environmental monitor during construction activities near sensitive biological resources, exclusionary fencing, implementation of general construction measures, and minimizing the disturbance of waters of the United States and waters of the state, including wetlands. Mitigation measure BIO-15 would also apply if construction occurs in Alameda Creek outside the dry season (April 15 to October 15), and would reduce potential temporary impacts through preparation of a wet-season contingency plan.

Seasonal Streams

The project would involve construction of a replacement approach road and installation of a replacement culvert in Leyden Creek, and bridge abutment construction in drainage D-1 (see Figure 12), resulting in temporary and direct disturbance of a jurisdictional seasonal stream. Direct temporary impacts on Leyden Creek would result from replacement of the existing culvert; however, the replacement culvert would be the same size as the existing culvert and would not result in additional permanent fill. A temporary impact of 0.02 acre on seasonal stream is estimated to result from project construction. Permanent impacts on seasonal drainage D-1 from placement of fill for construction of the bridge abutment would result in 152 square feet (0.003 acre) of permanent fill in the drainage. These impact acreages are based on the preliminary wetland delineation (see Appendix B).

While the project would result in permanent fill impacts on seasonal streams of 0.003 acre, the project as a whole would result in a net reduction of permanent fill in jurisdictional waters within the project area: Net permanent fill in seasonal and perennial waters in the project area would be reduced by 0.002 acre. This is based on the removal of 0.007 acre of fill associated with the existing bridge, and the addition of 0.002 acre of fill in Alameda Creek and 0.003 acre in drainage D-1 for the new bridge. Therefore, permanent fill impacts on seasonal streams are considered less than significant.

Temporary indirect impacts on seasonal streams would result from construction activities outside of the new bridge footprint. All construction activities within jurisdictional waters are anticipated to be conducted during the dry season. However, if construction is conducted outside of the dry season (April 15 to October 15), additional impacts on water quality could occur. Potential temporary impacts on water quality during construction could result from the release of hazardous construction-related materials (e.g., gasoline, oils, grease, lubricants, or other petroleum-based products) into Leyden Creek and drainage D-1. As part of this project, all construction contractors would implement measures to minimize any construction effects on local water quality, including a local storm drain system or watercourse. These measures would include preparation of a SWPPP (see Table 1 in Section B, Project Description), as applicable, and implementation of the BMPs included in the SWPPP, which would limit this potential impact.

Temporary impacts would be reduced to a less-than-significant level with implementation of mitigation measures BIO-1 through BIO-4 and BIO-14. These mitigation measures would require avoidance and minimization of impacts through worker awareness training, the presence of an on-site environmental monitor during construction activities near sensitive biological resources, exclusionary fencing, implementation of general construction measures, and minimizing the disturbance of waters of the United States and waters of the state, including wetlands. Mitigation measure BIO-15 calls for preparation of a wet-season contingency plan and would be implemented if construction must occur outside the window for the dry season (April 15 to October 15).

Mitigation Measure BIO-14: Minimize Disturbance of Waters of the United States and Waters of the State, Including Wetlands. SFPUC and its contractors shall minimize impacts on waters of the United States and waters of the state by implementing the following measures:

- Avoid construction activities in saturated or ponded streams (typically during the spring and winter) to the maximum extent feasible. Where water features must be disturbed, the minimum area of disturbance necessary for construction shall be identified, and the area outside of that necessary shall be avoided.
- Install a silt fence across all seasonal drainages or parts of seasonal drainages that are outside of the permanent impact area but within 50 feet of any proposed construction activity. Install signs that read "Environmentally Sensitive Area – Keep Out." No equipment mobilization, grading, clearing, or storage of equipment or machinery, or similar activity, shall occur until a representative of SFPUC has inspected and approved the fencing installed at the features to be avoided. SFPUC shall ensure that the temporary fencing is continuously maintained until all construction activities are completed. No construction activities, including the movement of equipment, storage of materials, or temporary stockpiling of spoil, shall be allowed within exclusion areas. A fencing material meeting the requirements of both water quality protection and wildlife exclusion may be used.
- To minimize the degradation of soils and vegetation in drainages where avoidance is infeasible, employ protective practices, such as the use of geotextile cushions or other materials (e.g., timber pads, prefabricated equipment pads, geotextile fabric) or vehicles with balloon tires, in saturated conditions (e.g., when there is noticeable rutting due to saturated conditions and mixing of topsoil and subsoil) as possible.
- Stabilize exposed slopes and streambanks immediately upon completion of construction activities.
- During construction, continuously remove trees, shrubs, debris, or soils that are inadvertently deposited below the OHWM of Alameda Creek or any seasonal drainage in the project area in a manner that minimizes disturbance of the drainage bed and bank (e.g., manually). Such materials shall be setback at least 10 feet from any drainages within the project site that are not otherwise directly disturbed by construction.

Mitigation Measure BIO-15: Prepare a Wet-Season Contingency Plan. If in-stream work must be conducted prior to April 15 or after October 15, SFPUC shall ensure that the contractor prepares and implements a wet-season contingency plan, subject to applicable resource agencies' approval. The plan will identify creek-flow thresholds where bypass of flow during the traditional wet season is necessary and approved by resource agencies ("bypass" refers to the process of containing and routing flow past active in-creek work areas, thereby providing a dry work area and preventing work activities from affecting aquatic resources and water quality). The wet-season contingency plan will detail the BMPs to be used to bypass flows and protect water quality and aquatic organisms. BMPs may include the following:

- Avoiding the creation of waterfalls when installing culverts;
- Installing and removing culverts when the streambed is dry, if possible;
- If streamflow is present, using sediment basins, a temporary diversion channel, or a dam and pump set-up to divert water during installation and removal of the culvert; and
- Implementing turbidity control measures.

d) Migratory Species

Fish

Temporary and permanent impacts on fish habitat would result from bridge demolition and construction. Temporary impacts on Alameda Creek could occur when flow is bypassed around the construction site within approximately 24-inch-diameter high-density polyethylene pipes. Temporary riprap aprons may need to be added at the culvert outlet to dissipate velocities and protect the streambed (WRE 2012).[181] This would cause a temporary impact on the stream channel during construction. This impact would be less than significant because, after construction, the culvert and riprap would be removed and the streambed restored.

Construction of the new bridge would result in new piers being placed below the OHWM in the creek channel. As discussed above under item "c," there would be a permanent loss of fish habitat in Alameda Creek of approximately 0.002 acre when peak wet-season flows inundate the new intermediate piers. However, the project will also remove trestles and associated concrete foundations with the existing bridge, resulting in a net reduction of permanent fill in Alameda Creek of 0.005 acre. In addition, the low-water crossing through Alameda Creek would be decommissioned and habitat quality enhanced (riparian trees and shrubs would be planted along the channel, on the bank, and in upland areas, and the creek bed within the channel would be rehabilitated by removing any existing fill and adding clean cobbles that would provide substrates for benthic macroinvertebrates). Following completion of the new bridge, no vehicles would traverse through the Alameda Creek at the current low-water crossing.

It is unknown if the existing bridge and associated hydraulics allow passage for trout. The new bridge and piers are not expected to impede trout migration. Trout have a sustained (time it takes to negotiate a barrier) swimming speed of 13.7 feet per second.[182] Estimated maximum velocity around the 5-foot-diameter piers is roughly 9.5 feet per second during peak 100-year flood flows.[183] Flows are not expected to reach that level often, and velocities outside of the piers' influence would be less. Therefore, it is not anticipated that the new bridge would cause a velocity block to fish migration. The impacts would be less than significant. No mitigation is required.

Wildlife

Temporary and permanent impacts on California red-legged frog, foothill yellow-legged frogs, and western pond turtles and their aquatic habitat would result from bridge demolition and construction, as discussed above. Project construction would temporarily block portions of the stream channel that could be used for movement of these species within Alameda Creek. However, most of the stream channel would be open to movement of aquatic species occurring in the creek. Therefore, the impact on the movement of these species during construction would be less-than-significant. No mitigation is required.

[181] Water Resources Engineering, Inc. 2012. *Hydraulic Analysis of Temporary Crossing/Diversion during Construction of Geary Road Bridge.* Memorandum to SFPUC dated February 13, 2012.

[182] Bell, M. C. 1986. *Fisheries Handbook of Engineering Requirements and Biological Criteria*. Portland, OR: U.S. Army Corps of Engineers.

[183] Water Resources Engineering, Inc. 2011. *Hydraulic Analysis of Alameda Creek Crossings in the Sunol Regional Wilderness*. Draft report. January. Prepared for San Francisco Public Utilities Commission.

Construction of the new bridge would result in new piers being placed below the OHWM, while trestles and associated concrete foundations from the existing bridge would be removed from below the OHWM. Following construction, all areas of temporary disturbance would be restored to their approximate preconstruction condition. Therefore, conditions within Alameda Creek are not expected to prohibit the movement of these wildlife species within the creek channel. Any potential operational impacts on California red-legged frog, foothill yellow-legged frogs, and western pond turtles would be less than significant. No mitigation is required.

Suitable nesting habitat for migratory birds as well as suitable habitat for roosting bats occurs within the project area. Construction activities (i.e., grading, excavation) could adversely affect nesting birds and roosting bats. Potential injury to birds or mortality, as well as the removal of active nests, and the loss of suitable nest trees and roosting bats would be considered a significant impact. Implementation of mitigation measures BIO-9 through BIO-13 would reduce these impacts to a less-than significant level.

e) Biological Resources Policies or Ordinances. The Alameda County Tree Ordinance applies only to the county right-of-way. None of the trees to be removed as part of the project is located within the county right-of-way. Therefore, no impacts would occur.

f) Habitat and Natural Community Conservation Plans. The SFPUC Alameda Watershed Habitat Conservation Plan (HCP) is currently in preparation; a draft has yet to be submitted. The purpose of the HCP is to comply with the federal ESA and the CESA and provide coordinated mitigation of impacts on natural resources and conservation planning within the watershed. The Geary Road Bridge Replacement Project is identified in the draft HCP, and if included in the adopted HCP, it would be a covered activity.

The project area is located within the planning area for the East Alameda County Conservation Strategy. The primary purpose of the conservation strategy is to provide a baseline inventory of biological resources and conservation priorities used by local agencies and resource agencies during project-level planning and environmental permitting. The conservation strategy describes how to avoid, minimize, and mitigate impacts on selected focal special-status species and sensitive habitats. By implementing the conservation strategy, local agencies will be able to address the legal requirements relevant to these species more easily. The mitigation measures proposed to avoid and minimize impacts on special-status species and sensitive resources are consistent with those that are put forth in the conservation strategy and do not conflict with the conservation strategy. Therefore, impacts would be less than significant. No mitigation is required.

Topics:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporated*	*Less-than-Significant Impact*	*No Impact*	*Not Applicable*
14. GEOLOGY AND SOILS— Would the project:					
a) Expose people or structures to 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?	☐	☐	☒	☐	☐

Topics:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact	Not Applicable
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐	☐
iv) Landslides?	☐	☐	☒	☐	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐	☐
c) Be located on 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, creating substantial 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) Change substantially the topography or any unique geologic or physical features of the site?	☐	☐	☐	☒	☐

Environmental Setting

The project area is underlain by Quaternary sedimentary deposits and older sedimentary bedrock units. General descriptions of the geologic units underlying the project site are presented in Table 20.

TABLE 20: SUMMARY OF GEOLOGIC UNITS OF THE PROPOSED PROJECT

Geologic Unit	Map Symbol	Age	Lithology and Occurrence
Surficial deposits	Qu	Quaternary	Alluvium, colluvium, fill, landslide and terrace deposits.
Landslide debris	Qls	Quaternary	Poorly sorted mixture of the source area formations; occurs north and northeast of the site.
Oursan Formation	To	Middle Miocene	Medium-grained sandstone with calcareous concretions interbedded with siltstone and claystone; underlies the entire project area.
Great Valley sequence, unnamed sandstone and shale	Ks	Cretaceous	Distinctly bedded fine- to coarse-grained sandstone, siltstone, and shale; forms hillside west of the proposed project area.
Franciscan Complex mélange	KJfm, sp	Jurassic/Cretaceous	Sandstone, shale, conglomerate, greywacke sandstone, chert, greenstone, and serpentinite; underlies Tertiary bedrock east of the site.

Source: Graymer et al., 1996.[184]

[184] Graymer, R. W., D. L. Jones, and E. E. Brabb. 1996. *Preliminary Geologic Map Emphasizing Bedrock Formations in Alameda County, California: A Digital Database* (pubs.usgs.gov/of/1996/of96-252). U.S. Geological Survey Open-File Report 96-252, Scale 1:75,000.

Subsurface Conditions

Subsurface exploration at the project site identified layers of fill up to 5 feet thick consisting of silty sand to gravelly, clayey sand at the surface.[185] Younger and older alluvium consisting of silty sand and gravel, sandy clay with gravel and rock fragments is also present at the surface, reaching a thickness of up to 5 feet. The Alameda Creek channel is bordered by stream terrace deposits and colluvium deposits ranging from 5 to 10 feet thick and consisting of clayey sand and sandy clay and stiff to hard clay with weathered bedrock fragments. Beneath these deposits lies the Oursan Sandstone (To) formation, with siltstone being the predominant rock type, followed by claystone and sandstone. Additional subsurface exploration was performed in 2011 by AGS. This included the completion of four new borings along the revised bridge alignment to help geologists understand subsurface conditions at the site.[186]

Soils

Soil types in the project area were identified from soil survey data published by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS).[187] The two basic soil types mapped in the project site area are Los Gatos-Los Osos complex (loam, clay loam, unweathered bedrock) and Pleasanton gravelly loam. These soils reflect the underlying geologic units of siltstone, sandstone, and alluvial terrace deposits or river channel deposits.

Soil corrosivity for concrete and steel is moderate for both major soil types in the project area.[188] Corrosivity analysis was performed on two shallow soil samples obtained during field exploration. Results of the pH, chloride ion concentration, and sulfide ion concentration tests showed that the chemicals to which the structures would be exposed are insufficient to damage concrete structures or cause corrosion of steel embedded in concrete. However, resistivity tests do present "corrosive" to "moderately corrosive" conditions for all buried iron, steel, cast iron, ductile iron, galvanized steel, and dielectric coated steel or iron pipes.

The highest soil expansion hazard (shrink-swell) was identified in soil layers ranging from a depth of 10 to 60 inches where clay content ranged from 35 to 50 percent. The soil expansion index ranges from moderate to high in both the Los Gatos-Los Osos complex and the Pleasant loam.[189]

Geologic Hazards

Slope Stability

The project site is located south and west of two mapped landslides.[190] One large landslide (approximately 750 feet wide) is approximately 2,500 feet north of the site. Another large landslide (approximately 1,500 feet wide) is approximately 1,500 feet east of the site (Figure 13). A large dormant landslide with a smaller reactivated landslide could occur on the steep slope west of the north abutment. Recent geotechnical borings and current site conditions show no recent landslide activity at the site.[191]

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[185] Arup. 2006. *New Diversion Dam Road Bridge, Geotechnical Investigation*. Final report. May.

[186] San Francisco Department of Public Works, Bureau of Engineering, 2012, *Geotechnical Memorandum, Geary Road Bridge, Sunol Wilderness Park*, January 11.

[187] Natural Resources Conservation Service. 2011. Web Soil Survey web site. Available: <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>. Accessed: June 2011.

[188] Ibid.

[189] Ibid.

[190] Graymer, R. W., D. L. Jones, and E. E. Brabb. 1996. *Preliminary Geologic Map Emphasizing Bedrock Formations in Alameda County, California: A Digital Database* (pubs.usgs.gov/of/1996/of96-252). U.S. Geological Survey Open-File Report 96-252, Scale 1:75,000.

[191] San Francisco Department of Public Works, Bureau of Engineering. 2012. *Geotechnical Memorandum, Geary Road Bridge, Sunol Wilderness Park*. January 11.

Faulting and Seismic Hazards

The regional structural geology of the project site is dominated by one major active strike-slip fault (Calaveras), as shown in Figure 13.[192] The active Calaveras fault trends north-northwest approximately 1,400 feet west of the site and is well expressed within late Quaternary deposits in the area. Locally, it shows evidence of Holocene displacement (right-lateral offset).[193] This fault has a slip rate of 6 millimeters per year and has a recurrence interval for large earthquakes (magnitude greater than 6.7) ranging from 250 to 850 years.[194]

Given the differences in bedrock units, a possible fault is located about 60 feet south of the south abutment, which could be linked to the Calaveras fault zone. The fault is most likely inactive and a low risk to the bridge project.[195]

Ground Shaking

The project site is located within Seismic Zone 4, as defined by the California Building Code.[196] Because of the proximity of several significant active faults, the project site is likely to experience at least one significant earthquake (magnitude greater than 6.7) within the expected lifetime of the bridge, ranging from a 7 percent probability in the next 30 years on the Calaveras fault to a 31 percent probability on the Hayward fault.[197]

Fault Rupture

The northern Calaveras fault segment (located west of the site) is estimated to be capable of 2 to 5 feet of fault offset (surface rupture).[198] However, the proposed project would not be expected to experience surface rupture associated with an event on the Calaveras fault because of the distance from the known fault trace. Although future earthquakes could occur anywhere along nearby faults, only regional strike-slip earthquakes of magnitude 6.0 or greater are likely to be associated with surface fault rupture and offset.[199] Minor coseismic movement on inactive faults may result from large earthquakes on nearby active faults (triggered fault movement).

Liquefaction

Liquefaction potential of the sandy colluvium at the project site is low because of its location above the water table in the bridge abutment areas.[200] However, some seismic settlement of the colluvium would be anticipated because of its relative proximity to the Calaveras fault where strong shaking may affect the project area. Liquefaction of the alluvium along Alameda Creek may occur during strong shaking but not in the consolidated bedrock beneath the site.

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[192] A "strike-slip" fault is one with lateral movement where one block slides past the other.

[193] Right-lateral offset of a strike-slip fault displays motion in a horizontal plane toward the right.

[194] Arup. 2006. *New Diversion Dam Road Bridge, Geotechnical Investigation*. Final report. May.

[195] San Francisco Department of Public Works, Bureau of Engineering. 2012. *Geotechnical Memorandum, Geary Road Bridge, Sunol Wilderness Park*. January 11.

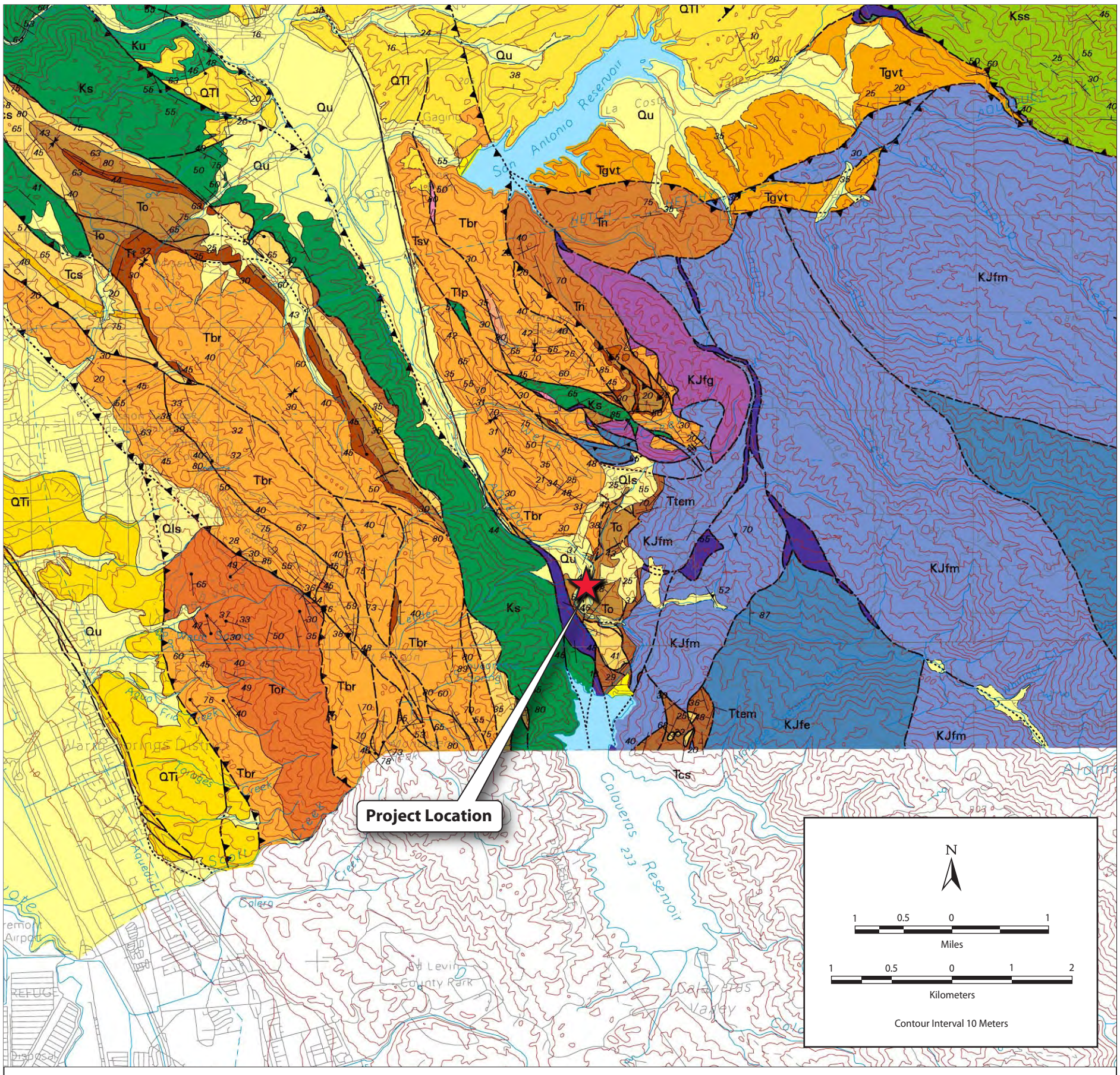
[196] The Uniform Building Code and, in turn, the California Building Code, classify earthquake hazard on a scale from 0 (least hazardous) to 4 (most hazardous). These values are used to determine the strengths of various components of a building required to resist earthquake damage.

[197] U.S. Geological Survey. 2008. *The Uniform California Earthquake Rupture Forecast, Version 2* (UCERF 2). Prepared by the 2007 Working Group on California Earthquake Probabilities, Open File Report 2007-1437.

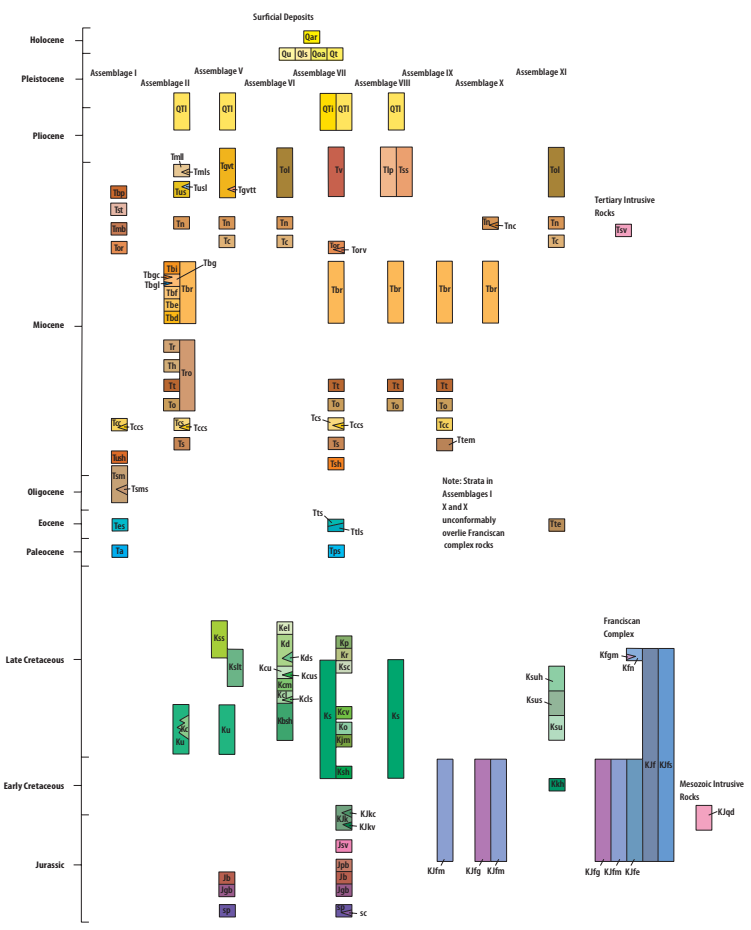
[198] Arup. 2006. *New Diversion Dam Road Bridge, Geotechnical Investigation*. Final report. May.

[199] California Geologic Survey. 1996. *Probabilistic Seismic Hazard Assessment for the State of California*. California Division of Mines and Geology Open File Report 96 08.

[200] Arup. 2006. New Diversion Dam Road Bridge, Geotechnical Investigation. Final report. May.



CORRELATION OF MAP UNITS



MAP EXPLANATION

Surficial Deposits

- Qar Artificial Deposits
- Qu Undivided surficial deposits
- Qls Landslide deposits
- Qoa Older alluvial deposits
- Qt Terrace deposits

Tertiary Intrusive Rocks

- Tsv Silicic intrusive rocks

Mesozoic Intrusive Rocks

- KJqd Quartz diorite

Franciscan Complex

- KJf Undivided Franciscan rocks
- Kfn Novato Quarry terrane - sandstone and siltstone
- Kfgm Diorite in Novato Quarry terrane
- KJfs Undivided Franciscan sandstone
- KJfg Undivided Franciscan greenstone
- KJfe Eylar Mountain terrane - sandstone, siltstone, conglomerate and chert
- KJfm Melange terrane
- fc chert
- fg greenstone
- fl limestone
- fs meta-graywacke
- sp Serpentinite

Assemblage I

- Tbp Bald Peak volcanics
- Tst Siesta Formation - siltstone and sandstone
- Tmb Moraga volcanics
- Tor Orinda Formation - conglomerate, sandstone, and siltstone
- Tcc Claremont Chert
- Tccs Claremont Chert, sandstone interbeds
- Tush Unnamed gray shale
- Tsms Unnamed brown sandstone
- Tsm Unnamed brown mudstone
- Tes Unnamed sandstone and green mudstone
- Ta Unnamed glauconite sandstone

Assemblage II

- QTl Livermore gravels
- Tmll Mullholland Formation - lower member
- Tmls Mullholland Formation - sandstone(?) member
- Tus Unnamed sedimentary and volcanic rocks
- Tusl Limestone member
- Tn Neroly Formation - blue sandstone
- Tbr Briones Formation, undivided - sandstone, locally divided into:
- Kcls Lower Unit C, sandstone member
- Kbsh Unit B, shale member

Assemblage VII

- QTi Irvington gravels
- QTl Livermore gravels
- Tv Unnamed volcanic rocks
- Tor Orinda Formation - conglomerate, sandstone, and mudstone
- Torv Orinda Formation, dacite lens
- Tbr Briones Formation - sandstone and shell breccia
- Tt Tice Shale
- To Oursan Sandstone
- Tcs Claremont Formation - shale and chert
- Tccs Claremont Formation, sandstone member
- Ts Sobrante Sandstone
- Tsh Unnamed shale and sandstone
- Ttls Tolman Formation, limestone member
- Tts Tolman Formation, glauconite sandstone member
- Tps Unnamed shale and glauconite sandstone
- Kp Pinehurst Shale
- Kr Redwood Canyon Formation - sandstone
- Ksc Shepherd Creek Formation - siltstone and mudstone
- Ks Unnamed sandstone and shale
- Kcv Unnamed sandstone, conglomerate, and shale
- Ko Oakland Formation - conglomerate and sandstone
- Kjm Joaquin Miller Formation - fine sandstone and shale
- Ksh Unnamed shale
- KJk Knoxville Formation - sandstone and shale
- KJkc Knoxville Formation - conglomerate member
- KJkv Knoxville Formation - volcanic breccia member
- Jsv Keratophyre and quartz keratophyre
- Jpb Pillow basalt
- Jb Basalt and diabase
- Jgb Gabbro
- sp Serpentinite
- sc Silica carbonate rock

Assemblage VIII

- QTl Livermore gravels
- Tlp Unnamed freshwater limestone and mudstone
- Tss Unnamed sandstone, chert, and limestone
- Tbr Briones Formation - sandstone and shell breccia
- Tt Tice Shale - brown mudstone
- Tbi Briones Formation, I member - sandstone and shell breccia
- Tbg Briones Formation, G member - sandstone and shell breccia
- Tbgc conglomerate beds
- Tbgl limestone beds
- Tbf Briones Formation, F member - sandstone and shale
- Tbe Briones Formation, E member - sandstone and shell breccia
- Tbd Briones Formation, D member - massive sandstone
- Tro Rodeo, Hambre, Tice, and Oursan Formations, undivided
- Tr Rodeo Shale
- Th Hambre Sandstone
- Tt Tice Shale
- To Oursan Sandstone
- Tcs Claremont Formation - shale and chert
- Tccs Claremont Formation, sandstone member
- Ts Sobrante Sandstone
- Ku Unnamed sandstone and shale
- Kc Unnamed conglomerate

Assemblage V

- QTl Livermore gravels
- Tgvt Green Valley/Tassajara group
- Tgvtt Green Valley/Tassajara group tuff member
- Tn Neroly Formation - blue sandstone
- Tc Cierbo Formation - white sandstone
- Kss Unnamed sandstone
- Kslt Unnamed siltstone
- Ku Unnamed shale
- Jb Basalt and diabase
- Jgb Gabbro
- sp Serpentinite

Assemblage VI

- Tol Oro Loma Formation - reddish silt, sand, and gravel
- Tn Neroly Formation
- Tc Cierbo Formation - white sandstone

Great Valley Sequence

- Kel Lower Unit E - siltstone
- Kd Unit D - sandstone
- Kds Unit D, shale member
- Kcu Upper Unit C - shale
- Kcus Upper Unit C, sandstone member
- Kcm Middle Unit C - sandstone
- Kcl Lower Unit C - shale
- To Oursan Sandstone - olive sandstone and siltstone
- Ks Unnamed sandstone and shale

Assemblage IX

- Tbr Briones Formation - sandstone and shell breccia
- Tt Tice Shale - brown mudstone
- To Oursan Sandstone - olive sandstone and siltstone
- Tcc Claremont Formation - chert and siliceous shale
- Ttem Temblor Sandstone

NOTE Ttem unconformably overlies rocks of the Franciscan complex in this assemblage

Assemblage X

- Tn Neroly Formation - blue sandstone
- Tnc Neroly Formation, conglomerate member
- Tbr Briones Formation - sandstone and shell breccia

NOTE Tbr unconformably overlies rocks of the Franciscan complex in this assemblage.

Assemblage XI

- Tol Oro Loma Formation - reddish silt, sand, and gravel
- Tn Neroly Formation - blue sandstone
- Tc Cierbo Formation - white sandstone
- Tte Tesla Formation - sandstone, claystone, and coal
- Ksuh Unnamed shale
- Ksus Unnamed sandstone
- Ksu Unnamed sandstone and shale
- Klch Horsetown Formation - dark shale and sandstone

- Contact
- Contact, approximately located
- Contact, inferred
- Contact, concealed
- Fault
- Fault, approximately located
- Fault, inferred
- Fault, uncertain
- Fault, concealed
- Fault, concealed and uncertain
- Oblique fault with thrust or reverse component
- Oblique fault with thrust or reverse component, approximately located
- Oblique fault with thrust or reverse component, inferred
- Oblique fault with thrust or reverse component, uncertain
- Oblique fault with thrust or reverse component, concealed
- Oblique fault with thrust or reverse component, concealed and uncertain
- Oblique fault with normal component
- Oblique fault with normal component, approximately located
- Oblique fault with normal component, concealed
- Fold axis
- Fold axis, inferred
- Fold axis, concealed
- Tuff bed
- Strike and dip of bedding
- Strike and dip of overturned bedding
- Strike of vertical bedding
- Flat bedding
- Strike and dip of bedding, top direction known
- Strike and dip of overturned bedding, top direction known
- Strike of vertical bedding, top direction known
- Approximate strike and dip of bedding
- Crumpled bedding
- Strike and dip of bedding and foliation
- Strike of vertical bedding and foliation
- Strike and dip of foliation
- Strike of vertical foliation
- Strike and dip of joint
- Anticline
- Syncline
- Overturned syncline
- Right lateral offset on fault

Source: R.W. Graymer, D.L.Jones, and E.E.Brabb 1996.

Graphics\Projects\ 00806.09 ISMND (9-2011).JD

Geary Road Bridge Replacement Project

Figure 13
Project Geology Map

Lateral Spreading

Small drainages and swales between hill slopes are generally filled by unconsolidated alluvium, colluvium, landslide debris, and slope wash. Steep banks along Alameda Creek with alluvium and colluvium overlying bedrock may be locally susceptible to lateral spreading during strong ground shaking at the project site. Bridge abutments would be founded on bedrock and not affected by a small slope failure along the sides of the stream channel.

Earthquake-Induced Settlement

Areas are susceptible to differential settlement if underlain by compressible sediments, such as poorly engineered artificial fill or soft sediments such as bay mud. The sandy clay, stiff clay, dense granular soils, and bedrock beneath the proposed bridge structure do not have these characteristics.

Regulatory Setting

Federal

There are no federal regulations that address geologic resource impacts associated with the proposed project.

State

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate hazards related to surface faulting that would affect structures for human occupancy. In accordance with this act, the state geologist established regulatory zones, called earthquake fault zones, around the surface traces of active faults and published maps showing these zones. Within these zones, buildings for human occupancy cannot be constructed across the surface trace of active faults. Generally, each earthquake fault zone extends approximately 200 to 500 feet on either side of the mapped fault trace because many active faults are complex and consist of more than one branch. There is the potential for ground surface rupture along any of the branches. The proposed project site falls outside of the Alquist-Priolo earthquake fault zone for the Calaveras fault.[201]

Seismic Hazard Mapping Act

The Seismic Hazard Mapping Act was passed in 1990, following the Loma Prieta earthquake, to reduce threats to public health and safety and minimize property damage caused by earthquakes. The act directs the U.S. Department of Conservation to identify and map areas prone to the earthquake hazards such as liquefaction, earthquake-induced landslides, and amplified ground shaking. The act requires site-specific geotechnical investigations to identify potential seismic hazards and formulate mitigation measures prior to permitting most developments designed for human occupancy within the designated Zones of Required Investigation.

As of June 2010, 116 official seismic hazard zone maps showing areas prone to liquefaction and landslides have been published in California, and more are scheduled in the future. Most of the mapping has been performed in Southern California and the San Francisco Bay Area. For the San Francisco Bay Area, 27 official maps have been released, with 13 additional maps for San Mateo, Santa Clara, Alameda, and Contra Costa counties planned or in progress. The seismic hazard map for the La Costa Valley quadrangle, where the proposed project is located, has not yet been published by the California Geologic Survey.

[201] California Geologic Survey. 1982. *La Costa Valley 7.5-minute Quadrangle, Special Studies Zone Map*. January.

California Building Code

The 2001 California Building Code is based on the 1997 Uniform Building Code but with more extensive structural seismic provisions added. The California Building Code is contained in CCR, Title 24, or the California Building Standards Code. Title 24, Part 2, Volume 2, Chapter 16, of the CCR contains definitions for seismic sources as well as the procedure used to calculate seismic forces on structures. The California Building Code covers grading and other geotechnical issues, building specifications, and non-building structures. The project would include these types of improvements. Therefore, the California Building Code would be applicable.

Caltrans Seismic Design Guidelines

Because the bridge is a three-span bridge with a 152-foot-long span, regular geometry, competent soils, and limited use, it is considered an Ordinary Bridge according to the Caltrans seismic design criteria. An explicit functional evaluation is not required for Ordinary Bridges if they meet the safety evaluation performance criteria and the requirements contained in the Caltrans seismic design criteria. The performance criteria under the safety evaluation related to ground motion allow significant damage to the structure as long as limited service can resume within days, with full service restored within a month.[202]

Local

East County Area Plan

Geologic hazards, such as landslides, liquefaction, slope instability, ground shaking, fault rupture, and erosion, are addressed by the ECAP. The Safety Element of the Alameda County General Plan includes policies for the avoidance of geologic hazards and/or the protection of unique geologic features. The ECAP requires detailed site-specific geologic hazard assessments in areas delineated with geologic hazards (seismic hazards, landslides, and liquefaction).

Alameda Watershed Management Plan

The relevant SFPUC Alameda WMP policies addressing seismic and geologic hazards include the following:

- Policy S4: Minimize damage from future seismic hazards by avoiding construction of facilities in active fault zones and traces, where feasible.
- Policy S5: Minimize damage from potential mass movement hazards by avoiding construction or other disturbances in known dormant landslide areas and on slopes greater than 30 percent without proper engineering.
- Policy S6: Conduct (for SFPUC-owned) and require (for easements) inspection of facilities and utilities near active landslide areas and fault traces following earthquakes and slope failures to assess their stability and integrity and complete repairs or further monitoring as needed to prevent geologic hazards.
- Policy S7: Require adequate seismic and static geologic hazards engineering studies for proposed facilities, infrastructure, and utilities easements within the watershed.
- Policy S8: Require utility pipelines within the watershed to meet current seismic standards and comply with applicable hazardous materials regulations.

[202] Arup. 2006. *New Diversion Dam Road Bridge, Geotechnical Investigation*. Final report. May.

SFPUC General Seismic Design Requirements

SFPUC's General Seismic Design Requirements[203] set forth consistent criteria for the seismic design and retrofit of all facilities and components of SFPUC. In accordance with these design requirements, every project must have project-specific design criteria that are based on the seismic environment and the importance of the facility with respect to maintaining stability in the event of a major earthquake.[204] The design criteria are based on the referenced codes, standards, and industry publications but would exceed these requirements for facilities that are located in a severe seismic environment. Covered facilities include offices, operating centers, water treatment plants, water storage structures, pumping plants, pipelines, tunnels, and related equipment. The proposed project would be designed and constructed in accordance with SFPUC's General Seismic Design Requirements.

Impacts Discussion

a) Four primary seismic hazards may affect construction and operation of the proposed project: fault rupture, ground shaking, seismic-related ground failure (i.e., liquefaction, settlement, lateral spreading, and surface cracking), and landslides.

i) Fault Rupture Hazard. The northern Calaveras fault, located 1,400 feet west of the project site, is estimated to be capable of 2 feet to 5 feet of fault offset (surface rupture).[205] However, as discussed above, the project site is not within the Alquist-Priolo earthquake fault zone. Therefore, the proposed project would not be expected to experience surface rupture associated with an event on the Calaveras fault. Although future earthquakes could occur anywhere along nearby faults, only regional strike-slip earthquakes of magnitude 6.0 or greater are likely to be associated with surface fault rupture and offset.[206] Furthermore, implementation of SFPUC's standard construction measures would ensure that there would be a less-than-significant impact on people or structures as a result of fault rupture by requiring all project components to be designed for seismic reliability and the recommendations of relevant geotechnical reports to be implemented. Therefore, impacts would be less than significant. No mitigation is required.

ii) Ground Shaking Hazards. The project site is located within Seismic Zone 4, as defined by the California Building Code, which is considered to be the most hazardous. Because of the proximity of several significant active faults (Calaveras, Hayward, and San Andreas), the bridge is likely to experience at least one significant earthquake within its expected lifetime. Most recently, on October 30, 2007, a magnitude 5.6 earthquake occurred on the Calaveras fault, approximately 8 miles southeast of the site; no damage from that earthquake was reported in the area. To address the potential adverse effects related to strong ground shaking, design and construction of the proposed project would conform to the California Building Code seismic design requirements for Seismic Zone 4, and SFPUC's General Seismic Design Requirements. The design requirements meet or exceed the International Building Code, California Building Code, and the Universal Building Code. Therefore, potential impacts related to ground shaking would be less than significant. No mitigation is required.

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[203] San Francisco Public Utilities Commission. 2006c. *General Seismic Requirements for Design of New Facilities and Upgrade of Existing Facilities.* August 15.

[204] In the general seismic design requirements, the term "major earthquake" is defined as an earthquake of Richter magnitude 7.8 or larger on the San Andreas fault, 7.1 or larger on the Hayward fault, or 6.8 or larger on the Calaveras fault.

[205] Arup. 2006. *New Diversion Dam Road Bridge, Geotechnical Investigation*. Final report. May.

[206] California Geological Survey. 1996. *Probabilistic Seismic Hazard Assessment for the State of California*. California Division of Mines and Geology Open File Report 96-08.

iii) Seismic Related Ground Failure. SFPUC conducted a preliminary geotechnical investigation of the project area and determined that liquefaction hazards at this location are low because the sandy colluvium is located above the water table in the bridge abutment areas.[207] Some seismic settlement of the colluvium may occur during strong shaking but not in the consolidated bedrock beneath the site. Design and construction of the proposed project would minimize the liquefaction hazard by over-excavating the loose to medium-dense sandy colluvium, moisture conditioning the excavated soil, and compacting the soil to a dense state prior to placing new embankment fill or foundations.[208] Design of the proposed project would avoid any potential liquefaction hazards at the site. Therefore, impacts would be less than significant. No mitigation is required.

Steep banks along Alameda Creek, which are composed of alluvium and colluvium over bedrock, may be locally susceptible to lateral spreading during strong ground shaking at the project site. Debris generated during a slope failure is not likely to affect the bridge, but it might block a portion of the new roadway approach. As stated above, the loose to medium-dense sandy colluvium soils would be over-excavated and recompacted prior to placing new embankment fills. The project geotechnical investigation report identified no slope instability or landslides near the bridge approaches or bridge structure.[209] Furthermore, the bridge abutments would be founded on bedrock and would not be affected by small slope failures along the sides of the stream channel Therefore, impacts related to slope instability or other slope failures would be less than significant. No mitigation is required.

iv) Landslides. The project site is located south and west of two mapped landslides (Figure 13). Destabilization of natural slopes could occur as a result of construction activities (e.g., excavation and/or grading operations at the bridge site) but could also be triggered during strong ground shaking or significant winter storm events. Excavation for the bridge could result in new slope instability; however, no excavation is planned at existing landslide sites. Slope failures are more likely to occur in areas with a history of previous failure and in weak geologic units on unfavorable slopes. These slope failures could cause injuries and/or damage to nearby facilities and properties. Debris generated during a shallow slope failure most likely would not affect the new bridge structure, but it may block a portion of the new roadway approach.

SFPUC's adherence to Occupational Health and Safety Administration (OSHA) and Cal/OSHA requirements (see Section 16, Hazards and Hazardous Materials) would prevent potential injuries or the death of construction personnel from slope instability during construction. No public receptors and no public buildings would be exposed to slope instability hazards. Therefore, impacts related to slope instability would be less than significant. No mitigation is required.

b) Erosion and Loss of Topsoil. Construction activities such as clearing vegetation, grading, and excavation could remove stabilizing vegetation and expose areas of loose soil that, if not properly stabilized during construction, would be subject to erosion by wind, precipitation, and runoff. The potential for erosion would be reduced once work is complete and the work area is restored, stabilized with long-term erosion controls (e.g., erosion control matting), and revegetated.

As proposed, SFPUC would implement a number of standard construction measures during construction, including on-site air- and water-quality BMPs, which would control erosion. Following construction, all disturbed areas would be stabilized to their preconstruction condition. To minimize the project's potential to result in substantial soil erosion or the loss of topsoil, both during and after

[207] Arup. 2006. *New Diversion Dam Road Bridge, Geotechnical Investigation*. Final report. May.
[208] Ibid.
[209] Ibid.

construction, SFPUC would be required to implement mitigation measure BIO-15 (detailed above under topic 13, Biological Resources), which requires the preparation of a restoration plan to identify success criteria for revegetation. Doing so would mitigate this potential impact to a less-than-significant level.

If not properly segregated and stored during construction, topsoil could be mixed with underlying sediments and lost. This is a significant impact. Implementation of mitigation measure GEO-1, which require topsoil to be salvaged, properly stored, and used to support revegetation in disturbed areas, would reduce this potential impact to a less-than-significant level.

Potential impacts on water quality and biological resources due to substantial erosion and loss of topsoil are discussed under their corresponding sections of this initial study.

> **Mitigation Measure GEO-1: Salvage Topsoil.** SFPUC will ensure that topsoil is salvaged during grading, stockpiled separately from subsoils, and protected from erosion (e.g., covered or watered) for use in the post-construction restoration of temporarily disturbed areas.

c) Unstable Soil. It is possible that project components could be located on a geologic unit or soil that is unstable. The potential for liquefaction or landslides to cause instability in the underlying soils and/or geologic units is discussed above.

Surface exposures suggest that the colluvium on the natural hillslope along the western side of the approach road may exceed 4.5 feet in thickness in some areas. Given the apparent thickness of the colluvium and the steepness of the slope, the surficial deposits may be unstable and prone to failure over the life of the project. Because slope instability has not been reported to date, the surficial deposits may be stable during static conditions. However, stability during seismic loading conditions has not been evaluated. Debris generated during seismically induced slope failure is not likely to affect the bridge, but it might block a portion of the new roadway approach. Loose to medium-dense sandy colluvium in the vicinity of the north bridge approach, as well as other loose soil, would be over-excavated and recompacted prior to placing new embankment fills.[210] The proposed project would be designed and constructed in accordance with SFPUC's general seismic design requirements to withstand or avoid seismically induced landslides.

No geologic or soil units were identified by the geotechnical investigation that would become unstable and contribute to a risk of landslide or other geologic hazard.[211] The bridge foundation would extend into bedrock units with no expansion potential. Following construction, temporarily disturbed areas would be revegetated in accordance with SFPUC standard construction measures, which would further stabilize the area. Therefore, impacts related to potentially unstable geologic or soil units would be less than significant. No mitigation is required.

d) Expansive/Corrosive Soils. Problematic soils, including corrosive and expansive soils, can cause damage to structures and can also increase required maintenance. Depending on the degree of corrosivity of subsurface soils, concrete and reinforcing steel in concrete structures and bare metal structures exposed to these soils can deteriorate, eventually leading to structural failure. Expansion and contraction of expansive soils in response to changes in moisture content can cause differential and cyclical movements that can cause damage and/or distress to structures and equipment.

[210] Arup. 2006. *New Diversion Dam Road Bridge, Geotechnical Investigation*. Final report. May.
[211] Ibid.

The results of the corrosivity analyses for pH, chloride ion concentration, and sulfate ion concentration on samples taken by Arup in early 2006 indicate that the chemicals in the soil to which the structures would be exposed would not damage concrete or corrode steel embedded in concrete. A resistivity measurement of 1,000 ohms centimeters (ohms-cm) or less is classified as corrosive. Although the pH and chloride ion concentration values do not present corrosion problems for buried metal pipes, the resistivity measurements (1,400 to 4,200 ohms-cm) do present corrosive to moderately corrosive conditions for all buried iron, steel, cast iron, ductile iron, galvanized steel, and dielectric coated steel or iron pipes. These types of pipes, if used, would require protection against corrosion.

Expansive soil hazards within the Los Gatos-Los Osos complex soils and Pleasanton gravelly loam may affect roadway improvements. However, these soils would be removed and recompacted during construction and would not be capable of shrink-swell. Therefore, potential impacts related to corrosive and expansive soils would be less than significant. No mitigation is required.

e) Wastewater Disposal Systems. The proposed project would not include or require the installation of septic tanks during construction or operation. Portable sanitary facilities for construction workers would be brought on-site during construction and removed following construction. Therefore, the issue of whether soils in the project area are capable of adequately supporting the use of septic tanks or alternative wastewater disposal systems is not applicable to the proposed project.

f) Topography and Unique Features. There are no unique geologic features in the project area. Slight alteration of the existing topography would take place to construct the bridge. However, no substantial alteration of the local topography would occur. Therefore, there would be no impact related to the alteration of topography.

Topics:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporation*	*Less-than-Significant Impact*	*No Impact*	*Not Applicable*
15. HYDROLOGY AND WATER QUALITY— Would the project:					
a) Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion of siltation on- or off-site?	☐	☐	☒	☐	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?	☐	☐	☒	☐	☐

Topics:		Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less-than-Significant Impact	No Impact	Not Applicable
e)	Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐	☐
f)	Otherwise substantially degrade water quality?	☐	☒	☐	☐	☐
g)	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other authoritative flood hazard delineation map?	☐	☐	☐	☐	☒
h)	Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	☐	☐	☒	☐	☐
i)	Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐	☐
j)	Expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☐	☒

Environmental Setting

Surface Water and Flooding

The Alameda Creek watershed encompasses approximately 440,000 acres, draining from eastern Alameda County westward toward the southern San Francisco Bay. Remote undeveloped lands are found along Upper Alameda Creek, within the Sunol Regional Wilderness area and SFPUC-managed Alameda watershed lands, located upstream of the project site.

Ground-disturbing activities associated with the proposed project would occur within the Upper Alameda Creek sub-watershed, which encompasses 130,000 acres upstream from the confluence with the Arroyo de la Laguna, of which one-third, or approximately 36,000 acres, is owned by SFPUC. Large water bodies located within the Upper Alameda Creek sub-watershed include SFPUC's Calaveras and San Antonio reservoirs and Alameda Creek. Portions of the project site would be located within the 100-year floodplain of Alameda Creek.[212]

During the 1 percent (100-year flood)[213] storm event, Alameda Creek water depth within the project reach is approximately 13 feet, with no overbank flow in the floodplain area and a flow velocity of 9.5 feet per second. Portions of the project site and much of the Sunol Valley would be inundated if the Calaveras Dam, located less than 2 miles upstream from the proposed project, were to fail catastrophically. Because the dam is located near a seismically active fault zone and was determined to be seismically vulnerable, since 2001 the California Department of Water Resources, Division of Safety of Dams (DSOD), has limited the amount of water that can be stored in the reservoir to approximately

[212] Water Resources Engineering, Inc. 2011. *Hydraulic Analysis of Alameda Creek Crossings in the Sunol Regional Wilderness.* Draft report. Prepared for the San Francisco Public Utilities Commission. January.

[213] The 100-year flood is defined as a flood having a 1 percent chance of being equaled or exceeded in any given year.

40 percent of its former full storage capacity until the safety deficiencies are corrected. However, SFPUC is currently replacing the existing dam with one of equivalent height and improved seismic design. When completed, this will restore the reservoir to its full storage capacity.

The Calaveras Dam EIR determined that the project would not have an adverse effect on downstream flood flows during construction because the existing dam would be maintained until the new dam is completed.[214] Upon completion of the Calaveras Dam, the reservoir will have increased capacity, and rainfall from large storm events can be retained. Therefore, in the future, risks associated with damaging floods in Alameda Creek downstream of the dam due to dam failure will be reduced.[215]

Groundwater

At the project site, soil borings were taken to determine subsurface ground and water conditions. Following this work, it was determined that the predominant rock formations at the project site consist of siltstone and claystone; sandstone is much less frequent. Siltstone is the major rock type found at the site, accounting for almost 80 percent of the total cored rock. Siltstone is a fine-grained, moderately hard, low-strength rock.[216]

Groundwater levels were measured at various soil borings in the creek and on the banks of the project site to evaluate existing conditions and assist with bridge design. The soil borings found water 2 feet bgs and 4 feet bgs. For analysis and construction purposes, the geotechnical findings note that groundwater should be assumed to be 2 to 4 feet below the surface. The findings also note that Alameda Creek water levels will vary during the year because of winter flows from the creek watershed and releases from Calaveras Dam. Because the creek channel is in direct contact with an unconfined aquifer, the creek may recharge the groundwater or receive discharge from the groundwater, depending on the relative creek levels.[217] The soil borings indicate that foundation work for the project could require dewatering and diversion of Alameda Creek during construction.[218]

Regulatory Setting

Clean Water Act, Section 402 NPDES Program

If a project would disturb more than 1 acre of land during construction, SFPUC is required to file a notice of intent with the State Water Resources Control Board to be covered under the Clean Water Act's Section 402 National Pollutant Discharge Elimination System (NPDES) program, which regulates discharges of pollutants to waters of the United States. The State Water Resources Control Board has the regulatory authority to implement the NPDES program. Therefore, the State Water Resources Control Board issued the NPDES General Permit for Stormwater Discharges Associated with Construction Activity (General Construction Permit) (Order No. 2009-0009-DWQ).[219] This permit requires submittal of a notice of intent to comply with conditions of the permit and implementation of control measures that are consistent with the General Construction Permit at the time of construction (the permit may be amended every 5 years). A SWPPP must be developed and implemented for each site covered by the General Construction Permit. Required elements of a SWPPP include descriptions of the elements and

[214] Ibid.
[215] Ibid.
[216] Arup. 2006. *New Diversion Dam Road Bridge, Geotechnical Investigation*. Final report. May.
[217] Ibid.
[218] Ibid.
[219] State Water Resources Control Board. 2009. *Water Quality Order 2009-00009-DWQ, National Pollutant Discharge Elimination System Permit for Stormwater Discharges Associated with Construction Activity.*

characteristics specific to the site; the BMPs for erosion and sediment control; the BMPs for construction waste handling and disposal; the implementation procedures for approved local plans; proposed post-construction controls, including local post-construction erosion and sediment control requirements; and non-stormwater management measures. In addition, preparation and implementation of a Spill Prevention, Control, and Countermeasure (SPCC) plan may be required if the contractor stores more than 660 gallons of petroleum-containing materials to minimize the potential for, and effects from, accidental spills of hazardous, toxic, or petroleum substances during construction of the proposed project. In accordance with existing regulations, both the SWPPP and SPCC plan must be completed before any construction activities begin. The General Construction Permit is enforced by the Regional Water Quality Control Board (RWQCB) where the project is located. The proposed project is located within the jurisdiction of the San Francisco Bay RWQCB.

The RWQCB issues NPDES permits to regulate discharges from municipal stormwater drainage systems. These permits apply to the activities of the agencies that manage municipal stormwater drainage systems as well as those entities and persons who discharge into those systems. There are no municipal stormwater drainage systems in the Sunol Regional Wilderness area. Therefore, the proposed project would not be subject to any NPDES regional municipal stormwater drainage system permit requirements. Furthermore, because SFPUC projects are not subject to local development approval authority (see Section C, Compatibility with Existing Zoning and Plans), the proposed project would not be subject to NPDES regional municipal stormwater drainage requirements, if any, which apply to discharges to watercourses that are not municipal drainage systems.

Alameda County Watercourse Protection Ordinance

Chapter 13.12 of the Alameda County General Ordinance is the Watercourse Protection Ordinance, which requires permits from the county director of public works for activities that may affect watercourses in unincorporated lands within Alameda County. This ordinance does not apply to the primary watershed lands owned by SFPUC but does apply to private lands in the watershed. Therefore, this ordinance does not apply to the project.

Nationwide Permit 14, Section 404

The proposed project, to replace the Geary Road bridge over Alameda Creek, including road improvements and a culvert replacement, qualifies for coverage under Nationwide Permit 14 (among other requirements) as a linear transportation project that would not result in greater than 0.5 acre of impacts on non-tidal waters.

Impacts Discussion

a, f) Water Quality/Discharge Standards and Requirements. Construction of project components (e.g., bridge piers, abutments) would involve excavation, grading, and other earthmoving activities. These activities could expose disturbed soils to rainfall and runoff, thereby potentially degrading the quality of stormwater runoff. In addition, any accidental spill of chemicals used during construction (e.g., fuels, lubricants, solvents, adhesives) could affect surface and groundwater quality. As part of this project, all construction contractors would implement measures to minimize any construction effects on local water quality, including a local storm drain system or watercourse. These measures would include preparation of a SWPPP, as applicable, and implementation of the BMPs proposed as part of the project SWPPP. The project would also involve discharges of groundwater and surface water to the environment, which could affect the quality of receiving waters.

The proposed project may require dewatering to provide a dry work area in the pits during construction of the piers, abutments, and culvert.[220] Construction of the piers would require excavation to approximately 15 to 30 feet bgs.[221] The dewatering of groundwater while surface water is visible could have a significant impact on water quality and water levels in Alameda Creek. As stated in the project description, water from dewatering would be treated and discharged pursuant to state regulations and permit conditions, which include implementation of the SWPPP and SPCC BMPs, such as media filters and vegetated swales. Further, discharges of groundwater from construction activities to surface waters are allowed under the RWQCB's General Construction Permit as long as it can be demonstrated that the water is not contaminated. Prior to being discharged to Alameda Creek, the water is required to meet the applicable requirements of the RWQCB's San Francisco Bay Basin Water Quality Control Plan[222] and any other requirements stipulated by the RWQCB during the permitting process. SFPUC's compliance with the RWQCB's Water Quality Control Plan and General Construction Permit would reduce or avoid potential water quality impacts from dewatering, in addition to impacts from construction-related stormwater runoff and associated contaminants. Furthermore, compliance with the SPCC plan, which would include measures for the proper management of hazardous materials (including disposal) and spill response to prevent hazardous materials from affecting construction discharges, would also reduce or avoid impacts on water quality. Potential impacts on water quality associated with construction-related discharges would be less than significant with implementation of mitigation measure HYD-1.

> **Mitigation Measure HYD-1: Implement Measures to Maintain Alameda Creek Water Levels while Dewatering Excavations When There Is Surface Flow in the Creek.** If dewatering of groundwater occurs, then the dewatering effluent will be discharged directly to Alameda Creek or an upland area immediately adjacent to the creek upstream of the dewatering activity to replace surface flows. The groundwater shall be discharged in a manner that does not cause erosion or scour and is evenly distributed among the active creek channels. To prevent a discharge of sediment-laden water directly into the creek, SFPUC shall ensure that the contractor implements a method to remove sediment from the groundwater prior to discharging it to Alameda Creek (e.g., use of a sedimentation basin, Baker tank, filter bags) or discharge it to a vegetated upland area where sediments can settle out before the water enters Alameda Creek. All discharges will comply with the required permits of the RWQCB. If a direct discharge of groundwater to the creek is not permitted by the RWQCB, alternative methods for replenishing flows in the creek will be implemented, such as release across vegetated areas prior to entering the creek, as permitted and approved by the RWQCB.

[220] Arup. 2006. *New Diversion Dam Road Bridge, Geotechnical Investigation*. Final report. May.

[221] San Francisco Public Utilities Commission. 2011a. *Amendment to Conceptual Engineering Report (August 2006) for the Geary Road Bridge Project,* (CUW264.03). Prepared by Engineering Management Bureau. May.

[222] As required by the Porter-Cologne Water Quality Control Act of 1969, each of the nine Regional Water Quality Control Boards in the state must adopt a Water Quality Control Plan, or Basin Plan, which is the master policy document for the water board. It contains descriptions of the legal, technical, and programmatic bases of water quality regulation in each region. The plan must include a statement of beneficial water uses that the region will protect, the water quality objectives needed to protect the designated beneficial water uses, and the strategies and time schedules for achieving the water quality objectives.

SFPUC proposes to construct a temporary crossing at Alameda Creek to bypass the bridge construction area. The bypass would consist of one or more circular pipes that would convey the creek design discharge of up to 40 cfs between May and November.[223,224] Potential impacts on water quality associated with placement of the temporary bypass would be less than significant with implementation of mitigation measure of HYD-2.

> **Mitigation Measure HYD-2: Implement Measures to Minimize Water Quality Impact of the Proposed Creek Water Bypass Structure.** The proposed Alameda Creek water bypass structure will be sized and placed, with appropriate energy dissipation provided, in accordance with the engineer's recommendations, including:[225]
>
> - Use a flow rate of 40 cfs in the design of diversion structures.
> - Develop and implement contingency measures to protect personnel and equipment if a flow event occurs that exceeds the capacity of the diversion structure.
> - Lay pipes at a slope of at least 1 percent or with a calculated slope that ensures critical flow when the pipe functions as an open channel.
> - Assume inlet control for culvert design and use performance curves to estimate headwater depths.
> - Calculate outlet velocities and provide appropriate energy dissipation.

b) Groundwater Supplies and Recharge. The proposed project would not require any use of local groundwater. As described above, water from construction dewatering would be treated and reapplied to the drainages, resulting in replenished flows and little to no groundwater effects. Water used for dust control and moisture conditioning of backfill during construction would be supplied from either SFPUC's existing water supply facilities in the Sunol Valley or imported by truck. Therefore, depletion of groundwater resources resulting from extraction and use of water would not occur. Furthermore, the project would not substantially change impervious surfaces or other impediments to groundwater recharge. No impact would occur.

c, d, e) Runoff and Stormwater Drainage Systems. The placement of fill in the creek channels has the potential to alter drainage patterns such that erosion, siltation, or flooding on- or off-site would result. During construction of the bridge, falsework[226] would not be required, and thus no temporary impact would result.[227] Regarding long-term impacts, the hydrology report prepared for the project analyzed a bridge design with a hydraulic skew[228] angle of 45 degrees and found that the bridge and roadway embankment caused no downstream bank erosion.[229] The proposed hydraulic skew angle is

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[223] Arboleda, Gustavo. WRE. February 13, 2012—memorandum to Gilbert Tang, SFPUC, titled "Hydraulic Analysis of Temporary Crossing/Diversion during Construction of Geary Road Bridge Design Flow Rate and Hydraulic Considerations."

[224] The project does not include proposed use of the temporary creek crossing after November.

[225] Arboleda, Gustavo. WRE. February 13, 2012—memorandum to Gilbert Tang, SFPUC, titled "Hydraulic Analysis of Temporary Crossing/Diversion during Construction of Geary Road Bridge Design Flow Rate and Hydraulic Considerations."

[226] *Falsework* refers to the temporary construction work required to support the bridge structure until the bridge is strong enough to support itself.

[227] Personal Communication: email from Craig Freeman, San Francisco Public Utilities Commission, July 28, 2011, to Shilpa Trisal, ICF International.

[228] If a pier is aligned with the flow, it has no hydraulic skew. If a pier (or abutment) is not lined up with the flow, it is said to be skewed to the flow.

[229] Water Resources Engineering, Inc. 2011. *Hydraulic Analysis of Alameda Creek Crossings in the Sunol Regional Wilderness*. Prepared for the San Francisco Public Utilities Commission. Draft report. January.

approximately 20 degrees (less than the 45 degrees analyzed); therefore, there is no potential for erosion as a result of this project because the lower skew angle would be expected to cause less erosion than the higher skew angle. Potential impacts related to altering the existing drainage pattern and thereby causing flooding or off-site erosion would be less than significant.

Because the existing structure would be removed once the new structure is constructed, there would be no substantial difference with respect to the amount of impermeable surface between the existing and proposed condition. Therefore, runoff volumes and rates would be similar, and potential impacts related to runoff would be less than significant. No mitigation is required.

g) Housing and Flooding. The proposed project does not include the development of housing. Therefore, this impact is not applicable to the proposed project.

h, i) 100-Year Flood Hazard Area and Flood Risk. As stated above in the Environmental Setting section, the project site (and much of the Sunol Valley) would be inundated if the Calaveras Dam were to fail catastrophically. The potential for inundation or flooding resulting from dam failure would not change with implementation of the proposed project. SFPUC is currently constructing a replacement for the existing Calaveras Dam with one of equivalent height but improved seismic design that will restore reservoir storage to its full design level.[230] Upon completion of the new dam, the reservoir would have increased capacity, and rainfall from larger storm events could be retained.

The proposed bridge would not contribute to a dam failure or obstruct flows. Therefore, the potential for the proposed project to increase the threat to people or structures due to catastrophic dam failure would be less than significant. No mitigation is required.

j) Seiche, Tsunami, and Mudflow. Hazards related to tsunamis and seiches are not found in the project area. Such hazards are associated with lands adjacent to large bodies of water (e.g., reservoirs, lakes, oceans). Seismic events can cause large bodies of water to oscillate, resulting in inundation of adjacent areas though wave action. However, because there are no large bodies of water adjacent to the project site, this type of impact is not applicable to the proposed project.

Topics:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporation*	*Less-than-Significant Impact*	*No Impact*	*Not Applicable*
16. HAZARDS AND HAZARDOUS MATERIALS—Would the project:					
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐	☐
c) Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?	☐	☐	☐	☐	☒

[230] San Francisco Planning Department. 2011. *Calaveras Dam Replacement Project Final Environmental Impact Report*, January 27.

Topics:		Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less-than-Significant Impact	No Impact	Not Applicable
d)	Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment?	☐	☐	☐	☒	☐
e)	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, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☐	☒
f)	For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☐	☒
g)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒	☐
h)	Expose people or structures to a significant risk of loss, injury, or death involving fires?	☐	☐	☒	☐	☐

Environmental Setting

The discussion of potential impacts associated with hazards and hazardous materials in the project area is based on information obtained from the Phase I Environmental Site Assessment completed for the proposed project by Environmental Resource Management in April 2010 (Appendix D).[231] The Environmental Site Assessment provides a review of historical land use information, including historical topographic maps and aerial photographs; a reconnaissance of the project site, including observations of adjacent properties and the local area; an interview with local personnel who are familiar with the area; and a review of environmental records from federal, state, and local sources.

Past Environmental Investigations and Observations

The project area is part of the Sunol Regional Wilderness area, which is administered by EBRPD. According to a review of historical records, the subject property was never developed. The existing timber bridge was originally constructed in the 1930s and later upgraded in 1961. Prior to the construction of the bridge, the subject property was undeveloped grasslands and woodlands. The only observable changes in the aerial photographs from the Environmental Site Assessment involve the farm and dirt roads, which have been relocated, and the fenced cattle paddock, which first appears in a 1974 aerial photograph. The development history of the adjacent properties is generally consistent with that of the project site. The site vicinity has remained predominantly undeveloped grasslands and woodlands, aside from the park ranger station, located approximately 0.5 mile north-northwest of the site.

[231] Environmental Resource Management. 2010. *Phase I Environmental Site Assessment, Sunol Geary Road Bridge Project.* Project No. 0109013. April 22.

Environmental Database Review

As part of the Environmental Site Assessment, Environmental Resource Management contracted Environmental Data Resources (EDR) to conduct a search of environmental records from federal, state, and local databases pertaining to past and present hazardous materials uses and releases on properties at or near the project site. The EDR report identified no current or historical facilities that are or have been associated with hazardous materials at the site. The closest facility is an aboveground storage tank located approximately 0.5 mile north-northwest of the project site at the ranger station, which has a 1,000-gallon gasoline tank, a 500-gallon diesel tank, and a 55-gallon kerosene tank.

No hazardous wastes are generated at the project site, and the project site is not listed in the databases in the EDR report pertaining to hazardous waste generation or disposal. The database investigation found that there are no regulated properties within a 1-mile radius of the project site.

Site Reconnaissance

Observations made during Environmental Resource Management's site reconnaissance identified no current use on the project site or adjoining properties that indicates a past or current use of hazardous materials. During site reconnaissance, it was noted that pressure-treated wood was used on some parts of bridge (i.e., the outside planks and support columns). The wood has been painted, but the paint is peeling. Given the age of the bridge, it is possible that the paint is lead based. However, no sampling was done as part of the Environmental Site Assessment.

No chemicals were observed during the site reconnaissance. The Alameda WMP restricts the use of pesticides and chemicals in the watershed.[232] The subject property was inspected for possible sources of polychlorinated biphenyls. No sources were found on the subject property. No visual indications of on-site contamination were observed at the subject property during the site visit. ERM also observed no asbestos-containing materials during the site visit. Serpentinite is the source of naturally occurring asbestos; of four soil samples tested for naturally occurring asbestos, one sample had no asbestos, and three samples indicated trace amounts[233] of asbestos.[234]

Regulatory Setting

Federal

Hazardous Materials Worker Safety Requirements

OSHA and Cal/OSHA are the agencies responsible for ensuring worker safety with respect to the handling and use of hazardous materials in the workplace. The federal regulations pertaining to worker safety are contained in Title 29 of the CFR, as authorized under the Occupational Safety and Health Act of 1970. The regulations provide standards for safe workplaces and work practices, including standards related to hazardous materials handling (refer to the Cal/OSHA requirements, below).

[232] San Francisco Public Utilities Commission. 2001. *Alameda Watershed Management Plan*. April.

[233] *Trace amounts* denotes the presence of asbestos below the limit of quantification, which is generally considered to be 1 percent.

[234] San Francisco Department of Public Works, Bureau of Engineering. 2012. *Geotechnical Memorandum, Geary Road Bridge, Sunol Wilderness Park*. January 11.

State

Hazardous Materials Worker Safety Requirements

In California, Cal/OSHA assumes primary responsibility for developing and enforcing workplace safety regulations. Cal/OSHA standards are generally more stringent than federal regulations. The state regulations concerning the use of hazardous materials in the workplace are included in Title 8 of the CCR, which contains requirements for safety training, the availability of safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation. Cal/OSHA also enforces hazard communications program regulations, which contain worker safety training and hazard information requirements, such as procedures for identifying and labeling hazardous substances, communicating hazard information related to hazardous substances and their handling, and the preparation of health and safety plans to protect workers and employees.

Cal/OSHA's Lead in Construction Standard (8 CCR Section 1532.1) requires development and implementation of a lead compliance plan when lead-based paint would be disturbed during construction. The plan must describe activities that could emit lead, methods that would be used to comply with the standard, safe work practices, and a plan to protect workers from exposure to lead during construction activities. Cal/OSHA would require 24-hour notification if more than 100 square feet of lead-based paint would be disturbed.

Hazardous Waste Control Act

The Hazardous Waste Control Act (HWCA) created the State Hazardous Waste Management Program, which is similar to, but more stringent than, the federal Resource Conservation and Recovery Act (RCRA). The HWCA is implemented by regulations contained in Title 26 of the CCR, which describes requirements for the proper management of hazardous wastes, including criteria for:

- Identification and classification.
- Generation and transportation.
- Design and permitting of recycling, treatment, storage, and disposal facilities.
- Treatment standards.
- Operation of facilities and staff training.
- Closure of facilities and liability requirements.

These regulations list more than 800 potentially hazardous materials and establish criteria for identifying, packaging, and disposing of such wastes. Under the HWCA and Title 26, the generator of hazardous waste must complete a manifest that accompanies the waste from the generator to the transporter to the ultimate disposal location. Copies of the manifest must be filed with the California Department of Toxic Substance Control (DTSC).

Treated Wood Waste (TWW) contains hazardous chemicals (i.e., arsenic, chromium, copper, creosote, and pentachlorophenol) that pose a risk to human health and the environment. Harmful exposure to these chemicals could result from dermal contact or from inhalation (sawdust) or ingestion (smoke) of TWW particulate matter. Because TWW contains hazardous chemicals, it is subject to the HWCA (CCR Title 22, Division 4.5, Chapter 34). DTSC developed alternative management standards to facilitate the safe and economical disposal of TWW.

Transportation of Hazardous Materials

California requires all hazardous waste transporters to register with DTSC. Unless specifically exempt, hazardous waste transporters must comply with the California Highway Patrol regulations, the California State Fire Marshal, and the U.S. Department of Transportation regulations. In addition, hazardous waste transporters must comply with Division 20, Chapter 6.5, Articles 6 and 13, of the California Health and Safety Code and Title 22, Division 4.5, Chapter 13, of the CCR, which are administered by DTSC.

Fire Safety Regulations

The California Public Resources Code includes fire safety regulations that restrict the use of equipment that may produce a spark, flame, or fire; require the use of spark arrestors on any piece of construction equipment that uses an internal combustion engine; specify requirements for the safe use of gasoline-powered tools in fire hazard areas; and specify fire suppression equipment that must be provided on-site for various types of work in fire-prone areas. The Public Resources Code requirements apply to the proposed project because the site is located in an area that has been designated by the California Department of Forestry and Fire Protection (CAL FIRE) as a high fire hazard severity zone.[235]

Local

Alameda Watershed Management Plan

As described under Section C, Compatibility with Existing Zoning and Plans, the Alameda WMP was adopted by SFPUC to provide watershed management implementation guidelines for SFPUC activities and facilities. The following Alameda WMP Management Actions pertaining to hazards and hazardous materials would be applicable to the proposed project:

Action Haz 4: Conduct regular servicing for the SFPUC vehicle fleet and equipment so that leaks/drips/spills of contaminants are minimized. Guidelines include:

- Immediately report accidental spills of hazardous materials into surface waters to the Water Quality Bureau and the appropriate state agencies.
- Require that buckets and absorbent materials be carried in all SFPUC vehicles in case of an accident or breakdown in which vehicle-related fluids are released.
- Follow appropriate BMPs in Appendix C-6 to minimize leaching of vehicle-related contaminants into the soil or groundwater from facilities.
- For fire protection purposes, ensure that all vehicles and equipment are equipped with spark arrestors and that each vehicle carries fire suppression equipment.

Action Haz 6: Identify high-risk spill potential areas and implement measures (e.g., fines, barricades, etc.) to reduce the risk of hazardous spills.

Action Haz 7: Develop spill response and containment measures for SFPUC vehicles on the watershed. These measures should be coordinated with the overall Emergency Response Plan developed in Action Saf 7.

[235] California Department of Forestry and Fire Protection. 2007. *Fire Hazard Severity Zones in SRA*. Adopted by CAL FIRE on November 7.

Action Fir 1: Prior to authorizing the use of any vehicle or equipment on the watershed, require that SFPUC vehicles/equipment comply with the fire prevention regulations established by CAL FIRE for use in the watershed. Non-SFPUC equipment must be certified by CAL FIRE. All vehicles/equipment shall include:

- Spark arrestors.
- Fire suppression equipment during the fire season.

Action Saf 7: Develop and periodically revise and Emergency Response Plan, which includes procedures for the following types of emergency situations:

- Toxic spills and leaks.
- Gas and water pipeline damage.
- Damaged electric transmission and distribution lines.
- Fire.
- Flooding/inundation.
- Geologic and soil-related disturbances.
- Human injury incidents/accidents.

Guidelines for emergency response procedures include:

- Assess adequacy of elapsed time between emergency occurrence and notification of SFPUC staff.
- Coordinate emergency response with non-SFPUC agencies (e.g., Alameda and Santa Clara counties, Office of Emergency Services).
- Collect information on all accidents that occur on the watershed, including type of injury, date, time, location, conditions, and activity as well as information regarding the injured party (e.g., SFPUC employee or recreationist, scientist, etc.).
- Evaluate all accidents to determine areas that may require modifications for safety reasons.

Impacts Discussion

a) Hazardous Materials Use, Transport, and Disposal

Construction

Construction activities would include the routine use, transport, and disposal of hazardous materials, including fuels, oils, demolition debris, and other materials. Improper transportation, use, storage, and disposal of these materials could result in exposure of construction workers or the public. In accordance with SFPUC and the contractor's specifications, these construction-related hazardous materials would be transported, stored, and handled in a manner consistent with relevant regulations and guidelines.

Demolition of the existing bridge would generate construction materials contaminated with lead. As described in the project description, demolition would involve disassembling the wooden structural components. Removal of the wooden structural components would rely on wet methods; all components would be dismantled without cutting, sawing, or dislodging debris while using dust control measures. Alameda Creek would be protected to prevent dust infiltration. Furthermore, the bridge would be demolished in compliance with Cal/OSHA and other permit requirements, and any contaminated materials would be disposed of consistent with applicable regulations and permit conditions.

As described above, trace amounts of naturally occurring asbestos were detected in surficial soil samples on the project site. Because only trace amounts of naturally occurring asbestos were detected, no special consideration would be necessary during construction. However, as a dust control practice, all excavated soils would be sprayed and kept moist, which would limit the possibility of exposure prior to reuse or disposal.

In addition, SFPUC would adhere to procedures to ensure that water quality is protected during construction, as specified in the project SWPPP provisions (see Section 15, Hydrology and Water Quality). The BMPs listed in the SWPPP would include provisions for appropriate handling of hazardous materials used on the project site. With the plans and procedures in place, potential construction impacts related to routine hazardous materials use, transport, storage, or disposal would be less than significant.

Operation

Operation of the new bridge would not change the quantity or type of hazardous materials used compared with existing conditions; therefore, no impact related to the use, transport, or disposal of hazardous materials during operation would result. Operation of the new bridge would eliminate the existing low-water crossing and the potential transport of any hazardous materials through the creek.

b) Hazardous Materials Release

Construction

Construction of the proposed project would require the use of hazardous materials, including gasoline and diesel fuel, for the operation of heavy equipment and other types of chemicals for vehicle maintenance (i.e., oils, battery fluids). Improper equipment use or accident conditions could result in releases or spills, potentially posing health risks to workers and the environment. An accidental release of these materials would be considered a significant impact. Preparation and implementation of a SPCC would be required if the contractor stores more than 660 gallons of petroleum-containing materials to minimize the potential for, and effects from, accidental spills of hazardous, toxic, or petroleum substances during construction of the proposed project. In accordance with existing regulations, both the SPCC and SWPPP must be completed before any construction activities begin; therefore, construction impacts would be reduced to a less-than-significant level with preparation and implementation of a SPCC and SWPPP and compliance with the Alameda WMP policies described above, including BMPs targeted at handling, storing, and responding to spills.

Operation

Operation of the new bridge would not change the quantity or type of hazardous materials used compared with existing conditions; therefore, no impact related to a release of hazardous materials during operation would result.

c) Schools. There are no schools within 0.25 mile of the project site; therefore, related impacts are not applicable to the project.

d) Hazardous Material Sites. The project site is not found on any list of federal or state hazardous materials sites. No impact on the public or the environment is anticipated.

e and f) Airport and Airstrips. No public airport, airport land, or private airstrips are located within 2 miles of the project site; therefore, impacts related to such facilities are not applicable to the project.

g) Emergency Response Plan or Evacuation Plan. Emergency access to the project site would not be affected by project construction. During demolition and construction (approximately April to December), the existing low-water crossing would be available for vehicular traffic. As described in the project description, the project site would be closed to pedestrians for the duration of construction; recreational users would be routed around the construction site, with posted signage identifying detour routes (i.e., the Hayfield footbridge). However, access would be provided, as necessary, for emergency vehicles. In addition, SFPUC and its contractor would be required to comply with the Alameda WMP Emergency Response Plan (Management Action Saf 7) in case of emergency. Therefore, no impacts are anticipated.

h) Fires. The use of construction equipment and the temporary on-site storage of fuel could pose a fire risk. As stated above, the project site is located in an area with high fire sensitivity.[236] Potential sources of ignition include equipment with internal combustion engines, gasoline-powered tools, and any other equipment or tools that produce a spark, fire, or flame. Other fire hazards could result from poor maintenance of equipment or smoking on-site by construction personnel. The proposed project would be required to comply with fire safety regulations governing the use of construction equipment in fire-prone areas, including the Alameda WMP and the Public Resources Code, as described above. Compliance with the statutory requirements of the Public Resources Code and the Alameda WMP would reduce impacts related to wildfire potential to a less-than-significant level.

Topics:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporation*	*Less-than-Significant Impact*	*No Impact*	*Not Applicable*
17. MINERAL AND ENERGY RESOURCES— Would the project:					
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒	☐
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒	☐
c) Encourage activities that result in the use of large amounts of fuel, water, or energy or use these in a wasteful manner?	☐	☐	☐	☒	☐

Impacts Discussion

a, b) Loss of Known Mineral Resource/Locally Important Mineral Resource. The project site is not in an area designated as having mineral resources of value to the region in a local general plan, specific plan, or other land use plan. Therefore, the proposed project would not result in the loss of availability of a known mineral resource that would be of value to the region or a locally important mineral resource recovery site delineated on a land use plan. The proposed project would have no impact.

c) Use Large Amounts of Fuel, Water, and Energy. Construction of the proposed project would require the use of fuels (e.g., petroleum or diesel) for construction equipment, electricity for nighttime construction, and potable water for the construction crew. Use of these resources would be temporary in nature, occurring between April and December, and wasteful use would not be economically sustainable for contractors. Operation and maintenance of the new bridge would require procedures

[236] Ibid.

similar to the ones carried out for the existing bridge. Permanent electric power facilities or new lighting facilities would not be included as part of the project. Therefore, the proposed project would not use large amounts of fuel, water, or energy in a wasteful manner. There would be no impact.

Topics:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporation*	*Less-than-Significant Impact*	*No Impact*	*Not Applicable*
18. AGRICULTURE AND FOREST RESOURCES: In determining whether impacts on agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts on forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forestland, including the Forest and Range Assessment Project and the Forest Legacy Assessment project, and forest carbon measurement methodology provided in the forest protocols adopted by the California Air Resources Board. **—Would the project**					
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒	☐
b) Conflict with existing zoning for agricultural use or a Williamson Act contract?	☐	☐	☐	☒	☐
c) Conflict with existing zoning for, or cause rezoning of, forestland (as defined in Public Resources Code Section 12220(g)) or timberland (as defined by Public Resources Code Section 4526)?	☐	☐	☐	☒	☐
d) Result in the loss of forestland or the conversion of forestland to non-forest use?	☐	☐	☐	☒	☐
e) Involve other changes in the existing environment that, because of their location or nature, could result in the conversion of Farmland to non-agricultural use or forestland to non-forest use?	☐	☐	☐	☒	☐

Impacts Discussion

a) Conversion of Farmland. The proposed project site is mapped as grazing land,[237] according to the California Department of Conservation (DOC) Farmland Mapping and Monitoring Program (FMMP).[238] Therefore, the project would not result in the indirect or direct conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. There would be no impact.

b) Conflict with Existing Agricultural Zoning. The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, is the state's primary program for the conservation of private land for agricultural and open space use. The project area is not located on lands under a Williamson Act

[237] The Department of Conservation Farmland Mapping and Monitoring Program defines grazing land as land on which the existing vegetation is suited to the grazing of livestock.

[238] California Department of Conservation. 2010. *Alameda County Important Farmland 2010*. Farmland Mapping and Monitoring Program.

contract. Rather, the site is designated as Public Conservation and Trust Land 2007.[239] Therefore, the proposed project would not conflict with existing zoning for agricultural use or a Williamson Act contract. There would be no impact.

c) Conflict with Existing Forest and Timberland Zoning. The project site is not zoned as forestland or timberland for timber production. Replacement of the existing bridge would not conflict with existing zoning of forestland or timberland. No impact would occur.

d, e) Loss or Conversion of Farmland and Forestland. There is no Farmland of Statewide Importance or other categories of important forestland in the project area. Therefore, potential impacts associated with the conversion of important farmland or forestland would not occur.

Topics:	*Potentially Significant Impact*	*Less than Significant with Mitigation Incorporation*	*Less-than-Significant Impact*	*No Impact*	*Not Applicable*
19. MANDATORY FINDINGS OF SIGNIFICANCE—Would the project:					
a) Have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal species, 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?	☐	☒	☐	☐	☐

Impacts Discussion

a) Degradation of/Effect on the Environment. The discussion in Section E, Evaluation of Environmental Effects, identifies potentially significant impacts related to aesthetics, cultural resources, transportation and circulation, noise, air quality, greenhouse gas emissions, biological resources, geology and soils, hydrology and water quality, and hazards and hazardous materials. However, mitigation measures have been provided to address these potentially significant project-level impacts. Implementation of the mitigation measures would reduce the impacts to a less-than-significant level. Therefore, with mitigation, the proposed project would not degrade environmental quality, have a significant impact on biological resources, or eliminate important examples of California history or prehistory.

[239] California Department of Conservation. 2009. *Alameda County Williamson Act Lands 2009, Land Enrolled in Williamson Act and Farmland Security Zone Contracts as of 01-01-2009.* Division of Land Resource Protection, Williamson Act Program.

b) Cumulative Impacts. Section 15130 of the State CEQA Guidelines requires a reasonable analysis of the significant cumulative impacts of a proposed project. *Cumulative impact* refers to "two or more individual effects that, when considered together, are considerable or able to compound or increase other environmental impacts." The individual effects may be changes resulting from a single project or an increase in the number of environmental impacts. The cumulative impact is the change in the environment that results when the incremental impact of the project is added to closely related past, present, or reasonably foreseeable future projects. Cumulative impacts can result from individually minor but collectively significant projects that take place over a period of time (State CEQA Guidelines, Section 15355(a)(b)).

Cumulative Context

For purposes of this initial study, the geographic context for the proposed project's cumulative impact assessment is the Sunol Valley and the Alameda Creek watershed. Recently approved and reasonably foreseeable projects and planning efforts in the vicinity of the proposed project are presented in Table 21 and Figure 14.

TABLE 21: PROJECTS CONSIDERED FOR CUMULATIVE IMPACTS

Map #	Project Name/Sponsor/Description	Implementation Schedule	Distance to Proposed Project	Environmental Areas with Potential Cumulative Effects
1	**Upper Alameda Creek Filter Gallery Project (SFPUC)** The filter gallery project would recover water released from or bypassed around Calaveras Reservoir (pursuant to the instream flow schedules for the Calaveras Dam Replacement Project) and relocate the point of diversion at the Sunol filter galleries. The recovered water would then be directed back to the regional water system. The filter gallery project would include the following facility components: • An approximately 1,400-foot-long filter gallery beneath the streambed of Alameda Creek, between the Pacific Gas and Electric Company's gas pipeline crossing and San Antonio Creek. Open-trench construction methods would be used to install the filter gallery. • A new pump station (Alameda Creek Pump Station) and wet well at the northeast corner of the Alameda Creek and San Antonio Creek confluence. A new electrical transformer and overhead power lines would be needed to power the pump station. • A new treatment facility adjacent to the Alameda Creek Pump Station to treat the recaptured water prior to directing it back to the regional water system. • A 36-inch-diameter, 1,250-foot-long transfer pipeline between the Alameda Creek Pump Station and the existing Sunol Pump Station pipeline.	2014 to 2016	5 miles	Air quality, biology, energy, hydrology and water quality, and traffic (construction period)

Map #	Project Name/Sponsor/Description	Implementation Schedule	Distance to Proposed Project	Environmental Areas with Potential Cumulative Effects
	• Post-construction restoration of Alameda Creek in the vicinity of the filter gallery project to enhance aquatic and riparian habitat.			
2	**Alameda Siphons Seismic Reliability Upgrade Project (SFPUC)** The Alameda siphons project extends approximately 3,000 feet, from the Alameda East Portal, across the Calaveras fault and Alameda Creek, to the Alameda West Portal. The project, which was completed in 2011, includes: • Provided a new siphon (Alameda Siphon No. 4), which required a 66-inch-diameter welded steel pipeline placed in a special 310-foot-long seismically designed trench. Thicker pipe was used in the fault rupture zone. In addition, a tunnel had to be constructed under Alameda Creek. Alameda Siphon No. 4 now connects with the Coast Range Tunnel near the Alameda East Portal. • Installed seismic reinforcements at Alameda Siphon No. 2, which required the installation of 300 feet of engineered foundation treatment at the Calaveras fault crossing. • Made seismic upgrades and improvements at the Alameda East Portal vaults and valve houses and constructed a new connection to the Coast Range Tunnel. • Replaced and extended the Alameda East Portal overflow pipeline and installed a new outlet structure at the southern end of quarry pit F6 for discharges of water through the Alameda East Portal. • Straightened Calaveras Road in the vicinity of the Alameda siphons, improved existing access roads, constructed a new access road along the north side of Alameda Siphon No. 4, and retrofitted bridges that cross Alameda Creek near the Alameda West Portal.	2009 to 2012	3.9 miles	Air quality, biology, energy, hydrology and water quality, and traffic (construction period)
3	**New Irvington Tunnel Project (SFPUC)** A new tunnel would be constructed parallel to and just south of the existing Irvington Tunnel to convey water from the Hetch Hetchy system and the Sunol Valley Water Treatment Plant to the Bay Area. The project would include the following components: • A new 18,200-foot-long, 10-foot-diameter tunnel. • A new portal at the east end, adjacent to the existing Alameda West Portal in the Sunol Valley, with connections to the existing and proposed Alameda siphons.	Mid-2010 to mid-2014	4 miles	Air quality, energy, hydrology and water quality, and traffic (construction period)

Map #	Project Name/Sponsor/Description	Implementation Schedule	Distance to Proposed Project	Environmental Areas with Potential Cumulative Effects
	• A new portal in Fremont at the west end, adjacent to the existing Irvington Portal, with connections to Bay Division Pipeline Nos. 1, 2, 3, 4, and 5. Conventional mining methods, such as road-header and/or drill-and-blast techniques, will be used to excavate the tunnel. However, a portion of the excavation work may rely on a tunnel boring machine. Spoils generated during project construction would be placed in permanent berms at the northern and southern spoils sites.			
4	**Sunol Valley Water Treatment Plant Expansion and Treated Water Reservoir Project (SFPUC)** The Sunol Valley Water Treatment Plant expansion project includes the following: • The sustainable capacity of the Sunol Valley Water Treatment Plant would be increased to 160 million gallons per day by adding a new flocculation/sedimentation basin and retrofitting some of the existing filters. • A new 17.5-million-gallon circular treated water reservoir and a new 3.5-million-gallon rectangular chlorine contact tank would be provided on the northern portion of the existing plant site. Roughly 350,000 cubic yards of excavated material would be removed from the plant for disposal. • New chemical storage and feed facilities would be provided to meet disinfection requirements. The facilities would handle sodium hypochlorite and ammonia. New fluoride facilities would be provided as well. • Approximately 2,700 feet of 78-inch-diameter pipe would connect the new treated water reservoir to the existing plant discharge pipeline, requiring a tunnel crossing at Alameda Creek. • Habitat on CCSF-owned lands that are zoned for agricultural uses and/or leased for grazing would be created or restored. • Miscellaneous plant improvements would be provided, including improvements to the plant's electrical system and substation, the flow distribution structure and associated facilities, and the influent chemical mixing system. In addition, a new emergency generator, upgraded instrumentation and controls, a new filter washwater recovery basin would be provided. The project would also include replacement in-kind of the existing chemical tanks.	2010 to mid-2013	2.4 miles	Air quality, energy, and traffic (construction period)

Map #	Project Name/Sponsor/Description	Implementation Schedule	Distance to Proposed Project	Environmental Areas with Potential Cumulative Effects
5	**San Antonio Pump Station Upgrade Project (SFPUC)** Under this project, three corroded electrical pumps were replaced with three new 1,000-horsepower electrical pumps, two 1.5-megawatt standby electrical generators were installed, and the existing pump station building was seismically retrofitted by extending the foundation and shotcreting the building's exterior. Two temporary staging areas were provided adjacent to the San Antonio Pump Station and the Sunol Valley Chloramination Facility. No grading or excavation was necessary to accommodate the proposed staging areas.	Completed in late 2010	3.9 miles	Air quality, energy, and traffic (construction period)
6	**San Antonio Reservoir Hypolimnetic Oxygenation System (SFPUC)** This project was designed to reduce the excessive buildup of nutrients in the deepest layer of water in San Antonio Reservoir, thereby inhibiting future algal blooms; reduce the formation of iron, manganese, and hydrogen sulfide that results from a lack of oxygen in the reservoir; and maintain the necessary oxygen concentration in the deepest layers of the reservoir to increase the usable habitat for coldwater fish. Project components included concrete pads for facilities, parking, and access roads; tanks; vaporizers; valves; piping and associated structures; an underground electrical supply line; and oxygen lines and diffusers suspended at specified depths within the reservoir.	Completed in late 2009	4.5 miles	Air quality, energy, and traffic (construction period)
7	**Calaveras Dam Replacement Project (SFPUC)** Under the project, a replacement dam that meets current seismic safety requirements would be designed and built for Calaveras Reservoir. The reservoir at the new dam would have the same storage capacity as the original (96,850 acre-feet) but would be designed to accommodate a potential enlargement of the dam in the future. The project includes the following improvements: • Regrading of the existing dam and construction of a new earth and rock-fill dam. • Replacing the existing spillway, stilling basin, and intake tower to increase seismic safety and improve operations and maintenance.	2011 to 2016	1.25 miles	Air quality, biology, energy, hydrology and water quality, noise, and traffic (construction period)
8	**San Antonio Backup Pipeline Project (SFPUC)** This project has two elements. The San Antonio backup pipeline would run from San Antonio Reservoir to the San Antonio Pump Station, a distance of about 2 miles. The San Antonio Creek discharge facilities would allow water from Hetch Hetchy to be discharged. Associated road improvements are also proposed.	2012 to 2014	5 miles	Air quality, biology, energy, hydrology and water quality, and traffic (construction period)

Map #	Project Name/Sponsor/Description	Implementation Schedule	Distance to Proposed Project	Environmental Areas with Potential Cumulative Effects
9 (various locations; not shown on map)	**Various Pipeline Inspection Projects (SFPUC)** SFPUC pipeline inspections provide internal evaluations of the network. The pipelines, which are accessed from existing ports, are dewatered prior to inspection and disinfected before refilling. The lines are normally dewatered through existing air valves, and the discharges are made in accordance with an existing NPDES permit for the SFPUC drinking water transmission system (Regional Water Quality Control Board Order No. R2-2008-0102), which encompasses inspections and water quality best management practices. In rare cases, a minor amount of excavation may be necessary to gain access to the pipeline. Pipelines that could require inspection in the Sunol Valley include the San Antonio pipeline, Calaveras pipeline, and Alameda siphons Nos. 1, 2, and 3, with dewatering discharges flowing to either San Antonio or Alameda creeks.	Ongoing	Not shown	Hydrology and water quality and traffic
10	**Stream Management Master Plan Improvements (Zone 7 Water Agency)** Under the Stream Management Master Plan, 49 projects would be implemented over the next 20 years throughout the Zone 7 service area (i.e., the Tri-Valley area). Proposed activities include bank stabilization and protection, grading and terracing of eroded banks, 3,000 feet of riparian corridor enhancement, and the removal of barriers to steelhead migration.	Construction of the projects in Reach 10 (includes Arroyo de la Laguna, which has its 30% design completed; construction schedule is TBD)	6.4 miles	Biology, energy, and hydrology and water quality
11	**Surface Mining Permit 30 Expansion (Oliver De Silva, Inc., previously Cemex Quarry)** This project proposes to expand the active mining area permitted under Surface Mining Permit (SMP) 30 by 58 acres, for a total of 367 acres. In addition, the quarry operator would install an approximately 7,800-foot-long, 35- to 45-foot-deep cutoff wall along the west bank of Alameda Creek and the south bank of San Antonio Creek to reduce the lateral flow of surface waters into active mining areas. The quarry operator would also restore the same banks of Alameda and San Antonio creeks by planting native vegetation. This project is contingent upon extension of the existing lease agreement between SFPUC and Oliver De Silva, Inc., and permit approvals from Alameda County for the expanded mining area.	The construction schedule for the SMP-30 cutoff wall and creek restoration work is unknown. Active mining would be extended 30 years	4.2 miles	Air quality, biology, energy, hydrology and water quality, and traffic (construction period)
12	**Pacific Gas and Electric Company Gas Pipeline Crossing (Pacific Gas and Electric Company)** Modify the cement-armored Pacific Gas and Electric Company gas pipeline crossing at Alameda Creek in the Sunol Valley, above the confluence of San	TBD	4.6 miles	Air quality, biology, energy, hydrology and water quality

Map #	Project Name/Sponsor/Description	Implementation Schedule	Distance to Proposed Project	Environmental Areas with Potential Cumulative Effects
	Antonio Creek. This would eliminate a barrier to fish migration at most creekflow levels. The project would involve modification of the concrete mat or construction of a fish ladder to allow fish passage.			

Source: City and County of San Francisco. 2011. *Calaveras Dam Replacement Project*. Planning Department. Final Environmental Impact Report. San Francisco Planning Department File No, 2005.016E. January 27.

Cumulative Impacts Analysis

This initial study determined that the following environmental issue areas would have no impact or the issues are not applicable: land use and land use planning, population and housing, wind and shadow, public services, mineral and energy resources, and agriculture and forest resources. Because of the limited nature of the intensity and/or duration of the impact, the proposed project would not contribute to cumulative impacts related to these topics. Furthermore, following construction, the proposed project would not contribute to any long-term operational effects.

The following discussion focuses on the proposed project's short-term construction-related impacts and the associated contribution to cumulative effects.

Aesthetics

The geographic scope of potential cumulative impacts on aesthetics encompasses the project site and viewsheds in the portion of the Sunol Valley that surrounds the project site. The potential exists for area projects to change the visual character of their surroundings temporarily during construction and permanently upon completion. However, none of the projects listed in Table 21 are within the viewshed of the proposed project. Therefore, any cumulative aesthetic impact would not be substantial. The cumulative aesthetic impact would be less than significant.

Cultural and Paleontological Resources

The geographic scope of potential cumulative impacts on cultural resources encompasses the project site and its vicinity. The Northwest Information Center records search, Native American correspondence, literature review, and the archaeological survey did not identify any archaeological resources within the APE. As discussed in Chapter 2 of the archaeological survey report, much of the southern portion of the APE is within the Holocene stream and terrace deposits associated with Alameda Creek. Although there is a moderate potential for buried archaeological resources to be found in such deposits, because of the limited ground-disturbing activities associated with the proposed project, the potential for disturbing buried archaeological material is considered low.

The proposed project would have the potential to affect unknown archaeological resources should they be present in the project area. In combination with other project, the potential for a cumulative impact is significant. Without mitigation, the project's contribution to cumulative impacts on archaeological resources would be cumulatively considerable. However, with implementation of mitigation measures CUL-1 (Unexpected Discoveries) and CUL-2 (Human Remains), the project's contribution would be less than cumulatively considerable (less than significant).

The areas proposed for ground-disturbing activity during project construction and maintenance are situated on a Holocene substrate that is not considered sensitive for paleontological resources. Therefore, the project would not contribute to any cumulative impacts on paleontological resources.

Transportation and Circulation

The geographic scope of potential cumulative impacts related to transportation and circulation includes local roads and regional freeways in the vicinity of the project area, mainly Geary Road, Calaveras Road, and the I-680 off ramps closest to the project. Construction of other projects in the project area would generate additional traffic in the vicinity, both during construction and operation.

Although operational changes would be expected to occur in stages, because other projects would generate additional permanent traffic that could affect the capacities of nearby roadways, the cumulative impacts would be considered potentially significant.

The proposed project would generate additional construction-related traffic that would be short term and less than significant at the project level. The proposed project would include the implementation of a traffic control plan (mitigation measure TR-1) to address construction-period transportation and circulation issues.

Because project construction would be limited in duration (8 months[240]), the volume of construction-related trips would be moderate (a maximum of 204 and average of 26 trips per day), and no permanent changes to the traffic network would result, the proposed project's contribution to cumulative impacts would not be cumulatively considerable (less than significant).

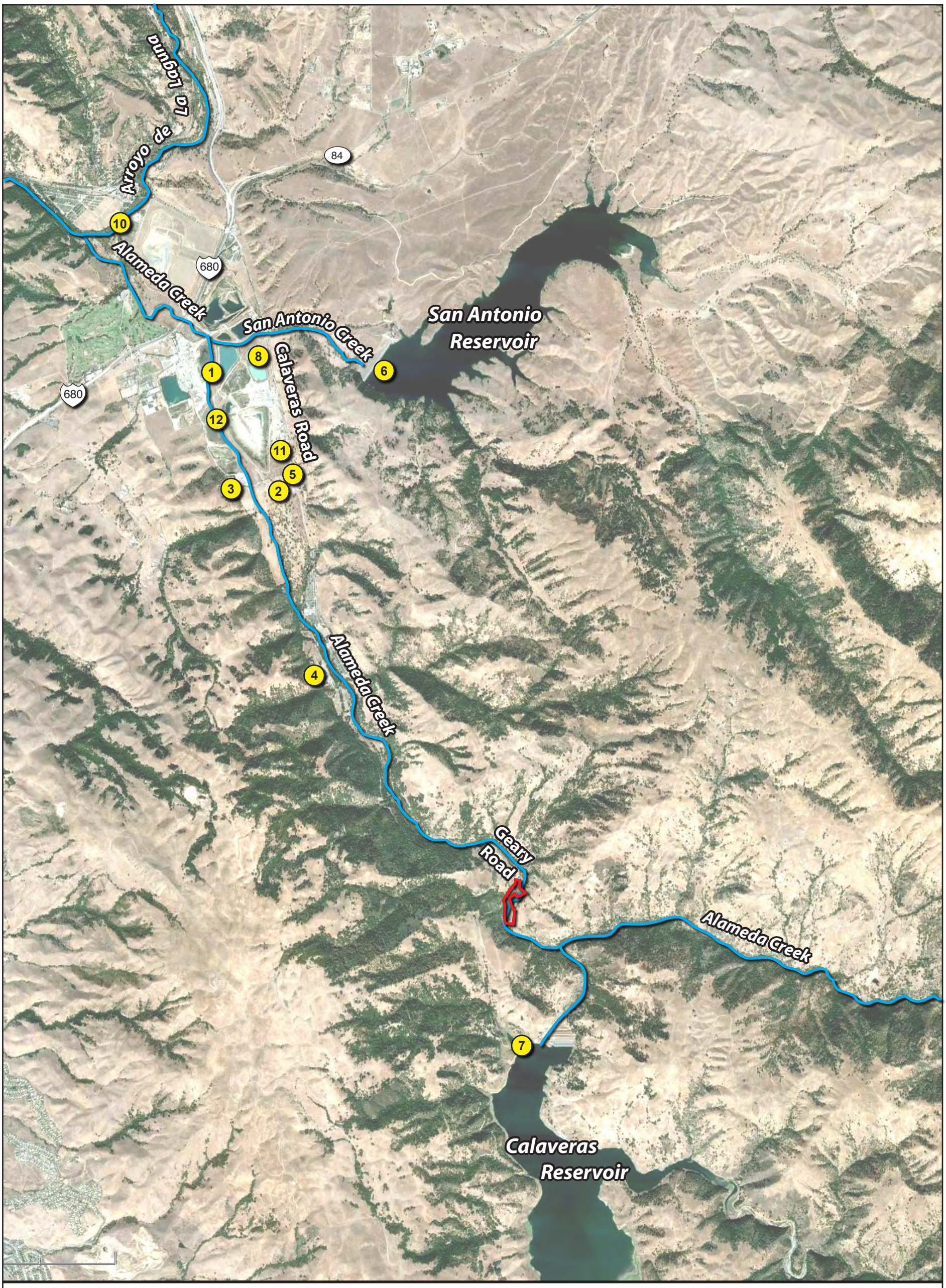
Noise

The geographic scope of potential cumulative noise impacts consists of the project area and the immediate vicinity as well as areas adjacent to access and haul routes to the project site.

As described in Section 6, Noise, all noise sources related to the proposed project would be located within identified construction limits, with the exception of vehicle traffic on Geary Road and Calaveras Road. Furthermore, the noise would occur only during the construction period. No new measurable post-construction (i.e., operational) noise would occur as part of the proposed project.

The project-level analysis in Section 6, Noise, determined that project construction activities would result in a temporary localized increase in noise levels, which would be higher than the existing ambient noise levels at the McCorkle Corral, picnic areas, trails, or other recreational areas in the vicinity. However, recreationalists would generally have limited exposure to construction noise because park visitors (e.g., hikers) typically disperse to areas away from where project construction would occur. In addition, their exposure would be limited to daytime hours because overnight camping is currently not allowed. Further, the noise standards from the Alameda County General Plan Noise Element, discussed in Section 6, Noise, indicate that a *long-term* noise level of up to 80 dBA L_{dn} is acceptable for outdoor recreational uses. Most of the temporary *short-term* noise generated by project construction would fall within this limit when adjusted for distance. None of the projects in Table 21 is located in the vicinity of the proposed project, and therefore, none would increase noise levels at the aforementioned areas. The potential for cumulative noise impacts at the project site does not exist because of the distance from other cumulative projects.

[240] As a contingency measure, construction work may need to be extended one additional month. Because the total number of construction trips would not increase substantially with construction extended to 9 months, the number of daily average and peak-hour trips presented in this analysis, and in Section 5, Transportation and Circulation, provides a conservative estimate.



Geary Road Bridge Replacement Project Area

Cumulative Projects

1. Upper Alameda Creek Filter Gallery
2. Alameda Siphons Seismic Reliability Upgrade
3. New Irvington Tunnel
4. SVWTP Expansion and Treated Water Reservoir
5. San Antonio Pump Station Upgrade
6. San Antonio Reservoir Hypolimnetic Oxygenation System
7. Calaveras Dam Replacement
8. San Antonio Backup Pipeline (SFPUC)
9. Various Pipeline Inspection Projects (not shown)
10. Stream Management Master Plan Improvements
11. SMP-30 Expansion
12. PG&E Gas Pipeline Crossing

N

0 0.5 1.0

Miles

Source: Google Earth, 2010.

Geary Road Bridge Replacement Project

Figure 14
Location of Cumulative Projects

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During construction, vehicles, including trucks, would travel on Calaveras Road between the project site and I-680. This construction-related vehicle noise could contribute to increased noise levels when considered with other planned projects in the Sunol Valley, including the Sunol Valley Water Treatment Plant Expansion and Treated Water Reservoir, Calaveras Dam Replacement, New Irvington Tunnel, and San Antonio Backup Pipeline projects as well as the various pipeline inspection projects listed in Table 21. However, the existing noise environment is dominated by the high volume of traffic on distant I-680. Because of the limited volume of traffic associated with project construction (average of 26 vehicles trips per day), the proposed project would not substantially contribute to any cumulative traffic noise impact (less than significant).

Air Quality and Greenhouse Gas Emissions

Air quality in the Sunol Valley and Bay Area has been affected by past projects and is currently affected by ongoing projects, including projects related to mining operations and SFPUC water conveyance and treatment facilities. Construction activities associated with regional development would result in short-term increases in PM10, PM2.5, CO, and ozone precursors (ROG and NO_X). Construction activities associated with some of the projects in Table 21 could contribute additional criteria pollutant emissions at the same time as the proposed project, depending on the timing of their construction.

Construction of the proposed project would not exceed the BAAQMD's significance thresholds for criteria pollutant emissions. In developing the emissions thresholds summarized in Table 12, BAAQMD considered levels at which individual projects contribute to a cumulative impact on air quality. As required by BAAQMD, the proposed project would implement fugitive dust control measures (mitigation measure AQ-1). Therefore, project construction would not result in a cumulatively considerable contribution to cumulative air quality impacts (less than significant).

Construction-related traffic associated with the project, when combined with traffic from other sources in the Sunol Valley, would not cause Calaveras Road or Geary Road to exceed BAAQMD's criteria for a "minor, low-impact source." Residences along Calaveras Road would not be exposed to levels of TACs in excess of BAAQMD's significance levels. No significant cumulative DPM emissions impact related to haul traffic has been identified, and the proposed project would not contribute to such an impact. The impact would be less than significant.

As discussed in Section 8, Greenhouse Gas Emissions, climate change caused by GHG emissions and land use changes has a global impact. However, with incorporation of CCSF and SFPUC measures to reduce GHGs, the proposed project would not impede the state's goal to reduce GHG emissions to 1990 levels by 2020, as set forth in Assembly Bill 32, the California Global Warming Solutions Act of 2006. Therefore, the project would not contribute considerably to cumulative GHG emissions. The impact would be less than significant.

Recreation

The geographic scope of potential cumulative recreational impacts consists of the Sunol Regional Wilderness area. Recreationists (hikers, bicyclists and equestrians) would have access through the work site by way of the temporary creek crossing on weekends and holidays throughout construction as well as on weekdays during the period when construction may overlap with the wildflower season (assumed to be April 1 through May 31). The project site is otherwise anticipated to be closed to recreationists during weekdays for the remainder of the construction period. Pedestrians and equestrians would be routed around the construction site, with posted signage identifying the detour route. Bicyclists would be detoured to other areas during weekday construction through detour information posted at the

entrance to Sunol Regional Wilderness and at the work site. No long-term changes to access are proposed. In general, past projects in the Sunol Valley have not increased the demand for recreational resources (i.e., these projects have not included local residential housing), nor have past projects degraded or restricted access to currently available recreational resources. However, ongoing and future projects, as summarized in Table 21, could disrupt access to recreational resources. The Calaveras Dam Replacement Project would use Calaveras Road for equipment and material deliveries. Slow-moving trucks and traffic congestion associated with this project could disrupt access to recreational resources in the southern Sunol Valley. However, mitigation measure TR-1 would reduce this potential impact.

Given the availability and diversity of recreational opportunities in the region as a whole, the diversion of recreationists would not likely result in decreased use of recreational facilities in the Sunol Regional Wilderness area. Therefore, the project's contribution to any disruption of access to recreational resources would not be cumulatively considerable. The impact would be less than significant.

Utilities and Service Systems

The geographic scope of potential cumulative utilities and service systems impacts consists of the project site, the immediate vicinity, and the service areas of regional service/utility providers.

As described in Section 11, Utilities and Service Systems, construction of the proposed project could generate solid waste. With the exception of spoils at major excavation projects (i.e., the Calaveras Dam Replacement and San Antonio Backup Pipeline projects), large quantities of solid waste would not be produced by the projects listed in Table 21. Construction of these and other SFPUC projects could generate spoils that would require off-site disposal. However, waste reduction measures implemented by the proposed project and other projects would reduce off-site disposal requirements. The cumulative impact would be less than significant.

Biological Resources

All of the projects in Table 21 are included in the cumulative impacts analysis for biological resources because many of the biological resources affected by the proposed project could also be affected by these other projects.

The other SFPUC projects in the Sunol Valley, which are considered in the cumulative analysis, would affect habitats similar to those in the project area, including oak woodlands riparian habitat, and seasonal and perennial streams. These projects may also affect many of the same special-status species that would be affected by the proposed project, including California red-legged frog, California tiger salamander, Alameda whipsnake, western burrowing owl, and migratory birds. The specific SFPUC projects that would affect the same geographic areas and habitats as the proposed project include the New Irvington Tunnel Project, the Sunol Valley Water Treatment Plant Improvement Project, and the San Antonio Backup Pipeline Project. In addition, Calaveras Dam could affect habitats and species that are found within the Alameda Creek watershed. Quarry expansion may result in impacts on species and habitats similar to those affected by the proposed project. Furthermore, construction discharges could affect water quality in Alameda Creek and habitat for common and special-status species. This is a potentially significant cumulative impact.

The proposed project would result in a cumulatively considerable contribution to cumulative biological impacts. However, with implementation of mitigation measures BIO-1 through BIO-15, the proposed project's contribution to cumulative impacts on biological resources would be less than cumulatively considerable (less than significant).

Implementation of planned and proposed cumulative projects (e.g., PG&E Gas Pipeline Crossing project and the SFPUC Calaveras Dam Replacement project) would remove barriers to fish passage or increase flows in Alameda Creek, resulting in conditions facilitating restoration of steelhead in the creek. Implementation of these projects would be beneficial by creating conditions conducive to fish passage. As noted in Section E.13 Biological Resources, the proposed project is not expected to impede the migration of trout, a species genetically related to steelhead. Therefore, no significant adverse cumulative impact on steelhead migration is expected to result from project operations.

Geology and Soils

The geographic scope of potential cumulative impacts related to geology and soils encompasses the project area and its immediate vicinity. There are no unique geologic features in the project area. Slight alteration of the existing topography would take place to construct the bridge, and the proposed project could affect topsoil if not salvaged and stored to support revegetation. However, mitigation measure GEO-1 has been proposed to reduce this impact to a less-than-significant level. All of the projects in the area are expected to incorporate standard engineering practices to limit cumulative impacts. Similarly, the proposed project would incorporate standard engineering practices, including design criteria based on a site-specific geotechnical analysis. Therefore, the project's contribution to any cumulative impact would be less than cumulatively considerable (less than significant).

Hydrology and Water Quality

For potential cumulative impacts on hydrology and water quality, all of the projects in Table 21 are included in the analysis because each project could affect flows and water quality in Alameda Creek and/or its tributaries. As described in Section 15, Hydrology and Water Quality, the project proposes numerous activities that could affect hydrology and water quality, including discharges of various types of water that could contain pollutants and activities that could lower groundwater levels, which could affect creek flows.

In general, cumulative projects that have included actions to stabilize soils and revegetate disturbed areas have not elevated the level of sediment in surface water runoff. However, ongoing and future projects that include ground disturbance and/or discharges of water containing pollutants could affect surface water quality, including water quality in Alameda Creek. The potential impacts on surface water quality associated with the proposed project and the projects listed in Table 21 could be cumulatively significant. However, with implementation of BMPs, which require contractors to minimize construction effects on local water quality, including water within a local storm drain system or watercourse; compliance with existing NPDES regulations; and implementation of a SWPPP to ensure proper management of construction-related fluids, as required by the State Water Resources Control Board, the project's contribution to any localized cumulative impacts related to degradation of surface water quality would not be cumulatively considerable (less than significant).

Past projects do not have the potential to lower groundwater levels locally and affect water levels in Alameda Creek because this would require active pumping. However, ongoing and future projects that include construction activities in the vicinity of the creek could result in temporary impacts on groundwater levels from construction-period pumping. Therefore, potential impacts on groundwater levels associated with the proposed project and the projects listed in Table 21 could be cumulatively considerable. However, with implementation of mitigation measure HYD-1, which would require the proposed project to maintain groundwater levels near the creek, the project's contribution to any localized cumulative impacts related to lower groundwater levels in the area would not be cumulatively considerable (less than significant).

Hazards and Hazardous Materials

The geographic scope of impacts associated with hazards and hazardous materials encompasses the project site and general vicinity. Cumulative project activities, including SFPUC water conveyance facilities and agricultural operations, have the potential to result in the release of contaminants, including petroleum hydrocarbons and pesticides, which would result in a significant cumulative impact. The Phase I Environmental Site Assessment identified no current or past associations with hazardous materials on-site. The closest hazardous materials facility is an aboveground storage tank, located approximately 0.5 mile north-northwest of the project site at the ranger station, which has a 1,000-gallon gasoline tank, a 500-gallon diesel tank, and a 55-gallon kerosene tank. According to the EDR report regarding hazardous waste generation and disposal, the project site is not listed in the Cortese databases. Therefore, the proposed project's contribution to any significant cumulative impact would not be cumulatively considerable (less than significant).

c) Adverse Effects on Human Beings. The discussion in Section E, Evaluation of Environmental Effects, identifies potentially significant impacts related to aesthetics, cultural resources, transportation and circulation, noise, air quality, greenhouse gas emissions, biological resources, geology and soils, hydrology and water quality, and hazards and hazardous materials that could result from implementation of the proposed project. Mitigation measures are provided in this initial study to reduce these potentially significant project-level impacts to a less-than-significant level. No project-level significant impacts were identified in the areas of land use and land use planning, population and housing, wind and shadow, recreation, utilities and service systems, public services, mineral and energy resources, and agriculture and forest resources. Therefore, with implementation of the mitigation measures, the proposed project would not result in substantial adverse effects, direct or indirect, on human beings.

F. PUBLIC NOTICE AND COMMENT

A "Notification of Project Receiving Environmental Review" was mailed on October 26, 2011, to property owners within a 300-foot radius of the project site, property owners in the Upper Alameda Creek sub-watershed, and interested parties. One comment letter was received from the Alameda County Public Works Agency, which noted the Alameda County Flood Control District's requirements for freeboard, hydraulic capacity of Alameda Creek, and replacement and/or restoration of any affected District facilities. The letter also requested review of the project's SWPPP and recommended coordination with USACE and CDFG.

G. DETERMINATION

On the basis of this initial study:

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

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

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

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

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects 1) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION, pursuant to applicable standards, and 2) 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, no further environmental documentation is required.

Bill Wycko
Environmental Review Officer
for
John Rahaim
Director of Planning

DATE June 4, 2012

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