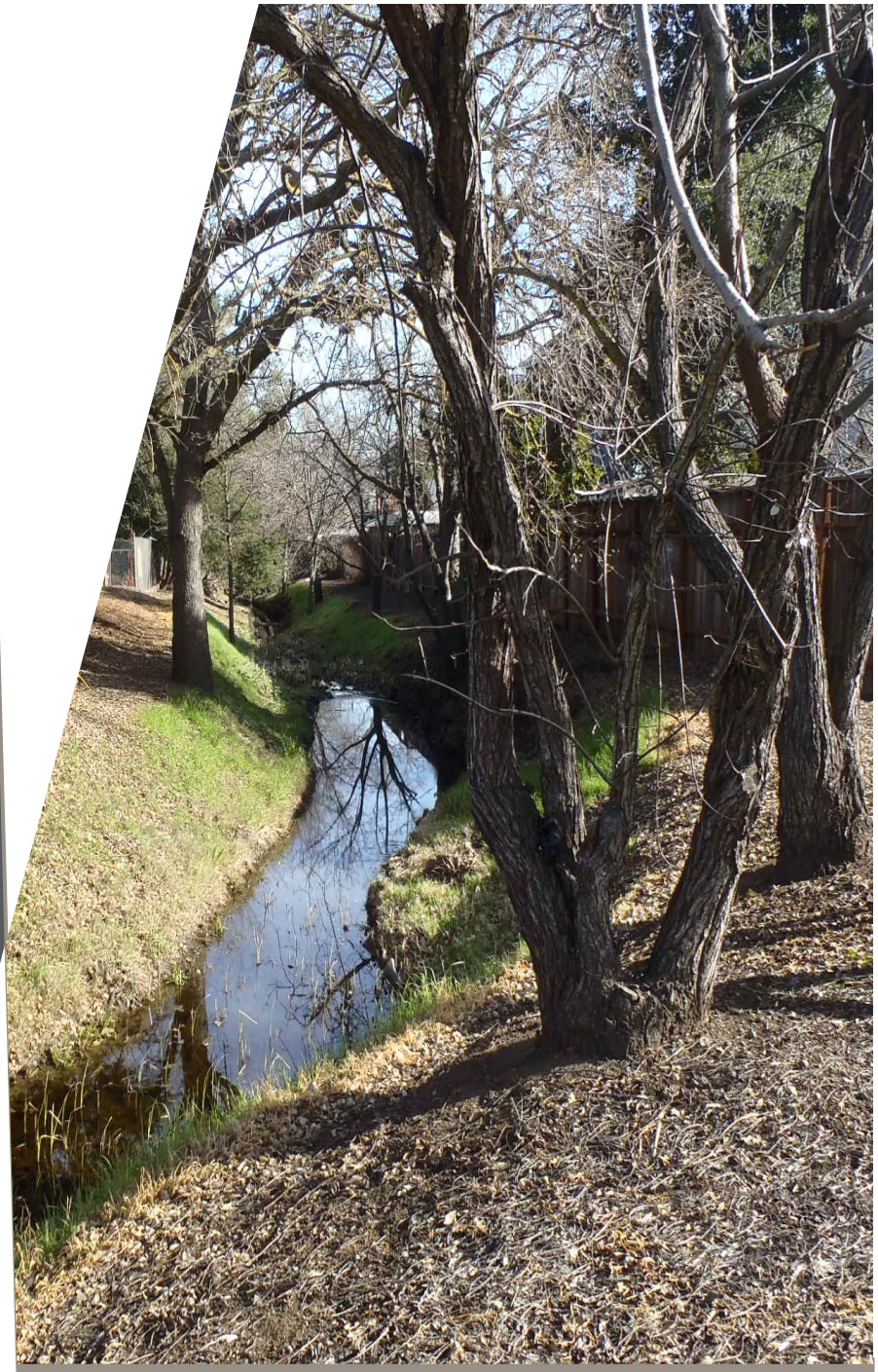
Upper Llagas Creek Project

Environmental Impact Report

Draft
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Prepared for

Santa Clara Valley Water District

Cardno ENTRIX
Shaping the Future

Document Information

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3 Affected Environment and Environmental Consequences

This chapter provides a description of the existing environmental setting (affected environment) for the Upper Llagas Creek Project (Project) and describes in-depth environmental impacts in 19 resource and issue areas:

> Geology and Soils (Section 3.1)
> Hydrology and Water Quality (Section 3.2)
> Mineral Resources (Section 3.3)
> Botanical Resources (Section 3.4)
> Wildlife Resources (Section 3.5)
> Aquatic Resources (Section 3.6)
> Agriculture and Forestry Resources (Section 3.7)
> Land Use and Planning (Section 3.8)
> Cultural Resources (Section 3.9)
> Traffic and Circulation (Section 3.10)
> Air Quality and Greenhouse Gases (Section 3.11)
> Noise (Section 3.12)
> Aesthetics Resources (Section 3.13)
> Utilities and Public Services (Section 3.14)
> Recreation Resources (Section 3.15)
> Population and Housing (Section 3.16)
> Socioeconomics Resources (Section 3.17)
> Hazards and Hazardous Materials (Section 3.18)
> Environmental Justice (Section 3.19)

The effects of the Proposed Project, including the Preferred Alternative, action alternatives, and the No Project Alternative are evaluated for all issues that could potentially result in significant impacts. Specific impact issues are defined for each resource area and are designated by unique alpha-numeric identifiers. Impacts and mitigation measure(s) are discussed for each issue and the corresponding alternative under which it would occur. For example, the first issue in the Hydrology and Water Quality section is HYDRO-1—Potential to Violate Water Quality Standards. Potential to violate water quality standards and mitigation associated with improving flood risk management are discussed under Issue HYDRO-1 for each alternative.

Under each impact issue is a table that identifies the various Project activities that are evaluated in connection with that impact issue. The tables may vary according to each impact issue evaluated and may also vary between each of the alternatives. If various specific activities have a similar effect, those activities may be grouped together under a broader, generalized descriptive term, such as “construction

activities" or "maintenance activities". A full description and explanation of all the construction and maintenance activities are provided in Chapter 2, Description of Alternatives. However, a specific construction or maintenance activity may be identified and analyzed separately from the broader grouping if that activity could result in a different impact. For example, the activity "herbicide spraying" may be called out separately and analyzed separately from the full range of maintenance activities. Therefore, some of the activities identified for analysis in a table may be more detailed than in other tables depending on the number of distinguishable impacts that could occur. The final impact determination for each issue is the most adverse determination in the table.

Where different alternatives have the same impact, the impact is described completely the first time it is mentioned; the subsequently discussed alternatives with the same impact, refer back to the original impact analysis with some qualitative discussion of the differences. Some activities do not apply to certain resource issues or to certain alternatives and those that do not apply are identified with a N/A. For example, there are no construction activities under the No Project Alternative; therefore, all construction related activities are assigned an N/A in the table.

"Approach to Analysis" precedes the discussion of Impacts and Mitigation and discusses the methods and assumptions used in the analysis. Many of the assumptions are applicable to all of the action alternatives. If an assumption is related only to a specific alternative, then this is clearly identified. Significance thresholds have been established to assess the adverse impacts of the Preferred Alternative and Project alternatives under the "Significance Criteria" subsection. A mitigation is identified corresponding to each impact.

Some impacts are identified as "beneficial" consistent with the National Environmental Protection Act (NEPA), but the California Environmental Quality Act (CEQA) does not consider positive impacts, so the corresponding CEQA determination is "No Impact". An adverse impact would be less than significant if the impact is less than the significance threshold. If mitigation can be applied to an otherwise potentially significant impact to reduce it below the threshold of significance ("less than significant"), the impact is thus identified as "less than significant with mitigation". If mitigation cannot reduce the impact to less than significant, it would be identified as "significant and unavoidable". In the case of the No Project Alternative, mitigation is not discussed or provided; because at the end of the CEQA process mitigations would not be implemented for the No Project Alternative.

Where appropriate, impacts are described in terms of their duration. We define "short-term" impacts to be those effects that occur up to the length of the construction period (coterminous with the number of construction seasons, which vary from one alternative to another) and do not endure beyond the construction period. "Long-term" impacts are effects that endure beyond the construction period, even if not permanent.

Following CEQA, this Environmental Impact Report (EIR) identifies the Proposed Project and its alternatives, including a No Project Alternative. The impacts of all of the alternatives (No Project Alternative, the Preferred Alternative [Tunnel Alternative], Natural Resource Conservation Service [NRCS] Alternative, Culvert/Channel Alternative, and the Reach 6 Bypass Alternative) are compared to one another and to existing conditions in the Project area.

3.1 Geology and Soils

3.1.1 Introduction

The Upper Llagas Creek Project (Project) area is located within an actively forming geologic environment of earthquakes and faulting as well as associated uplift of mountain ranges and lowering of basins. These geological processes, ongoing for millions of years, have created the landforms upon which the Project streams flow; and, as a result, must be accounted for in Project design and potential impacts. In addition, the Project involves excavation of soils and exposure of underlying geologic layers in order to construct Project features, such as new or expanded channels, culverts, maintenance, and access roads. The ongoing risks of major earthquakes and potential hazards resulting from ground shaking and failures, such as ruptures and liquefaction are important factors to consider in design of key Project elements. In general, the geologic and soils setting described below applies to the Project area and surrounding region. Baseline information on geologic and soil resources in the Project area was compiled from existing published literature. Primary data sources include the following:

> California Geological Survey (CGS). 2010a. *2010 Geologic Map of California, Geologic Data Map No. 2*. Available online at: http://www.quake.ca.gov/gmaps/GMC/stategeologicmap.html. Accessed on February 15, 2013.

> California Geological Survey (CGS). 2010b: *Historical California Earthquakes*. Available online at: http://redirect.conservation.ca.gov/cgs/rghm/quakes/historical/degreemap.asp?Map=12237#Map. Accessed February 15, 2013.

> Santa Clara County. 2006. *Chapter IV Geologic Provisions*. Available online at: http://www.sccgov.org/sites/planning/PermitsDevelopment/GeoHazards/Documents/Geologic_Ord_031902.pdf. Accessed on February 15, 2013.

> Santa Clara County. 2012a. *County Geologic Hazard Zones*. Available online at: http://www.sccgov.org/sites/planning/GIS/GeoHazardZones/Pages/SCCGeoHazardZoneMaps.aspx. Accessed on February 15, 2013.

3.1.2 Study Area

The Project is located in southern Santa Clara County, approximately 25 miles southeast of San Jose, passing through rural, residential, and a commercial district in the communities of Morgan Hill, San Martin, and Gilroy (Figure 1.1-1, Regional Area Map). The northern portion of the Project (Reaches 8, 7B, and portions of 7A) is within the City of Morgan Hill; a portion of 7A is within unincorporated Santa Clara County. Reaches 6, 5, and 14 are within the San Martin planning area, and a portion (north of Masten Avenue) of Reach 4 is also in the San Martin planning area. The southern portion of Reach 4 is within unincorporated Santa Clara County. The southern extent of the study area is less than 1 mile from the City of Gilroy.

The following section describes the environmental setting for the Project area and regional setting for geology and soils and includes an assessment of potential impacts and offsetting mitigation measures that should be employed to minimize risks.

3.1.2.1 Environmental Setting

Geologic Setting

The Project area and its 84-square-mile watershed are located within the Coast Range Geologic Province of Central California. The Upper Main Llagas Creek drainage basin originates at the crest of the Santa Cruz Mountains. The creek flows southeastward through foothill terrain, then onto the floor of the Southern Santa Clara Valley, before joining the Pajaro River. The Pajaro River flows into Monterey Bay

near Watsonville in Santa Cruz County. West Little Llagas Creek flows along the western edge of the valley, turns eastward north of San Martin, and joins East Little Llagas near the center of the valley. East Little Llagas Creek drains small creeks gathering flow from tributaries from the east side of the valley before joining the main stem just north of Masten Avenue. The Project area includes segments of all three creeks to the Project terminus near Buena Vista Avenue.

Southern Santa Clara Valley is geologically a fault-bounded, down-dropping basin structurally oriented northwest to southeast. It is bounded by the Santa Cruz Mountains to the west and the Diablo Range to the east. The region and the Project area are structurally dominated by San Andreas and Calaveras Fault systems: to the west the San Andreas Fault is a right lateral movement with thrust zones that have raised the Santa Cruz Mountains and shortened the earth's crust by several kilometers (Page, et al. 1998); to the east is the parallel Calaveras Fault, which trends through the lower foothills forming linear valleys and basins such as that holding Coyote and Anderson reservoirs and dams. The fault zones are within several miles of the Project area and are historically active, most notably the 1906 San Francisco Quake (M=7.8)[1] and the 1989 Loma Preita Quake (M=6.9).

Movement and earthquakes along the San Andreas Fault system, and associated faults to the east and west, occur along a major tectonic plate boundary between the Pacific Plate and the North American Plate. The headwaters of the Llagas Creek drainage area are east of the San Andreas Fault, which has lifted older Mesozoic Rocks of marine origin (such as the Franciscan Complex) to the surface, including meta-sedimentary rocks, deep ocean shales, cherts, and serpentine and ultramafic rocks (Figure 3.1-1; CGS 2010a).

The terrain of the Llagas Creek headwaters in Santa Cruz Mountains is comprised of steep vegetated slopes, with heavily sheared and deeply weathered rocks and soils. These slopes are prone to large landslides during earthquakes and rainstorms as well as debris flows during intense rainstorms. Below the steep headwater terrain; Llagas Creek flows through Chesbro Reservoir and Chesbro Dam into the foothills, where younger (Quaternary) continental deposits are encountered. These formations include the Pleistocene Santa Clara Formation, older alluvial fan deposits (terraces) and Holocene Alluvium, and the most recently moved sediments within the modern Llagas Creek corridor and floodplain. Further downstream, Llagas Creek flows on the valley floor where lower gradients and historical tectonic movements have created layers of alluvium (sand and gravel) and thick muds associated with past lake (lacustrine) environments categorized as "Basin Fill".

The Diablo Range to the east is predominately Mesozoic sedimentary and metasedimentary rocks, sandstones and siltstones of the Great Valley Sequence, as well as Tertiary volcanic rock and exposures of Franciscan Complex—like Mesozoic metamorphic and meta sedimentary rocks along fault lines (e.g., at Coyote Reservoir Dam). The Diablo Range has drier conditions than the forested Santa Cruz Mountains to the west; and, as a result, is predominately grasslands or oak/grasslands. Only small, short drainages from the Diablo Range enter the valley floor east of East Little Llagas Creek. The structural trend of linear fault valleys dip northward resulting in much of the Diablo Range watershed draining into San Francisco Bay.

The Santa Clara Valley is underlain with up to 1,000 feet of Plio-Pleistocene alluvial and basin sediments lying over older bedrock units. Within the Project area, recent basin deposits range up to 450 feet in thickness and consist of a mix of alluvial stream deposits interbedded with dense clay lacustrine sediments that act as confining layers for groundwater (aquicludes). This stratigraphy reflects the environmental history of stream systems and intervening periods of lake environments within the past 2 million years, likely formed by the ongoing warping and down dropping of the valley floor caused by regional tectonic movements.

[1] "M=" refers to earthquake magnitude for the specific event as measured by the Richter Scale (see http://en.wikipedia.org/wiki/Richter_magnitude_scale for more information).

Seismicity

The geologic region is subject to intense earthquakes generated on both the San Andreas Fault, 9 miles to the west;; and the Calaveras Fault, 4 miles to the east (Figure 3.1-2). Historical quakes and shaking have caused building damage and ground failures by many mechanisms nearby (i.e. ground offsets, heaving, and landsliding). However, mapping of the 1906 quake ground failures did not indicate any major damage in the Project area. The three most significant recent events include the Great 1906 San Francisco Quake (M7.8); the 1989 Loma Prieta Quake (M=6.9) on the San Andreas Fault system; and the Morgan Hill Quake of 1986 (M6.2), closer to the Calaveras Fault (CGS 2010b).

Historical records indicate that the Project area has been subject to major earthquakes greater than M5.0 more than six times since 1800. Landslides, stream bank failures, and liquefaction have occurred in the region; and due to the presence of saturated, unconsolidated sand layers and shallow groundwater, areas of the Llagas Creek corridor have been designated as potential, severe earthquake shaking and liquefaction failure zones (Figure 3.1-3; Santa Clara County 2012a).

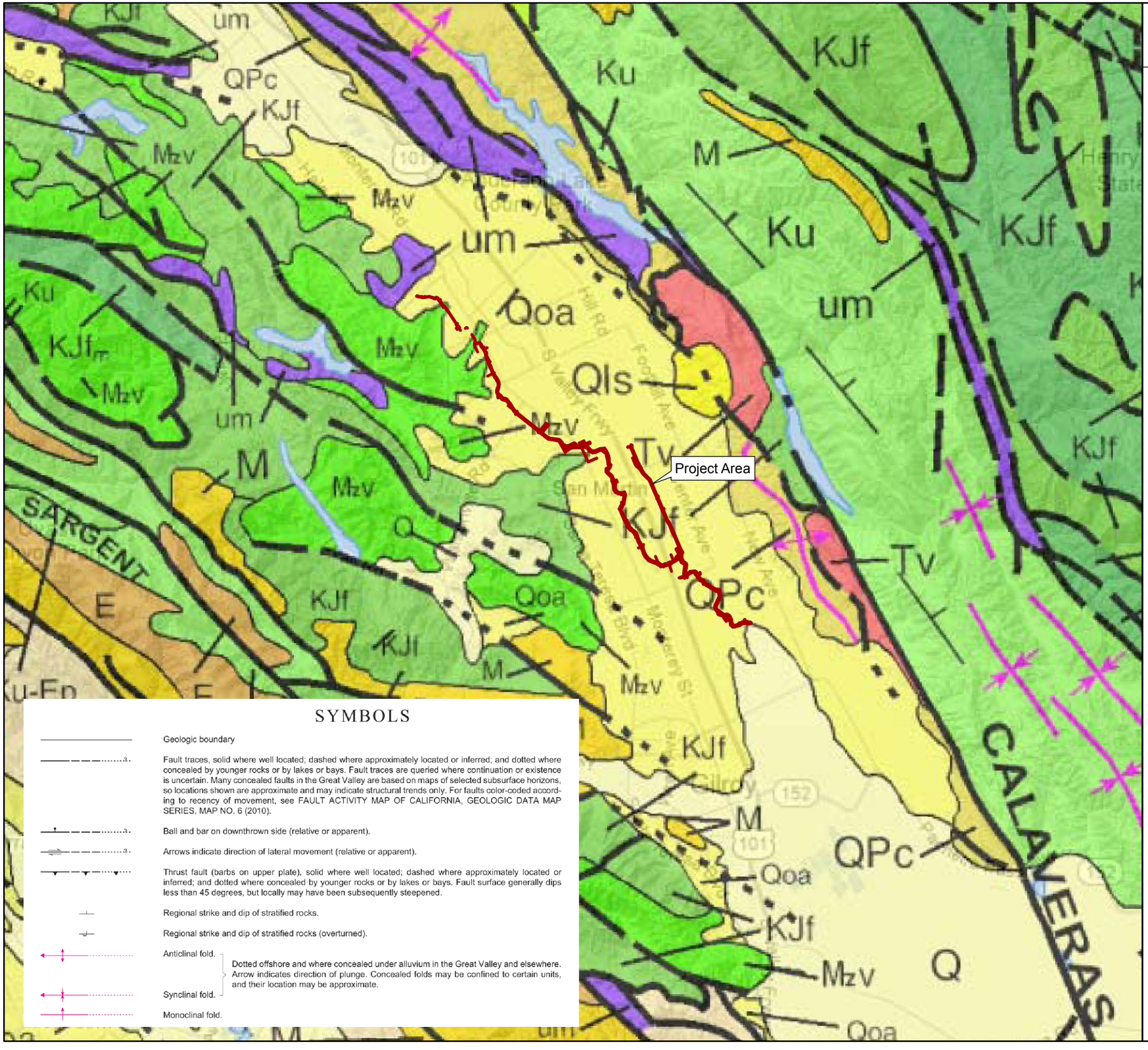
Soils

The soils underlying the Project area's valley floor location reflect the recent geologic history of periods of alluvial sediment deposits and gravels and sands in old channels, which are interlayered with fine layers of floodplain deposits. The intervening periods of lake environments, Ancient Lake San Juan and Lake San Benito, resulted in thick layers of dense lacustrine clays. Soil mapping and a site investigation for the Project was performed to address revegetation planning (Cardno ENTRIX 2012a). In general, the soils present in the Project area are deep, well drained, medium to fine textured loams (gravels, sands, and silts), and clay loams and include Yolo, Zamora, Pleasanton, San Ysidro, Cropley, and Arbuckle Series. According to the Farmland Mapping and Monitoring Program (Section 3.7) as of 2010, there were 17,270 acres of Prime Farmland, 3,630 acres of Farmland of Statewide Importance, and 2,523 acres of Unique Farmland in Santa Clara County. Within the Project footprint, there are 57 acres of Prime Farmland as well as 3 acres of Farmland of Statewide Importance. Agricultural Resources are discussed further in Section 3.7.

Ultramafic rocks, such as serpentine, are a source for naturally-occurring asbestos (NOA). While serpentine soils and NOA are not known to occur in the Project area, some deposits of ultramific source rocks have been identified upstream of Reach 8 (Figure 3.1-1; Formation **um**). Potential impacts related to encountering NOA soils are discussed in Section 3.18, Hazards and Hazardous Materials, HAZ-2 determinations.

One key characteristic of Project area soils involves varying degrees of silica cementation of some underlying conglomerate layers. Such cementation results in a hardening of sediment materials causing consolidation that limits root penetration (Cardno ENTRIX 2012a).

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Upper Llagas Creek Project EIR

FIGURE 3.1-1

Geology in the Project Vicinity

Quaternary Deposits

Qls	Qls	Selected large landslides, such as the Blackhawk Slide on the north side of San Gabriel Mountains; early to late Quaternary.
Q	Q	Alluvium, lake, playa, and terrace deposits; unconsolidated and semi-consolidated. Mostly nonmarine, but includes marine deposits near the coast.
Qoa	Qoa	Older alluvium, lake, playa, and terrace deposits.
QPc	QPc	Pliocene and/or Pleistocene sandstone, shale, and gravel deposits; mostly loosely consolidated.

Tertiary Rocks

P	P	Sandstone, siltstone, shale, and conglomerate; mostly moderately consolidated.
M	M	Sandstone, shale, siltstone, conglomerate, and breccia; moderately to well consolidated.
Tv	Tv	Tertiary volcanic flow rocks; minor pyroclastic deposits.
E	E	Shale, sandstone, conglomerate, minor limestone; mostly well consolidated.
Ep	Ep	Sandstone, shale, and conglomerate; mostly well consolidated.

Mesozoic Rocks

Ku	Ku	Upper Cretaceous sandstone, shale, and conglomerate.
MzV	MzV	Undivided Mesozoic volcanic and metavolcanic rocks. Andesite and rhyolite flow rocks, greenstone, volcanic breccia and other pyroclastic rocks; in part strongly metamorphosed. Includes volcanic rocks of Franciscan Complex: basaltic pillow lava, diabase, greenstone, and minor pyroclastic rocks.
um	um	Ultramafic rocks, mostly serpentine. Minor peridotite, gabbro, and diabase; chiefly Mesozoic.
KJf	KJf	Franciscan Complex: Cretaceous and Jurassic sandstone with smaller amounts of shale, chert, limestone, and conglomerate. Includes Franciscan melange, except where separated - see KJfm.
KJf_m	KJf_m	KJf Melange of fragmented and sheared Franciscan Complex rocks.

Source: CGS 2010a

N

0 0.5 1 2

Miles

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Upper Llagas Creek Project EIR

FIGURE 3.1-2

Faults in the Project Vicinity

EXPLANATION

Fault traces on land are indicated by solid lines where well located, by dashed lines where approximately located or inferred and by dotted lines where concealed by younger rocks or by lakes or bays. Fault traces are queried where continuation or existence is uncertain.

FAULT CLASSIFICATION COLOR CODE

(Indicating Recency of Movement)

Fault along which historic (last 200 years) displacement has occurred

Holocene fault displacement (during past 11,700 years) without historic record

Late Quaternary fault displacement (during past 700,000 years)

Quaternary fault (age undifferentiated)

Pre-Quaternary fault (older than 1.6 million years) or fault without recognized Quarternary displacement

Additional Fault Symbols

Bar and ball on downthrown side (relative or apparent)

Arrows along fault indicate relative or apparent direction of lateral movement

Arrow on fault indicates direction of dip

Low angle fault (barbs on upper plate)

California Geological Survey
Geologic Data Map No. 6

Compilation and Interpretation by:
Charles W Jennings and William A Bryant

Graphics by: Milind Patel, Ellon Sander, Jim Thompson, Barbara Wanish and Milton Honseca

Source: CGS 2010b

N

0 0.75 1.5 3
Miles

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Upper Llagas Creek Project EIR

FIGURE 3.1-3

Liquefaction Susceptibility in the Project Vicinity

Reach 8

Reach 7b

Reach 7a

Reach 14

Reach 6

Reach 5

Reach 4

Anderson Lake

Chesbro Reservoir

Uvas Reservoir

Coyote Lake

Project Reaches

- Reach 4
- Reach 5
- Reach 6
- Reach 7a
- Reach 7b
- Reach 8
- Reach 14

Liquefaction Susceptibility

- Very High
- High
- Moderate
- Low
- Very Low

Source: USGS, Open-File Report 00-444 (Accessed April 4, 2013)

N

0 0.25 0.5 1

Miles

3.1.3 Regulatory Environment

The following federal, state, regional, and local requirements for the Project are described below.

3.1.3.1 Federal

No federal regulations specifically apply to the evaluation of potential impacts on soils, geology, and seismicity. Provisions of water quality regulations that relate to soil erosion and runoff in association with construction activities are described in Section 3.2, Hydrology and Water Quality.

3.1.3.2 State

California State Alquist-Priolo Earthquake Fault Zoning Act and Seismic Hazards Mapping Act

The Alquist-Priolo Earthquake Fault Zone Act (Public Resources Code [PRC], Section 2621 et. seq.) was created in the aftermath of the 1971 San Fernando Valley Earthquake in order to map and recognize zones of land within active fault zones that are subject to fault offset, movement, and ground failures. The Act required that the Resources Agency create fault rupture hazards maps based upon scientific and historical information and that local governments recognize special consideration in land development to the hazards of fault rupture zones.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act was passed in 1990 and directs the State Department of Conservation to identify and map areas subject to earthquake hazards, such as liquefaction, earthquake-induced landslides, and amplified ground shaking (PRC 2690–2699.6). Passed by the state legislature after the 1989 Loma Prieta Earthquake, the act is aimed at reducing the threat to public safety and minimizing potential loss of life and property in the event of a damaging earthquake event. Seismic hazard zone maps are a product of the resultant Seismic Hazards Mapping Program and are produced to identify Zones of Required Investigation; most developments designed for human occupancy within these zones must conduct site-specific geotechnical investigations to identify the hazard and to develop appropriate mitigation measures prior to permitting by local jurisdictions.

For the Project area, the provisions and requirements of Alquist-Priolo and Seismic hazards Mapping Act are incorporated within the Santa Clara County Geological Ordinance discussed in Section 3.1.3.3 below.

3.1.3.3 Local

Santa Clara County Geologic Ordinance

The Santa Clara County Geologic Ordinance (Ordinance) was created to address Geologic Hazards within designated zones, including those caused by earthquakes and landsliding (Santa Clara County 2006). The Ordinance incorporates various zones designated by maps of specific geologic hazards, such as fault rupture, seismic shaking, liquefaction, ground failures, and landslides. This Ordinance is explained in Part 1. General Provisions, Sec. C12-600 Purpose:

"This chapter is enacted for the purpose of establishing minimum requirements for the geologic evaluation of land based on proposed land uses. It further establishes procedures to enforce these requirements, including rules and regulations for the development of land which is on or adjacent to known potentially hazardous areas, or which has the potential to create or increase the risk of geologic hazard. The provisions of this chapter also are intended to ensure that the County fulfills its duties under state law regarding geologic hazards, including the Alquist-Priolo Earthquake Fault Zoning Act and the Seismic Hazards Mapping Act. This chapter may be cited as the "Santa Clara County Geologic Ordinance".

The Project area lies within the county-designated liquefaction hazards zone (Santa Clara County 2012a), which require geologic reporting and consideration in a project design.

3.1.4 Impact Analysis

The potential impacts of the Project specific to geology and soils are presented below. Where appropriate, the discussion of impacts and mitigation will cite related sections within the Environment Impact Report (EIR).

3.1.4.1 Significance Criteria

The following significance criteria are derived from Appendix G, Environmental Checklist Form of the state CEQA Guidelines.

The project would result in a significant impact related to geology and soils if it would:

> Expose people or structures to potential adverse effects, including the risk of loss, injury or death involving 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.

> Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death related to strong seismic ground shaking or seismic-related ground failure, including liquefaction or landslides.

> Result in substantial soil erosion or the loss of topsoil. (The potential impact related to substantial soil erosion or loss of topsoil is addressed in Section 3.2 Hydrology and Water Quality.).

> Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

> Be located on expansive soil, as defined in the Uniform Building Code or identified by the Natural Resources Conservation Service (NRCS) as having moderate to high linear extensibility, creating substantial risks to life or property.

The following additional guideline is included in Appendix G of the CEQA Guidelines, but is not relevant to the Project as no permanent waste disposal needs will be associated with the Project:

> Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

3.1.4.2 Approach to Analysis

An evaluation of the Geology and Soils impacts was performed based upon an assessment of the Project site location, geology, and soils setting and in consideration of the engineering design, construction, and operations and maintenance of the Project in relation to the significance criteria. The following section identifies potential impacts and mitigations.

In the event of an earthquake, significance criteria relevant to the Project listed above could be exceeded during construction or operations and maintenance of the Project under all alternatives due to earthquake induced ground failures (landslides or liquefaction). This is not an impact related to the Project itself, but rather a function of a natural disaster in this seismically active region. We note that the primary mechanism by which people or structures may be exposed to harm or injury due to earthquake or ground failure is due to a failure of the of the flood management features that are to be implemented with the action alternatives. If key Project features were to fail because of seismic ground shaking, it is precisely the failure of the flood management feature that would cause a potential risk of streamflow re-direction

that could cause flooding, and potential harm or injury to property and people. Therefore we are addressing potential harm to property and people by considering the potential failure of the flood management features that are proposed. This is a direct causal chain.

The potential impacts related to erosion and topsoil loss, stormwater turbidity and sediment transport as may be attributable to Project construction and operation, is addressed as a water quality issue in Section 3.2, Hydrology and Water Quality, and is not addressed in this section.

The impacts and mitigations described below address the potential for Project damages resulting from failure within the flood control system caused by geologic and soil hazards, and the potential to expose people or structures to harm or injury.

3.1.5 Impacts and Mitigation Measures

3.1.5.1 No Project Alternative

GEO-1 NP—Project features could be subject to failure due to earthquake-induced liquefaction ground failures, which could diminish flood capacity and protection and/or present physical hazards to public safety

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Existing channel and bridge/culvert conditions	N/A	N/A
Vegetation, Sediment, Bank Stabilization, and Minor Maintenance	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The No Project Alternative would follow existing conditions into the future without any new constructed features or changes in the existing flood control system. As a result, there would be no proposed activities or construction that would change existing conditions for geology and soils conditions and therefore, no impacts.

Operations and Maintenance

Since the No Project Alternative would not change existing conditions and facilities, no new impacts would result from earthquake liquefaction failure.

The No Project Alternative would not change the existing maintenance and operation activities. The Santa Clara Valley Water District (SCVWD) has addressed the impacts of maintenance activities under the Stream Maintenance Program (SMP), which was recently revised and reimplemented in 2012. A description of the operation and maintenance activities under the SMP is provided in Section 2.3 of Chapter 2, Description of Alternatives, in this EIR.

As detailed in the 2012 SMP, work is divided into two general categories: regularly-scheduled work (most vegetation management and trash pick-up) that occurs in the same place and the same manner with a predictable frequency; and other routine work that is not undertaken on a regular annual schedule, but is done as the need arises. This latter type of work (e.g., sediment removal and bank protection) has a less predictable frequency and location. Therefore, selection of Best Management Practices (BMPs) is managed differently for these two types of work. As the existing SMP is an ongoing project that would not

change under the No Project Alternative, there would be no new impacts due to earthquake induced failures related to operations and maintenance of the existing facilities.

Best Management Practices (BMPs)

None applicable

3.1.5.2 Tunnel Alternative (Preferred Alternative)

GEO-1 T—Project features could be subject to failure due to earthquake-induced liquefaction ground failures, which could diminish flood capacity and protection and/or present physical hazards to public safety

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All Construction Activities	NI	N/A
Vegetation and sediment Management, minor maintenance activities, and channel operation	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The main components of the Preferred Alternative are described in Section 2.6. The key feature of the Preferred Alternative that could be subject to failure and could present a physical hazard in the case of earthquake induced failure is an underground concrete tunnel through Nob Hill in Reach 8 (which is also a feature of the Reach 6 Bypass Alternative). The tunnel construction would be carried out by drilling then lining the earthen tunnel with reinforcements and concrete. The other constructed features of the Preferred Alternative include widening and deepening the existing channel, constructing a new bypass channel in Reach 7A, new culverts, maintenance roads, a sediment detention basin, exhuming two buried bridges, and construction of the Lake Silveira mitigation element (see Section 2.4.6 for description of the features and construction at Lake Silveira).

The nature of structural engineering requirements for tunnels are different than that for surface constructed channels and pipes; however, the same procedures are required to define and account for an earthquake's potential liquefaction in the seismic design (i.e., selection of design event and conditions and engineering to offset anticipated forces). Design would meet the following seismic requirements:

> 2010 California Building Code, California Code of Regulations Title 24, Part 2, Volumes 1 and 2

> American Society of Civil Engineers Standard 7-05 "Minimum Design Loads for Buildings and Other Structures"

> American Concrete Institute 318, "*Building Code Requirements for Structural Concrete*", (Chapter 21)

> American Association of State and Highway Transportation Officials (AASHTO) Load Resistance Factor Design Bridge Design Specifications (6th. Edition)

> AASHTO Standard Specification for Highway Bridges (17th. Edition)

Included within these requirements is a mechanism for monitoring seismic induced structural offset within the tunnel. Displacement bands or their equivalent would be incorporated into the tunnel's construction to monitor tunnel movement. By meeting the design requirements listed above no impacts would result from the construction of the Project.

Operations and Maintenance

The Project area is situated within portions of the Liquefaction Failure Hazard Zone, as defined in the Building Code Ordinance. This means that Project features, such as sediment detention basin, earthen stream banks, maintenance roads, and box culverts may fail during an earthquake due to land heaving, ground ruptures, or landsliding. Such failures could compromise the operational performance of the flood management system, potentially rerouting flows outside of the channel conveyance system causing flooding, reducing flood capacity, or presenting physical hazards to adjacent land uses that could threaten public health and safety. Implementation of Mitigation Measure GEO-1a T would reduce the impact of impaired flood conveyance capacity due to earthquake related ground failure to less than significant.

Flood conveyance would be most at risk if there was failure within the tunnel. Monitoring of displacement bands that are planned as part of the tunnel construction would identify if there was a potential structural failure. Implementation of Mitigation Measure GEO-1b T would reduce the impact of impaired flood conveyance capacity due to earthquake related ground failure within the tunnel to less than significant.

Vegetation, sediment, and minor maintenance activities are implemented solely for the purpose of ensuring that the Project features are functioning to maintain the flood design capacity. Consequently, implementation of these maintenance activities would help to ensure that the design channel capacity is not impaired and thereby reduce the risk of failure of the project features and associated potential for risk to people or public property.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure GEO-1a T: Post Earthquake Inspections. In the aftermath of a major earthquake, the SCVWD would inspect the Project culverts, maintenance roads, and channel for any failures that require repair or remediation and implement repairs. In some circumstances, state and federal governments may provide disaster assistance to enable rapid response, funding, and resources for repairs under Federal Emergency Management Agency (FEMA) disaster assistance and/or through the U.S. Army Corps of Engineers (USACE) Services Branch where federal projects are damaged.

Mitigation Measure GEO-1b T: Post Earthquake Tunnel Inspection. When an earthquake of Magnitude 3.7 (typically the smallest magnitude with visually observable damage) or greater occurs in the Project vicinity, tunnel displacement bands will be inspected for any structural instability and any necessary repairs will be made.

Implementation of Mitigation Measures GEO-1a and GEO-1b T would reduce from earthquake-induced liquefaction to less than significant.

3.1.5.3 Natural Resources Conservation Service (NRCS) Alternative

GEO-1 NRCS—Project features could be subject to failure due to earthquake-induced liquefaction ground failures, which could diminish flood capacity and protection and/or present physical hazards to public safety

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All Construction Activities	NI	N/A
Vegetation and sediment Management, minor maintenance activities, and channel operation	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The NRCS Alternative consists of Project features that are very similar to the Preferred Alternative with the exception that there will be no tunnel and no sediment detention basin in Reach 8 (see Section 2.5 for description of NRCS Alternative features and construction).

The Building Code Ordinance requires specific geological reports and design consideration for new construction in designated hazard areas. This requires that engineering design of all project elements consider liquefaction and earthquake shaking in the active seismic environment. Specific engineering design measures have been incorporated into the Project, such as deepening footings and reinforcing concrete structures and leaving finished grades of earthen channels and bank soils in a condition to withstand a design earthquake event; therefore, no impacts would result from construction activities.

Operations and Maintenance

The Project area is situated within portions of the Liquefaction Failure Hazard Zone as defined in the Ordinance. This means that features, such as earth stream banks, maintenance roads, and box culverts may fail during an earthquake due to land heaving, ground ruptures, or landsliding. Such failures could compromise the performance of the flood management system potentially rerouting flows outside of the channel conveyance system causing flooding, reducing flood capacity, or presenting physical hazards to adjacent land uses that could threaten public health and safety. Implementation of Mitigation Measure GEO-1a T would reduce the risk and impact of an impaired flood conveyance capacity and associated potential risk to people or public property due to earthquake related ground failure to less than significant.

Under the NRCS Alternative, vegetation, sediment, and minor maintenance activities are implemented solely for the purpose of ensuring that the Project features are functioning to maintain the flood design capacity. Consequently, implementation of these maintenance activities would help to ensure that the design channel capacity is not impaired and thereby reduce the risk of failure of the Project features and associated potential for risk to people or public property.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure GEO-1a T: Post Earthquake Inspections.

Implementation of Mitigation Measure GEO-1a T would reduce potential impacts from earthquake-induced liquefaction to less than significant.

3.1.5.4 Culvert/Channel Alternative

The key difference between the Culvert/Channel Alternative and the NRCS Alternative is elimination of the need for channel deepening and widening through residential properties between West Main Avenue and West 2nd Street in Reach 8. The impacts and mitigation of the Culvert/Channel Alternative would be the same as the NRCS Alternative.

GEO-1 CC—Project features could be subject to failure due to earthquake-induced liquefaction ground failures, which could diminish flood capacity and protection and/or present physical hazards to public safety

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All Construction Activities	NI	N/A
Vegetation and sediment Management, minor maintenance activities, and channel operation	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction activities would not result in any impacts. The rationale is the same as that discussed under GEO-1 NRCS

Operations and Maintenance

The Project area is situated within portions of the Liquefaction Failure Hazard Zone as defined in the Ordinance. This means that features, such as earth stream banks, maintenance roads, and box culverts may fail during an earthquake due to land heaving, ground ruptures, or landsliding. Such failures could compromise the performance of the flood management system potentially rerouting flows outside of the channel conveyance system causing flooding, reducing flood capacity, or presenting physical hazards to adjacent land uses that could threaten public health and safety. Implementation of Mitigation Measure GEO-1a T would reduce the risk and impact of an impaired flood conveyance capacity and associated potential risk to people or public property due to earthquake related ground failure to less than significant.

Under the Culvert/Channel Alternative, vegetation, sediment, and minor maintenance activities are implemented solely for the purpose of ensuring that the Project features are functioning to maintain the flood design capacity. Consequently, implementation of these maintenance activities would help to ensure that the design channel capacity is not impaired and thereby reduce the risk of failure of the project features and associated potential for risk to people or public property.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure GEO-1a T: Post Earthquake Inspections.

Implementation of Mitigation Measure GEO- T would reduce potential impacts from earthquake-induced liquefaction to less than significant.

3.1.5.5 Reach 6 Bypass Alternative

The impacts and mitigation of the Reach 6 Bypass Alternative would be similar to the Preferred Alternative.

GEO-1 BY—Project features could be subject to failure due to earthquake-induced liquefaction ground failures, which could diminish flood capacity and protection and/or present physical hazards to public safety

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All construction activities	NI	N/A
Vegetation and sediment Management, minor maintenance activities, and channel operation	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The Reach 6 Bypass Alternative is exactly the same in Reach 8 as the Preferred Alternative (including a sediment detention basin and a tunnel), but has some different design and flood management structures than the Preferred Alternative; most notably, a proposed weir and gate structure to divert high flows at the upstream end of Reach 6 to Reach 14. As discussed under GEO-1 T, no impacts would result from the construction activities for this alternative.

Operations and Maintenance

Operations and maintenance proposed under the Reach 6 Bypass Alternative would be substantially similar to that described for the Preferred Alternative (described in detail in Section 2.4.5.) with the exception of maintenance for the bypass channel hydraulic control structure in Reach 6. The concrete weir hydraulic control structure would be regularly inspected and maintained to ensure that the concrete is not cracking, spalling, or otherwise losing its structural integrity and that the sluice gates are free of debris and properly functioning.

Failures due to ground shaking could compromise the operational performance of the flood management system, potentially rerouting flows outside of the channel conveyance system causing flooding, reducing flood capacity, or presenting physical hazards to adjacent land uses that could threaten public health and safety. Implementation of Mitigation Measure GEO-1a T would reduce the impact of impaired flood conveyance capacity due to earthquake related ground failure to less than significant.

Flood conveyance would be most at risk if there was failure within the tunnel. Monitoring of displacement bands that are planned as part of the tunnel construction would identify if there was a potential structural failure. Implementation of Mitigation Measure GEO-1b T would reduce the impact of impaired flood conveyance capacity due to earthquake related ground failure within the tunnel to less than significant.

Vegetation, sediment, and minor maintenance activities are implemented solely for the purpose of ensuring that the Project features are functioning to maintain the flood design capacity. Consequently, implementation of these maintenance activities would help to ensure that the design channel capacity is not impaired and thereby reduce the risk of failure of the project features and associated potential for risk to people or public property.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure GEO-1a T: Post Earthquake Inspections.

Mitigation Measure GEO-1b T: Post Earthquake Tunnel Inspection.

Implementation of Mitigation Measures GEO-1a and GEO-1b T would reduce from earthquake-induced liquefaction to less than significant.

3.1.6 Summary of Impacts to Geology and Soils

The only Project impact to people and property from geology and soils risks would be caused by earthquake-induced liquefaction. This potential impact would be reduced to less than significant with Mitigation Measure GEO-1a T for all action alternatives with the addition of Mitigation Measure GEO-1b T for Preferred and Reach 6 Bypass alternatives.

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3.2 Hydrology and Water Quality

3.2.1 Introduction

This section addresses surface water, groundwater, and water quality conditions in the Upper Llagas Creek watershed. The hydrologic setting of the Project area and the regional vicinity is described. This is followed by the Regulatory Setting, which describes the pertinent federal, state, and local laws related to water resources, flooding hazards, and water quality. Following the Regulatory Setting is an analysis of the potential impacts related to hydrologic and water quality conditions that could be affected by implementation of the Project, including a list of the significance criteria used in the evaluation and an explanation of the analytical approach. The end of this section presents the potential impacts with associated mitigation measures that would reduce or eliminate each potentially significant impact.

3.2.2 Study Area

For the purpose of describing the surface and subsurface water resources and evaluating associated impacts, the study area includes the watershed and groundwater basin of upper Llagas Creek within the communities of Morgan Hill, San Martin, and Gilroy in southern Santa Clara County. The study area includes West Little Llagas Creek from Llagas Road to its transition to East Little Llagas Creek, and from there to the confluence with Llagas Creek and Llagas Creek downstream of Lake Silveira to 1,000 feet downstream of Buena Vista Avenue. The study area for impacts related to surface water includes the channels and floodplains of upper Llagas Creek and lower reaches of West Little Llagas and East Little Llagas creeks. The groundwater resources study area is defined as the Llagas subbasin of the larger Gilroy-Hollister Groundwater Basin.

3.2.2.1 Environmental Setting

Climate

Llagas Creek is located on the eastern slope of the Coast Range with moderating influence from the Pacific Ocean and is subject to a Mediterranean-type climate. The watershed experiences mild, wet winters and dry summers. Average annual precipitation ranges from about 40 inches near the headwaters of Llagas Creek to 28 inches at Chesbro Reservoir and to 20 to 24 inches on the valley floor. About 92 percent of the average annual rainfall falls between November 1 and April 30 (Soil Conservation Service 1982). Mean annual temperature is 58°F, with a mean monthly variation from 66°F in July to 48°F in January. Extreme temperatures in Gilroy are recorded as 20°F and 116°F. The average frost-free period is 273 days. The growing season varies between 209 and 365 days in Gilroy.

Surface Hydrology

Llagas Creek originates in the Santa Cruz Mountains from Mount Loma Prieta and flows southeasterly towards the lower agricultural plains of Santa Clara County. The Llagas Creek watershed covers an area of approximately 104 square miles and is contained within the larger Pajaro River watershed, which drains to Monterey Bay. The Project covers a drainage of 61.7 square miles within Santa Clara Valley, including the Santa Cruz Mountains and a portion of the Diablo Range on the eastern side of the Santa Clara Valley, that give rise to the major tributaries of West Little Llagas and East Little Llagas Creeks.

Historically, channels in the Llagas Creek watershed were more diffuse and discontinuous prior to 19th and 20th century modifications. The streams were shallow, braided, and branched into smaller distributary channels within broad riparian corridors supporting seasonal and perennial ponds and wetlands (SFEI 2008). Small creeks descending from the hills in some cases dissipated across alluvial fans and divided into multiple channels before eventually soaking into the ground (SFEI 2008). In the dry season sections of Llagas Creek would go completely dry, with the exception of a few standing, isolated

pools. Large flows during the rainy season were supported by Llagas Creek, but stream banks would overflow regularly during flood events (SFEI 2008).

Today Llagas Creek is a mixture of natural and engineered stream features. Increased runoff with impervious surfaces associated with urban development and stormwater drains routed in to West Little Llagas Creek, East Little Llagas Creek, and Llagas Creek. The stream channels have historically been altered by realignment and channelization and the constructions of culverts and bridges to accommodate development in the urban areas of Morgan Hill, San Martin, and Gilroy as well as for farmland reclamation and road and freeway construction. Chesbro Reservoir was constructed in 1955 to provide an increased water supply for the growing population in Santa Clara Valley (Santa Clara County 1997) and regulates the upper 19 square miles of the watershed. Historic and ongoing channel incision are identified as the cumulative effects of decades of changes in land use, the increase in impervious surfaces from urbanization, sediment supply loss associated with Chesbro Reservoir, water diversions, hydrograph modifications, and past channelization (Balance Hydrologics 2012; Schaaf & Wheeler 2012). Streambed incision of the Llagas Creek watershed ranges from 0.4 to 0.8 feet per decade (Balance Hydrologics 2012).

The Upper Llagas Creek watershed is a flashy system. Stream channels are typically dry or nearly dry even through the winter. Runoff occurs during larger storm events. A week after rains have subsided, stream channels typically return back to their dry state. As such, the Project stream reaches have ephemeral flow, except for a 6,600-foot portion of Llagas Creek in Reach 6 from below Lake Silveira to about San Martin Avenue, which is perennial and continuously supported by releases from Chesbro Reservoir. Downstream from San Martin Avenue, Reach 6 returns to an ephemeral channel as flow percolates through the streambed to groundwater. Urban return flows from lawns, irrigation, etc. may provide a small discharge in the upper urbanized Reaches 8 and 7B along West Little Llagas Creek.

The section of West Little Llagas Creek to be cut-off from flows by diversion in Reach 7A extends nearly 9,600 feet from near La Crosse Drive flowing east toward U.S. Highway 101 (U.S. 101). By naming convention, West Little Llagas Creek becomes East Little Llagas near the Union Pacific Railroad crossing about 3,500 feet downstream from Monterey Road. East Little Llagas Creek confluences with a straightened channel known as the Madrone Ditch on the east side of U.S. 101, and thence the East Little Llagas Creek channel parallels U.S. 101 for about 5,500 feet before it reaches the beginning of Reach 14. The channel to be cut-off passes through mostly open fields with a few scattered homes and a trailer court, and flows through culverts at six road crossings. This entire section of West Little Llagas Creek to East Little Llagas Creek is intermittent, flowing only when there is sufficient rain to generate runoff. Flooding occurs all along the channel length during a 1-percent exceedance flow (see Figure 2.3-1).

Under all the action alternatives, there would be no flows from the upstream segment of West Little Llagas Creek entering the cut-off channel segment reducing, but not eliminating the flooding extent occurring during a 1 percent exceedance flow event for a 6,500-foot distance downstream from the cut-off point (see Figure 2.4-1). Only local runoff, which includes several storm drains, would continue to discharge through the West and East Little Llagas Creek channel starting at the cut-off to a point 6,500 feet downstream where the Butterfield Channel extension confluences with West Little Llagas Creek. The recently completed Butterfield Detention facility and City of Morgan Hill's Butterfield Channel extension has a drainage area of 2.78 square miles (Schaaf and Wheeler 2013). The Butterfield Channel extension confluences with West Little Llagas Creek about 6,500 feet downstream from the Reach 7A cut-off point. The Butterfield extension will introduce flows at this confluence point to West Little Llagas Creek that are similar to the discharges that would have naturally occurred prior to the 7A diversion. The West Little Llagas Creek channel is expected to continue to flow only intermittently under post-Project conditions, and high flows of the magnitude occurring under existing conditions would no longer occur between the cut-off point and the Butterfield Channel extension confluence. However, some flooding although reduced compared with existing conditions, would continue to occur both upstream and downstream from the Butterfield Channel extension, high flow events will still persist, and the channel will

continue to flood under a 1 percent exceedance flow event (see Figure 2.4-1The post-Project 1 percent exceedance flow (i.e., 100-year flow) would be 110 cubic feet per second (cfs) near the Union Pacific Railroad (UPRR) (which is 5,200 feet downstream from the cut-off point for the bypass channel) and 870 cfs near the confluence with the Madrone Channel at U.S. 101 (Table 3.2-1).

There is currently no channel in Reach 7A. All of the action alternatives would include the construction of a bypass channel in Reach 7A, which would carry all of the flow formerly in West Little Llagas Creek to East Little Llagas Creek and route it through the bypass channel to the Llagas Creek channel just downstream from Lake Silveira near Monterey Highway. This will decrease flow in East Little Llagas Creek and increase the discharge magnitude routed to Llagas Creek through Reaches 6, 5, and 4. These reaches would be widened and deepened to accommodate the additional flow magnitude, so that there is no new flooding induced by the channel capacity improvements in the upstream reaches. The SCVWD diverts a portion of the flow from Reach 6 to the Church Street percolation ponds for groundwater recharge. Reaches 5 and 4 are an intermittently flowing channel as the perennial flow in Reach 6 dissipates and percolates to groundwater. East Little Llagas Creek (i.e., Reach 14), which was deepened and channelized several decades ago for construction of U.S. 101, is also an intermittently flowing channel. A reach-by-reach summary description of the stream channels and the Project features common to all of the action alternatives is provided in Sections 2.1 and 2.4, respectively.

Historically, flooding was a natural process of the southern Santa Clara Valley's drainage. Sloughs and wetlands were common features that would swell and stream bank overtopping was not uncommon during large storm events. Modern urbanization has further compounded the effect of large storm events on the drainage by reducing permeable surfaces within the valley and directing stormwater runoff into the local streams. Flows through the Project reaches during various flood events under existing conditions and the proposed design conditions for the Project are provided in Table 3.2-1. At the upstream boundary of the Project at Llagas Road the 1-percent exceedance flow is 410 cfs. All of the action alternatives would remove a constricting plate in the Llagas Road culvert and widen and deepen the channel downstream to accommodate the 1-percent exceedance flow.

Llagas Creek is a primary source of flood risk in the City of Morgan Hill and the unincorporated community of San Martin. A number of floods have occurred in the southern Santa Clara Valley during major storm events. The floods in 1937, 1955, 1962, 1963, 1969, 1982, 1986, 1996, 1997, 1998, and 2006 damaged existing homes, businesses, and agricultural property within these communities (USACE 2010b). The largest recorded flood, estimated to be a 33-year event, occurred in December 1955 (SCVWD 2010a).

3.2.2.2 Groundwater

The Llagas Creek and Llagas subbasin of the Gilroy-Hollister Groundwater Basin comprise a linked surface water-groundwater hydrologic setting. Llagas Creek surface water discharge (streamflow) is partially dependent upon groundwater conditions, and groundwater conditions are equally dependent on recharge by precipitation (infiltration) and streamflow contributions.

Llagas Creek is within the Llagas subbasin of the Gilroy-Hollister Groundwater Basin. The groundwater bearing formations of Llagas subbasin include Pliocene to Holocene age continental deposits of unconsolidated to semi-consolidated gravel, silt, and clay (DWR 1981). The principal water producing deposits include the Santa Clara Formation and valley fill materials of old and young alluvium and alluvial fans (California DWR 1981). Water quality from these deposits varies with depth and deposit type. The Santa Clara Formation is the deepest water-bearing unit with water quality suitable for irrigation and municipal purposes. The young alluvium deposits are the uppermost water-bearing unit and water quality is generally acceptable for domestic purposes (DWR 1981). Operational groundwater storage capacity of the Llagas subbasin is estimated to be between 150,000 and 165,000-acre feet (SCVWD 2011a).

Table 3.2-1 Existing and Proposed Project Design Flow Capacities

Location	Reach Description		Existing Channel Capacity in Reach				With Project Peak Discharge [1] (cfs)		Design Capacity (cfs)	Design Return Period
			Discharge (cfs) [2]		Approximate Return Period [3]					
	From	To	Min	Max	Min	Max	10-yr	100-yr		
Reach 4	E. Little Llagas Ck.	Masten Ave.	2,200	3,400	<2-yr	5-yr	6,790	11,830	6,790	10-yr
	Masten Ave.	Rucker Ave.	2,200	7,000	<2-yr	25-yr	6,790	11,830	6,790	10-yr
	Rucker Ave.	Buena Vista Ave.	2,200	9,500	<2-yr	25-yr	6,790	11,830	6,790	10-yr
Reach 5	U.S. 101	E. Little Llagas Ck.	2,700	>2,800	<5-yr	>5-yr	3,280	5,780	3,280	10-yr
Reach 6	Silveira Lake	U.S. 101	1,300	>2,800	2-yr	>5-yr	2,990	5,540	2,990	10-yr
	U/S Silveira Lake	Silveira Lake	3,000	6,200	25-yr	>100-yr	1,930	4,860	--	--
Reach 7A	La Crosse Dr.	Llagas Ck.	n/a	n/a	n/a	n/a	1,360	2,100	2,100	100-yr
Reach 7B	W. Dunne Ave.	Ciolino Ave.	--	300	--	<2-yr	720	1,130	1,130	100-yr
	Ciolino Ave.	Spring Ave.	200	650	<2-yr	4-yr	950	1,490	1,490	100-yr
	Spring Ave.	La Crosse Dr.	<410	1,700	<2-yr	>100-yr	1,050	1,580	1,580	100-yr
	W. Little Llagas near La Crosse Dr. (cut-off channel section)	West Little Llagas Ck at UPRR						110	[4]	[4]
	West Little Llagas Ck at UPRR	West Little Llagas at U.S. 101, before Madrone Channel						870	[4]	[4]
Reach 8	W. Main Ave.	W. 5th St.	<260	260	<2-yr	<2-yr	630	990	990	100-yr
	W. 5th St.	W. Dunne Ave.	<320	320	<2-yr	<2-yr	720	1,130	1,130	100-yr
Reach 14	Madrone Channel	Corralitos Ck.	1,200	21,000	5-yr	>100-yr	1,570	2,160	1,570	10-yr
	Corralitos Ck.	San Martin Ck.	1,700	3,000	5-yr	25-yr	2,540	4,060	2,540	10-yr
	San Martin Ck.	Church Ck.	2,300	3,000	5-yr	< 10-yr	3,150	5,140	3,150	10-yr
	Church Ck.	Llagas Ck.	2,300	2,300	5-yr	5-yr	3,450	5,780	3,450	10-yr

[1] 10-yr and 100-yr Peak Discharges from USACE Llagas Creek Flood Control Project Hydrologic Investigation, rounded.

[2] Based on Hydrologic Engineering Center - River Analysis System (HEC-RAS) models for Existing Llagas Creek (i.e. discharge not in overbank areas. Actual channel capacity will vary.) USACE estimates existing Reach 8 capacity = 300 cfs.

[3] Relative to estimated Project peak discharge.

[4] The cut-off West to East Little Llagas Creek channel segment would not have a design capacity since there would be no improvement work in this channel segment. The flow capacity would remain the same as existing conditions.

Recharge of the Llagas subbasin occurs naturally from streams, through percolation of precipitation and surplus irrigation waters, from seepage along canals, and subsurface inflow. Average natural groundwater recharge in the Llagas subbasin is estimated to be 23,000 acre feet per year (SCVWD 2010c). In southern Santa Clara County, ground water pumping provides 95 percent of supply for all beneficial uses and 100 percent of the drinking water supply (SCVWD 2010c). Natural ground water recharge is insufficient to replenish the amount of ground water withdrawn and SCVWD conducts a managed recharge program to maintain groundwater supply.

Groundwater elevation in the Llagas subbasin Index Well (10S03E13d003) has remained stable over the period of record (1969 to 2001) with the exception of water level drops and subsequent recovery associated with drought periods (DWR 2004). A groundwater condition report from SCVWD in August of 2012 (SCVWD 2012b) states that Llagas subbasin groundwater levels from 2010 to July of 2012 in the City of Morgan Hill were above the normal year represented by 2004 and above or slightly below the 5-year average (SCC 2012). In July 2012, groundwater elevations were roughly 50 feet below ground surface (bgs) near Morgan Hill and approximately 40 feet bgs near San Martin (SCVWD 2012b). The SCVWD groundwater report for February 2012 (SCVWD 2012a) shows that January groundwater levels in the Llagas subbasin increased in elevation since July and remained the same with respect to the normal and the 5-year average (Table 3.2-2). These monitoring wells are not indicative of elevations in all wells, but suggest seasonal changes in the groundwater basin.

Table 3.2-2 Selected Monitoring Well Water Levels for January 2012

Monitoring Well	State Well Number	Water Level Below Ground Surface (ft)					
		Jan 1987	Jan 2004	5-Year Average 2007 to 2011	Jan 2012	Change from 2004 to 2012	Change from 5-Year Average to 2012
Morgan Hill	09S03E22P005	50.4	47.7	50.3	40	7.7	10.3
San Martin	10S03E13D003	34.6	33.4	36.4	30.4	3.0	6.0
Gilroy	11S04E10D004	13.4	16.7	14.5	13.3	3.4	1.2

Source: SCVWD 2012a

Review of groundwater elevations from streamside observation wells[1] installed and used for geotechnical observations related to the Proposed Project indicates that maximum annual groundwater elevations are near or above the existing stream channel bottom (Table 3.2-3). Average well water elevations were typically 2-5 feet bgs. However, soil sampling conducted for the SCVWD in 2012 did not find evidence of groundwater near or above the channel invert; and there were no redoximorphic soil features encountered which would have indicated sustained groundwater levels close to the channel bottom (Cardno ENTRIX 2012a). Liquefaction maps discussed in the Section 3.1, Geology and Soils, reflect shallow groundwater within 15 feet bgs.

Soil borings obtained during Phases II Environmental Site Assessments (ESAs) conducted in 1997 and 2004 showed that in Reaches 7A and 7B groundwater was encountered in many borings at depths of 14 to 26 feet bgs (Weiss 2011). A geotechnical investigation near Lake Silveira area, within Reach 7A, encountered groundwater at depths as shallow as 3 feet bgs. However this data does not represent static water levels, but rather the depth at which saturated soils were first encountered, which ranged between 3 feet bgs to 13 feet bgs (Pacific Geotechnical Engineering 2013 unpublished).

[1] Observation wells listed in Table 3.2-3 were installed for geotechnical study purposes and do not supply water. These wells will be sealed and operationally closed as part of the Project construction.

Recent well, piezometer, and pump test data was collected near Lake Silveira along the Reach 7A channel alignment, just east of the lake (Balance Hydrologic 2013). The well data found that groundwater was approximately 8 feet bgs in August 2013. The proposed channel will be excavated to depths of approximately 12 feet in this part of the reach; as such, it is likely that groundwater will be encountered during construction and dewatering will be necessary. About 0.5 mile further upstream from the lake near West Middle Avenue, groundwater elevations are deeper, approximately 14–15 feet bgs (based on data collected by Kleinfelder, June 1997, and Pacific Geotechnical Engineering, August 2010, as reported in Balance Hydrologics 2013). Proposed construction depths will be nearly 15 feet deep, so that groundwater is also likely to be intercepted, although, to a lesser extent than closer to the lake.

Table 3.2-3 SCVWD Observational Well Elevations In Proximity to Llagas Creek, West Little Llagas Creek, and East Little Llagas Creek

Location	Well Number	Well Elevations (ft) [1]			Months Dry
		Mean	Min	Max	
Reach 4	OW4-11	214.6	213.1	219.8	0
	OW4-18	209.5	207.7	211.0	6
Reach 6	OW6-7	288.6	287.8	289.7	0
	OW6-17	264.6	262.3	268.1	0
	OW6-25	249.4	247.7	251.2	2
	OW6-27	244.9	244.4	245.4	7
Reach 7	OW7A-2	312.1	310.2	314.3	6
Reach 8	OW8A-2C	329.4	324.2	334.5	4
	OW8A-3B	327.4	324.5	334.6	0
	OW8A-4	328.5	324.7	336.5	0
	OW8A-5	333.1	329.2	338.2	0
Reach 14	OW14-10	277.0	272.2	282.6	4
	OW14-16	259.7	252.8	265.2	2
	OW14-22	249.6	247.9	252.8	2
	OW14-26	236.1	234.4	237.8	7

[1] Values calculated from nine measurements. Well elevation data was generally collected monthly from June 1, 2012 to January 4, 2013. Two measurements were taken in December 2012.

Source: Pacific Geotechnical Engineering 2013

3.2.2.3 Water Quality

Water quality in a given area of a flowing stream is controlled by multiple factors, which include the chemical and physical nature of streambed material (erodibility, grain size, and rock type) as well as influences outside the stream corridor, such as quality of groundwater and upstream runoff acting to recharge the system. Minerals with differing rock types greatly affect types and levels of dissolved metals within a stream. More easily erodible or finer-grained material presents a greater surface area on which chemical reactions can occur; and, therefore, also influence water quality. Very fine-grained sediments contribute to elevated turbidity and temperature, which in turn affects oxygen levels. All of these variables occur within a natural stream system. In streams within urban or agricultural corridors, water quality is typically influenced from increases in peak runoff, dissolved hydrocarbons, dissolved fertilizers, and increases in sediment loads. Water quality impacts associated with agricultural runoff are linked to residual level concentrations of fertilizers and pesticides, as well as increased sediment loads in receiving

waters. In streams with urban corridors other pollutants can be directly introduced into the stream through storm drains and can be further concentrated with the increased proportion of impermeable surfaces within urban areas. The more densely populated and developed areas draining to Project Reaches 8 and 7B are potential sources of urban pollutants, while most of Reaches 7A, 6, 5, and 14 drain areas that are more likely to be subject to water quality constituents carried by agricultural runoff.

The Central Coast Regional Water Control Board (CCRWQCB) monitors Llagas Creek for known pollutants and other parameters that can impair water quality. Impaired water bodies are listed on the Clean Water Act 303 (d) list by pollutant and then submitted to the Environmental Protection Agency (EPA) for determination of total maximum daily loads (TMDL). From the 2010 integrated report (SWRCB 2010), there are two specific areas within Llagas Creek where water quality has been identified as impaired: Reach 14 and downstream of Reach 4. East Little Llagas Creek downstream of Church Avenue in Reach 14, elevated levels of fecal coliform, nitrates (nutrients), sedimentation/siltation, and total dissolved solids have been detected (SWRCB 2010). Sources for these pollutants range from natural to agricultural and due to channel hydromodifications. Sources of sediment include nonpoint and point source discharge activities including agricultural and grazing land uses, urbanization and rural development, roads, and modifications to the channel (i.e., hydromodification).

Four pollutants (fecal coliform, nitrates [nutrients], sedimentation/siltation, and total dissolved solids) are currently listed on the Clean Water Act (CWA) Section 303 (d) list; and TMDLs have been established by the EPA for nitrates (nutrients) and sedimentation. The TMDL for nitrates in the Pajaro River and Llagas Creek is set at a maximum of 10 milligrams per Liter (mg/L) in receiving waters (Final Regional SWMP 2010). The TMDL for sedimentation in Llagas Creek is provided in Table 3.2-4. High levels of chloride and sodium have been detected on Llagas Creek downstream of the confluence with Miller Slough on an approximately 1-mile-long section of stream near Southside Drive. However, Southside Drive is roughly 7 miles downstream of Reach 4 and outside of the Project footprint. Llagas Creek is listed on the CWA Section 303 (d) list for chloride and sodium, but TMDLs for each pollutant have yet to be established. Other pollutants and impairment parameters without specified locations on Llagas Creek are also listed on the Section 303 (d) list. These include chlorpyrifos, electrical conductivity, *E. coli*, low dissolved oxygen (DO), and turbidity. Sources of these more general area impairments range from unknown to agricultural and municipal, as well as habitat modification and TMDLs have yet to be established.

Table 3.2-4 Suspended Sediment Total Maximum Daily Load Numeric Targets for Llagas Creek (CRWQCB)

Exposure Category		Exceedance Event Criteria		Numeric targets [1]	
Duration (Consecutive Days)	Suspended Sediment Concentration (mg/L)	Duration (Consecutive Days)	Suspended Sediment Concentration (mg/L)	Maximum Number of Exceedance Events	Maximum Duration of Exceedance Event (Consecutive Days)
1	666 – 1808	2	>1808	0	0
2	245 – 665	3	>665	0	1
6	91 – 244	7	>244	9	15
14	91 – 244	15	>244	1	15
49	33 – 90	50	>90	0	28

[1] Numeric targets are comprised of two components: a maximum number of exceedance events that may occur and the maximum duration (consecutive days) in which the maximum suspended sediment concentration (SSC) value for each range can be exceeded. Exceedance events are specific to each exposure category.

Lake Silveira (an artificially created impoundment) influences water quality conditions, notably turbidity, temperature, and DO in both the lake itself and downstream in Reach 6. The SCVWD measured turbidity, temperature and DO during the spring, summer and winter periods in 2011 (Balance Hydrologics et al.

2012) in order to obtain information on lake water quality and its influence on water quality in receiving waters immediately downstream. Water quality data for turbidity, temperature, and DO were collected just upstream, downstream, and within the lake itself.

Temperature and DO are two water quality parameters that strongly influence steelhead growth and survival. As discussed in the Aquatics Resources, Section 3.6.2.1, DO levels within Lake Silveira do not meet water quality objectives established by the Regional Water Quality Control Board (RWQCB) Central Coast Region. In the Water Quality Control Plan for the Central Coast Region (Basin Plan) for the Llagas Creek watershed (RWQCB 2011) it states "*for waters not mentioned by a specific beneficial use, DO concentration shall not be reduced below 5.0 mg/L at any time. Median values should not fall below 85 percent saturation as a result of controllable water quality conditions*". DO never fell below 7 mg/L when measured upstream and downstream of the lake and percent saturation did not fall below 85 percent above or below the lake in any season. As such, DO is not likely adversely influenced by the lake in the downstream Reach 6. However, the average daily percent saturation did fall to as low as 40 percent saturation in the lake itself during the summer season measurements. It should be noted that the percent saturation measurements were taken near the bottom of the lake in the hypolimnion, indicating a natural process of lake stratification, which is not an unusual condition and is in fact an expected process.

Outflow from Lake Silveira causes higher water temperatures downstream in Reach 6, varying from 9-14°F greater than upstream of the lake in summer, in some cases exceeding water quality objectives established in the Basin Plan (RWQCB 2011), which states "*at no time or place shall the temperature of any water be increased by more than 5°F above natural receiving temperature*". Warming within Lake Silveira raises downstream temperatures above optimal temperature range for juvenile steelhead (59-65°F). Daily average temperatures in late August exceeded 75°F, which are stressful and potentially lethal to rearing juvenile steelhead. Temperature and DO conditions are not further addressed in Section 3.2, Hydrology and Water Quality; but are addressed in Section 3.6, Aquatics Resources, because of the important connection of these water quality parameters to steelhead growth and survival. Additionally, turbidity in the lake was consistently higher than upstream reaches and exceeded Basin Plan objectives by increasing turbidity downstream from the lake in the summer and winter seasons.

Groundwater quality in South County is good for most beneficial uses except for nitrate levels, which remains the primary ground water protection challenge (SCVWD 2013c). The Llagas subbasin of the Gillroy-Holister groundwater basin is distant from the coast and seawater intrusion has not been documented. Seawater intrusion has been documented in other aquifers of the region, but the encroachment has been arrested by changes in management practices resulting in the decrease in groundwater withdrawals and increasing groundwater recharge.

A Nitrate Management Program was created in 1991 to investigate and remediate increasing nitrate concentrations. Nitrate concentrations in excess of federal standards were found only in private wells, while all public wells meet federal drinking water standards. A hazardous material investigation was performed in Reach 7A. Groundwater analytical results indicate the presence of nitrate at hazardous waste concentrations (Kleinfelder 1997). In 2012, nitrate was detected above the drinking water standard in 30 percent of South County water supply wells, primarily domestic wells (SCVWD 2013c). For a full discussion of the investigation, please see Section 3.18 Hazardous Materials.

3.2.3 Regulatory Environment

The following section discusses the policies and regulations that are relevant to the specific analysis of hydrology and water quality impacts of the Proposed Project.

3.2.3.1 Federal

Federal Clean Water Act (33 USC § 1251 et seq.)

The U.S. Environmental Protection Agency (USEPA) is the federal agency responsible for water quality management and administers the Federal Water Pollution Control Act Amendments of 1972 and 1987, collectively known as the CWA. The CWA establishes the principal federal statutes for water quality protection. It was established with the intent "*to restore and maintain the chemical, physical, and biological integrity of the nation's water, to achieve a level of water quality that provides for recreation in and on the water, and for the propagation of fish and wildlife*".

Several key sections of the CWA guide the regulation of water pollution in the United States:

> *Section 208, Water Quality Control Plans.* This section requires the preparation of local water quality control plans by regulatory agencies throughout the nation. Each water quality control plan covers a defined drainage area. The primary goal of each water quality control plan is to attain water quality standards established by the CWA and the state governments within the defined area of coverage. Minimum content requirements, preparation procedures, time constraints, and federal grant funding criteria pertaining to the water quality control plans are established in Section 208 of the CWA. Preparation of the water quality control plans has been delegated to the individual states by the USEPA.

> *Section 401, Water Quality Certifications.* This section of the CWA requires that, prior to the issuance of a federal license or permit for an activity or activities that may result in a discharge of pollutants into navigable waters (Section 404 discussed below), the permit applicant must first obtain a certification from the state in which the discharge would originate. A state certification indicates that the proposed activity or activities would not result in a violation of applicable water quality standards established by federal or state law, or that no water quality standards apply to the proposed activity.

> *Section 402, National Pollutant Discharge Elimination System (NPDES).* The NPDES requires permits for pollution discharges into water bodies such that the permitted discharge does not cause a violation of federal and state water quality standards. The NPDES permits define quantitative and/or qualitative pollution limitations for the permitted source and control measures that must be implemented to achieve the pollution limitations. Pollution control measures are often referred to as BMPs. State Water Board Water Quality Control Order No. 97-03-DWQ lists industry-specific waste discharge requirements applicable to this Project, which include mining requirements. Please see the Construction General Permit outlined under Section 3.2.3.2.

> *Section 404, Discharge of Dredge and Fill Material.* Section 404 assigns the USACE with permitting authority for proposed discharges of dredged and fill material into waters of the U.S., defined as *"…waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; territorial seas and tributaries to such waters"*. Section 404 is applicable to projects in which fill material would be placed within or below the ordinary high-water mark (OHWM) of a stream. Any project requiring a 404 permit also requires a Section 401 water quality certification (discussed above). The USACE typically considers all natural drainages with defined beds and banks to be waters of the U.S. Section 404 establishes procedures by which the permitting agency is to review, condition, approve, and deny permit requests. Per the regulations, permitting agencies are responsible to conduct public noticing and provide the opportunity for public hearings during the review of each permit request. This responsibility includes informing the U.S. Fish and Wildlife

Service (USFWS) and/or the National Marine Fisheries Service (NMFS) of each permit request. Consultation with USFWS and/or NMFS is required for proposed discharges that could affect species protected by the federal Endangered Species Act (ESA). Measures that are required by USFWS or NMFS to minimize impacts to federally protected species must be included as conditions of the permit.

> *Rivers and Harbors Act.* The Rivers and Harbors Act (RHA) of 1899 prohibits the unauthorized alteration or obstruction of any navigable waters of the U.S. As defined by the RHA, navigable waters include all waters that are:

  – Historically, presently, or potentially used for interstate or foreign commerce.
  – Subject to the ebb and flow of tides.
    - Regulations implementing RHA Section 10 are coordinated with regulations implementing CWA Section 404. The RHA specifically regulates:
      o Construction of structures in, under, or over navigable waters.
  – Deposition or excavation of material in navigable waters.
  – All work affecting the location, condition, course, or capacity of navigable waters.
    - The RHA is administered by the USACE. If a proposed activity falls under the authority of RHA Section 10 and CWA Section 404, the USACE processes and issues a single permit. For activities regulated only under RHA Section 10, such as installation of a structure not requiring fill, permit conditions may be added to protect water quality during construction.

> *National Flood Insurance Program, Federal Emergency Management Agency (FEMA).* The FEMA administers the National Flood Insurance Program. This agency has completed Flood Insurance Rate Maps that identify Special Flood Hazard Areas in the Project area. To comply with the program, communities must adopt a floodplain management ordinance addressing construction and habitation in flood zones. In California, the Department of Water Resources (DWR) provides and encourages communities to adopt the California Model Floodplain Management Ordinance.

> *Executive Order (EO) 11988-Floodplain Management (11988).* The 11988 requires federal agencies to recognize the values of floodplains and to consider the public benefits from restoring and preserving floodplains. Under this order, the USACE is required to take action and provide leadership to:

  – Avoid development in the base floodplain;
  – Reduce the risk and hazard associated with floods;
  – Minimize the impact of floods on human health, welfare, and safety; and
  – Restore and preserve the beneficial and natural values of the base floodplain.

3.2.3.2 State

Porter-Cologne Act

The Porter-Cologne Act (California Water Code Section 13000) is the principal law governing water quality regulation in California. It establishes a comprehensive program to protect water quality and the beneficial uses of water. The Porter-Cologne Act applies to surface waters, wetlands, and groundwater, and to both point and nonpoint sources of pollution. Pursuant to the Porter-Cologne Act, it is the policy of the State of California that:

> The quality of all the waters of the state shall be protected.

> All activities and factors affecting the quality of water shall be regulated to attain the highest water quality within reason.

> The state must be prepared to exercise its full power and jurisdiction to protect the quality of water in the state from degradation.

Pursuant to the Porter-Cologne Act, the responsibility for protection of water quality in California rests with the State Water Resources Control Board (SWRCB). The SWRCB administers federal and state water quality regulations for California's ocean waters and also oversees and funds the state's nine RWQCB. The RWQCBs prepare water quality control plans, establish water quality objectives, and carry out federal and state water quality regulations and permitting duties for inland water bodies, enclosed bays, and estuaries within their respective regions. The Porter-Cologne Act gives the SWRCB and RWQCBs broad powers to protect water quality by regulating waste discharge to water and land and by requiring cleanup of hazardous wastes.

Central Coastal Basin Water Quality Control Plan

The Basin Plan is maintained by the Central Coast RWQCB and details present and potential beneficial uses of basin surface waters and sets water quality objectives for controllable water quality conditions. The AntiDegradation Policy (Chapter 3, Section IIA of the plan) details general objectives for all inland surface waters of the basin including targets for suspended and settleable materials, sediment, turbidity, DO, and toxins. The implementation plan establishes TMDL for impairments by specific hydrologic unit and subwatershed. The TMDL for sediment in Llagas Creek are presented in Table 3.2-4, above. The TMDL for fecal coliform is limited to one of two allocations. Erosion and sedimentation controls are detailed in approved area-wide BMPs. Some of the relevant Central Coast Region Basin Plan water quality objectives and criteria are as follows:

> *Suspended Material.* Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.

> *Settleable Material.* Waters shall not contain settleable material in concentrations that result in deposition of material that causes nuisance or adversely affects beneficial uses.

> *Oil and Grease.* Waters shall not contain oils, greases, waxes, or other similar materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water, that cause nuisance, or that otherwise adversely affect beneficial uses.

> *Sediment.* The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

> *Turbidity.* Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increase in turbidity attributable to controllable water quality factors shall not exceed the following limits:

  – Where natural turbidity is between 0 and 50 Jackson Turbidity Units[2] (JTU), increases shall not exceed 20 percent.

  – Where natural turbidity is between 50 and 100 JTU, increases shall not exceed 10 JTU.

  – Where natural turbidity is greater than 100 JTU, increases shall not exceed 10 percent.

[2] A JTU is roughly equivalent to the industry standard Nephelometric turbidity unit (NTU) used for measuring turbidity in a water sample (USGS 2012).

- *Dissolved Oxygen.* For waters not mentioned by a specific beneficial use, DO concentration shall not be reduced below 5.0 mg/L at any time. Median values should not fall below 85 percent saturation as a result of controllable water quality conditions.
- *Toxicity.* All waters shall be maintained free of toxic substances in concentrations that are toxic to, or which produce detrimental physiological responses in, human, plant, animal, or aquatic life. Survival of aquatic life in surface waters subjected to waste discharge, or other controllable water quality factors. Water temperature is also a water quality issue, but it is not addressed in this section. Water temperature is addressed in Section 3.6, Aquatic Resources.
- *Section 401 Water Quality Certification.* Placement of structures, fill, or dredged materials into waters of the state requires Section 401 Water Quality Certification. Activities that require a federal Section 404 permit also require a Section 401 Water Quality Certification. Water bodies that may not be covered by USACE jurisdiction may require a Section 401 Water Quality Certification for impact on waters of the state. The RWQCB issues Section 401 Water Quality Certifications.

Construction General Permit

To reduce or eliminate construction related water quality effects, the Project would be required to obtain coverage under the NPDES General Construction Permit (CGP). This is required for all construction projects over 1 acre with a Rainfall Erosivity Factor (R-Factor) greater than 5. The R-Factor is calculated via the EPA Rainfall Erosivity Factor calculator (http://cfpub.epa.gov/npdes/stormwater/lew/lewcalculator.cfm).

The CGP requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP must contain a site map(s) showing the construction site perimeter, existing and proposed buildings, lots, roadways, stormwater collection and discharge points, general topography both before and after construction, and drainage patterns across the project. The SWPPP must list BMPs the discharger will use to protect stormwater runoff and the placement of those BMPs. Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs; and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment. Section A of the Construction General Permit describes the elements that must be contained in a SWPPP.

The SWPPP must include erosion and sediment control plans to reduce the input of pollutants into the waterway. As a performance standard, General Construction Permit require controls of pollutant discharges that use best available technology (BAT) that is economically achievable, best conventional pollutant control technology (BCT) to reduce pollutants, and any more stringent controls necessary to meet water quality standards. BMPs may consist of a wide variety of measures taken to reduce pollutants in stormwater and other non-point source runoff.

Section 1602 Streambed Alteration Agreement

Section 1602, administered by the California Department of Fish and Wildlife (CDFW), is applicable to any project proposing an alteration or modification of the bed, bank or channel of a stream, lake or river. The three agreement types are a Standard Agreement for activities expected to take place within a 5-year timeframe; a Standard Long-Term Agreement for activities expected to continue past a 5-year timeframe; and Master Agreement applicable to a large, multi-phased stages for a project with a duration exceeding 5 years, and for which detailed plans have not been prepared at the time of application for the permit.

3.2.3.3 Local

Santa Clara Valley Water District (SCVWD)

The SCVWD implements various BMPs that are protective of water quality for construction and maintenance activities. A list of relevant BMPs is provided in Appendix C.

Santa Clara County General Plan, South County Joint Area Plan

> *SC 7.5.* Streambeds and other appropriate percolation areas should be protected.

> *SC 8.0.* Water quality should be protected from contamination, and should be monitored to assure that present policies and regulations are adequate. Such uses as waste facilities, septic systems and industries using toxic chemicals should be prohibited where polluting substances may come in contact with groundwater, floodwaters, and creeks or reservoir waters.

> *SC 8.11.* Properties located in areas that have soils with rapid water percolation shall be protected from future development in order to ensure existing water quality. Such development should not begin until preceded by the inclusion within the cities' and county's Hazardous Materials Storage Ordinance a section specifically related to high percolation rates.

> *SC 8.13.* In order to provide greater protection of the aquifers, which supply drinking water to the South County, special consideration, should be given to the management of contaminants (e.g., hazardous materials, sanitary effluents) in groundwater recharge areas where no protective aquitard layer exists.

> *SC 12.3.* Developers whose proposed projects would induce downstream flooding should be required to provide mitigation to eliminate the flood-inducing impacts of their projects.

> *SC 12.4.* Streamside development should be designed in such a way as to facilitate maintenance of the waterway and protection of the environment and riparian areas. Careful consideration should be given to the use of streets to separate urban streamside development from the waterway consistent with SCVWD-recommended streamside street designs.

> *SC 12.7.* The cities and the county should require mitigation of any stormwater runoff produced by development that occurs beyond that described in the 1981 General Plans of the county and the cities as of 1982.

> *SC 12.8.* All local development should provide appropriate mitigations of off-site impacts. These may include limiting runoff to pre-development levels or complete solutions to flooding and local drainage problems in the vicinity of the development. Methods may include detention (storing runoff temporarily and then releasing it) or retention (storing runoff on-site for percolation).

> *SC 12.9.* Careful consideration should be given to the cumulative effects of development, which would drain into the upper reaches of Llagas Creek and other creeks in order to avoid the need for channelization and consequent destruction of its riparian vegetation and natural habitat.

> *SC 15.8.* Natural streamside and riparian areas should be left in their natural state, in order to preserve their value as percolation and recharge areas, natural habitat, scenic resources, recreation corridors and for bank stabilization. If flood control projects needed to protect presently existing development make this infeasible, disruption should be minimized, maintaining slow flow and stable banks through design and other appropriate mitigation measures.

> *SC 15.6.* Development should be limited along the shores of reservoirs, which can be expected to sustain damage from seismically-induced seiche waves.

City of Morgan Hill General Plan

> *4c.* Limit development along the shores of reservoirs which can be expected to sustain damage from seismically-induced seiche waves. (SCJAP 15.6)

> *4e.* Natural streamside and riparian areas should be left in their natural state in order to preserve their value as percolation and recharge areas, natural habitat, scenic resources, recreation corridors and for bank stabilization. (SCJAP15.08)

> *4f.* Minimize disruption of natural riparian areas by flood control projects needed to protect presently existing development by maintaining slow flow and stable banks through design and other appropriate mitigation measures. (SCJAP 15.08)

> *4k.* Require developers whose proposed projects would induce downstream flooding to provide mitigation to eliminate the flood-inducing impacts of their projects. (SCJAP 12.03)

> *4n.* Require mitigation of any stormwater runoff produced by development that occurs beyond that described in the General Plans of the city and county as of 1982. (SCJAP 12.07)

> *4o.* Require all local development to provide appropriate mitigation of off-site flooding impacts, including limiting runoff to pre-development levels and/or complete solutions to flooding and local drainage problems in the vicinity of the development, using such methods as detention or retention. (SCJAP 12.08)

> *4p.* Require careful consideration of the cumulative effects of development, which would drain into the upper reaches of Llagas Creek and other creeks, in order to avoid the need for channelization and consequent destruction of its riparian vegetation and natural habitat. (SCJAP 12.09)

> *5a.* Protect water quality from contamination, and monitor it to assure that present policies and regulations are adequate. Prohibit such uses as waste facilities, septic systems and industries using toxic chemicals where polluting substances may come in contact with groundwater, floodwaters, and creeks or reservoir waters. (SCJAP 8.00)

> *5j.* Protect properties located in areas that have soils with rapid water percolation from future development in order to ensure existing water quality. Permit development in such areas according to the city's Hazardous Materials Storage Ordinance section specifically related to high percolation rates. (SCJAP 8.11)

> *5l.* In order to provide greater protection of the aquifers, which supply drinking water to the South County, give special consideration to the management of contaminants (e.g., hazardous materials, sanitary effluents) in groundwater recharge areas where no protective aquitard layer exists. (SCJAP 8.13)

3.2.4 Impact Analysis

Potential impacts, as they relate to hydrologic and water quality conditions, that could be affected by implementation of the Project are described by evaluating the Project flood management features and operation and maintenance activities in relation to the significance criteria (listed below), the regulatory environment, and preexisting conditions and practices.

3.2.4.1 Significance Criteria

Standards of significance were derived from Appendix G of the CEQA Guidelines. Impacts to hydrology and water quality may be considered significant if implementation of the Project results in the following:

> Violates any water quality standards or waste discharge requirements;

> Otherwise substantially degrades water quality;

> Creates or contributes runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provides substantial additional sources of potentially impacted runoff;

> Substantially depletes groundwater supplies or interferes substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level;

> Substantially alters 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 or siltation on- or off-site;

> Substantially alters the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increases the rate or amount of surface runoff in a manner that would result in flooding on- or off-site;

> Places housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map;

> Places within a 100-year flood hazard area structures that would impede or redirect flood flows; and

> Exposes 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.

3.2.4.2 Approach and Analysis

Potential impacts related to hydrology and water quality conditions were evaluated on the basis of flood maps, water quality data in reports, streamflow from existing models for Project design, field observations, and other information on surface and groundwater conditions that are available in both published and unpublished reports. How each of the Project alternatives would alter the overall direction and trend of existing fluvial processes is considered and characterized. Each of the significance criteria is considered for each of the Project alternatives.

The last four significance criteria listed in Section 3.2.4.1, above, are all closely related to the issue of increasing potential flooding and the potential to, thereby, increase risks to infrastructure or to people. Therefore, we address each of those four significance criteria as one common group. The overall purpose, design, and effect of the Project is to reduce flooding through Morgan Hill in Reaches 8, 7A, and 7B by containing the 1-percent exceedance flow; in Reach 14 by containing the 10-percent exceedance flow; and to not induce flooding in Reaches 4, 5, or 6, due to the upstream flood capacity improvements, for all of the Project alternatives. As shown by comparison of Figures 2.3-1 and 2.4-1, the Project only reduces the extent of flooding—it does not cause increased flooding at any location. This is a fundamental purpose and objective of the Project design. Additionally, the operations and maintenance of the Project (Section 2.4.5) is intended to maintain the designed flood capacity of the Project. Consequently, both construction and maintenance would have no impact to a beneficial effect in relation to each of the four significance criteria, listed above, that are associated with flooding. Each of the summary impact assessment tables reflect this determination of no impact and beneficial effect related to flooding.

The analysis addressing the significance criteria associated with the potential to deplete groundwater supplies or interfere with groundwater recharge considers the extent to which the Project construction could lower the groundwater table by excavation to deepen and widen existing channels and creating a new bypass channel (Reach 7A). Excavation depths that intersect the groundwater table have the potential to locally drain groundwater and, thereby, potentially lower the water table near stream banks that in some locales support riparian vegetation (primarily in Reach 6); or if excavation is deep enough, could lower the aquifer. The document considers the available well data that provides information on depth to groundwater in relation to proposed excavation depths in order to determine the potential for depleting groundwater supplies for each of the alternatives.

Regarding potential to interfere with groundwater recharge, none of the action alternatives create any areas of new impervious surfaces that would impede recharge in any reach. This includes new maintenance roads, which are designed with an aggregate base; and, therefore, would allow percolation to groundwater. All action alternatives, except for the Reach 6 Bypass Alternative, would require the inlet pipe to the SCVWD Church Street Percolation Ponds in Reach 6 to be adjusted so that it continues to take water from the channel at a new lower elevation. This is necessary to maintain the same volume of water diversion to the ponds after Project construction. Given the lack of new impervious surfaces to be constructed under the Project design and continued maintenance of inflow to the Church Street Percolation Ponds, the Project has no potential to alter recharge to groundwater. Therefore, the issue of recharge to groundwater is not considered further; and the focus of the analysis for each alternative is on excavation depths in relation to groundwater elevations.

In regards to the significance criteria associated with the potential to alter existing drainage patterns resulting in substantial erosion or siltation on- or off-site, there are three potential causal mechanisms that are considered: construction related activities that may cause erosion and siltation, maintenance activities that may cause erosion and siltation, and the overall stability of the channels as they function under the post-construction design and hydrology. Construction and maintenance activities are described in Sections 2.4.3 and 2.4.5. Construction activities that may cause erosion and siltation involve grading and other earth moving activities, particularly where the channel may be flowing perennially primarily in a portion of Reach 6. SCVWD project BMPs address issues related to potential water quality impacts from construction, which are identified and considered under each of the alternatives below. The maintenance activity likely to have a potential for increasing erosion and siltation is sediment removal to maintain channel capacity. The potential for these construction and maintenance activities to cause significant impacts from erosion and siltation is based on the adequacy of the SCVWD project BMPs and construction approach.

If the proposed channel improvements are not designed so that they are stable, then there could be issues associated with channel bank erosion and siltation. However, a stable channel design analysis was performed by conducting sediment transport and hydraulic studies (Balance Hydrologics 2012; Noble Consultants and Northwest Hydraulics 2008). This analysis assisted with determining stable channel dimensions and form that would not result in channel aggradation (i.e., sediment deposition), or degradation (i.e., scour and incision), and that would reduce potential long-term maintenance and would continue to meet flood capacity objectives. The channel cross-sectional form was designed to be in a stable, dynamic equilibrium to match the flow conditions and sediment regime of the Llagas Creek watershed. The stable channel form incorporates the additional flow volume and discharge that would occur by cutting off a section of West Little Llagas Creek and routing that additional flow from Reaches 7B to 7A and into Reach 6, just below Lake Silveira. The stable channel form includes a bankfull channel morphology, whereby the width-depth ratio, slope, sinuosity, and overall channel dimensions have been sized to accommodate the flow and sediment load contributed by the drainage area. This stable channel form is applicable to all of the action alternatives within their respective construction footprints. Additionally, all of the Project action alternatives include grade control structures to arrest existing incision processes and ensure the Project channels are vertically stable. The stable channel form does not and should not imply that there would be absolutely no erosion; but it does mean that the channel dimensions and planform should remain about the same over the long term; and would, therefore, not generate excess sediment that could cause any siltation or aggradation.

The drainage pattern associated with the 9,600-foot length of West Little Llagas Creek, from near La Crosse Avenue to East Little Llagas Creek at U.S. 101, would also be altered under all Project alternatives. This section of West Little Llagas Creek would be cut off from discharge generated upstream through Reach 8 so that only runoff from the immediate drainage area and local storm drain outfalls would provide flow. Under existing conditions, this portion of West Little Llagas Creek flows intermittently during periods when sufficient rainfall generates runoff. Flow in West and East Little Llagas Creek would

be diminished so that periodic, high flows during storm events will be of a smaller magnitude. Consequently, this reach (between the cut-off point and 6,500 feet downstream where the Butterfield channel extension confluences with West Little Llagas Creek) would experience less frequent flooding and during the 1-percent exceedance event a smaller area of flooding (compare Figures 2.3-1 and 2.4-1), which is a beneficial effect of the Project. Downstream from the Butterfield channel extension East Little Llagas Creek would continue to flood during a 1-percent exceedance event, similar to, but somewhat less than pre-Project extents. There will be a smaller reduction in flow magnitude for the more infrequent larger magnitude flow events compared with the greater reduction in magnitude for the more moderate flood events. Overall, the reduction in flow magnitude with the Project would also reduce the potential for erosion, incision, or siltation of the channel. The intermittent nature of the channel flows would persist with flow occurring only during storm events, due to the local drainage area contributions to runoff that will continue with the Project.

The first three significance criteria listed in Section 3.2.4.1 are all closely related to the degradation of water quality. Therefore, we address each of those three significance criteria as one common group. The Basin Plan outlines water quality standards and TMDLs for Llagas Creek. RWQCB approved erosion and sedimentation controls are detailed in approved area-wide BMPs, which are identified within the Regional SWMP and described in the SCVWD, BMP Handbook, Revision A, May 22, 2008. These BMPs are intended to minimize degradation of water quality to levels set forth in the Basin Water Quality Control Plan related to DO, turbidity, sedimentation, and nitrates. Additionally, a Project SWPPP to be prepared in accordance with the CGP will contain additional BMPs intended to protect water quality during Project construction. The effect of the Lake Silveira mitigation element on temperatures and DO conditions is not addressed in Section 3.2, Hydrology and Water Quality, but is addressed in Section 3.6, Aquatics Resources, because of the important connection of these water quality parameters to steelhead growth and survival. However, it is noted here that the proposed restoration of flow into the formerly abandoned Llagas Creek channel around Lake Silveira; and the creation of wetland habitat represents a net benefit to water quality to the downstream Project reaches by reducing high water temperatures, improving DO, and providing a wetlands sink for nutrients such as nitrogen and phosphorus. As such, water quality during stormflow runoff through the Lake Silveira project element would be improved and this is a beneficial effect of the Project.

There are no waste or nutrient discharges related to any of the Project alternatives; however there are Project-related changes to the existing stormwater drainage systems. Eliminating over-bank flows during floods through Morgan Hill (Reaches 8 and 7B, including the cut-off portion of West Little Llagas Creek), the potential to entrain sediments and carry pollutants from urban and agricultural lands on the floodplain, which then drain back into the channel, would be substantially reduced, improving water quality. Although operational activities do not contribute any additional runoff, all of the action alternatives would bypass flow from the existing West Little Llagas Creek channel through a newly constructed channel in Reach 7A that would add runoff to the downstream Llagas Creek Reaches 4, 5, and 6. However, this is not an impact on the capacity of the stormwater drainage system. This is because the Project design fundamentally includes an increase in the flood capacity of these downstream reaches so that there is no induced flooding due to upstream project improvements. Additionally, as discussed above, the downstream reaches are dimensioned so that they are hydraulically stable under the new flow conditions. As such, there is no operational impact to the stormwater drainage system. Vegetation management, sediment management, and minor maintenance activities are proposed and conducted only to maintain the flood capacity of the channels under all of the action alternatives. Consequently, maintenance activities do not add to runoff, rather maintenance ensures that the channels function efficiently to handle the runoff and maintain the hydraulic capacity of the channel design.

Excavation to deepen and widen existing stream channels and to create a new bypass channel (Reach 7A) could potentially intercept local groundwater as indicated by stream side well elevations, and recent piezometer readings and pump tests specifically pertinent to Reach 7A (see Section 3.2.2.2 above

for description of existing groundwater conditions). An analysis is provided for each alternative for the potential to substantially lower the groundwater table, along West Little Llagas, East Little Llagas, and Llagas Creek in the Project design. The analysis considers the extent, to which excavation will deepen the channel in relationship to expected groundwater levels, describes the extent to which groundwater elevations could be lowered and considers the potential for groundwater lowering to affect adjacent riparian vegetation.

Through the implementation of SWPPP BMPs, the action alternatives would not directly contribute substantial sources of potentially impacted runoff during construction. Operation of the Project under all Project alternatives due to the planned stable channel design would reduce ongoing channel incision and bank erosion and, thereby, improve water quality and reduce sedimentation and siltation impairment, helping to achieve the TMDL targets in Llagas Creek and the Pajaro River.

3.2.5 Impacts and Mitigation Measures

3.2.5.1 No Project Alternative

The No Project Alternative serves as a basis for comparison with the action alternatives. Under the No Project Alternative, the Project would not be built, and flooding in the urban areas of Morgan Hill and San Martin would continue through Reaches 8 and 7B, and the cut-off segment of West and East Little Llagas Creek. This periodic flooding would continue to contribute to water quality degradation. As discussed in Section 3.2.3.2, historic rates of channel streambed incision[3] of 0.4 to 0.8 foot per decade, (Balance Hydrologics 2012) and resultant channel bank erosion and widening would likely continue. This process of channel incision would contribute to sedimentation and would not help to achieve TMDL targets. Under the No Project Alternative, storm runoff would continue through channelized reaches, there would be no fish habitat improvement features installed, and the bypass channel in Reach 7A would not be constructed.

Under the No Project Alternative, maintenance activities in the Proposed Project area would continue following the SCVWD SMP. The SMP contains procedures for routine maintenance of stream channels involving ongoing sediment removal, vegetation management, stream bank protection and minor maintenance activities (Section 2.4.5).

HYDRO-1 NP—Potential to violate water quality standards

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Existing channel operations	N/A	S
Vegetation, sediment, and minor maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No channel modifications or improvements would be constructed. As such, there is no potential for construction impacts to violate water quality standards.

[3] Causes of historic and ongoing channel incision are identified as the cumulative effects of decades of changes in land use, the increase in impervious surfaces from urbanization, sediment supply loss associated with Chesbro Reservoir, water diversions, hydrograph modifications, and past channelization (Balance Hydrologics 2012a; Schaaf & Wheeler 2012).

Operations and Maintenance

Ongoing operations ('operation' of the channel is passive, as they automatically carry flow when there is runoff; there is no specific human intervention required for the existing channels to carry runoff) in an unstable, incising channel would contribute to bank erosion and sedimentation. Periodic flooding along Reaches 8, 7B, and West Little Llagas Creek would continue, contributing to water quality degradation and to continued impairment of the existing water quality standards. This continued degradation, resulting in reduced water quality, would be a significant impact. DO, temperature and turbidity in Lake Silveira exceed Basin Plan standards. These water quality parameters are more fully discussed and addressed in Section 3.6, Aquatic Resources.

Maintenance of stream channels would continue under the SCVWD SMP. Maintenance activities, which broadly include sediment and vegetation management, bank erosion repair, and minor maintenance, is described in Section 2.3. Through the SMP and in accordance with the CCRWQCB Basin Plan, SCVWD project BMPs will reduce any maintenance related impacts to potentially violate water quality standards to less than significant. BMPs relevant to maintenance activities include the following:

Best Management Practices (BMPs) (from the SCVWD SMP)

- **GEN-1:** In-Channel Work Window—applicable to operation and maintenance phase of all elements.
- **GEN-2:** Instream Herbicide Application Work Window—applicable to operation and maintenance phase of all elements.
- **GEN-4:** Minimize the Area of Disturbance—applicable to operation and maintenance phase of all elements.
- **GEN-16:** In-Channel Minor Activities—applicable to operation and maintenance phase of all elements.
- **GEN-19:** Work Site Housekeeping—applicable to operation and maintenance phase of all elements.
- **GEN-20:** Erosion and Sediment Control Measures—applicable to operation and maintenance phase of all elements.
- **GEN-21:** Staging and Stockpiling of Materials—applicable to operation and maintenance phase of all elements.
- **GEN-22:** Sediment Transport—applicable to operation and maintenance phase of all elements.
- **GEN-23:** Stream Access–applicable to operation and maintenance phase of all elements.
- **GEN-24:** On-Site Hazardous Materials Management—applicable to operation and maintenance phase of all elements.
- **GEN-25:** Existing Hazardous Materials—applicable to operation and maintenance phase of all elements.
- **GEN-26:** Spill Prevention and Response—applicable to operation and maintenance phase of all elements.
- **GEN-27:** Existing Hazardous Sites—applicable to operation and maintenance phase of all elements.
- **GEN-30:** Vehicle and Equipment Maintenance—applicable to operation and maintenance phase of all elements.
- **GEN-31:** Vehicle Cleaning—applicable to operation and maintenance phase of all elements.
- **GEN-32:** Vehicle and Equipment Fueling—applicable to operation and maintenance phase of all elements.

> **GEN-33:** Dewatering for Non-Tidal Sites—applicable to operation and maintenance phase of all elements.

> **GEN-35:** Pump/Generator Operations and Maintenance—applicable to operation and maintenance phase of all elements.

> **SED-1:** Groundwater Management—applicable to operation and maintenance phase of all elements.

> **SED-2:** Prevent Scour Downstream of Sediment Removal—applicable to operation and maintenance phase of all elements.

> **SED-4:** Berm Bypass—applicable to operation and maintenance phase of all elements.

> **VEG-1:** Minimize Local Erosion Increase from In-channel Vegetation Removal—applicable to operation and maintenance phase of all elements.

> **VEG-3:** Use Appropriate Equipment for Instream Removal—applicable to operation and maintenance phase of all elements.

> **BANK-1:** Bank Stabilization Design to Prevent Erosion Downstream—applicable to operation and maintenance phase of all elements.

> **BANK-2:** Concrete Use near Waterways—applicable to operation and maintenance phase of all elements.

> **REVEG-1:** Seeding—applicable to operation and maintenance phase of all elements.

> **REVEG-2:** Planting Material—applicable to operation and maintenance phase of all elements.

> **ANI-5:** Slurry Mixture near Waterways—applicable to operation and maintenance phase of all elements.

The No Project Alternative would have continued channel degradation, resulting in reduced water quality, and would be a significant impact.

HYDRO-2 NP—Substantially degrades water quality

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Existing channel operations	N/A	S
Vegetation, sediment, and minor maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No channel modifications would be constructed. As such, there is no potential for construction impacts to substantially degrade water quality.

Operations and Maintenance

Ongoing operations (i.e., existing condition and passive functioning of the channels to pass flow) in an unstable, incising channel would contribute to bank erosion and sedimentation. Periodic flooding along Reaches 8, 7B, and West Little Llagas Creek would continue, contributing to water quality degradation and to continued impairment of the existing water quality standards. This is a significant effect. DO and temperature in Lake Silveira exceed Basin Plan standards, substantially degrading water quality in the

lake and in outflows to the downstream reach. These water quality parameters are more fully discussed and addressed in Section 3.6, Aquatic Resources.

Maintenance of stream channels would continue under the SCVWD SMP. Through the maintenance plan and in accordance with the CCRWQCB Basin Plan, SCVWD project BMPs will reduce any maintenance-related impacts to substantially degrade water quality to less than significant.

Best Management Practices (BMPs) (from SCVWD SMP)

> **GEN-1:** In-Channel Work Window—applicable to operation and maintenance phase of all elements.

> **GEN-2:** Instream Herbicide Application Work Window—applicable to operation and maintenance phase of all elements.

> **GEN-4:** Minimize the Area of Disturbance—applicable to operation and maintenance phase of all elements.

> **GEN-16:** In-Channel Minor Activities—applicable to operation and maintenance phase of all elements.

> **GEN-19:** Work Site Housekeeping—applicable to operation and maintenance phase of all elements.

> **GEN-20:** Erosion and Sediment Control Measures—applicable to operation and maintenance phase of all elements.

> **GEN-21:** Staging and Stockpiling of Materials—applicable to operation and maintenance phase of all elements.

> **GEN-22:** Sediment Transport—applicable to operation and maintenance phase of all elements.

> **GEN-23:** Stream Access—applicable to operation and maintenance phase of all elements.

> **GEN-24:** On-Site Hazardous Materials Management—applicable to operation and maintenance phase of all elements.

> **GEN-25:** Existing Hazardous Materials—applicable to operation and maintenance phase of all elements.

> **GEN-26:** Spill Prevention and Response—applicable to operation and maintenance phase of all elements.

> **GEN-27:** Existing Hazardous Sites—applicable to operation and maintenance phase of all elements.

> **GEN-30:** Vehicle and Equipment Maintenance—applicable to operation and maintenance phase of all elements.

> **GEN-31:** Vehicle Cleaning—applicable to operation and maintenance phase of all elements.

> **GEN-32:** Vehicle and Equipment Fueling—applicable to operation and maintenance phase of all elements.

> **GEN-33:** Dewatering for Non-Tidal Sites—applicable to operation and maintenance phase of all elements.

> **GEN-35:** Pump/Generator Operations and Maintenance—applicable to operation and maintenance phase of all elements.

> **SED-1:** Groundwater Management—applicable to operation and maintenance phase of all elements.

> **SED-2:** Prevent Scour Downstream of Sediment Removal—applicable to operation and maintenance phase of all elements.

> **SED-4:** Berm Bypass—applicable to operation and maintenance phase of all elements.

> **VEG-1:** Minimize Local Erosion Increase from In-channel Vegetation Removal—applicable to operation and maintenance phase of all elements.

> **VEG-3:** Use Appropriate Equipment for Instream Removal—applicable to operation and maintenance phase of all elements.

> **BANK-1:** Bank Stabilization Design to Prevent Erosion Downstream—applicable to operation and maintenance phase of all elements.

> **BANK-2:** Concrete Use near Waterways—applicable to operation and maintenance phase of all elements.

> **REVEG-1:** Seeding—applicable to operation and maintenance phase of all elements.

> **REVEG-2:** Planting Material—applicable to operation and maintenance phase of all elements.

> **ANI-5:** Slurry Mixture near Waterways—applicable to operation and maintenance phase of all elements.

Periodic flooding would continue, contributing to water quality degradation and to continued impairment of the existing water quality standards; therefore the impacts would be significant.

HYDRO-3 NP—Creates or contributes runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provides substantial additional sources of potentially impacted runoff

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Existing channel operations	N/A	NI
Vegetation, sediment, and minor maintenance activities	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No channel modifications or improvements would be constructed. As such, there is no potential for construction impacts to create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provides substantial additional sources of potentially impacted runoff.

Operations and Maintenance

Operations and maintenance of stream channels would continue under the SCVWD SMP. Continuing maintenance activities would not contribute any additional runoff water that would influence the capacity of stormwater drainage systems. This is because there are no maintenance activities that contribute to increasing the volume of runoff. Maintenance activities are designed to improve the rate at which water flows through the channel and culverts, thereby reducing potential flooding; but it does not do anything to impede runoff or add water volume to the stormwater drainage system. Further, maintenance does not substantially add to sources of impacted runoff as it is a continuing and existing condition, consequently there are no related impacts.

Best Management Practices (BMPs)

None applicable

The No Project Alternative would not contribute to runoff therefore no impact would occur.

HYDRO-4 NP—Substantially depletes or interferes with groundwater supplies, groundwater recharge, or water table level

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Existing channel conditions	NI	NI
Vegetation, sediment, and minor maintenance activities	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No channel modifications or improvements would be constructed. As such, there is no potential for construction impacts to substantially deplete or interfere with groundwater supplies, groundwater recharge, or water table level.

Operations and Maintenance

Impacts from operations and maintenance related to groundwater recharge would be the same as under existing conditions. Groundwater supplies and water table elevations would fluctuate naturally and with SCVWD recharge. Sediment removal is the only maintenance activity that could potentially lower the channel bed elevation and, thereby, potentially influence a shallow groundwater table if it is near the channel invert. However, this type of activity has occurred and will continue to occur very infrequently (every 4 to 5 years), only in small and localized areas, and there have been no known effects interfering with groundwater recharge or altering the groundwater table. Therefore, there are no maintenance or operational impacts with potential to deplete or interfere with groundwater under the No Project Alternative.

Best Management Practices (BMPs)

None applicable

The No Project Alternative would not impact groundwater.

HYDRO-5 NP—Alteration of drainage pattern and course of stream resulting in substantial erosion or siltation on- or off-site

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Existing channel conditions	NI	S
Vegetation, sediment, and minor maintenance activities	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No channel modifications or improvements would be constructed. There would be no alteration of drainage pattern and course of stream and no impacts resulting in erosion or siltation due to construction operations.

Operations and Maintenance

Existing operations (i.e., existing channel condition and the passive functioning of the channel to pass flow) would allow ongoing processes of channel downcutting to continue (Balance Hydrologics 2012), which would perpetuate over-steepening of streambanks that leads to bank erosion, channel widening, sedimentation, and potentially loss of riparian vegetation. Therefore, existing operations would result in a significant impact due to the ongoing, long-term erosion, and siltation of the channel.

There would be no alteration of drainage pattern or course of stream as a result of maintenance activities. The stream would be maintained for sediment and vegetation, minor maintenance and banks stabilization, as is under the SMP and employ SCVWD project BMPs to control erosion and siltation.

Best Management Practices (BMPs) (from SCVWD SMP)

> **GEN-1:** In-Channel Work Window—applicable to operation and maintenance phase of all elements.

> **GEN-4:** Minimize the Area of Disturbance—applicable to operation and maintenance phase of all elements.

> **GEN-16:** In-Channel Minor Activities—applicable to operation and maintenance phase of all elements.

> **GEN-20:** Erosion and Sediment Control Measures—applicable to operation and maintenance phase of all elements.

> **GEN-23:** Stream Access—applicable to operation and maintenance phase of all elements.

> **GEN-33:** Dewatering for Non-Tidal Sites—applicable to operation and maintenance phase of all elements.

> **SED-2:** Prevent Scour Downstream of Sediment Removal—applicable to operation and maintenance phase of all elements.

> **SED-4:** Berm Bypass—applicable to operation and maintenance phase of all elements.

> **VEG-1:** Minimize Local Erosion Increase from In-channel Vegetation Removal—applicable to operation and maintenance phase of all elements.

> **VEG-3:** Use Appropriate Equipment for Instream Removal—applicable to operation and maintenance phase of all elements.

> **BANK-1:** Bank Stabilization Design to Prevent Erosion Downstream—applicable to operation and maintenance phase of all elements.

> **REVEG-1:** Seeding—applicable to operation and maintenance phase of all elements.

> **REVEG-2:** Planting Material—applicable to operation and maintenance phase of all elements.

Ongoing, long-term erosion and siltation of the channel would continue resulting in a significant impact.

HYDRO-6 NP—Alteration of drainage pattern and course of stream resulting in flooding or increased surface runoff on- or off-site. Places housing within a 100-year-flood hazard area. Places within a 100-year-flood hazard area structures that would impede or redirect flood flows, and exposes 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.

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Existing channel conditions	NI	S
Vegetation, sediment, and minor maintenance activities	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No channel modifications or improvements would be constructed. There would be no alteration of drainage pattern or course of stream and no construction impacts resulting in flooding.

Operations and Maintenance

Under the No Project Alternative, no channel modifications or improvements would be constructed. As such, there would be continued flooding, potentially exposing structures and people to 100-year flood hazards. Operational impacts to flood hazards are significant. Maintenance activities are conducted in order to help maximize the flow capacity of the existing channels. Therefore, maintenance activities would not represent an impact on flooding.

Best Management Practices (BMPs)

None applicable

Continued flooding, would potentially expose structures and people to 100-year flood hazards; therefore, the impact would be significant.

3.2.5.2 Tunnel Alternative (Proposed Action)

The Preferred Alternative tunnel construction, channel improvements (excavation to widen and deepen) and construction and operations and maintenance are described in Section 2.5.

HYDRO-1 T—Potential to violate water quality standards

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction activities	LTS	N/A
Cut-off section of West Little Llagas Ck	N/A	B
Vegetation and sediment management, minor maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Project construction (see Sections 2.4 and 2.6 for a complete description of construction activities) would include channel modifications (excavation to deepen and widen), constructing a tunnel, excavating a bypass channel in Reach 7A, constructing or replacing culverts; installing maintenance roads or access ramps; constructing temporary and permanent grade control structures, and upgrading bridge crossings. These actions are all surface-disturbing activities. When portions of the Project area are excavated or otherwise disturbed, the potential for unstabilized incidental material fallback, soil erosion and/or elevated sediment levels to occur in runoff discharging from the site would substantially increase. Construction activities would also have the potential to mobilize sediments and associated organics, pesticides and herbicide residues contained in the soils. In addition, equipment used during the construction activities would have the potential to leak polluting materials, including oil and gasoline. These sediments and contaminants may be transported into and decrease or impair water quality in Llagas Creek or downstream drainages and water bodies. Potential to violate water quality standards during construction activities would be less than significant by following the SCVWD project BMPs and by implementation of the SWPPP, both of which are described below.

Within Reach 6 the proposed channel widening would encroach upon a deed restricted property (see Section 3-18). The deed restriction requires that any planning of any ground disturbing work within the parcel requires consultation with the CCRWQCB to confirm compliance with regulatory guidelines that pertain to a closed landfill. The current property owner would also participate in consultation and final design resolution. Compliance with the deed restriction and the resulting consultation requirements would reduce potential water quality impacts to less than significant.

Operations and Maintenance

Maintenance, including vegetation management, sediment management, and minor maintenance work, for the Preferred Alternative is described in Section 2.4.5. Maintenance activities, predominately sediment removal, would have the greatest potential to mobilize sediments and introduce associated excess nutrients contained in soils. Because nearly all of the stream reaches only flow intermittently, including during the winter season, it is expected that most maintenance activities would occur when the channels are dry, which would substantially reduce the potential for siltation, release of nutrients, and prevent or substantially minimize adverse changes in water quality parameters, such as DO and turbidity. SCVWD BMPs include measures to isolate sites, such as by the use of a flow bypass (WQ-12), that would address sediment removal activities that might need to occur within a flowing section of channel. Potential to violate water quality standards during maintenance activities would be reduced to less than significant by following the SCVWD project BMPs including, but not limited to, those described under impacts from construction in HYDRO-1 T, below. A complete description of the BMPs, listed below, are provided in Appendix B.

The Preferred Alternative operations would result in flow through a designed stable channel morphology, which would reduce ongoing, existing channel incision and with little potential for bank erosion. This would reduce sedimentation and improve water quality. Flooding would be reduced in Reaches 8, 7A, and 7B, which is also a water quality improvement. The 6,500-foot-long cutoff portion of West and East Little Llagas Creek to the Butterfield channel extension confluence would also no longer experience high flows of the same magnitude, although some flooding will still occur during the larger storm events. The reduction in flood magnitude and extent which would reduce potential scour, erosion, and degradation of water quality during over-bank flow events. This is a beneficial water quality effect.

Best Management Practices (BMPs)

To the extent feasible, all in-channel construction and maintenance activities would occur during the dry season when stream channels in the majority of the reaches are dry and water quality would not be impacted. Construction activities would be required in the perennial flowing Reach 6. In accordance with

the CGP implementation of the Project SWPPP and SCVWD project BMPs would reduce the potential of violating water quality standards to less than significant. The following SCVWD project BMPs, include actions to prevent potential violation of water quality standards from all construction and maintenance operations: WQ-1 to WQ-6, WQ-9, WQ-10, WQ-12, WQ-14, WQ-15, WQ-18, WQ-40, WQ-41, and WQ-42. These BMPs would ensure that potential to violate DO, turbidity, and sedimentation standards during construction operations is less than significant.

> **WQ-1:** Conduct Work from Top of Bank.

> **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms.

> **WQ-3:** Limit Impact of Pump and Generator Operation and Maintenance.

> **WQ-4:** Limit Impacts of Sediments on Water Quality.

> **WQ-5:** Limit Impacts from Staging and Stockpiling Materials.

> **WQ-6:** Stabilize Construction Entrances and Exits.

> **WQ-9:** Minimize Erosion from Removal of In-Channel Vegetation.

> **WQ-10:** Limit Impact of Concrete near Waterways.

> **WQ-12:** Isolate Work in Non-Tidal Sites with Use of Diversion of Bypass.

> **WQ-14:** Use Seeding for Erosion Control, Weed Suppression, and Site Improvement.

> **WQ-15:** Manage Exposed Groundwater at Work Sites.

> **WQ-18:** Maintain Clean Conditions at Work Sites.

> **WQ-40:** Prevent Water Pollution.

> **WQ-41:** Prevent Stormwater Pollution.

> **WQ-42:** Manage Sanitary/Septic Waste.

Implementation of the SCVWD project BMPs will reduce any maintenance impacts to potentially violate water quality standards to less than significant.

Implementation of Project SWPPP is required under the CGP. SWPPP BMPs range from source controls, such as reduced surface disturbance to treatment of polluted runoff, such as detention or retention basins. Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs; and a sediment monitoring plan. Section A of the CGP describes the elements that must be contained in a SWPPP and requires BMPs for proper storage and transportation of sediments for sites less than 1 acre to minimize water quality impacts.

The SWPPP requires practices to reduce the potential for equipment to introduce pollutants to the program area, and would require accidental spill containment and disposal planning. In addition, the erosion and sediment control plans within the SWPPP would be required to include BMPs to minimize the potential for, and effects from, spills of hazardous, toxic, or petroleum substances during construction activities.

If a spill occurs, the contractor’s superintendent would take action to contact the appropriate safety and cleanup crews to ensure that the Spill Prevention Control Plan (SPCP) is followed. A written description of reportable releases would be submitted to the RWQCB and the Department of Toxic Substances Control (DTSC) by the contractor or owner. This submittal would be required to contain a description of the release, including the type of material and an estimate of the amount spilled, the date of the release, an explanation of why the spill occurred, and a description of the steps taken to prevent and control future

releases. The releases would be documented on a spill report form. If an appreciable spill occurs and results determine that Project activities have adversely affected surface water or groundwater quality, a detailed analysis would be performed to the specifications of DTSC to identify the likely cause of contamination. This analysis would include recommendations for reducing or eliminating the source or mechanisms of contamination. Based on this analysis, contractors would select and implement measures to control contamination with a performance standard that surface and/or groundwater quality must be returned to baseline conditions. These measures would be subject to approval by the SCVWD and/or the RWQCB.

Mitigation Measures

None required

Implementation of the BMPs listed above would reduce impacts to less than significant.

HYDRO-2 T—Substantially degrades water quality

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel construction activities and operation	LTS	B
Cut-off section of West Little Llagas Ck	LTS	B
Tunnel diversion	LTS	LTSM
Vegetation and sediment management, minor maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Project construction includes activities that would cause soil disturbance, such as equipment mobilization, staging, demobilization, channel grading, and vegetation restoration. When portions of the Project area are excavated or otherwise disturbed, the potential for unstabilized incidental material fallback, soil erosion, and/or elevated sediment levels to occur in runoff discharging from the site would substantially increase. Construction in shallow groundwater areas could intersect the water table, exposing groundwater at work sites. Construction activities would also have the potential to mobilize sediments and associated organics, pesticides, and herbicide residues contained in the soils. The use of explosives to build the tunnel section could leave nitrate residues in the surrounding rock material that has the potential to be a contaminant if it migrates into the channel with runoff. However, by the time the tunnel is completed, grouted, and sealed it is assumed that there is very little potential for contact of nitrate residue with streamfllow through the tunnel. Additionally, BMPs WQ-4, WQ-5, and WQ-6 would control removal of rock and sediments from the tunnel blasting work to reduce the risk of mishandling sediments that may have nitrate residues that could enter a waterway and cause water quality violations.

Llagas Creek is currently on the CWA Section 303(d) list for impaired water bodies for multiple water quality parameters. Sedimentation and nitrates are the primary parameters with impairment.

Potential to substantially degrade water quality during construction activities would be less than significant by implementation of the SWPPP (described above under HYDRO-1 T) and by following the SCVWD project BMPs, which are listed below.

Operations and Maintenance

Maintenance activities such as herbicide spraying, vegetation pruning, and sediment removal would have the potential to expose bed and bank sediments allowing for mobilization of soils and sediments, potentially causing siltation and introduction of associated organics, pesticides, and herbicide residues if present and contained in the soils. However, as described in Section 2.4.5, potential to degrade water quality during maintenance activities would be minimized by following the SCVWD project BMPs that reduce the risk of allowing sediment to be mobilized and transported into flowing channel segments. The BMPs that are pertinent to protecting water quality are those listed below.

Under the proposed stable channel design erosion, channel downcutting, and resultant sedimentation and turbidity levels would be reduced from existing conditions. Operation of the Preferred Alternative would also eliminate flooding in Reaches 7B and 8 to the 1-percent event, which would reduce the opportunity for sediments and associated organics, pesticides, and herbicide residues to become mobilized and to enter the stream channel, which is a benefit to water quality. Additionally, most of the cut-off section of West Little Llagas Creek (and East Little Llagas Creek up to the Butterfield extension channel) would experience less flooding during the 1-percent flood event; a benefit to water quality. In other reaches of the Project, the extent of flooding would remain exactly the same as under existing conditions, so water quality would not be degraded beyond existing conditions due to flooding.

A potential water quality issue specific to the construction and operation of the tunnel in Reach 8 is related to potential bat colonization. Bats are known to use structures, such as tunnels for roosting. Operation of the tunnel portion of the Project in Reach 8 could pose a water quality problem if bats use the tunnel to roost. If bats colonize the tunnel, then bat guano could enter the channel and degrade water quality. Bat guano can introduce nitrogen and *E. Coli* bacteria. Besides the water quality issue, there is also an issue of potential for harm and injury to a colony if bats use the tunnel. Consequently, measures to monitor and exclude bats, which address the harm and injury issue, as well as the water quality issue, are both addressed in Section 3.5, Wildlife Resources. Mitigation Measure WILD-3c T, listed below includes monitoring for the presence of bats and use of exclusionary devices if bats are observed, to prevent colonizing the tunnel. With the implementation of Mitigation Measure WILD-3c T, the potential for water quality degradation due to bat colonization would be mitigated to less than significant.

Best Management Practices (BMPs)

> **WQ-1:** Conduct Work from Top of Bank.

> **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms.

> **WQ-3:** Limit Impact of Pump and Generator Operation and Maintenance.

> **WQ-4:** Limit Impacts of Sediments on Water Quality.

> **WQ-5:** Limit Impacts from Staging and Stockpiling Materials.

> **WQ-6:** Stabilize Construction Entrances and Exits.

> **WQ-9:** Minimize Erosion from Removal of In-Channel Vegetation.

> **WQ-10:** Limit Impact of Concrete near Waterways.

> **WQ-12:** Isolate Work in Non-Tidal Sites with Use of Diversion of Bypass.

> **WQ-14:** Use Seeding for Erosion Control, Weed Suppression, and Site Improvement.

> **WQ-15:** Manage Exposed Groundwater at Work Sites.

> **WQ-18:** Maintain Clean Conditions at Work Sites.

> **WQ-40:** Prevent Water Pollution.

> **WQ-41:** Prevent Stormwater Pollution.

> **WQ-42:** Manage Sanitary/Septic Waste.

> **HM-1:** Comply with All Pesticide Application Restrictions.

> **HM-2:** Use Appropriate Type(s) of Pest Control.

> **HM-5:** Comply with All Pesticide Usage Requirements.

> **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas.

> **HM-8:** Comply with Restrictions on Herbicide Use in Aquatic Areas.

> **HM-12:** Assure Proper Hazardous Materials Management.

> **HM-13:** Prevent Spills.

Mitigation Measures

Mitigation Measure WILD-3c T: Development and Implementation of a Bat Monitoring Program and Development of Bat/Tunnel Exclusion Devices.

A bat monitoring program will be implemented upon completion of tunnel construction per the guidance of regulatory agencies and local bat experts. The monitoring program will include, but not be limited to air flow through the tunnel will be maintained to inhibit the use of the tunnel by roosting bats. Exterior grade plywood will be used to exclude bats from smaller manholes and a braided nylon net with 0.25-inch mesh suspended over larger access points (H.T. Harvey & Associates 2012a). Visual inspections by a qualified biologist for bats and bat sign (i.e., individual animals and guano) will be conducted in the tunnel annually prior to annual maintenance activities in the tunnel. If bats are detected, acoustic monitoring with AnaBat™ or Petersson units will be installed to monitor the number of bats using the tunnel. After establishing a baseline count of bats occupying the tunnel, consultation with resource agencies would be consulted to determine if further action is necessary. In the event that bats would need to be excluded from the tunnel, SCVWD staff will install one-way exits at the tunnel entrances through which the bats can leave, but cannot return. Exits will consist of netting with 1/60.25-inch mesh to prevent bats from returning. This mitigation measure would identify if bats are using the tunnel and, if so, would exclude them. This would reduce the potential for harm or injury in case of a large flood and would protect against water quality degradation.

Implementation of Mitigation Measure WILD-3c T and BMPs specified above will reduce any maintenance impacts to potentially violate water quality standards associated with bat colonization of the tunnel to less than significant.

HYDRO-3 T—Creates or contributes runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provides substantial additional sources of potentially impacted runoff

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel construction activities and operation	NI	NI
Diversion Channel Reach 7A	NI	NI
Cut-off section of West Little Llagas Ck	NI	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Project construction activities would have no effect on existing storm drain systems since there is no expansion or alteration of storm drain locations for this alternative. Since construction activities do not expand or otherwise alter existing storm drain locations, they also do not add substantial additional sources of contaminated runoff to the stormwater drainage system; as such, there are no impacts.

Operations and Maintenance

Although operational activities do not contribute any additional runoff, the Preferred Alternative (as well as all of the action alternatives) would bypass flow from the existing West Little Llagas Creek channel through a newly constructed channel in Reach 7A that would add runoff to the downstream Llagas Creek Reaches 4, 5, and 6. However, this is not an impact on the capacity of the stormwater drainage system. As discussed in Section 3.2.4.2, the Project design includes an increase in the flood capacity of these downstream reaches so that there is no induced flooding due to upstream project improvements. As such, there is no operational impact to the stormwater drainage system. Vegetation management, sediment management, and minor maintenance activities are conducted only to maintain the flood capacity of the channels under all of the action alternatives. Consequently, maintenance activities do not add to runoff, rather maintenance ensures that the channels function efficiently to handle the runoff and maintain the hydraulic capacity of the channel design.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

There would be no impact because the Preferred Alternative would not contribute to stormwater runoff.

HYDRO-4 T—Substantially depletes or interferes with groundwater supplies, groundwater recharge, or water table level

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel construction and operation	LTS	LTS
Diversion Channel Reach 7A	LTS	LTS
Vegetation and sediment management, minor maintenance	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Project construction activities, such as excavation and grading, would have virtually no influence on groundwater supplies or recharge since it does not create impervious surface areas, block infiltration, or withdraw groundwater. However, in the Reach 7A bypass channel segment it is likely that the shallow groundwater table will be intercepted (see existing groundwater conditions in Section 3.2.2.2 above). From near Lake Silveira to the Llagas Creek channel confluence with Reach 7A near Monterey Highway, there is a shallow groundwater table, approximately 8 feet bgs. Excavation depths in this lowermost section of Reach 7A will be about 12 feet bgs, as such construction will intercept groundwater. Upstream from Lake Silveira the groundwater table is less shallow, approximately 14–15 feet bgs near West Middle Avenue. Proposed construction depths will be nearly 15 feet deep, so that groundwater is also likely to be

intercepted, although, to a lesser extent than closer to the lake. SCVWD project BMP WQ-15 addresses encountering groundwater during construction to protect water quality. Consequently, impacts associated with construction work would be less than significant.

Operations and Maintenance

For Project operations, the completed channel excavation depths would lower the channel invert, which could intersect the groundwater table where it is shallow and, thereby, the potential to locally lower groundwater elevations near stream banks that in some locales supports riparian vegetation (primarily in Reach 6). From review of recent well elevation data, average water table elevations are below the proposed channel excavation depths of approximately 5 feet along most of the existing channel. Additionally, stream bank soil samples collected for the Project (Cardno ENTRIX 2012a) found that the local water table is likely lower than the existing channel invert in most reaches and, as such, the probability of the Project channel design intercepting the groundwater table and lowering existing shallow groundwater elevations is less than significant in most reaches. Based on the 65-percent design and analysis of annual fluctuations in the elevation of the water table (presented in Section 3.2.2 and discussed above) it is not anticipated that stream channel deepening would breach the water table along any of the existing channel alignment, but it would intercept groundwater in the proposed Reach 7A bypass channel. As discussed in section 3.2.2.2, the design channel invert in Reach 7A near Lake Silveira (essentially through the “bow-tie” parcel, see Section 2.4.6) would be about 4 feet below the shallow groundwater table and a little further upstream near West Middle Avenue the channel design invert would be about 1 foot below the groundwater table. Consequently, the Reach 7A bypass channel will likely lower the shallow groundwater table in the vicinity near to the constructed channel by about 4 feet.

However, this is not a substantial change to the groundwater table elevation, and there are not any related adverse effects associated with a groundwater table lowering of this magnitude. This is because the shallow groundwater level lowering is likely to be only in a narrow-width band corresponding to the immediate vicinity of the Reach 7A channel streambanks that will be constructed. It is very unlikely that the groundwater table would be lowered in a wider area, because there is no groundwater pumping associated with the Project. Unlike a pumping draw-down that could mine the deeper groundwater aquifer, the shallow groundwater table will slope from the area near the constructed streambanks toward the elevation of the channel bed. Additionally, there is no existing riparian vegetation along Reach 7A, because there is no existing flowing channel; the proposed construction in this reach is through relatively flat agricultural fields with no existing drainage channel and no riparian vegetation. As such, there is no risk to established vegetation that might require shallow groundwater for survival. There are also no known water supply wells in the vicinity of the proposed construction alignment that would be affected. The shallow groundwater table may, in fact, provide a small amount of perennial baseflow to the lowermost portion of Reach 7A since groundwater will be influent to the constructed channel. This could be a net benefit to establishing aquatic habitat in this part of Reach 7A and may also contribute flow to the Llagas Creek channel at the Reach 7A confluence. However, groundwater relative to the top of streambanks created by construction of Reach 7A will likely be not much higher than the design invert of the streambed, about 15 feet bgs. As part of the Lake Silveira mitigation element, new upland and riparian vegetation plantings are proposed along the channel alignment through Reach 7A (see Section 2.4.6) that takes into consideration the post-construction ground contour elevations and associated groundwater elevation as appropriate for plant growth and survival. Additionally, when flow is restored to the remnant Llagas Creek channel this would likely increase percolation to groundwater. The Preferred Alternative (and all action alternatives) would result in a vegetated corridor along the Reach 7A channel alignment. Although the groundwater table will be intercepted in Reach 7A, this is not a substantial lowering of the groundwater table or attendant adverse effects; as such, the impact is less than significant.

Maintenance of the Proposed Project has no relationship to or influence on groundwater recharge or the water table, because maintenance activities do not change the ground contours, does not add impervious surface area; and, therefore, does not influence percolation to groundwater and does not pump groundwater. Therefore, maintenance activities do no influence or impact the groundwater recharge or water table elevations.

Best Management Practices

> **WQ-15:** Manage Exposed Groundwater at Work Sites.

Mitigation Measures

None required

Implementation of the BMP listed above reduces impacts to less than significant.

HYDRO-5 T—Alteration of drainage pattern and course of stream resulting in substantial erosion or siltation on- or off-site

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel construction and operation	LTS	LTS
Diversion channel Reach 7A	LTS	LTS
Cut-off section of West Little Llagas Ck	LTS	B

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Project construction includes activities that would cause soil disturbance, such as equipment mobilization, staging and demobilization, and excavation and channel grading. Similar to HYDRO-1 T and HYDRO-2 T, the SCVWD project BMPs reduce the potential of construction related erosion or siltation. The implementation of BMPs listed below would reduce the potential of substantial erosion or siltation due to construction activities to less than significant.

Operations and Maintenance

Maintenance after construction of the Proposed Project would continue under this alternative, as described in Section 2.4.5. Similar to HYDRO-1 T and HYDRO-2 T, the SCVWD project BMPs listed below would limit the potential of construction-related erosion or siltation to less than significant.

The final channel form in all Project reaches, including the additional flows that will be delivered to Reaches 6 and 5 through the 7A bypass channel, is designed to provide stable channel dimensions. This would result in reduced bank erosion and reduced channel incision that in turn would limit sedimentation and siltation, as described and analyzed in Section 3.2.5.2. The operational design of the Project would not eliminate all erosion, but would reduce the sedimentation and siltation impairments of Llagas Creek to less than the existing conditions. For the cutoff channel segment of West and East Little Llagas Creek, the existing high flows would be of a substantially lower magnitude, reducing the potential for erosion or siltation in that reach; a beneficial effect.

Best Management Practices (BMPs)

> **WQ-1:** Conduct Work from Top of Bank.

> **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms.

> **WQ-3:** Limit Impact of Pump and Generator Operation and Maintenance.

> **WQ-4:** Limit Impacts of Sediments on Water Quality.

> **WQ-5:** Limit Impacts from Staging and Stockpiling Materials.

> **WQ-6:** Stabilize Construction Entrances and Exits.

> **WQ-9:** Minimize Erosion from Removal of In-Channel Vegetation.

> **WQ-10:** Limit Impact of Concrete near Waterways.

> **WQ-12:** Isolate Work in Non-Tidal Sites with Use of Diversion of Bypass.

> **WQ-14:** Use Seeding for Erosion Control, Weed Suppression, and Site Improvement.

> **WQ-15:** Manage Exposed Groundwater at Work Sites.

> **WQ-18:** Maintain Clean Conditions at Work Sites.

> **WQ-40:** Prevent Water Pollution.

> **WQ-41:** Prevent Stormwater Pollution.

> **WQ-42:** Manage Sanitary/Septic Waste.

Mitigation Measures

None required

Implementation of the SCVWD project BMPs will reduce any potential water quality impacts to less than significant.

HYDRO-6 T—Alteration of drainage pattern and course of stream resulting in flooding or increased surface runoff on- or off-site. Places housing within a 100-year-flood hazard area. Places within a 100-year-flood hazard area structures that would impede or redirect flood flows, and exposes 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.

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel construction and operation	NI	B
Diversion channel Reach 7A	NI	B
Cut-off section of West Little Llagas Ck	NI	B

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction activities including channel excavation and grading for the Proposed Project, as described and analyzed in Section 3.2.5.2, would not result in increased surface runoff or flooding, would not impose flooding hazards to buildings or impede flood flows, and would not expose people or property to

increased flooding from flood protection features. As a result, construction would have no impact on the alteration of a drainage resulting in flooding.

Operations and Maintenance

Operation of the Proposed Project, as described in Section 3.2.5.2, is designed to reduce flooding through Morgan Hill by containing the 1-percent exceedance flow in Reaches 7A, 7B and 8; containing the 10-percent exceedance flow in Reach 14; and to not induce flooding in Reaches 4, 5, and 6 due to upstream flood protection improvements. The Proposed Project would reduce the extent of flooding in the Project area as shown in comparison of Figures 2.3-1 and 2.4-1.

Maintenance, as described in Section 2.4.5, would involve activities such as sediment removal, vegetation trimming, and spraying to maintain flood capacity of the Proposed Project. Consequently, the operations and maintenance of the Proposed Project would be beneficial and would have no impact under CEQA based on this significance criteria.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

Implementation of the Preferred Alternative is designed to reduce flooding and, therefore, be beneficial and would have no impact under CEQA.

3.2.5.3 Natural Resources Conservation Service (NRCS) Alternative

The NRCS Alternative is similar to the Preferred Alternative, except that no diversion tunnel or sediment detention basin would be constructed through a portion of Reach 8, replaced by channel improvements between West Main Avenue and West Dunne Avenue. This will increase the Project footprint, and require more channel to be maintained relative to the Preferred Alternative. The NRCS Alternative provides the same 1-percent flood management as the Preferred Alternative in Reach 8 protecting downtown Morgan Hill, as well as in Reaches 7A and 7B. See Section 2.6.1 for more detail on features of the NRCS Alternative. All other Project reaches would have the same level of protection; and the same Project features would be constructed, as described for the Preferred Alternative. Impact determinations for the NCRS Alternative are similar to those in the Preferred Alternative.

HYDRO-1 NRCS—Potential to violate water quality standards

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel construction	LTS	N/A
Cut-off section of West Little Llagas Ck	N/A	B
Vegetation and sediment management, minor maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Project construction (see Sections 2.4 and 2.6 for a complete description of construction activities) would include channel modifications (excavation to deepen and widen), excavating a bypass channel in

Reach 7A, constructing or replacing culverts, installing maintenance roads or access ramps, constructing temporary and permanent grade control structures, and upgrading bridge crossings. These actions are all surface-disturbing activities. When portions of the Project area are excavated, or otherwise disturbed, the potential for unstabilized incidental material fallback, soil erosion, and/or elevated sediment levels to occur in runoff discharging from the site would substantially increase. Construction activities would also have the potential to mobilize sediments and associated organics, pesticides, and herbicide residues contained in the soils. In addition, equipment used during the construction activities would have the potential to leak polluting materials, including oil and gasoline. These sediments and contaminants may be transported into, and decrease or impair water quality in Llagas Creek or downstream drainages and water bodies. Potential to violate water quality standards during construction activities would be less than significant by following the SCVWD project BMPs and by implementation of the SWPPP, both of which are described below.

Within Reach 6 the proposed channel widening would encroach upon a deed restricted property (see Section 3-18). The deed restriction requires that any planning of any ground disturbing work within the parcel requires consultation with the CCRWQCB to confirm compliance with regulatory guidelines that pertain to a closed landfill. The current property owner would also participate in consultation and final design resolution. Compliance with the deed restriction and the resulting consultation requirements would reduce potential water quality impacts to less than significant.

Operations and Maintenance

Maintenance, including vegetation management, sediment management, and minor maintenance work, for the NRCS Alternative is described in Section 2.4.5. Maintenance activities, predominately sediment removal, would have the greatest potential to mobilize sediments and introduce associated excess nutrients contained in soils. Because nearly all of the stream reaches only flow intermittently, including during the winter season, it is expected that most maintenance activities would occur when the channels are dry, which would substantially reduce the potential for siltation, release of nutrients, and prevent or substantially minimize adverse changes in water quality parameters, such as DO and turbidity. SCVWD BMPs include measures to isolate sites, such as by the use of a flow bypass (WQ-12) that would address sediment removal activities that might need to occur within a flowing section of channel. Potential to violate water quality standards during maintenance activities would be reduced to less than significant by following the SCVWD project BMPs including, but not limited to, those described under impacts from construction in HYDRO-1 T, below. A complete description of the BMPs, listed below, are provided in Appendix B.

The NRCS Alternative operations would result in flow through a designed stable channel morphology, which would reduce ongoing, existing channel incision and with little potential for bank erosion. This would reduce sedimentation and improve water quality. Flooding would be reduced in Reaches 8, 7A, and 7B, which is also a water quality improvement. The 6,500-foot-long cutoff portion of West Little Llagas Creek to the Butterfield channel extension confluence would also no longer experience high flows or flooding, which would reduce potential scour, erosion, and degradation of water quality during over-bank flow events. This is a beneficial water quality effect.

Best Management Practices (BMPs)

To the extent feasible, all in-channel construction and maintenance activities would occur during the dry season when stream channels in the majority of the reaches are dry and water quality would not be impacted. Construction activities would be required in the perennial section of Reach 6. In accordance with the CGP implementation of the Project SWPPP and SCVWD project BMPs would reduce the potential of violating water quality standards. The following SCVWD project BMPs include actions to prevent potential violation of water quality standards from all construction operations: WQ-1 to WQ-6, WQ-9, WQ-10, WQ-12, WQ-14, WQ-15, WQ-18, WQ-40, WQ-41, and WQ-42. These BMPs would

ensure that potential to violate DO, turbidity, and sedimentation standards during construction operations is less than significant.

> **WQ-1:** Conduct Work from Top of Bank.

> **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms.

> **WQ-3:** Limit Impact of Pump and Generator Operation and Maintenance.

> **WQ-4:** Limit Impacts of Sediments on Water Quality.

> **WQ-5:** Limit Impacts from Staging and Stockpiling Materials.

> **WQ-6:** Stabilize Construction Entrances and Exits.

> **WQ-9:** Minimize Erosion from Removal of In-Channel Vegetation.

> **WQ-10:** Limit Impact of Concrete near Waterways.

> **WQ-12:** Isolate Work in Non-Tidal Sites with Use of Diversion of Bypass.

> **WQ-14:** Use Seeding for Erosion Control, Weed Suppression, and Site Improvement.

> **WQ-15:** Manage Exposed Groundwater at Work Sites.

> **WQ-18:** Maintain Clean Conditions at Work Sites.

> **WQ-40:** Prevent Water Pollution.

> **WQ-41:** Prevent Stormwater Pollution.

> **WQ-42:** Manage Sanitary/Septic Waste.

Implementation of the SCVWD project BMPs will reduce any potential water quality impacts to less than significant.

Implementation of Project SWPPP is required under the CGP. SWPPP BMPs range from source controls, such as reduced surface disturbance to treatment of polluted runoff, such as detention or retention basins. Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented, if there is a failure of BMPs; and a sediment monitoring plan. Section A of the CGP describes the elements that must be contained in a SWPPP and requires BMPs for proper storage and transportation of sediments for sites less than 1 acre to minimize water quality impacts.

Implementation of the SWPPP requires practices to reduce the potential for equipment to introduce pollutants to the Program area and would require accidental spill containment and disposal planning. In addition, the erosion and sediment control plans within the SWPPP would be required to include BMPs to minimize the potential for, and effects from, spills of hazardous, toxic, or petroleum substances during construction activities.

If a spill occurs, the contractor’s superintendent would take action to contact the appropriate safety and cleanup crews to ensure that the Spill Prevention, Control, and Countermeasure Plan (SPCCP) is followed. A written description of reportable releases would be submitted to the RWQCB and the DTSC by the contractor or owner. This submittal would be required to contain a description of the release, including the type of material and an estimate of the amount spilled, the date of the release, an explanation of why the spill occurred, and a description of the steps taken to prevent and control future releases. The releases would be documented on a spill report form. If an appreciable release occurs and results determine that Project activities have adversely affected surface water or groundwater quality, a detailed analysis would be performed to the specifications of DTSC to identify the likely cause of contamination. This analysis would include recommendations for reducing or eliminating the source or

mechanisms of contamination. Based on this analysis, contractors would select and implement measures to control contamination, with a performance standard that surface and/or groundwater quality must be returned to baseline conditions. These measures would be subject to approval by the SCVWD and/or the CCRWQCB.

Mitigation Measures

None required

Implementation of the BMPs listed above would reduce impact to less than significant.

HYDRO-2 NRCS—Substantially degrades water quality

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel construction activities and operation	LTS	B
Cut-off section of West Little Llagas Ck	LTS	B
Vegetation and sediment management, minor maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Project construction includes activities that would cause soil disturbance, such as equipment mobilization, staging, demobilization, channel grading, and vegetation restoration. When portions of the Project area are excavated or otherwise disturbed, the potential for unstabilized incidental material fallback, soil erosion, and/or elevated sediment levels to occur in runoff discharging from the site would substantially increase. Construction in shallow groundwater areas could intersect the water table, exposing groundwater at work sites. Construction activities would also have the potential to mobilize sediments and associated organics, pesticides, and herbicide residues contained in the soils.

Llagas Creek is currently on the CWA Section 303(d) list for impaired water bodies for multiple water quality parameters. Sedimentation and nitrates are the primary parameters with impairment.

Potential to substantially degrade water quality during construction activities would be less than significant by implementation of the SWPPP (described above under HYDRO-1 NRCS) and by following the SCVWD project BMPs, which are listed below.

Operations and Maintenance

Maintenance activities, such as herbicide spraying, vegetation pruning, and sediment removal, would have the potential to expose bed and bank sediments allowing for mobilization of soils and sediments; potentially causing siltation and introduction of associated organics, pesticides, and herbicide residues if present and contained in the soils. However, as described in Section 2.4.5, potential to degrade water quality during maintenance activities would be minimized by following the SCVWD project BMPs that reduce the risk of allowing sediment to be mobilized and transported into flowing channel segments. The BMPs that are pertinent to protecting water quality are those listed below.

Under the proposed stable channel design erosion, channel down-cutting, and resultant sedimentation and turbidity levels would be reduced from existing conditions. Operation of the NRCS Alternative would also eliminate flooding in Reaches 7B and 8 to the 1-percent event, which would reduce the opportunity for sediments and associated organics, pesticides, and herbicide residues to become mobilized and to enter the stream channel, which is a benefit to water quality. Additionally, the most of the cut-off section of

West to East Little Llagas Creek (up to the Butterfield extension channel) would experience reduced flooding during the 1-percent exceedance event; a benefit to water quality. In other reaches of the Project, the extent of flooding would remain exactly the same as under existing conditions, so water quality would not be degraded beyond existing conditions due to flooding.

Best Management Practices (BMPs)

- **WQ-1:** Conduct Work from Top of Bank.
- **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms.
- **WQ-3:** Limit Impact of Pump and Generator Operation and Maintenance.
- **WQ-4:** Limit Impacts of Sediments on Water Quality.
- **WQ-5:** Limit Impacts from Staging and Stockpiling Materials.
- **WQ-6:** Stabilize Construction Entrances and Exits.
- **WQ-9:** Minimize Erosion from Removal of In-Channel Vegetation.
- **WQ-10:** Limit Impact of Concrete near Waterways.
- **WQ-12:** Isolate Work in Non-Tidal Sites with Use of Diversion of Bypass.
- **WQ-14:** Use Seeding for Erosion Control, Weed Suppression, and Site Improvement.
- **WQ-15:** Manage Exposed Groundwater at Work Sites.
- **WQ-18:** Maintain Clean Conditions at Work Sites.
- **WQ-40:** Prevent Water Pollution.
- **WQ-41:** Prevent Stormwater Pollution.
- **WQ-42:** Manage Sanitary/Septic Waste.
- **HM-1:** Comply with All Pesticide Application Restrictions.
- **HM-2:** Use Appropriate Type(s) of Pest Control.
- **HM-5:** Comply with All Pesticide Usage Requirements.
- **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas.
- **HM-8:** Comply with Restrictions on Herbicide Use in Aquatic Areas.
- **HM-12:** Assure Proper Hazardous Materials Management.
- **HM-13:** Prevent Spills.

Mitigation Measures

None required

Implementation of the SCVWD project BMPs will reduce any potential water quality impacts to less than significant.

HYDRO-3 NRCS—Creates or contributes runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provides substantial additional sources of potentially impacted runoff

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel construction activities and operation	NI	NI
Diversion Channel Reach 7A	NI	NI
Cut-off section of West Little Llagas Ck	NI	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Project construction activities would have no effect on existing storm drain systems since there is no expansion or alteration of storm drain locations for this alternative. Since construction activities do not expand or otherwise alter existing storm drain locations, they also do not add substantial additional sources of contaminated runoff to the stormwater drainage system; as such, there are no impacts.

Operations and Maintenance

Although operational activities do not contribute any additional runoff, the NRCS Alternative (as well as all of the action alternatives) would bypass flow from the existing West Little Llagas Creek channel through a newly constructed channel in Reach 7A that would add runoff to the downstream Llagas Creek Reaches 4, 5, and 6. However, this is not an impact on the capacity of the stormwater drainage system. As discussed in Section 3.2.4.2, the Project design includes an increase in the flood capacity of these downstream reaches so that there is no induced flooding due to upstream project improvements. As such, there is no operational impact to the stormwater drainage system.

Vegetation management, sediment management, and minor maintenance activities are conducted only to maintain the flood capacity of the channels under all of the action alternatives. Consequently, maintenance activities do not add to runoff, rather maintenance ensures that the channels function efficiently to handle the runoff and maintain the hydraulic capacity of the channel design.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

There would not be an impact because NRCS Alternative would not contribute to increased runoff water.

HYDRO-4 NRCS—Substantially depletes or interferes with groundwater supplies, groundwater recharge, or water table level

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel construction and operation	LTS	LTS
Diversion Channel Reach 7A	LTS	LTS
Vegetation and sediment management, minor maintenance	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Project construction activities, such as excavation and grading, would have virtually no influence on groundwater supplies or recharge since it does not create impervious surface areas, block infiltration, or withdraw groundwater. However, in the Reach 7A bypass channel segment, it is likely that the shallow groundwater table will be intercepted (see existing groundwater conditions in Section 3.2.2.2 above). From near Lake Silveira to the Llagas Creek channel confluence with Reach 7A near Monterey Highway, there is a shallow groundwater table, approximately 8 feet bgs. Excavation depths in this lowermost section of Reach 7A will be about 12 feet bgs, as such construction will intercept groundwater. Upstream from Lake Silveira the groundwater table is less shallow, approximately 14–15 feet bgs near West Middle Avenue. Proposed construction depths will be nearly 15 feet deep, so that groundwater is also likely to be intercepted, although to a lesser extent than closer to the lake. SCVWD project BMP WQ-15 addresses encountering groundwater during construction to protect water quality. Consequently, impacts associated with construction work would be less than significant.

Operations and Maintenance

For Project operations, the completed channel excavation depths would lower the channel invert, which could intersect the groundwater table where it is shallow and, thereby, the potential to locally lower groundwater elevations near stream banks that in some locales supports riparian vegetation (primarily in Reach 6). From review of recent well elevation data, average water table elevations are below the proposed channel excavation depths of approximately 5 feet along most of the existing channel. Additionally, stream bank soil samples collected for the Project (Cardno ENTRIX 2012a) found that the local water table is likely lower than the existing channel invert in most reaches and, as such, the probability of the Project channel design intercepting the groundwater table and lowering existing shallow groundwater elevations is less than significant in most reaches. Based on the 65-percent design and analysis of annual fluctuations in the elevation of the water table (presented in Section 3.2.2 and discussed above) it is not anticipated that stream channel deepening would breach the water table along any of the existing channel alignment, but it would intercept groundwater in the proposed Reach 7A bypass channel. As discussed in Section 3.2.2.2, the design channel invert in Reach 7A near Lake Silveira (essentially through the “bow-tie” parcel, see Section 2.4.6) would be about 4 feet below the shallow groundwater table and a little further upstream near West Middle Avenue the channel design invert would be about 1 foot below the groundwater table. Consequently, the Reach 7A bypass channel will likely lower the shallow groundwater table in the vicinity near to the constructed channel by about 4 feet.

However, this is not a substantial change to the groundwater table elevation, and there are not any related adverse effects associated with a groundwater table lowering of this magnitude. This is because the shallow groundwater level lowering is likely to be only in a narrow-width band corresponding to the immediate vicinity of the Reach 7A channel streambanks that will be constructed. It is very unlikely that

the groundwater table would be lowered in a wider area, because there is no groundwater pumping associated with the Project. Unlike a pumping draw-down that could mine the deeper groundwater aquifer, the shallow groundwater table will slope from the area near the constructed streambanks toward the elevation of the channel bed. Additionally, there is no existing riparian vegetation along Reach 7A, because there is no existing flowing channel, the proposed construction in this Reach is through relatively flat agricultural fields with no existing drainage channel and no riparian vegetation. As such, there is no risk to established vegetation that might require shallow groundwater for survival. There are also no known water supply wells in the vicinity of the proposed construction alignment that would be affected. The shallow groundwater table may in fact provide a small amount of perennial baseflow to the lowermost portion of Reach 7A since groundwater will be influent to the constructed channel. This could be a net benefit to establishing aquatic habitat in this part of Reach 7A and may also contribute flow to the Llagas Creek channel at the Reach 7A confluence. However, groundwater at the top of streambanks created by construction of Reach 7A will likely be not much higher than the design invert of the streambed, about 15 feet bgs. As part of the Lake Silveira project element, new upland and riparian vegetation plantings are proposed along the channel alignment through Reach 7A (see Section 2.4.6) that takes into consideration the post-construction ground contour elevations and associated groundwater elevation, as appropriate for plant growth and survival. The NRCS Alternative (and all action alternatives) would result in a vegetated corridor along the Reach 7A channel alignment. Although the groundwater table will be intercepted in Reach 7A, this is not a substantial lowering of the groundwater table or attendant adverse effects, as such, the impact is less than significant.

Maintenance of the Proposed Project has no relationship to or influence on groundwater recharge or the water table; because maintenance activities do not change the ground contours, does not add impervious surface area and, therefore, does not influence percolation to groundwater and does not pump groundwater. Therefore, maintenance activities do no influence or impact the groundwater recharge or water table elevations.

Best Management Practices (BMPs)

> **WQ-15:** Manage Exposed Groundwater at Work Sites.

Mitigation Measures

None required

Implementation of the BMP listed above reduces impacts to less than significant.

HYDRO-5 NRCS—Alteration of drainage pattern and course of stream resulting in substantial erosion or siltation on- or off-site

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel construction and operation	LTS	LTS
Diversion channel Reach 7A	LTS	LTS
Cut-off section of West Little Llagas Ck	LTS	B

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Project construction includes activities that would cause soil disturbance, such as equipment mobilization, staging and demobilization, and excavation and channel grading. Similar to HYDRO-1 NRCS and

HYDRO-2 NRCS, the SCVWD project BMPs reduce the potential of construction related erosion or siltation. The implementation of BMPs listed below would reduce the potential of substantial erosion or siltation due to construction activities to less than significant.

Operations and Maintenance

Maintenance after construction of the Proposed Project would continue under this alternative, as described in Section 2.4.5. Similar to HYDRO-1 NRCS and HYDRO-2 NRCS, the SCVWD project BMPs listed below would limit the potential of construction-related erosion or siltation to less than significant.

The final channel form in all Project reaches, including the additional flows that will be delivered to Reaches 6 and 5 through the 7A bypass channel, is designed to provide stable channel dimensions. This would result in reduced bank erosion and reduced channel incision that in turn would limit sedimentation and siltation, as described and analyzed in Section 3.2.5.2. The operational design of the Project would not eliminate all erosion but would reduce the sedimentation and siltation impairments of Llagas Creek to less than the existing conditions. For the cutoff channel segment of West to East Little Llagas Creek, the existing high flows would be of a substantially lower magnitude, reducing the potential for erosion or siltation in that reach; a beneficial effect.

Best Management Practices (BMPs)

> **WQ-1:** Conduct Work from Top of Bank.

> **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms.

> **WQ-3:** Limit Impact of Pump and Generator Operation and Maintenance.

> **WQ-4:** Limit Impacts of Sediments on Water Quality.

> **WQ-5:** Limit Impacts from Staging and Stockpiling Materials.

> **WQ-6:** Stabilize Construction Entrances and Exits.

> **WQ-9:** Minimize Erosion from Removal of In-Channel Vegetation.

> **WQ-10:** Limit Impact of Concrete near Waterways.

> **WQ-12:** Isolate Work in Non-Tidal Sites with Use of Diversion of Bypass.

> **WQ-14:** Use Seeding for Erosion Control, Weed Suppression, and Site Improvement.

> **WQ-15:** Manage Exposed Groundwater at Work Sites.

> **WQ-18:** Maintain Clean Conditions at Work Sites.

> **WQ-40:** Prevent Water Pollution.

> **WQ-41:** Prevent Stormwater Pollution.

> **WQ-42:** Manage Sanitary/Septic Waste.

Mitigation Measures

None required

Implementation of the SCVWD project BMPs will reduce any potential water quality impacts to less than significant.

HYDRO-6 NRCS—Alteration of drainage pattern and course of stream resulting in flooding or increased surface runoff on- or off-site. Places housing within a 100-year-flood hazard area. Places within a 100-year-flood hazard area structures that would impede or redirect flood flows, and exposes 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.

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel construction and operation	NI	B
Diversion channel Reach 7A	NI	B
Cut-off section of West Little Llagas Ck	NI	B

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction activities including channel excavation and grading for the Proposed Project, as described and analyzed in Section 3.2.5.2, would not result in increased surface runoff or flooding, would not impose flooding hazards to buildings or impede flood flows, and would not expose people or property to increased flooding from flood protection features. As a result, construction would have no impact on the alteration of a drainage resulting in flooding.

Operations and Maintenance

Operation of the Proposed Project, as described in Section 3.2.5.2, is designed to reduce flooding through Morgan Hill by containing the 1-percent exceedance flow in Reaches 7A, 7B and 8, containing the 10-percent exceedance flow in Reach 14, and to not induce flooding in Reaches 4, 5, and 6 due to upstream flood protection improvements. The Proposed Project would reduce the extent of flooding in the Project area as shown in comparison of Figures 2.3-1 and 2.4-1.

Maintenance under this alternative, as described in Section 2.4.5, would involve activities, such as sediment removal, vegetation trimming, and spraying to maintain flood capacity of the Proposed Project. Consequently, the operations and maintenance of the Proposed Project would be beneficial and would have no impact under CEQA based on this significance criteria.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

Implementation of the NRCS Alternative is designed to reduce flooding and, therefore, be beneficial and would have no impact under CEQA.

3.2.5.4 Culvert/Channel Alternative

The Culvert/Channel Alternative is similar to the NRCS Alternative. The Culvert/Channel Alternative provides the same 1-percent flood management as the NRCS Alternative in Reaches 7A, 7B, and 8, protecting downtown Morgan Hill. The primary difference from the NRCS Alternative is routing flows through the Britton athletic fields instead of along Hale Avenue. See Section 2.7.1 for more detail on features of the Culvert/Channel Alternative. Under the Culvert/Channel Alternative, the HYDRO-1 through HYDRO-6 impact determinations would be the same as those under the NRCS Alternative.

HYDRO-1 CC—Potential to violate water quality standards

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel construction	LTS	N/A
Cut-off section of West Little Llagas Ck	N/A	B
Vegetation and sediment management, minor maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Project construction (see Sections 2.4 and 2.6 for a complete description of construction activities) would include channel modifications (excavation to deepen and widen), excavating a bypass channel in Reach 7A, constructing or replacing culverts; installing maintenance roads or access ramps, constructing temporary and permanent grade control structures, and upgrading bridge crossings. These actions are all surface-disturbing activities. When portions of the Project area are excavated, or otherwise disturbed, the potential for unstabilized incidental material fallback, soil erosion, and/or elevated sediment levels to occur in runoff discharging from the site would substantially increase. Construction activities would also have the potential to mobilize sediments and associated organics, pesticides, and herbicide residues contained in the soils. In addition, equipment used during the construction activities would have the potential to leak polluting materials, including oil and gasoline. These sediments and contaminants may be transported into and decrease or impair water quality in Llagas Creek or downstream drainages and water bodies. Potential to violate water quality standards during construction activities would be less than significant by following the SCVWD project BMPs and by implementation of the SWPPP, both of which are described below.

Within Reach 6 the proposed channel widening would encroach upon a deed restricted property (see Section 3-18). The deed restriction requires that any planning of any ground disturbing work within the parcel requires consultation with the CCRWQCB to confirm compliance with regulatory guidelines that pertain to a closed landfill. The current property owner would also participate in consultation and final design resolution. Compliance with the deed restriction and the resulting consultation requirements would reduce potential water quality impacts to less than significant.

Operations and Maintenance

Maintenance, including vegetation management, sediment management, and minor maintenance work, for the Culvert Channel Alternative is described in Section 2.4.5. Maintenance activities, predominately sediment removal, would have the greatest potential to mobilize sediments and introduce associated excess nutrients contained in soils. Because nearly all of the stream reaches only flow intermittently, including during the winter season, it is expected that most maintenance activities would occur when the channels are dry, which would substantially reduce the potential for siltation, release of nutrients, and prevent or substantially minimize adverse changes in water quality parameters such as DO and turbidity. SCVWD BMPs include measures to isolate sites, such as by the use of a flow bypass (WQ-12) that would address sediment removal activities that might need to occur within a flowing section of channel. Potential to violate water quality standards during maintenance activities would be reduced to less than significant by following the SCVWD project BMPs including, but not limited to, those described under impacts from construction in HYDRO-1 T, below. A complete description of the BMPs, listed below, is provided in Appendix B.

The Culvert/Channel Alternative operations would result in flow through a designed stable channel morphology, which would reduce ongoing, existing channel incision, and with little potential for bank erosion. This would reduce sedimentation and improve water quality. Flooding would be reduced in Reaches 8, 7A, and 7B, which is also a water quality improvement. The 6,500-foot-long cutoff portion of West to East Little Llagas Creek to the Butterfield channel extension confluence would also no longer experience high flows with reduced flooding, which would reduce potential scour, erosion, and degradation of water quality during over-bank flow events. This is a beneficial water quality effect.

Best Management Practices (BMPs)

To the extent feasible, all in-channel construction and maintenance activities would occur during the dry season when stream channels in the majority of the reaches are dry and water quality would not be impacted. Construction activities would be required in the perennial section of Reach 6. In accordance with the CGP implementation of the Project SWPPP, SCVWD project BMPs would reduce the potential of violating water quality standards. The following SCVWD project BMPs include actions to prevent potential violation of water quality standards from all construction operations: WQ-1, WQ-2, WQ-3, WQ-4, WQ-5, WQ-6, WQ-9, WQ-10, WQ-12, WQ-14, WQ-15, WQ-18, WQ-40, WQ-41, and WQ-42. These BMPs would ensure that potential to violate DO, turbidity, and sedimentation standards during construction operations is less than significant.

> **WQ-1:** Conduct Work from Top of Bank.

> **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms.

> **WQ-3:** Limit Impact of Pump and Generator Operation and Maintenance.

> **WQ-4:** Limit Impacts of Sediments on Water Quality.

> **WQ-5:** Limit Impacts from Staging and Stockpiling Materials.

> **WQ-6:** Stabilize Construction Entrances and Exits.

> **WQ-9:** Minimize Erosion from Removal of In-Channel Vegetation.

> **WQ-10:** Limit Impact of Concrete near Waterways.

> **WQ-12:** Isolate Work in Non-Tidal Sites with Use of Diversion of Bypass.

> **WQ-14:** Use Seeding for Erosion Control, Weed Suppression, and Site Improvement.

> **WQ-15:** Manage Exposed Groundwater at Work Sites.

> **WQ-18:** Maintain Clean Conditions at Work Sites.

> **WQ-40:** Prevent Water Pollution.

> **WQ-41:** Prevent Stormwater Pollution.

> **WQ-42:** Manage Sanitary/Septic Waste.

Implementation of the SCVWD project BMPs will reduce any potential water quality impacts to less than significant.

Implementation of Project SWPPP is required under the CGP. SWPPP BMPs range from source controls, such as reduced surface disturbance to treatment of polluted runoff, such as detention or retention basins. Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented, if there is a failure of BMPs; and a sediment monitoring plan. Section A of the CGP describes the elements that must be contained in a SWPPP and requires BMPs for proper storage and transportation of sediments for sites less than 1 acre to minimize water quality impacts.

Implementation of the SWPPP requires practices to reduce the potential for equipment to introduce pollutants to the program area and would require accidental spill containment and disposal planning. In addition, the erosion and sediment control plans within the SWPPP would be required to include BMPs to minimize the potential for, and effects from, spills of hazardous, toxic, or petroleum substances during construction activities.

If a spill occurs, the contractor's superintendent would take action to contact the appropriate safety and cleanup crews to ensure that the SPCCP is followed. A written description of reportable releases would be submitted to the RWQCB and the DTSC by the contractor or owner. This submittal would be required to contain a description of the release, including the type of material and an estimate of the amount spilled, the date of the release, an explanation of why the spill occurred, and a description of the steps taken to prevent and control future releases. The releases would be documented on a spill report form. If an appreciable release occurs and results determine that Project activities have adversely affected surface water or groundwater quality, a detailed analysis would be performed to the specifications of DTSC to identify the likely cause of contamination. This analysis would include recommendations for reducing or eliminating the source or mechanisms of contamination. Based on this analysis, contractors would select and implement measures to control contamination, with a performance standard that surface and/or groundwater quality must be returned to baseline conditions. These measures would be subject to approval by the SCVWD and/or the CCRWQCB.

Mitigation Measures

None required

Implementation of the BMPs listed above would reduce impacts to less than significant.

HYDRO-2 CC —Substantially degrades water quality

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel construction activities and operation	LTS	B
Cut-off section of West Little Llagas Ck	LTS	B
Vegetation and sediment management, minor maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Project construction includes activities that would cause soil disturbance, such as equipment mobilization, staging, demobilization, channel grading, and vegetation restoration. When portions of the Project area are excavated or otherwise disturbed, the potential for unstabilized incidental material fallback, soil erosion, and/or elevated sediment levels to occur in runoff discharging from the site would substantially increase. Construction in shallow groundwater areas could intersect the water table, exposing groundwater at work sites. Construction activities would also have the potential to mobilize sediments and associated organics, pesticides, and herbicide residues contained in the soils.

Llagas Creek is currently on the CWA Section 303(d) list for impaired water bodies for multiple water quality parameters. Sedimentation and nitrates are the primary parameters with impairment.

Potential to substantially degrade water quality during construction activities would be less than significant by implementation of the SWPPP (described above under HYDRO-1 CC) and by following the SCVWD project BMPs, which are listed below.

Operations and Maintenance

Maintenance activities, such as herbicide spraying, vegetation pruning, and sediment removal would have the potential to expose bed and bank sediments allowing for mobilization of soils and sediments, potentially causing siltation and introduction of associated organics, pesticides, and herbicide residues if present and contained in the soils. However, as described in Section 2.4.5, potential to degrade water quality during maintenance activities would be minimized by following the SCVWD project BMPs that reduce the risk of allowing sediment to be mobilized and transported into flowing channel segments. The BMPs that are pertinent to protecting water quality are those listed below.

Under the proposed stable channel design erosion, channel downcutting, and resultant sedimentation and turbidity levels would be reduced from existing conditions. Operation of the Culvert/Channel Alternative would also eliminate flooding in Reaches 7B and 8 to the 1-percent event, which would reduce the opportunity for sediments and associated organics, pesticides, and herbicide residues to become mobilized and to enter the stream channel, which is a benefit to water quality. Additionally, most of the cutoff section of West to East Little Llagas Creek (up to the Butterfield extension channel) would experience reduced flooding during the 1-percent exceedance event, a benefit to water quality. In other reaches of the Project, the extent of flooding would remain exactly the same as under existing conditions, so water quality would not be degraded beyond existing conditions due to flooding.

Best Management Practices (BMPs)

> **WQ-1:** Conduct Work from Top of Bank.

> **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms.

> **WQ-3:** Limit Impact of Pump and Generator Operation and Maintenance.

> **WQ-4:** Limit Impacts of Sediments on Water Quality.

> **WQ-5:** Limit Impacts from Staging and Stockpiling Materials.

> **WQ-6:** Stabilize Construction Entrances and Exits.

> **WQ-9:** Minimize Erosion from Removal of In-Channel Vegetation.

> **WQ-10:** Limit Impact of Concrete near Waterways.

> **WQ-12:** Isolate Work in Non-Tidal Sites with Use of Diversion of Bypass.

> **WQ-14:** Use Seeding for Erosion Control, Weed Suppression, and Site Improvement.

> **WQ-15:** Manage Exposed Groundwater at Work Sites.

> **WQ-18:** Maintain Clean Conditions at Work Sites.

> **WQ-40:** Prevent Water Pollution.

> **WQ-41:** Prevent Stormwater Pollution.

> **WQ-42:** Manage Sanitary/Septic Waste.

> **HM-1:** Comply with All Pesticide Application Restrictions.

> **HM-2:** Use Appropriate Type(s) of Pest Control.

> **HM-5:** Comply with All Pesticide Usage Requirements.

> **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas.

> **HM-8:** Comply with Restrictions on Herbicide Use in Aquatic Areas.

> **HM-12:** Assure Proper Hazardous Materials Management.

> **HM-13:** Prevent Spills.

Mitigation Measures

None required

Implementation of the SCVWD project BMPs will reduce any potential water quality impacts to less than significant.

HYDRO-3 CC—Creates or contributes runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provides substantial additional sources of potentially impacted runoff

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel construction activities and operation	NI	NI
Diversion Channel Reach 7A	NI	NI
Cut-off section of West Little Llagas Ck	NI	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Project construction activities would have no effect on existing storm drain systems since there is no expansion or alteration of storm drain locations for this alternative. Since construction activities do not expand or otherwise alter existing storm drain locations, they also do not add substantial additional sources of contaminated runoff to the stormwater drainage system; as such, there are no impacts.

Operations and Maintenance

Although operational activities do not contribute any additional runoff, the Culvert/Channel Alternative (as well as all of the action alternatives) would bypass flow from the existing West Little Llagas Creek channel through a newly constructed channel in Reach 7A that would add runoff to the downstream Llagas Creek Reaches 4, 5, and 6. However, this is not an impact on the capacity of the stormwater drainage system. As discussed in Section 3.2.4.2, the Project design includes an increase in the flood capacity of these downstream reaches so that there is no induced flooding due to upstream Project improvements. As such, there is no operational impact to the stormwater drainage system. Vegetation management, sediment management, and minor maintenance activities are conducted only to maintain the flood capacity of the channels under all of the action alternatives. Consequently, maintenance activities do not add to runoff, rather maintenance ensures that the channels function efficiently to handle the runoff and maintain the hydraulic capacity of the channel design.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

There would not be an impact because Culvert/Channel Alternative would not contribute to increased runoff water.

HYDRO-4 CC —Substantially depletes or interferes with groundwater supplies, groundwater recharge, or water table level

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel construction and operation	LTS	LTS
Diversion Channel Reach 7A	LTS	LTS
Vegetation and sediment management, minor maintenance	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Project construction activities, such as excavation and grading, would have virtually no influence on groundwater supplies or recharge since it does not create impervious surface areas, block infiltration, or withdraw groundwater. However, in the Reach 7A bypass channel segment it is likely that the shallow groundwater table will be intercepted (see existing groundwater conditions in Section 3.2.2.2 above). From near Lake Silveira to the Llagas Creek channel confluence with Reach 7A near Monterey Highway, there is a shallow groundwater table, approximately 8 feet bgs. Excavation depths in this lowermost section of Reach 7A will be about 12 feet bgs, as such construction will intercept groundwater. Upstream from Lake Silveira the groundwater table is less shallow, approximately 14–15 feet bgs near West Middle Avenue. Proposed construction depths will be nearly 15 feet deep, so that groundwater is also likely to be intercepted, although to a lesser extent than closer to the lake. SCVWD project BMP WQ-15 addresses encountering groundwater during construction to protect water quality. Consequently, impacts associated with construction work would be less than significant.

Operations and Maintenance

For Project operations, the completed channel excavation depths would lower the channel invert, which could intersect the groundwater table where it is shallow and, thereby, the potential to locally lower groundwater elevations near stream banks that in some locales supports riparian vegetation (primarily in Reach 6). From review of recent well elevation data, average water table elevations are below the proposed channel excavation depths of approximately 5 feet along most of the existing channel. Additionally, stream bank soil samples collected for the Project (Cardno ENTRIX 2012a) found that the local water table is likely lower than the existing channel invert in most reaches and, as such, the probability of the Project channel design intercepting the groundwater table and lowering existing shallow groundwater elevations is less than significant in most reaches. Based on the 65-percent design and analysis of annual fluctuations in the elevation of the water table (presented in Section 3.2.2 and discussed above) it is not anticipated that stream channel deepening would breach the water table along any of the existing channel alignment, but it would intercept groundwater in the proposed Reach 7A bypass channel. As discussed in Section 3.2.2.2, the design channel invert in Reach 7A near Lake Silveira (essentially through the “bow-tie” parcel, see Section 2.4.6) would be about 4 feet below the shallow groundwater table and a little further upstream near West Middle Avenue the channel design

invert would be about 1 foot below the groundwater table. Consequently, the Reach 7A bypass channel will likely lower the shallow groundwater table in the vicinity near to the constructed channel by about 4 feet.

However, this is not a substantial change to the groundwater table elevation, and there are not any related adverse effects associated with a groundwater table lowering of this magnitude. This is because the shallow groundwater level lowering is likely to be only in a narrow-width band corresponding to the immediate vicinity of the Reach 7A channel streambanks that will be constructed. It is very unlikely that the groundwater table would be lowered in a wider area, because there is no groundwater pumping associated with the Project. Unlike a pumping draw-down that could mine the deeper groundwater aquifer, the shallow groundwater table will slope from the area near the constructed streambanks toward the elevation of the channel bed. Additionally, there is no existing riparian vegetation along Reach 7A, because there is no existing flowing channel, the proposed construction in this Reach is through relatively flat agricultural fields with no existing drainage channel, and no riparian vegetation. As such, there is no risk to established vegetation that might require shallow groundwater for survival. There are also no known water supply wells in the vicinity of the proposed construction alignment that would be affected. The shallow groundwater table may in fact provide a small amount of perennial baseflow to the lowermost portion of Reach 7A since groundwater will be influent to the constructed channel. This could be a net benefit to establishing aquatic habitat in this part of Reach 7A and may also contribute flow to the Llagas Creek channel at the Reach 7A confluence. However, groundwater in relation to the top of streambanks created by construction of Reach 7A will likely be not much higher than the design invert of the streambed, about 15 feet bgs. As part of the Lake Silveira project element, new upland and riparian vegetation plantings are proposed along the channel alignment through Reach 7A (see Section 2.4.6) that takes into consideration the post-construction ground contour elevations and associated groundwater elevation as appropriate for plant growth and survival. The Culvert/Channel Alternative (and all action alternatives) would result in a vegetated corridor along the Reach 7A channel alignment. Although the groundwater table will be intercepted in Reach 7A, this is not a substantial lowering of the groundwater table or attendant adverse effects; as such, the impact is less than significant.

Maintenance of the Proposed Project has no relationship to or influence on groundwater recharge or the water table, because maintenance activities do not change the ground contours, does not add impervious surface area and, therefore, does not influence percolation to groundwater and does not pump groundwater. Therefore, maintenance activities do no influence or impact the groundwater recharge or water table elevations.

Best Management Practices

> **WQ-15:** Manage Exposed Groundwater at Work Sites.

Mitigation Measures

None required

Implementation of the BMP listed above reduces impacts to less than significant.

HYDRO-5 CC—Alteration of drainage pattern and course of stream resulting in substantial erosion or siltation on- or off-site

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel construction and operation	LTS	LTS
Diversion channel Reach 7A	LTS	LTS
Cut-off section of West Little Llagas Ck	LTS	B

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Project construction includes activities that would cause soil disturbance, such as equipment mobilization, staging and demobilization, and excavation and channel grading. Similar to HYDRO-1 CC and HYDRO-2 CC, the SCVWD project BMPs reduce the potential of construction related erosion or siltation. The implementation of BMPs listed below would reduce the potential of substantial erosion or siltation due to construction activities to less than significant.

Operations and Maintenance

Maintenance after construction of the Proposed Project would continue under this alternative, as described in Section 2.4.5. Similar to HYDRO-1 CC and HYDRO-2 CC, the SCVWD project BMPs listed below would limit the potential of construction-related erosion or siltation to less than significant.

The final channel form in all Project reaches, including the additional flows that will be delivered to Reaches 6 and 5 through the 7A bypass channel, is designed to provide stable channel dimensions. This would result in reduced bank erosion and reduced channel incision that in turn would limit sedimentation and siltation, as described and analyzed in Section 3.2.5.2. The operational design of the Project would not eliminate all erosion, but would reduce the sedimentation and siltation impairments of Llagas Creek to less than the existing conditions. For the cutoff channel segment of West to East Little Llagas Creek, the existing high flows would be of a substantially lower magnitude, reducing the potential for erosion or siltation in that reach; a beneficial effect.

Best Management Practices (BMPs)

> **WQ-1:** Conduct Work from Top of Bank.

> **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms.

> **WQ-3:** Limit Impact of Pump and Generator Operation and Maintenance.

> **WQ-4:** Limit Impacts of Sediments on Water Quality.

> **WQ-5:** Limit Impacts from Staging and Stockpiling Materials.

> **WQ-6:** Stabilize Construction Entrances and Exits.

> **WQ-9:** Minimize Erosion from Removal of In-Channel Vegetation.

> **WQ-10:** Limit Impact of Concrete near Waterways.

> **WQ-12:** Isolate Work in Non-Tidal Sites with Use of Diversion of Bypass.

> **WQ-14:** Use Seeding for Erosion Control, Weed Suppression, and Site Improvement.

> **WQ-15:** Manage Exposed Groundwater at Work Sites.

> **WQ-18:** Maintain Clean Conditions at Work Sites.

> **WQ-40:** Prevent Water Pollution.

> **WQ-41:** Prevent Stormwater Pollution.

> **WQ-42:** Manage Sanitary/Septic Waste.

Mitigation Measures

None required

Implementation of the SCVWD project BMPs will reduce any potential water quality impacts to less than significant.

HYDRO-6 CC —Alteration of drainage pattern and course of stream resulting in flooding or increased surface runoff on- or off-site. Places housing within a 100-year-flood hazard area. Places within a 100-year-flood hazard area structures that would impede or redirect flood flows, and exposes 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.

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel construction and operation	NI	B
Diversion channel Reach 7A	NI	B
Cut-off section of West Little Llagas Ck	NI	B

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction activities including channel excavation and grading for the Proposed Project, as described and analyzed in Section 3.2.5.2, would not result in increased surface runoff or flooding, would not impose flooding hazards to buildings or impede flood flows, and would not expose people or property to increased flooding from flood protection features. As a result, construction would have no impact on the alteration of a drainage resulting in flooding.

Operations and Maintenance

Operation of the Proposed Project, as described in Section 3.2.5.2, is designed to reduce flooding through Morgan Hill by containing the 1-percent exceedance flow in Reaches 7A, 7B and 8, containing the 10-percent exceedance flow in Reach 14, and to not induce flooding in Reaches 4, 5, and 6 due to upstream flood protection improvements. The Proposed Project would reduce the extent of flooding in the Project area, as shown in comparison of Figures 2.3-1 and 2.4-1.

Maintenance under this alternative, as described in Section 2.4.5, would involve activities, such as sediment removal, vegetation trimming, and spraying, to maintain flood capacity of the Proposed Project. Consequently, the operations and maintenance of the Proposed Project would be beneficial and would have no impact under CEQA based on this significance criteria.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

Implementation of the Culvert/Channel Alternative is designed to reduce flooding and, therefore, be beneficial and would have no impact under CEQA.

3.2.5.5 Reach 6 Bypass Alternative

The Reach 6 Bypass Alternative is the most dissimilar from the other alternatives, but provides for the same level of flood protection. The Reach 6 Bypass Alternative would construct a high flow bypass channel (i.e., diversion channel) between Reach 6 of Llagas Creek and Reach 14 of East Little Llagas Creek. The bypass would be designed so that no flood capacity improvements would be needed along Reach 6 (downstream of bypass) or Reach 5; and there would be no increased inflow from upstream improvements. Maintenance activities for Reach 5 and Reach 6 would be implemented based on the existing SCVWD SMP BMPs where the SCVWD has maintenance easements. See Section 2.8.1 for more detail on features of the Reach 6 Bypass Alternative. Flood conveyance improvements for the upstream Project Reaches 8, 7A, and 7B, and for the downstream Reach 4 would remain the same as that described for the Preferred Alternative. The Reach 6 Bypass would convey extra flow from Reaches 7A, 7B, and 8 directly into Reach 14 in East Little Llagas Creek. Reach 14, downstream of the bypass, would be designed to carry the extra flow, maintaining capacity for a 10-percent exceedance flow event. The bypass segment would provide protection from a 1-percent event.

HYDRO-1 BY—Potential to violate water quality standards

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction activities	LTS	N/A
Cut-off section of West Little Llagas Ck	N/A	B
Vegetation and sediment management, minor maintenance	N/A	LTS
Operation of Reach 5 and Reach 6	NI	S

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Project construction (see Sections 2.4 and 2.6 for a complete description of construction activities) would include channel modifications (excavation to deepen and widen), constructing a tunnel, excavating a bypass channel in Reach 7A, excavating a bypass channel is Reach 6, constructing or replacing culverts; installing maintenance roads or access ramps, constructing temporary and permanent grade control structures, and upgrading bridge crossings. These actions are all surface-disturbing activities. When portions of the Project area are excavated or otherwise disturbed, the potential for unstabilized incidental material fallback, soil erosion, and/or elevated sediment levels to occur in runoff discharging from the site would substantially increase. Construction activities would also have the potential to mobilize sediments and associated organics, pesticides, and herbicide residues contained in the soils. In addition, equipment used during the construction activities would have the potential to leak polluting materials, including oil and gasoline. These sediments and contaminants may be transported into and decrease or impair water quality in Llagas Creek or downstream drainages and water bodies. Potential to violate water quality standards during construction activities would be less than significant by following the SCVWD project BMPs and by implementation of the SWPPP, both of which are described below.

Within Reach 6 the proposed channel widening would encroach upon a deed restricted property (see Section 3-18, Hazards and Hazardous Materials). The deed restriction requires that any planning of any ground disturbing work within the parcel requires consultation with the CCRWQCB to confirm compliance with regulatory guidelines that pertain to a closed landfill. The current property owner would also participate in consultation and final design resolution. Compliance with the deed restriction and the resulting consultation requirements would reduce potential water quality impacts to less than significant.

Operations and Maintenance

Maintenance including vegetation management, sediment management, and minor maintenance work for the Bypass Alternative is described in Section 2.4.5. Maintenance activities, predominantly sediment removal, would have the greatest potential to mobilize sediments and introduce associated excess nutrients contained in soils. Because nearly all of the stream reaches only flow intermittently, including during the winter season, it is expected that most maintenance activities would occur when the channels are dry, which would substantially reduce the potential for siltation, release of nutrients, and prevent or substantially minimize adverse changes in water quality parameters, such as DO and turbidity. SCVWD BMPs include measures to isolate sites, such as by the use of a flow bypass (WQ-12) that would address sediment removal activities that might need to occur within a flowing section of channel. Potential to violate water quality standards during maintenance activities would be reduced to less than significant by following the SCVWD project BMPs including, but not limited to, those described under impacts from construction in HYDRO-1 BY, below. A complete description of the BMPs, listed below, are provided in Appendix B.

The Bypass Alternative operations would result in flow through a designed stable channel morphology, which would reduce ongoing, existing channel incision and with little potential for bank erosion in all constructed reaches, except for Reach 5 and most of the length of Reach 6 (downstream from the bypass), which are outside the project construction footprint. This would reduce sedimentation and improve water quality; and flooding would be reduced in Reaches 8 and 7A, which is also a water quality improvement. The 6,500-foot-long cutoff portion of West to East Little Llagas Creek up to the Butterfield channel extension confluence would experience reduced high flow magnitude and reduced extent of flooding, which would reduce potential scour, erosion, and degradation of water quality during over-bank flow events. However, in most of Reach 5 and Reach 6 the channel would be subject to instability, predominantly channel down-cutting, which has been an ongoing process. Channel down-cutting eventually leads over time to over-steepened streambanks with resultant channel erosion and widening. This would increase water turbidity and potentially cause channel sedimentation. Consequently, the Bypass Alternative has the potential over time to cause a degradation of water quality relative to the other action alternatives. The instability in Reach 5 and most of Reach 6 would lead to potential violations of water quality standards and this is a significant impact.

Best Management Practices (BMPs)

To the extent feasible, all in-channel construction and maintenance activities would occur during the dry season when stream channels in the majority of the reaches are dry and water quality would not be impacted. Construction activities would be required in the perennial flowing Reach 6. In accordance with the CGP implementation of the Project SWPPP, SCVWD project BMPs would reduce the potential of violating water quality standards to less than significant. The following SCVWD project BMPs include actions to prevent potential violation of water quality standards from all construction and maintenance operations: WQ-1 to WQ-6, WQ-9, WQ-10, WQ-12, WQ-14, WQ-15, WQ-18, WQ-40, WQ-41, and WQ-42. These BMPs would ensure that potential to violate DO, turbidity, and sedimentation standards during construction operations is less than significant.

> **WQ-1:** Conduct Work from Top of Bank.

> **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms.

> **WQ-3:** Limit Impact of Pump and Generator Operation and Maintenance.

> **WQ-4:** Limit Impacts of Sediments on Water Quality.

> **WQ-5:** Limit Impacts from Staging and Stockpiling Materials.

> **WQ-6:** Stabilize Construction Entrances and Exits.

> **WQ-9:** Minimize Erosion from Removal of In-Channel Vegetation.

> **WQ-10:** Limit Impact of Concrete near Waterways.

> **WQ-12:** Isolate Work in Non-Tidal Sites with Use of Diversion of Bypass.

> **WQ-14:** Use Seeding for Erosion Control, Weed Suppression, and Site Improvement.

> **WQ-15:** Manage Exposed Groundwater at Work Sites.

> **WQ-18:** Maintain Clean Conditions at Work Sites.

> **WQ-40:** Prevent Water Pollution.

> **WQ-41:** Prevent Stormwater Pollution.

> **WQ-42:** Manage Sanitary/Septic Waste.

Implementation of the SCVWD project BMPs will reduce any maintenance impacts to potentially violate water quality standards to less than significant.

Implementation of Project SWPPP is required under the GCP. SWPPP BMPs range from source controls, such as reduced surface disturbance to treatment of polluted runoff, such as detention or retention basins. Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs; and a sediment monitoring plan. Section A of the CGP describes the elements that must be contained in a SWPPP and requires BMPs for proper storage and transportation of sediments for sites less than 1 acre to minimize water quality impacts.

The SWPPP requires practices to reduce the potential for equipment to introduce pollutants to the program area and would require accidental spill containment and disposal planning. In addition, the erosion and sediment control plans within the SWPPP would be required to include BMPs to minimize the potential for, and effects from, spills of hazardous, toxic, or petroleum substances during construction activities.

If a spill occurs, the contractor’s superintendent would take action to contact the appropriate safety and cleanup crews to ensure that the SPCP is followed. A written description of reportable releases would be submitted to the RWQCB and the DTSC by the contractor or owner. This submittal would be required to contain a description of the release, including the type of material and an estimate of the amount spilled, the date of the release, an explanation of why the spill occurred, and a description of the steps taken to prevent and control future releases. The releases would be documented on a spill report form. If an appreciable spill occurs and results determine that Project activities have adversely affected surface water or groundwater quality, a detailed analysis would be performed to the specifications of DTSC to identify the likely cause of contamination. This analysis would include recommendations for reducing or eliminating the source or mechanisms of contamination. Based on this analysis, contractors would select and implement measures to control contamination with a performance standard that surface and/or groundwater quality must be returned to baseline conditions. These measures would be subject to approval by the SCVWD and/or the RWQCB.

Mitigation Measures

None required

Implementation of the SCVWD project BMPs will reduce any maintenance impacts to potentially violate water quality standards to less than significant.

HYDRO-2 BY—Substantially degrades water quality

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel construction activities and operation	LTS	B
Cut-off section of West Little Llagas Ck	LTS	B
Tunnel diversion	LTS	LTSM
Operation of Reach 5 and Reach 6	NI	S
Vegetation and sediment management, minor maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Project construction includes activities that would cause soil disturbance, such as equipment mobilization, staging, demobilization, channel grading, and vegetation restoration. When portions of the Project area are excavated or otherwise disturbed, the potential for unstabilized incidental material fallback, soil erosion, and/or elevated sediment levels to occur in runoff discharging from the site would substantially increase. Construction in shallow groundwater areas could intersect the water table, exposing groundwater at work sites. Construction activities would also have the potential to mobilize sediments and associated organics, pesticides, and herbicide residues contained in the soils. The use of explosives to build the tunnel section could leave nitrate residues in the surrounding rock material that has the potential to be a contaminant if it migrates into the channel with runoff. However, by the time the tunnel is completed, grouted, and sealed it is assumed that there is very little potential for contact of nitrate residue with streamfllow through the tunnel. Additionally, BMPs WQ-4, WQ-5, and WQ-6 would control removal of rock and sediments from the tunnel blasting work to reduce the risk of mishandling sediments that may have nitrate residues that could enter a waterway and cause water quality violations.

Llagas Creek is currently on the CWA Section 303(d) list for impaired water bodies for multiple water quality parameters. Sedimentation and nitrates are the primary parameters with impairment.

Potential to substantially degrade water quality during construction activities would be less than significant by implementation of the SWPPP (described above under HYDRO-1 BY) and by following the SCVWD project BMPs, which are listed below.

Operations and Maintenance

Maintenance activities, such as herbicide spraying, vegetation pruning, and sediment removal would have the potential to expose bed and bank sediments allowing for mobilization of soils and sediments, potentially causing siltation and introduction of associated organic residues if present and contained in the soils. However, as described in Section 2.4.5, potential to degrade water quality during maintenance activities would be minimized by following the SCVWD project BMPs that reduce the risk of allowing sediment to be mobilized and transported into flowing channel segments. The BMPs that are pertinent to protecting water quality are those listed below.

Under the proposed stable channel design, erosion, channel downcutting, and resultant sedimentation and turbidity levels would be reduced from existing conditions except in Reach 5 and most of Reach 6

where no construction is proposed. Operation of the Bypass Alternative would eliminate flooding in Reaches 7B and 8 up to the 1-percent exceedance event, which would reduce the opportunity for sediments and associated organics residues to be mobilized and to enter the stream channel, which is a benefit to water quality. Additionally, most of the cutoff section of West to East Little Llagas Creek (up to the Butterfield extension channel) would have experience a reduction in flood magnitude and extents during the 1-percent exceedance event; a benefit to water quality. In other reaches of the Project, the extent of flooding would remain exactly the same as under existing conditions, so water quality would not be degraded beyond existing conditions due to flooding.

However, in most of Reach 5 and Reach 6 the channel would be subject to instability, predominantly channel down-cutting which has been an ongoing process. Channel down-cutting eventually leads over time to over-steepened streambanks with resultant channel erosion and widening. This would increase water turbidity and potentially cause channel sedimentation. Consequently, the Bypass Alternative has the potential over time to cause a degradation of water quality relative to the other action alternatives. This is a potentially significant impact.

A potential water quality issue specific to the construction and operation of the tunnel in Reach 8 is related to potential bat colonization. Bats are known to use structures, such as tunnels for roosting. Operation of the tunnel portion of the Project in Reach 8 could pose a water quality problem if bats use the tunnel to roost. If bats colonize the tunnel, then bat guano could enter the channel and degrade water quality. Bat guano can introduce nitrogen and *E. Coli* bacteria. Besides the water quality issue, there is also an issue of potential for harm and injury to a colony if bats use the tunnel. Consequently, measures to monitor and exclude bats, which address the harm and injury issue, as well as the water quality issue, are both addressed in Section 3.5, Wildlife Resources. Mitigation Measure WILD-3c T, listed below, includes monitoring for the presence of bats and use of exclusionary devices, if bats are observed, to prevent colonizing the tunnel. With the implementation of Mitigation Measure WILD-3c T, the potential for water quality degradation due to bat colonization would be mitigated to less than significant.

Best Management Practices (BMPs)

> **WQ-1:** Conduct Work from Top of Bank.

> **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms.

> **WQ-3:** Limit Impact of Pump and Generator Operation and Maintenance.

> **WQ-4:** Limit Impacts of Sediments on Water Quality.

> **WQ-5:** Limit Impacts from Staging and Stockpiling Materials.

> **WQ-6:** Stabilize Construction Entrances and Exits.

> **WQ-9:** Minimize Erosion from Removal of In-Channel Vegetation.

> **WQ-10:** Limit Impact of Concrete near Waterways.

> **WQ-12:** Isolate Work in Non-Tidal Sites with Use of Diversion of Bypass.

> **WQ-14:** Use Seeding for Erosion Control, Weed Suppression, and Site Improvement.

> **WQ-15:** Manage Exposed Groundwater at Work Sites.

> **WQ-18:** Maintain Clean Conditions at Work Sites.

> **WQ-40:** Prevent Water Pollution.

> **WQ-41:** Prevent Stormwater Pollution.

> **WQ-42:** Manage Sanitary/Septic Waste.

> **HM-1:** Comply with All Pesticide Application Restrictions.

> **HM-2:** Use Appropriate Type(s) of Pest Control.

> **HM-5:** Comply with All Pesticide Usage Requirements.

> **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas.

> **HM-8:** Comply with Restrictions on Herbicide Use in Aquatic Areas.

> **HM-12:** Assure Proper Hazardous Materials Management.

> **HM-13:** Prevent Spills.

Mitigation Measures

Mitigation Measure WILD-3c T: Development and Implementation of a Bat Monitoring Program and Development of Bat/Tunnel Exclusion Devices.

Implementation of Mitigation Measure WILD-3c T and the BMPs specified above will reduce any impacts to potentially violate water quality standards due to potential for bat roosting in the tunnel to less than significant.

HYDRO-3 BY—Creates or contributes runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provides substantial additional sources of potentially impacted runoff

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel construction activities and operation	NI	NI
Diversion Channel Reach 7A	NI	NI
Cut-off section of West Little Llagas Ck	NI	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Project construction activities would have no effect on existing storm drain systems since there is no expansion or alteration of storm drain locations for this alternative. Since construction activities do not expand or otherwise alter existing storm drain locations, they also do not add substantial additional sources of contaminated runoff to the stormwater drainage system; as such, there are no impacts.

Operations and Maintenance

Although operational activities do not contribute any additional runoff, the Reach 6 Bypass Alternative would bypass flow from the existing West Little Llagas Creek channel through a newly constructed channel in Reach 7A that would add runoff to a 0.5-mile section of the downstream Llagas Creek Reach 6 below Monterey Highway, then to another bypass channel to Reach 14. However, this is not an impact on the capacity of the stormwater drainage system. As discussed in Section 3.2.4.2, the Project design includes an increase in the flood capacity through the second bypass channel and through Reach 14 so that there is no induced flooding due to upstream Project improvements. As such, there is no operational impact to the stormwater drainage system.

Vegetation management, sediment management, and minor maintenance activities are conducted only to maintain the flood capacity of the constructed channels under all of the action alternatives. Consequently,

maintenance activities do not add to runoff, rather maintenance ensures that the channels function efficiently to handle the runoff and maintain the hydraulic capacity of the channel design.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

There would not be an impact because the Reach 6 Bypass Alternative would not contribute to increased runoff water.

HYDRO-4 BY—Substantially depletes or interferes with groundwater supplies, groundwater recharge, or water table level

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel construction and operation	LTS	LTS
Diversion Channel Reach 7A	LTS	LTS
Vegetation and sediment management, minor maintenance	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Project construction activities, such as excavation and grading, would have virtually no influence on groundwater supplies or recharge since it does not create impervious surface areas, block infiltration, or withdraw groundwater. However, in the Reach 7A bypass channel segment it is likely that the shallow groundwater table will be intercepted (see existing groundwater conditions in Section 3.2.2.2 above). From near Lake Silveira to the Llagas Creek channel confluence with Reach 7A near Monterey Highway, there is a shallow groundwater table, approximately 8 feet bgs. Excavation depths in this lowermost section of Reach 7A will be about 12 feet bgs, as such construction will intercept groundwater. Upstream from Lake Silveira the groundwater table is less shallow, approximately 14-15 feet bgs near West Middle Avenue. Proposed construction depths will be nearly 15 feet deep, so that groundwater is also likely to be intercepted, although to a lesser extent than closer to the lake. SCVWD project BMP WQ-15 addresses encountering groundwater during construction to protect water quality. Consequently, impacts associated with construction work would be less than significant.

Operations and Maintenance

For Project operations, the completed channel excavation depths would lower the channel invert, which could intersect the groundwater table where it is shallow and, thereby, the potential to locally lower groundwater elevations near stream banks that in some locales supports riparian vegetation (primarily in Reach 6). From review of recent well elevation data, average water table elevations are below the proposed channel excavation depths of approximately 5 feet along most of the existing channel. Additionally, stream bank soil samples collected for the Project (Cardno ENTRIX 2012a) found that the local water table is likely lower than the existing channel invert in most reaches and, as such, the probability of the Project channel design intercepting the groundwater table and lowering existing shallow groundwater elevations is less than significant in most reaches. Based on the 65-percent design and analysis of annual fluctuations in the elevation of the water table (presented in Section 3.2.2 and

discussed above) it is not anticipated that stream channel deepening would breach the water table along any of the existing channel alignment, but it would intercept groundwater in the proposed Reach 7A bypass channel. As discussed in Section 3.2.2.2, the design channel invert in Reach 7A near Lake Silveira (essentially through the "bow-tie" parcel, see Section 2.4.6) would be about 4 feet below the shallow groundwater table and a little further upstream near West Middle Avenue the channel design invert would be about 1 foot below the groundwater table. Consequently, the Reach 7A bypass channel will likely lower the shallow groundwater table in the vicinity near to the constructed channel by about 4 feet.

However, this is not a substantial change to the groundwater table elevation, and there are not any related adverse effects associated with a groundwater table lowering of this magnitude. This is because the shallow groundwater level lowering is likely to be only in a narrow-width band corresponding to the immediate vicinity of the Reach 7A channel streambanks that will be constructed. It is very unlikely that the groundwater table would be lowered in a wider area, because there is no groundwater pumping associated with the Project. Unlike a pumping draw-down that could mine the deeper groundwater aquifer, the shallow groundwater table will slope from the area near the constructed streambanks toward the elevation of the channel bed. Additionally, there is no existing riparian vegetation along Reach 7A because there is no existing flowing channel, the proposed construction in this Reach is through relatively flat agricultural fields with no existing drainage channel and no riparian vegetation. As such, there is no risk to established vegetation that might require shallow groundwater for survival. There are also no known water supply wells in the vicinity of the proposed construction alignment that would be affected. The shallow groundwater table may in fact provide a small amount of perennial baseflow to the lowermost portion of Reach 7A since groundwater will be influent to the constructed channel. This could be a net benefit to establishing aquatic habitat in this part of Reach 7A and may also contribute flow to the Llagas Creek channel at the Reach 7A confluence. However, groundwater relative to the top of streambanks created by construction of Reach 7A will likely be not much higher than the design invert of the streambed, about 15 feet bgs. As part of the Lake Silveira project element, new upland and riparian vegetation plantings are proposed along the channel alignment through Reach 7A (see Section 2.4.6) that takes into consideration the post-construction ground contour elevations and associated groundwater elevation as appropriate for plant growth and survival. The Preferred Alternative (and all action alternatives) would result in a vegetated corridor along the Reach 7A channel alignment. Although the groundwater table will be intercepted in Reach 7A, this is not a substantial lowering of the groundwater table or attendant adverse effects; as such, the impact is less than significant.

Maintenance of the Proposed Project has no relationship to or influence on groundwater recharge or the water table because maintenance activities do not change the ground contours, does not add impervious surface area and, therefore, does not influence percolation to groundwater and does not pump groundwater. Therefore, maintenance activities do no influence or impact the groundwater recharge or water table elevations.

Best Management Practices

> **WQ-15:** Manage Exposed Groundwater at Work Sites.

Mitigation Measures

None required

Implementation of the BMP listed above reduces impacts to less than significant.

HYDRO-5 BY—Alteration of drainage pattern and course of stream resulting in substantial erosion or siltation on- or off-site

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel construction and operation	LTS	LTS
Diversion channel Reach 6 to Reach 14	LTS	S
Cut-off section of West Little Llagas Ck	LTS	B

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Project construction includes activities that would cause soil disturbance, such as equipment mobilization, staging and demobilization, and excavation and channel grading. Similar to HYDRO-1 BY and HYDRO-2 BY, the SCVWD project BMPs reduce the potential of construction related erosion or siltation. The implementation of BMPs listed below would reduce the potential of substantial erosion or siltation due to construction activities to less than significant.

Operations and Maintenance

Maintenance after construction of the Proposed Project would continue under this alternative, as described in Section 2.4.5. Similar to HYDRO-1 and HYDRO-2 BY, the SCVWD project BMPs listed below would limit the potential of erosion or siltation to less than significant.

The final channel form in all constructed Project reaches, including Reach 8, Reach 7B, and the flows that will be delivered to Reach 7A, the Reach 6 bypass channel segment, Reach 14, and Reach 4 are designed to provide stable channel dimensions. This would result in reduced bank erosion and reduced channel incision in the improved channel sections that in turn would limit sedimentation and siltation, as described and analyzed in Section 3.2.5.2. The operational design of the Project would not eliminate all erosion but would likely reduce the sedimentation and siltation impairments of Llagas Creek to less than the existing conditions.

However, there would be no construction in Reach 5 or Reach 6 downstream of the bypass channel under this alternative. These two reaches would continue to be subject to periodic high flows (only those flows that are associated with the additional induced flooding in association with the upstream channel capacity improvements would be routed to the second bypass channel) and the ongoing processes of channel incision that are operative in the existing channel. As such, over the long-term, Reach 5 and Reach 6 will experience incision and over-steepening of streambanks, resultant erosion and channel widening, and an increase in sedimentation as the channel sections incise and widen. This would be a significant impact.

For the cutoff channel segment of West to East Little Llagas Creek, the existing high flows would be of a substantially lower magnitude, reducing the potential for erosion or siltation in that reach. This is a beneficial water quality effect and no impact under CEQA.

Best Management Practices (BMPs)

> **WQ-1:** Conduct Work from Top of Bank.

> **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms.

> **WQ-3:** Limit Impact of Pump and Generator Operation and Maintenance.

> **WQ-4:** Limit Impacts of Sediments on Water Quality.

> **WQ-5:** Limit Impacts from Staging and Stockpiling Materials.

> **WQ-6:** Stabilize Construction Entrances and Exits.

> **WQ-9:** Minimize Erosion from Removal of In-Channel Vegetation.

> **WQ-10:** Limit Impact of Concrete near Waterways.

> **WQ-12:** Isolate Work in Non-Tidal Sites with Use of Diversion of Bypass.

> **WQ-14:** Use Seeding for Erosion Control, Weed Suppression, and Site Improvement.

> **WQ-15:** Manage Exposed Groundwater at Work Sites.

> **WQ-18:** Maintain Clean Conditions at Work Sites.

> **WQ-40:** Prevent Water Pollution.

> **WQ-41:** Prevent Stormwater Pollution.

> **WQ-42:** Manage Sanitary/Septic Waste.

Mitigation Measures

None required

Implementation of the SCVWD project BMPs will reduce any potential water quality impacts to less than significant.

HYDRO-6 BY—Alteration of drainage pattern and course of stream resulting in flooding or increased surface runoff on- or off-site. Places housing within a 100-year-flood hazard area. Places within a 100-year-flood hazard area structures that would impede or redirect flood flows, and exposes 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.

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel Excavation	NI	B
Diversion channel Reach 7A	NI	B
Cut-off section of West Little Llagas Ck	NI	B

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction activities including channel excavation and grading for the Proposed Project, as described and analyzed in Section 3.2.5.2, would not result in increased surface runoff or flooding, would not impose flooding hazards to buildings or impede flood flows, and would not expose people or property to increased flooding from flood protection features. As a result, construction would have no impact related to flooding caused by alteration of drainage patterns.

Operations and Maintenance

Operation of the Proposed Project, as described in Section 3.2.5.2, is designed to reduce flooding through Morgan Hill by containing the 1-percent exceedance flow in Reaches 7A, 7B, and 8; containing

the 10-percent exceedance flow in Reach 14; and to not induce flooding in Reaches 4, 5, and 6 due to upstream flood protection modifications. The Proposed Project would reduce the extent of flooding in the Project area as shown in comparison of Figures 2.3-1 and 2.4-1.

Maintenance under this alternative, as described in Section 2.4.5, would involve activities, such as sediment removal, vegetation trimming, and spraying to maintain flood capacity of the Proposed Project. Consequently, the operations and maintenance of the Proposed Project would be beneficial no impact under CEQA.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

Implementation of the Reach 6 Bypass Alternative is designed to reduce flooding and, therefore, be beneficial and no impact under CEQA.

3.2.6 Summary of Impacts to Hydrology and Water Quality

Effects of Project activities on hydrology, channel geomorphology, and water quality vary from no impact to less than significant with mitigation.

Effects of Project construction activities on water quality are less than significant the Preferred, NRCS, and Culvert/Channel Alternatives through the implementation of the SCVWD project BMPs and the SWPPP required under the GCP. One water quality issue associated with the Preferred Alternative is identified as a less than significant impact with Mitigation Measure WILD-3c T. This mitigation measure (defined in Section 3.5, Wildlife Resources) would eliminate the potential for bat roosting with consequent contamination and degradation of water quality by bat guano in the tunnel section of Reach 8.

The Reach 6 Bypass Alternative would have significant impacts associated with the water quality significance criteria (HYDRO-1 BY and HYDRO-2 BY) and would result in substantial erosion (HYDRO-5 BY), due to ongoing process of channel incision that would continue through most of Reach 6 and in Reach 5 since these channel reaches are not part of the constructed design.

There are no impacts related to flooding significance criteria from construction activities with implementation of any of the Project alternatives. Effects of all operation and maintenance activities on flooding significance criteria under all of the action alternatives would be beneficial by eliminating the 1-percent flood exceedance extents in Reaches 8 and 7B. The cut-off segment of West to East Little Llagas Creek would be subject to beneficial water quality effects for all action alternatives due to the reduced flooding over a portion of the channel length (up to the point of confluence with the Butterfield extension channel).

3.3 Mineral Resources

3.3.1 Introduction

This section describes the mineral resources of the Project area, including the designation of mineral resource zones (MRZ) in the Project area as delineated on statewide MRZ maps. Section 3.3.2, Study Area, presents the existing environmental setting conditions with respect to mineral resources in the Project area. Section 3.3.3, Regulatory Environment, describes the pertinent federal, state, and local regulations related to mineral resources.

Baseline information on mineral resources in the Project area was compiled from existing published literature. Primary data sources include the following:

> City of Gilroy. 2002. *Gilroy General Plan 2002 to 2020*. Adopted June 2002. Gilroy, California.

> City of Morgan Hill. 2010a. *Morgan Hill General Plan*. February 2010. Morgan Hill, California.

> Santa Clara County. 1994. *Santa Clara County General Plan, 1995–2010*. Adopted December 1994. County of Santa Clara, California.

> U.S. Geological Survey (USGS). 1957. *Gemstones of the United States; Geological Survey Bulletin 1042-G*.

3.3.2 Study Area

The Project is located in southern Santa Clara County, approximately 25 miles southeast of San Jose, passing through rural, residential, and a commercial district in the communities of Morgan Hill, San Martin, and Gilroy (Figure 1.1-1, Regional Area Map). The northern portion of the Project (Reaches 8, 7B, and portions of 7A) is within the City of Morgan Hill; a portion of 7A is within unincorporated Santa Clara County. Reaches 6, 5, and 14 are within the San Martin planning area, and a portion (north of Masten Avenue) of Reach 4 is also in the San Martin planning area. The southern portion of Reach 4 is within unincorporated Santa Clara County. The southern extent of the study area is less than 1 mile from the City of Gilroy.

The study area for assessing impacts to mineral resources is defined as work conducted directly on or within an identified resource area that has the potential to cause a “loss of availability”. This would specifically apply to channel earthwork or construction of maintenance roads, which could result in a loss of aggregate resources through consumption (road construction) or removal (channel earthwork).

3.3.2.1 Environmental Setting

According to the Santa Clara County General Plan, 1995–2010 (1994), mineral resources of significance found and extracted in Santa Clara County include construction aggregate deposits and, to a lesser extent, salts derived from evaporation ponds at the edge of San Francisco Bay. Crushed rock is also a commercially important material in the region. It may be derived from greenstone, serpentine, diabase, and chert-limestone (Jensen 1988; Kohler-Antablin 1996; Kohler 1999). Eight mines are currently operating within the county. The Sargent Oil Field (7 miles south of the City of Gilroy) is also active. Cinnabar (mercury ore) deposits are present within in the county.

In the Project area, Reaches 4, 5, and 6, and the southernmost portion of Reach 14 have been classified by the California Division of Mines and Geology (CDMG) as MRZ-2 (significant deposits present), because they contain sand and gravel resources. There are no active quarries or other mineral extraction sites within the Project area.

Poppy Jasper

Poppy jasper, a semi-precious gemstone used in art and jewelry, is a type of orbicular jasper with characteristic orange and red "poppy flowers" within a microcrystalline quartz matrix found in rhyolitic deposits along the eastern wall of the valley. A famous locality for poppy jasper is Morgan Hill, California (USGS 1957). Historically strip mining has been conducted to extract this gemstone. Due to this former practice, the resource has become rare and is now protected by the City of Morgan Hill General Plan (Maxey Pers. Com. 2013a). However, the major deposits of poppy jasper have been previously identified outside of the Project boundary. It would be unlikely that a new deposit would be inadvertently discovered during construction of the Project.

Lake Silveira (located just east of where Reach 7A and 6 come together) is an element of the Project that would be constructed primarily for mitigation to be implemented for all proposed alternatives as described in Section 2.4.6. This feature was a former shallow open pit quarry likely a source of sand and gravel material for local construction prior to 1980. This quarry was not described in any searches of the historic U.S. Geological survey bulletins pertaining to the region. It is located within recent (Quaternary) alluvium, lake, playa, and terrace deposits (Figure 3.1-1; Formation **Qoa**). It is unlikely that the former quarry site contains any poppy jasper due to its location relative to the poppy jasper parent rock outcrops (Figure 3.1-1; Formation **Tv**).

3.3.3 Regulatory Environment

The following federal, state, regional, and local regulatory requirements for the Project are described below.

3.3.3.1 Federal

No federal regulations are applicable to this section.

3.3.3.2 State

California Surface Mining and Reclamation Act

The California Surface Mining and Reclamation Act of 1975 (SMARA) includes in its provisions the designation of state lands as MRZs to prevent the development of lands containing significant mineral deposits. SMARA calls for the state geologist to classify the lands within California based on mineral resource availability. Although California has a wide range of mineral commodities, it was recognized that construction materials like sand, gravel, and crushed stone produced regionally are used in every urban area of the state and require special classification data. The CDMG has classified urbanizing lands according to the presence or absence of significant sand, gravel, or stone deposits that are suitable as sources of aggregate (Kohler 1999). These MRZ areas are described below:

> *SZ.* Scientific Resource area containing unique or rare occurrences of rocks, minerals, or fossils that are of outstanding scientific significance.

> *MRZ-1.* Mineral Resource Zone where adequate information indicates that no significant mineral deposits are present or likely to be present.

> *MRZ-2.* Mineral Resource Zone where adequate information indicates that significant mineral deposits are present, or there is a high likelihood of their presence and development should be controlled.

> *MRZ-3.* Mineral Resource Zone where the significance of mineral deposits cannot be determined from the available data.

> *MRZ-4.* Mineral Resource Zone where there is insufficient data to assign any other MRZ designation.

3.3.3.3 Local

Santa Clara County General Plan

The Santa Clara County General Plan, 1995–2010 (1994) contains several policies for ensuring continued availability and access to identified mineral resources (C-RC 44, C-RC 45, and C-RC-46). Proper development of new quarry sites (including access routes) is defined in the Santa Clara County General Plan as areas with compatible land uses and minimized environmental impacts.

> *C-RC 44.* Local supplies of mineral resources should be recognized for their importance to the local, regional, and state economy. This policy identifies strategies for preserving and managing mineral resources and sources that identify mineral resources within Santa Clara County.

> *C-RC 45.* Current and future demand for mineral resources in Santa Clara County, particularly construction aggregates, should be ensured by the following means:

  - inventorying existing sites, identifying and properly designating potential new sites for protection measures;
  - preserving deposits and access routes;
  - increased use of recycled material; and
  - proper development of new quarry sites.

> *C-RC 46.* Existing sites and access routes for regionally significant resources should be protected from incompatible land uses and development that would preclude or unnecessarily limit resource availability.

City of Morgan Hill General Plan

The City of Morgan Hill General Plan (City of Morgan Hill 2010a) contains guidance pertaining to the conservation of the semi-precious gemstone, poppy jasper.

> *7f.* Preserve Poppy Jasper as a natural resource unique to Morgan Hill.

> *7.9.* Work cooperatively with the county to ensure that city and county regulations prohibit the mining of Poppy Jasper.

This policy is focused on the previously identified deposits of poppy jasper, and the city does not have authority to preserve the mineral discovered on private property (Maxey Pers. Com. 2013b).

City of Gilroy General Plan

The City of Gilroy General Plan (City of Gilroy 2002) references preserving the mineral resources along Uvas Creek, located south of the City of Gilroy, (Policy 23.06), which is outside of the Project area. No additional mineral resources are identified.

3.3.4 Impact Analysis

3.3.4.1 Significance Criteria

The significance criteria for this analysis were developed from criteria presented in Appendix G of the CEQA Guidelines. Project evaluation criteria indicate that a project will have a significant effect on mineral resources if it would:

> Result in the loss of availability of a known valuable mineral resource that would be of value to the region and the residents of California; or

> 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.

3.3.4.2 Approach to Analysis

The approach to the analysis of potential impacts on mineral resources was to determine the presence of known, valuable mineral resources. For the purposes of the evaluation, mineral resources are considered valuable if they are identified as MRZ-2 or are otherwise protected by local regulations. New construction directly on or within an identified resource was considered a "loss of availability".

3.3.5 Impacts and Mitigation Measures

In the Project area, Reaches 4, 5, and 6, and the southernmost portion of Reach 14 have been classified by the CDMG as MRZ-2 (significant deposits present), because they contain aggregate resources. There are no active quarries or other mineral extraction sites within the Project area.

Within the vicinity of the City of Morgan Hill, the semi-precious stone, poppy jasper, is a protected resource. This resource has been identified and removal prohibited by law in the formerly mined areas (Maxey Pers. Com. 2013a) near the City of Morgan Hill. Mitigation for an inadvertent discovery during excavation work is included in the corresponding sections below.

3.3.5.1 No Project Alternative

Under the No Project Alternative, the Project would not be built; and no new land purchases or construction activities would occur. Flooding in the residential areas of Morgan Hill and San Martin would continue. The bypass channel in Reach 7A would not be constructed under the No Project Alternative. Under the No Project Alternative there would be no fish habitat improvement features installed.

Maintenance activities in the channel would be carried out according to SCVWD SMP. The SMP established procedures for routine maintenance of stream channels involving ongoing sediment removal, vegetation management, bank protection, and associated minor activities. The SMP incorporated a wetland and riparian mitigation program, a series of resource protection policies, and BMPs to reduce environmental impacts from the aforementioned maintenance activities. Maintenance of the Upper Llagas Creek facilities would be conducted in accordance with the guidelines established in the SMP Update.

MIN-1 NP—Result in the loss of availability of a known valuable mineral resource that would be of value to the region and the residents of California

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Existing conditions	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

There would be no construction under the No Project Alternative and, therefore, no impact to loss of availability of mineral resources.

Operations and Maintenance

Under the No Project Alternative, removal of sands and gravels would occur during maintenance of the existing channels. Due to the proximity of urban areas, rural residences, and significant aquatic habitat (Section 3.6, Aquatic Resources), these areas have limited or no accessibility for mining operations and

would likely render such operations infeasible in accordance with the Santa Clara County General Plan criteria; therefore, there would be no impact.

Best Management Practices (BMPs)

None applicable

MIN-2 NP—Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel Excavation	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

There would be no construction under the No Project Alternative and, therefore, no impact to loss of availability of mineral resources.

Operations and Maintenance

Under the No Project Alternative, removal of sediments would continue as currently being conducted under the SMP and would not result in extensive excavation; therefore, there would be no impact.

Best Management Practices (BMPs)

None applicable

3.3.5.2 Tunnel Alternative (Preferred Alternative)

The key feature of the Preferred Alternative is an underground concrete tunnel through downtown Morgan Hill with channel widening and deepening being restricted to the areas between Llagas Road and Hillwood Lane. The main components of the Preferred Alternative are described in Section 2.6. This alternative would also include installation of subterranean pipes and culverts in places along Reach 8. The subterranean construction would be carried out by drilling then lining the earthen tunnel with reinforcements and concrete. Reaches 7 and 8 are not designated as MRZ-2 and, therefore, implementation of this alternative would have no impact on a known resource. Since the tunnel would be constructed beneath the town of Morgan Hill, it is possible that an inadvertent discovery of the locally important semi-precious stone resource could be encountered.

MIN-1 T—Result in the loss of availability of a known valuable mineral resource that would be of value to the region and the residents of California

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation	B	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Channel modifications in Reaches 4, 5, 6, and 14 (areas identified at MRZ-2) would result in removal of aggregate material resources. Aggregate materials removed from the Project area would be stockpiled for future reuse. Use of aggregate materials in the future would not represent a loss of a resource and would represent a reduction in demand from local quarries reflecting a beneficial use under NEPA. Due to the proximity of urban areas, rural residences, and significant aquatic habitat (Section 3.6, Aquatic Resources), these areas have limited or no accessibility for mining operations and would likely render such operations infeasible in accordance with the Santa Clara County General Plan criteria; therefore, there would be no impact.

Operations and Maintenance

Operations and maintenance would consist of maintenance activities described in Section 2.6.5. Due to the proximity of urban areas, rural residences, and significant aquatic habitat (Section 3.6, Aquatic Resources), these areas have limited or no accessibility for mining operations and would likely render such operations infeasible in accordance with the Santa Clara County General Plan criteria. Operations and maintenance of the Project would, therefore, result in no impact to mineral accessibility.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

MIN-2 T—Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation	LSTM	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Extractable localities of poppy jasper have been well documented by Morgan Hill and are protected. The likelihood of encountering a previously undiscovered extractable quantity within the Project area is remote due to the Project Area location relative to the poppy jasper parent rock outcrops. However, channel modification in reaches near Morgan Hill, such as tunnel construction, could result in an inadvertent discovery of a deposit of poppy jasper, which is a potentially significant impact. In accordance with guidance received from the City of Morgan Hill Planning Department (Maxey Pers. Com. 2013a), Mitigation Measure MIN-2 T would be implemented to reduce this impact to a less-than-significant level.

Operations and Maintenance

Maintenance operations conducted in reaches near Morgan Hill would not result in major earthwork that could uncover a previously undiscovered deposit of poppy jasper; therefore, this work would result in no impact.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure MIN-2 T: Inadvertent Discovery of Poppy Jasper. If, during the course of Project construction, any deposit of poppy jasper is discovered, all work shall immediately stop within 50 feet of the discovery and a geologist shall be notified immediately. The geologist shall initiate investigation to determine the significance of the discovery. The property owner would be notified of the discovery, as they would be the legal owner of the mineral and have final decision on its disposition (Maxey Pers. Com. 2013b).

Implementation of this measure would reduce these potential impacts to less than significant with mitigation.

3.3.5.3 Natural Resources Conservation Service (NRCS) Alternative

MIN-1 NRCS—Result in the loss of availability of a known valuable mineral resource that would be of value to the region and the residents of California

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation	B	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The NRCS Alternative modifications would entail excavation in Reaches 4, 5, 6, and 14 for channel widening or deepening. Instream complexity features for fish habitat would also be installed in Reaches 4, 5, and 6.

Channel modifications in Reaches 4, 5, 6, and 14 (areas identified at MRZ-2) would result in removal of aggregate material resources. Aggregate materials removed from the Project area would be stockpiled for future reuse. Use of aggregate materials in the future would not represent a loss of a resource and would represent a reduction in demand from local quarries and would reflect a beneficial use under NEPA. Due to the proximity of urban areas, rural residences, and significant aquatic habitat (Section 3.6, Aquatic Resources), these areas have limited or no accessibility for mining operations and would likely render such operations infeasible in accordance with the Santa Clara County General Plan criteria; therefore, there would be no impact.

Operations and Maintenance

Operations and maintenance would consist of maintenance activities described in Section 2.5.5. Due to the proximity of urban areas, rural residences, and significant aquatic habitat (Section 3.6, Aquatic Resources), these areas have limited or no accessibility for mining operations and would likely render such operations infeasible in accordance with the Santa Clara County General Plan criteria. Operations and maintenance of the Project would, therefore, result in no impact to mineral accessibility.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

MIN-2 NRCS—Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation	LSTM	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Extractable localities of poppy jasper have been well documented by Morgan Hill and are protected. The likelihood of encountering a previously undiscovered extractable quantity within the Project area is remote due to the Project Area location relative to the poppy jasper parent rock outcrops. However, channel modification in reaches near Morgan Hill could result in an inadvertent discovery of a deposit of poppy jasper, which is a potentially significant impact. In accordance with guidance received from the City of Morgan Hill Planning Department (Maxey Pers. Com. 2013a), Mitigation Measure MIN-2 T would be implemented to reduce this impact to less than significant level.

Operations and Maintenance

Operations and maintenance would consist of maintenance activities described in Section 2.5.5. Due to the proximity of urban areas, rural residences, and significant aquatic habitat (Section 3.6, Aquatic Resources), these areas have limited or no accessibility for mining operations and would likely render such operations infeasible in accordance with the Santa Clara County General Plan criteria. Operations and maintenance of the Project would therefore result in no impact to mineral accessibility.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure MIN-2 T: Inadvertent Discovery of Poppy Jasper.

Implementation of Mitigation Measure MIN-2 T would reduce impacts to a locally important mineral to less than significant.

3.3.5.4 Culvert/Channel Alternative

The key feature of the Culvert/Channel Alternative is elimination of the need for channel deepening and widening through residential properties, as proposed for the NRCS Alternative between West Main Avenue and West 2nd Street in Reach 8.

MIN-1 CC—Result in the loss of availability of a known valuable mineral resource that would be of value to the region and the residents of California

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation	B	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The Culvert/Channel Alternative modifications would entail excavation in Reaches 4, 5, 6, and 14 for channel widening or deepening. Instream complexity features for fish habitat would also be installed in Reaches 4, 5, and 6.

Channel modifications in Reaches 4, 5, 6, and 14 (areas identified at MRZ-2) would result in removal of aggregate material resources. Aggregate materials removed from the Project area would be stockpiled for future reuse. Use of aggregate materials in the future would not represent a loss of a resource and would represent a reduction in demand from local quarries and would reflect a beneficial use under NEPA. Due to the proximity of urban areas, rural residences, and significant aquatic habitat (Section 3.6, Aquatic Resources), these areas have limited or no accessibility for mining operations and would likely render such operations infeasible in accordance with the Santa Clara County General Plan criteria; therefore, there would be no impact.

Operations and Maintenance

Operations and maintenance would consist of maintenance activities described in Section 2.7.5. Due to the proximity of urban areas, rural residences, and significant aquatic habitat (Section 3.6, Aquatic Resources), these areas have limited or no accessibility for mining operations and would likely render such operations infeasible in accordance with the Santa Clara County General Plan criteria. Operations and maintenance of the Project would therefore result in no impact to mineral accessibility.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

MIN-2 CC—Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation	LTSM	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Channel modification in reaches near Morgan Hill could result in an inadvertent discovery of a deposit of poppy jasper, which is a potentially significant impact. In accordance with guidance received from the City of Morgan Hill Planning Department (Maxey Pers. Com. 2013a), Mitigation Measure MIN-2 T would be implemented. Implementation of this measure would reduce these potential impacts to less than significant with mitigation.

Operations and Maintenance

Maintenance operations conducted in reaches near Morgan Hill would not result in major earthwork that could uncover a previously undiscovered deposit of poppy jasper; therefore, this work would result in no impact.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure MIN-2 T: Inadvertent Discovery of Poppy Jasper.

Implementation of Mitigation Measure MIN-2 T would reduce impacts to a locally important mineral to less than significant.

3.3.5.5 Reach 6 Bypass Alternative

The construction and maintenance impacts, BMPs, and necessary mitigation for the Reach 6 Bypass Alternative would be similar as those previously described under the Preferred Alternative. The Reach 6 Bypass Alternative would include maintenance for the bypass channel hydraulic control structure constructed in Reach 6; however, this maintenance would not result in impact levels different than those described under the Preferred Alternative.

The Reach 6 Bypass Alternative would construct a high flow bypass channel between Reach 6 of Llagas Creek and Reach 14 of East Little Llagas Creek. The bypass would be designed so that no flood capacity improvements would be needed along Reach 6 or Reach 5 of Llagas Creek downstream of the proposed bypass. Flood conveyance modifications for the upstream Project Reaches 8, 7A, and 7B, and for the downstream Reach 4 would remain the same as that described for the Preferred Alternative. All components of the flood management design would be subject to the same impact and mitigation measures as the Preferred Alternative.

MIN-1 BY—Result in the loss of availability of a known valuable mineral resource that would be of value to the region and the residents of California

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation	B	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The Reach 6 Bypass Alternative modifications would entail excavation in Reaches 4, a portion of 6, and 14 for channel widening or deepening. Additional earthwork would be required for installation of a weir

and gate structure to divert high flows at the upstream end of Reach 6 to Reach 14. Instream complexity features for fish habitat would also be installed in Reach 4.

Channel modifications in Reaches 4, 6, and 14 (areas identified at MRZ-2) would result in removal of aggregate material resources. Aggregate materials removed from the Project area would be stockpiled for future reuse. Use of aggregate materials in the future would not represent a loss of a resource and would represent a reduction in demand from local quarries and would reflect a beneficial use under NEPA. Due to the proximity of urban areas, rural residences, and significant aquatic habitat (Section 3.6, Aquatic Resources), these areas have limited or no accessibility for mining operations and would likely render such operations infeasible in accordance with the Santa Clara County General Plan criteria; therefore, there would be no impact.

Operations and Maintenance

Operations and maintenance would consist of maintenance activities described in Section 2.8.5. Due to the proximity of urban areas, rural residences, and significant aquatic habitat (Section 3.6, Aquatic Resources), these areas have limited or no accessibility for mining operations and would likely render such operations infeasible in accordance with the Santa Clara County General Plan criteria. Operations and maintenance of the Project would therefore result in no impact to mineral accessibility.

Due to the proximity of urban areas, rural residences, and significant aquatic habitat (Section 3.6, Aquatic Resources), these areas have limited or no accessibility for mining operations and would likely render such operations infeasible in accordance with the Santa Clara County General Plan criteria; therefore, there would be no impact.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

MIN-2 BY—Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation	LSTM	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Channel modification in reaches near Morgan Hill could result in an inadvertent discovery of a deposit of poppy jasper, which is a potentially significant impact. In accordance with guidance received from the City of Morgan Hill Planning Department (Maxey Pers. Com. 2013a), Mitigation Measure MIN-2 T would be implemented. Implementation of this measure would reduce these potential impacts to less than significant with mitigation.

Operations and Maintenance

Maintenance operations conducted in reaches near Morgan Hill would not result in major earthwork that could uncover a previously undiscovered deposit of poppy jasper; therefore, this work would result in no impact.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure MIN-2 T: Inadvertent Discovery of Poppy Jasper.

Implementation of Mitigation Measure MIN-2 T would reduce impacts to a locally important mineral to less than significant.

3.3.6 Summary of Impacts to Mineral Resources

No impacts to aggregate resources would result from implementation of Project alternatives due to the proposed use of aggregate materials in the future retrofit of Anderson Dam. This use would be beneficial by reusing material and reducing demand on nearby quarries.

An impact could occur to the locally significant semi-precious gem resource with an unanticipated discovery of a deposit during major earthwork necessary to construct the Project. Implementation of Mitigation Measure MIN-2 T would reduce impacts to less than significant.

3.4 Botanical Resources

3.4.1 Introduction

This section describes the botanical resources in the study area, including vegetation types and habitats, rare or important plant communities, special-status plant species, and waters of the United States and state. This section discusses Project impacts to these botanical resources for the action alternatives described in Chapter 2. Section 3.4.3, Regulatory Setting, describes the regulations and ordinances that apply to botanical resources and jurisdictional waters of the United States and state.

The following reports were reviewed for relevant information on botanical resources and jurisdictional waters in the study area:

> Upper Llagas Creek Project Baseline Biological Resources Report (Cardno ENTRIX 2012b).

> Baseline Biological Resources/Habitat Mapping, Upper Llagas Creek Flood Protection Project (Condor Country Consulting, Inc. 2012a).

> Wetland Delineation and Preliminary Jurisdictional Determination Santa Clara Valley Water District Upper Llagas Creek Flood Protection Project Santa Clara County, California. Prepared for Cardno ENTRIX, August 1, 2012 (Condor Country Consulting, Inc. 2012b).

> Upper Llagas Creek Stormwater Improvements Project Preliminary Delineation of Wetlands and Other Waters. 5 July (H. T. Harvey & Associates 2013b).

> Upper Llagas Creek Flood Protection Project 65% Design Habitat Impact Analysis Technical Memorandum. June 17. (H. T. Harvey & Associates 2013c).

> Final Santa Clara Valley Habitat Conservation Plan, Appendix D Species Accounts. August 2012. (ICF International 2012a).

> Upper Llagas Creek Flood Protection Project, Soil Characterization Report, June 2012 (Cardno ENTRIX 2012a).

> Revised Draft Fish and Wildlife Coordination Act Report (CAR) for the Llagas Creek Flood Protection Project, Santa Clara County, California (USFWS 2003).

3.4.2 Study Area

The Project study area (study area) for the evaluation of vegetation and habitats includes any areas that would be directly, permanently, or temporarily affected by the construction activities associated with all the Project alternatives (Figure 3.4-1). The study area includes access roads, temporary staging areas, and some areas that were included at various stages of the Project design to ensure all potentially impacted areas were included in biological studies. Specific locations relating to the study area include Upper Llagas Creek channel north of the City of Gilroy to Silveira Lake in the City of Morgan Hill, Reaches 4, 5, and 6; West Little Llagas Creek in the City of Morgan Hill (Reaches 7A, 7B, and 8); the stream channel of West Little Llagas Creek proposed to be cut off by Reach 7A in the City of Morgan Hill, and the southern portion of the East Little Llagas Creek within the City of San Martin (Reach 14). The study area is approximately 320 acres. The footprint of the Preferred Alternative is approximately 305 acres and is referred to as the Preferred Alternative Project area (Appendix E).

The wetland delineation conducted for the Project has a unique study area boundary (delineation study area) that includes areas outside of the current Project study area, such as the Lake Silveira proposed mitigation area (Appendix F). Tree surveys and California sycamore woodland mapping were also conducted in some areas adjacent to the Project study area (Appendix F).

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Llagas Rd
E Main Ave
Hill Rd
MORGAN HILL
E Dunne Ave
Monterey St
Railroad Ave
Tennant Ave
W Edmundson Ave
Watsonville Rd
SAN MARTIN
W San Martin Ave
Monterey Hwy
E San Martin Ave
Coolidge Ave
Church Ave
Santa Teresa Blvd
Fitzgerald Ave
Masten Ave
New Ave
Monterey Rd
Day Rd
GILROY

Legend

- Reach 4
- Reach 5
- Reach 6
- Reach 7a
- Reach 7b
- Reach 8
- Reach 14

Imagery: Microsoft, 05/12/2010

bing

0 0.25 0.5 1 Miles

N

Cardno ENTRIX

Upper Llagas Creek Project EIR

FIGURE 3.4-1

Study Area

3.4.2.1 Environmental Setting

The study area is located in southern Santa Clara County, approximately 25 miles southeast of San Jose, in the communities of Morgan Hill, San Martin, and Gilroy (Figure 1.1-1). The study area is in the southern Santa Clara Valley, in relatively flat terrain, with elevations ranging from 220 to 350 feet (67 to 106 meters) above sea level. Existing land use in the study area is agricultural, residential, open space, and commercial.

The study area and its 84-square-mile watershed are located within the Central California Coast Ranges. The Upper Main Llagas Creek drainage basin originates at the crest of the Santa Cruz Mountains and extends southeastward through foothill terrain then onto the floor of the Southern Santa Clara Valley before joining the Pajaro River, which then flows into Monterey Bay near Watsonville in Santa Cruz County. West Little Llagas Creek flows along the western edge of the valley then turns eastward north of San Martin where it joins East Little Llagas near the center of the valley. East Little Llagas Creek gathers flow from tributaries from the east side of the valley before joining the main stem just north of Masten Avenue. The study area includes segments of all three creeks and southward to just beyond Buena Vista Avenue.

The soils underlying the study area's valley floor location reflect the geologic history and periods of flowing stream sediment deposits, gravels, and sands in old channels with overlapping fine layers of floodplain deposits. In general, the soils present in the study area are deep; well drained; medium to fine textured loams (gravels, sands, and silts) and clay loams; formed on gradients less than 9 percent; and include Yolo, Zamora, Pleasanton, San Ysidro, Cropley, and Arbuckle Series (Cardno ENTRIX 2012a). Serpentine, alkaline, or volcanic soils that potentially support special-status plant species endemic to these soil types are not present in the study area. The soils investigation conducted for the Project identified several soil conditions in the study area that could influence the success of proposed plantings (Cardno ENTRIX 2012a). These conditions include cemented soil layers that would limit root growth and soil moisture and low fertility, which could limit plant growth.

The following discussion describes vegetation and general characteristics of the creek channel that are present in the study area for each reach. These descriptions are based on field surveys conducted in portions of the study area during September 20 through 23, 2011 vegetation sampling; October 18, 19, and 21, 2011 vegetation mapping; October 17 and 18, 2011 and January 16 and 17, 2012 wetland delineation investigations; and vegetation mapping and sampling on West Little Llagas on April 17 through 20, 2012 (Condor Country Consulting, Inc. 2012b). The following floristic descriptions are limited to surveys that were conducted primarily during the fall and winter when identification of herbaceous species would be limited. Specific vegetation types and habitats are described in more detail in Section 3.4.2.1. Vegetation types and habitats in the study area are shown in Appendix E.

Reach 4

Reach 4 is an intermittent stream channel that winds through agricultural and suburbanized areas. The stream channel averages about 30 feet wide at the OHWM along its 2.4-mile stretch. The stream channel bed is cobbles, pebbles, and sand, which support sparse riparian vegetation, such as mule fat (*Baccharis salicifolia*). The stream banks are typically steep, well defined, and support a mix of riparian and non-riparian species. Annual non-native grass species, such as wild oats (*Avena* spp.) and ripgut brome (*Bromus diandrus*), are common along with invasive non-native species, such as Italian thistle (*Carduus pycnocephalus*) and yellow star thistle (*Centaurea solstitialis*). Top of bank areas support non-native trees, such as red gum (*Eucalyptus camaldulensis*) and native trees, such as Fremont cottonwood (*Populus fremontii* ssp. *fremontii*), western sycamore (*Platanus racemosa*), and coast live oak (*Quercus agrifolia*). Black walnut (*Juglans* sp.), which are escapes from orchard rootstock, are also present in Reach 4.

Reach 5

Reach 5 is a short 0.4-mile segment connecting Reaches 6 and 14 that averages 15 feet wide at the OHWM. The channel is composed of gravel and sand and contains riparian species, such as mule fat in the stream channel, red gum at the top of bank, and annual grassland dominating the understory throughout. There is a large grove of Monterey pine (*Pinus radiata*) on the bank above the southeast portion of the reach, but this commonly-planted species, while native to California, is not native to the study area. Land use to the north is agriculture and to the south is urban.

Reach 6

Reach 6 flows southward for 3.7 miles. The channel is composed of gravel, sand, and silt and varies between 15 to 30 feet wide. The southern portion of Reach 6 is adjacent to several SCVWD percolation ponds to the west and greenhouses and agricultural fields to east. The southern portion supports riparian species, such as mule fat and willow (*Salix* spp.) in the stream channel and coast live oak, red gum, and western sycamore on top of the banks. The middle portion of Reach 6 traverses agricultural fields, small corporation yards, and suburban areas. Portions of this central reach are adjacent to paved roads and invasive non-native species, such as giant reed (*Arundo donax*) and Himalayan blackberry (*Rubus armeniacus*), are abundant amid the annual grassland and scattered native and non-native tree species, such as western sycamore, red gum, and willows. The northern portion of Reach 6 passes through an industrial area and waste treatment facilities, but still supports considerable riparian forest and scrub habitat.

Reaches 7A and 7B

Reach 7 is divided into two sections, Reaches 7A and 7B. The southern end of Reach 7A ends at Llagas Creek and Silveira Lake, and this small portion of Reach 7A is biologically diverse with valley oak (*Quercus lobata*) and coast live oak, walnut, willow, and broad-leaved cattail (*Typha latifolia*). The majority of the southern half of Reach 7A is a non-channelized topographically flat section of land with a combination of heavy agricultural use (plowed fields) or fallow land that has converted to annual non-native grassland. The northern half of Reach 7A supports non-native grassland and patches of perennial marsh and highly fragmented riparian forest and runs through a residential neighborhood.

Reach 7B contains West Little Llagas Creek and the channel is composed of gravel, sand, silt, and clay, which transects an urban area. The stream channel supports riparian scrub species and the banks and the undisturbed areas above the top of bank support non-native grasslands dominated by wild oats along with Bermuda grass (*Cynodon dactylon*) and annual canary grass (*Phalaris canariensis*). Over half the study area in Reach 7B is grassland (Table 3.4-1). The tree canopy consists of a combination of planted exotic trees and native trees, such as coast live and valley oaks, and Fremont cottonwood. The southern half of the Reach 7B channel averages 75 feet in width and the northern half of Reach 7B (north of Tennant Avenue) averages 15 feet in width. In the northern portion, the stream channel is adjacent to small businesses and is in an underground culvert for the northernmost 650 feet of the reach.

Table 3.4-1 Vegetation Types and Habitats in the Study Area

Vegetation Type	Study Area Total (Acres)
Reach 4	
Riparian Forest (PFO) (native and non-native)	17.5
Riparian Scrub-shrub (PSS) (native and non-native)	2.9
Perennial Marsh (PEM)	--
Upland Herbaceous (U/H)	41.1
Aquatic	7.9
Developed	1.2
Reach 5	
Riparian Forest (PFO) (native and non-native)	1.8
Riparian Scrub-shrub (PSS) (native and non-native)	2.1
Perennial Marsh (PEM)	--
Upland Herbaceous (U/H)	13.7
Aquatic	1.9
Developed	0.9
Reach 6	
Riparian Forest (PFO) (native and non-native)	12.9
Riparian Scrub-shrub (PSS) (native and non-native)	11.1
Perennial Marsh (PEM)	1.0
Upland Herbaceous (U/H)	49.7
Aquatic	8.5
Developed	9.3
Reach 7A	
Riparian Forest (PFO) (native and non-native)	3.9
Riparian Scrub-shrub (PSS) (native and non-native)	3.3
Perennial Marsh (PEM)	1.7
Upland Herbaceous (U/H)	43.2
Aquatic	0.1
Developed	1.3

Table 3.4-1 Vegetation Types and Habitats in the Study Area

Vegetation Type	Study Area Total (Acres)
Reach 7B	
Riparian Forest (PFO) (native and non-native)	1.4
Riparian Scrub-shrub (PSS) (native and non-native)	0.1
Perennial Marsh (PEM)	1.6
Upland Herbaceous (U/H)	13.7
Aquatic	0.3
Developed	3.1
Reach 8	
Riparian Forest (PFO) (native and non-native)	3.4
Riparian Scrub-shrub (PSS) (native and non-native)	0.9
Perennial Marsh (PEM)	1.3
Upland Herbaceous (U/H)	10.2
Aquatic	0.4
Developed	4.1
Reach 14	
Riparian Forest (PFO) (native and non-native)	1.4
Riparian Scrub-shrub (PSS) (native and non-native)	2.7
Perennial Marsh (PEM)	0.3
Upland Herbaceous (U/H)	28.6
Aquatic	13.4
Developed	11.0

Reach 8

Reach 8 is an intermittent stream (West Little Llagas Creek) and the channel is composed of gravel, sand, silt, and clay, which averages 12 feet in width. The channel transects an urban area with businesses, residential areas, and roads abutting many portions of the top of the channel bank. The channel runs underground for 250 feet in two locations. The bottom of the channel varies from sections with no vegetation to areas with broad-leaved cattails and hardstem bulrush (*Schoenoplectus acutus*). The banks are predominately vegetated with non-native annual grassland. A large portion of this reach has a canopy of exotic trees with occasional patches of remnant coast live oak and valley oak. The northernmost section runs along Hale Avenue and supports mostly ruderal vegetation, with some cattail and scattered oaks throughout. Most of the study area in Reach 8 is bordered by developed urban and landscape habitats (Table 3.4-1).

Reach 14

Reach 14 is an engineered wide channel with several portions that were recently re-excavated in 2011. The channel width at the OHWM averages 25 feet and the top of bank width averages 70 feet. The stream channel substrate is composed of cobbles, gravel, sand, and silt. A few sections contain riprap. The bottom of the channel is mostly bare ground with scattered patches of riparian herbs, such as curly dock (*Rumex crispus*) and cocklebur (*Xanthium strumarium*). The vegetation on the banks of the channel is predominately non-native grasslands. The top of the channel on both sides is lined with roads or ruderal habitat with scattered scrub, exotic trees, and willows. Agricultural fields or suburban areas are present beyond the roads on each side of the channel.

3.4.2.2 Vegetation Types and Habitats

Vegetation types and habitats in the study area were mapped using a SCVWD vegetation classification, which was based on *the Manual of California Vegetation* (Sawyer et al 2009), the industry standard for California vegetation mapping. The SCVWD categories were applied to the study area (Condor Country Consulting, Inc. 2012a; Cardno ENTRIX 2012b). Additional adjustments and data gaps for vegetation mapping were addressed to maximize mapping precision with aerial photograph interpretation and ground surveys (H.T. Harvey & Associates 2013c). This analysis resulted in 43 vegetation types or habitats in the study area, which were grouped into 15 corresponding vegetation types and habitats for this EIR. Thirteen of the 15 types were further grouped into six CAR types for the purpose of conducting an impact analysis and proposing compensatory mitigation that is consistent with the requirements of the CAR (USFWS 2003). The CAR habitat types are riparian habitats that were described in the USFWS (2003) report prepared for this Project for the purpose of identifying appropriate mitigation measures and compensatory mitigation ratios for impacts to habitats. A map series showing CAR habitat types in the study area is provided in Appendix E. Subsequent to completion of the analysis described above, an additional section was added to Reach 8, between Hillwood Lane and Llagas Road; and CAR vegetation types were determined for this area using aerial photography, ground based photos and other data.

The following section provides a general description of each of the six CAR habitat types and each of the corresponding SCVWD vegetation types or habitats associated with that CAR type. Table 3.4-1 provides a summary of the acreages by reach of four main CAR habitats in which Riparian Forest (native) and Riparian Forest (non-native) are combined, and Riparian Scrub-shrub (native) and Riparian Scrub-shrub (non-native) are combined. In addition, Aquatic and Developed habitats, which do not correspond to a CAR habitat, are also described.

Riparian Forest (PFO) (native)

The Riparian Forest (PFO) (native) CAR habitat type consists of five SCVWD vegetation types in the study area that are dominated by native riparian trees (Appendix E). These types include: (1) broad-leaved woodland, (2) California sycamore woodland[1], (3) horticultural and landscape plantings (native), (4) native riparian scrub, and (5) riparian woodland. The Riparian Forest (native) category refers to habitat dominated by woody plant species over 20 feet in height in the riparian corridor (USFWS 2003). This habitat is generally found within the bed and banks of the creek, but includes the canopy of trees that extend beyond the bed and banks. The structure of this habitat varies throughout the study area, ranging from single isolated trees with sparse to no herbaceous understory to dense, multiple-layered canopy forest. Isolated trees, such as those found in much of Reaches 7 and 8, represent degraded habitat with limited biological function whereas multi-layered canopy forest, such as those found in Reach 4 and parts of Reach 6, provides high biological functions and values.

[1] The California sycamore woodland type is dominated by western sycamore trees.

Broad-leaved Woodland

Broad-leaved woodland consists of upland woodland with a tree layer composed of varying proportions of coast live oak, valley oak, and California buckeye (*Aesculus californica*). Dominant shrub species include poison oak (*Toxicodendron diversilobum*). In some portions of the study area the broad-leaved woodland type is dominated by coast live oak or valley oak with over 50 percent of the relative tree canopy cover provided by one of these two oak species. The broad-leaved woodland type also includes mixed oak woodland; where neither the coast live oak nor valley oak comprises over 50 percent of the tree canopy cover. Broad-leaved woodland is generally represented as individual trees or small clusters along most reaches, except in Reach 4, where more extensive patches exist.

California Sycamore Woodland

California sycamore woodland in the study area is based on the SCVWD *Platanus racemosa* type. This woodland alliance generally occurs within the riparian corridor and is composed of mature, widely spaced western sycamore comprising at least 5 percent of the absolute cover of the tree canopy layer. Other species associated native trees include coast live oak, valley oak, sandbar willow, red willow, arroyo willow, and black walnut. California sycamore woodland is considered a rare and sensitive vegetation community by the California Department of Fish and Game (CDFG [2010]). Regulatory agencies are concerned with the decline in this habitat type in Santa Clara County (CBI 2006). It is considered a declining habitat type and relict trees are considered particularly valuable, because seed produced by native sycamores in the Santa Clara Valley includes genetic material from widely-planted non-native sycamores (*Platanus* sp.). For that reason, the limited young trees that have recruited from seed are often hybrids with non-native trees. In addition, the extent of hydrologic alteration in the region has made natural recruitment of native sycamores infeasible in most areas, including most reaches of the Project and, therefore, new native sycamore trees are not replacing the old trees that reach the end of their lifespan.

California sycamore woodland was mapped in the field during the 2013 site investigations to encompass all California sycamore woodlands, including small mapping units. During these field surveys, existing California sycamore woodland mapping units that were defined as western sycamore occupying 50 percent of the relative tree canopy were expanded to encompass some adjacent woodland areas and western sycamore occupying at least 5 percent absolute cover. This method resulted in larger mapping units in some areas and a higher acreage of California sycamore woodland than for the trees alone in the study area.

Horticultural and Landscape Plantings (native)

Horticultural and landscape plantings (native) consist of planted native trees such as Monterey pine.

Native Riparian Scrub

The native riparian scrub vegetation type in the study area is dominated by one or more riparian shrub species and the absolute vegetative cover in the shrub layer ranges from 20 to 50 percent. Herbaceous plants may occur in the understory. Dominant species in this vegetation type that occurs in PFO (native) include arroyo willow (*Salix lasiolepis*) and other willow species with a shrubby understory of Himalayan blackberry.

Riparian Woodland

Riparian woodland in the PFO CAR habitat is dominated by red willow (*Salix laevigata*) and/or Fremont cottonwood. The subcanopy may include arroyo willow. In the study area, this habitat type generally consists of individual trees or small clusters of trees except on Reach 7A just south of La Crosse Drive and Reach 4 south of the convergence of Reaches 5 and 14. This habitat provides important biological functions and values.

Riparian Forest (PFO) (non-native and planted non-local natives)

The Riparian Forest (PFO) (native) CAR habitat type consists of two vegetation types in the study area (Appendix E). This habitat is similar to Riparian Forest (PFO) (native) except that this habitat is dominated by non-native or planted non-local native riparian trees. This habitat is generally found within the bed and banks of the creek, but includes trees where canopy extends beyond the bed and banks. The structure of this habitat varies throughout the study area, ranging from single isolated trees with sparse to no herbaceous understory to dense, multiple-layered canopy forest.

Eucalyptus

The eucalyptus type contains a eucalyptus tree canopy with a relative tree cover greater than 80 percent. The predominant eucalyptus species in the study area is red gum. Other scattered eucalyptus species in the study area include blue gum (*E. globulus*) and forest red gum (*E. tereticornis*). Red gum has a California Invasive Plant Council (Cal-IPC) rating of limited and is considered to have a low to moderate rate of invasiveness (Cal-IPC 2006).

Horticultural and Landscape Plantings

Horticultural and landscape plantings consist of ornamental non-native trees and stands of black walnut, which are escapes from orchard rootstock.

Riparian Scrub-shrub (PSS) (native)

The Riparian Scrub-shrub (PSS) (native) CAR habitat type consists of two vegetation types in the study area that are dominated by native riparian shrubs (Appendix E). Riparian Scrub-shrub (native) is habitat composed of woody plant species less than 20 feet tall within the riparian corridor (USFWS 2003). This includes species that are in an early developmental stage of PFO, shorter stature native trees and native shrub species. The structure of this habitat ranges from single isolated shrubs to dense, multi-species canopy scrub habitat.

Native Riparian Scrub

The native riparian scrub vegetation type in the study area is dominated by one or more riparian shrub species and the absolute vegetative cover in the shrub layer ranges from 20 to 50 percent. Dominant species in this vegetation type include mule fat, sandbar willow (*Salix exigua*), and arroyo willow. This vegetation type often has an herbaceous understory, but may also have a shrubby understory of Himalayan blackberry.

Upland Scrub

The Upland vegetation type in the study area is vegetation complex that consists of a shrubby layer of coyote brush (*Baccharis pilularis*) that occupies over 50 percent of the absolute cover.

Riparian Scrub-shrub (PSS) (non-native)

The Riparian Scrub-shrub (PSS) (native) CAR habitat type consists of one vegetation type in the study area that is dominated by non-native riparian shrubs and giant reed (Appendix E). Riparian Scrub-shrub (non-native) refers to habitat composed of vegetation that is less than 20 feet tall within the riparian corridor (USFWS 2003). This includes species that are in an early developmental stage of PFO and shorter stature vegetation. The structure of this habitat ranges from single isolated shrubs to dense, multi-layered canopy scrub habitat.

Riparian Exotic Scrub

Riparian exotic scrub is dominated by giant reed or Himalayan blackberry, with 60 percent or greater relative cover of one of these species. Giant reed has a Cal-IPC rating of high and considered a highly invasive plant that can have a severe impact on animal communities and vegetation structure with a high likelihood of invading and dominating adjacent riparian plant communities (Cal-IPC 2006). Himalayan

blackberry has a Cal-IPC rating of high and considered a highly invasive plant that can have a severe impact on animal communities and vegetation structure with a high likelihood of invading and dominating adjacent wetland plant communities (Cal-IPC 2006).

Upland Herbaceous (U/H)

The Upland Herbaceous (U/H) CAR habitat type consists of four vegetation types or habitats in the study area that are dominated by non-native grasses and forbs and include sparsely vegetated disturbed areas with invasive species (Appendix E). This type includes: (1) agriculture, (2) barren, (3) grassland, and (4) ruderal. It is located on the Creek channel banks and levee slopes. Areas where the Creek banks occur under bridges were characterized as Upland Herbaceous but vegetation cover tends to be sparse in these areas.

Agriculture

Agriculture habitat in the study area supports agricultural activity or recently fallowed fields and includes orchards and land planted with crops.

Barren

Barren habitats are sparsely vegetated to unvegetated areas. These areas have less than 10 percent absolute cover of vegetation. Recently plowed agricultural areas are included in agriculture.

Grassland

Grassland habitat is the dominant vegetation type in the study area (Table 3.4-1). This vegetation type is dominated by naturalized (non-native) annual plants, such as wild oat (*Avena fatua*), slender wild oat (*Avena barbata*), ripgut brome, Italian ryegrass (*Festuca perennis*), or by naturalized perennial grasses such as Harding grass (*Phalaris aquatica*), Dallis grass (*Paspalum dilatatum*) and Bermuda grass.

Ruderal

Ruderal vegetation consists of weedy species growing on highly disturbed land that is frequently subject to disturbance from people and vehicles. Ruderal plant species in the study area include non-native wild radish (*Raphanus sativus*), narrow-leaved plantain (*Plantago lanceolata*), filaree (*Erodium* spp.), and annual grasses, such as wild oat. Ruderal habitat is commonly found adjacent to highways.

Perennial Marsh (PEM)

The Perennial Marsh (PEM) CAR habitat type consists of any perennial marsh and seasonal wetlands habitat that were delineated as USACE jurisdictional features (H. T. Harvey & Associates 2013b; Appendices E and F). These habitats are generally found on the edges of the active channel; however, some span the entire channel bed (H. T. Harvey & Associates 2013b). Perennial marsh habitat occurs in the perennially and intermittently flowing reaches of the creek and is composed of species, such as cattail (*Typha* sp.), California bulrush (*Schoenoplectus californicus*), tall flatsedge (*Cyperus eragrostis*), and fringed willowherb (*Epilobium ciliatum*). Seasonal wetlands are generally located in the ephemerally flowing reaches of the creek and are composed of species such as curly dock, cocklebur, and Dallis grass.

Other Habitats

Two habitats in the study area do not correspond to a CAR habitat: Aquatic and Developed (Appendix E).

Aquatic

Aquatic habitat includes concrete lined channels, perennial stream channels, and seasonal intermittent streambeds. Concrete lined channels are characterized by an impermeable layer of concrete that may

have an overlying layer of sediment that contains herbaceous plant species. Perennial stream channels have moving water year round. Seasonal streambeds are over 80 percent bare ground composed primarily of sand, gravel, and cobbles. These gravelly stream beds do not contain surface water for at least 3 months of the year. Facultative, facultative wet, and facultative upland plant species, such as curly dock, cockle bur, and crab grass (*Digitaria sanguinalis*), and other species, such as black mustard (*Brassica nigra*) and teasel (*Dipsacus fullonum*), may occur in scattered stands.

Developed

Areas in the study area that are mapped as developed include urban and suburban, roads, and riprap. Water channels in urbanized areas may be underground inside large diameter pipes with built up urban areas above. Roads are regularly maintained and traveled gravel or asphalt surfaced roads. Riprap consists of channel areas with a fill composed of large boulders greater than 10 inches (25 centimeters).

3.4.2.3 Rare or Important Plant Communities

The CDFW regulates impacts to rare or important plant communities (CDFG 2010). Locations of some these communities occurrences are recorded in the California Natural Diversity Database (CNDDB) (CDFW 2012), but many are not. There are two sensitive natural communities in the CNDDB within 10 miles of the study area: Serpentine Bunchgrass and Sycamore Alluvial Woodland (Figure 3.4-2). Serpentine Bunchgrass does not occur in the study area, because serpentine soils are not present. The CNDDB Sycamore Alluvial Woodland community corresponds to California sycamore woodland in the study area, and to the *Platanus racemosa* Woodland Alliance in *A Manual of California Vegetation*, second edition (Sawyer et. al 2009). There are 24.02 acres of this habitat in the vicinity of the study area, primarily in Reaches 4 and 6 (Appendix E). The updated *List of Vegetation Alliances and Associations* (CDFG 2010) ranks *Platanus racemosa* Woodland Alliance as G3, S3, which means there are 21 to 100 occurrences of it worldwide/statewide and/or more than 2,590 to 12,950 hectares of the alliance.

Other riparian habitats in the study area are also considered sensitive vegetation communities by CDFW, because of their ranking (CDFG 2010) and their location adjacent to Aquatic habitat that consists of bare channels (perennial and intermittent stream channels). The CDFW's jurisdiction along channels with a defined bed and bank extends to adjacent riparian habitats. Most of the Riparian Forest (42.09 acres) in the study area is located adjacent to Aquatic habitat and is comprised of vegetation subtypes that are ranked as sensitive, including *Populus fremontii*, *Salix laevigata*, and *Quercus lobata*.

The study area also has the potential to support native grassland alliances that could be considered rare, such as purple needle grass grassland (*Nassella pulchra* alliance). The CDFW ranks this alliance as G3? S3?, which means a tentative ranking is that there are 21 to 100 occurrences of it worldwide/statewide, or more than 2,590 to 12,950 hectares (CDFG 2010). Another sensitive native grassland community that is potentially present in the study area is blue wild rye meadows (*Elymus glaucus* alliance), which has a ranking of G3?, S3?, meaning that tentatively there are only 21 to 100 occurrences of it worldwide/statewide, and/or 2,590 to 12,950 hectares of the alliance. Most of the grasslands in the study area are disturbed, especially in Reach 14, so these sensitive grassland habitats are not likely to be present in the upper reaches of the Project, but are potentially present in less disturbed areas, such as Reach 4.

3.4.2.4 Waters of the United States and Waters of the State

Two recent wetland delineations have been conducted for different parts of this Project. The first delineation was on October 17 and 18, 2011, January 16 and 17, 2012, and April 17 through 20, 2012 and covered Reaches 6 and 7A bypasses, Reach 7A at Watsonville Road, north tunnel portal terminus construction area, and the West Little Llagas Creek channel and adjoining banks, as well as several areas outside the study area (Appendix F) (Condor Country Consulting, Inc. 2012b). The second was conducted on November 8 through December 7, 2012 and May 2, 6, and 14, 2013 and covered the

remaining portions of the Project study area, as well as the northern section of Reach 8 and some of the proposed mitigation areas, such as Lake Silveira (H.T. Harvey & Associates 2013b). Both delineations were routine onsite investigations that followed the USACE standard methods (Environmental Laboratory 1987; USACE 2008). The results of the delineations were combined and are included as Appendix F. The delineation study area corresponds to the botanical study area except for one part of Reach 7A, where no delineation has been conducted. However, this area is primarily agricultural fields and wetlands, if present, are anticipated to be very limited in extent.

Table 3.4-2 provides a summary of the 52.70 acres of potential jurisdictional waters (Section 404) that were identified in the 181.93-acre delineation study area (H.T. Harvey & Associates 2013b). A total of 9.75 acres of perennial marsh and seasonal wetlands were delineated as potential jurisdictional wetlands. A total of 42.95 acres and 53,473 linear feet of intermittent and perennial streams, culverts, or ponds situated below the OHWM were delineated as potential jurisdictional other waters (non-wetland waters) of the United States. These jurisdictional wetlands and other waters are shown in Appendix E where perennial marsh and seasonal wetlands correspond to the CAR Perennial Marsh (PEM) habitat, and intermittent and perennial streams, culverts, and ponds are grouped as Aquatic habitats. All reaches within the delineation study area are relatively permanent waters (RPWs) and Lake Silveira is a palustrine feature (P) (H.T. Harvey & Associates 2013b). None of the non-wetland waters in the study areas are traditionally navigable waters (TNWs).

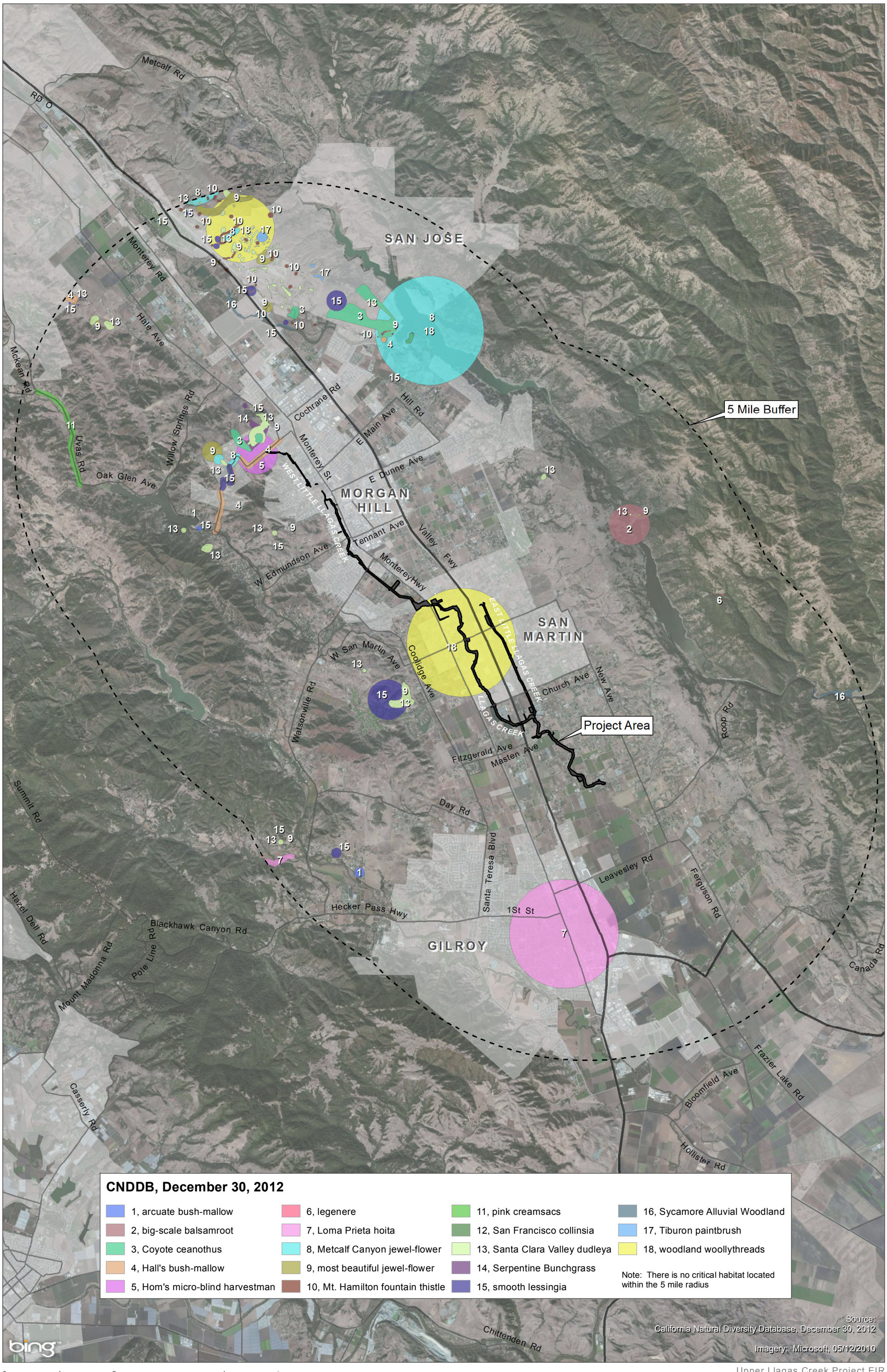
Table 3.4-2 Jurisdictional Waters in the Delineation Study Area

Potential Jurisdictional Waters	Acres
Section 404 Wetlands	**9.75**
Perennial Marsh	1.42
Seasonal Wetlands	8.33
Section 404 Other Waters	**42.95**
Intermittent Streams	24.21
Perennial Streams	9.90
Culverts	0.94
Pond	7.90
Total Jurisdictional Waters	**52.70**

Source: H.T. Harvey & Associates 2013b

Two hundred twelve (212) potential jurisdictional perennial marsh features (totaling 1.42 acres) were mapped in the study area (Appendix F). Perennial marsh is restricted to areas that retain water throughout the year, such as areas within the OHWM in the perennial stream corridors and along the banks of Lake Silveira. There are 6,329 total linear feet of perennial marsh in streambeds throughout the study area. Vegetation below the OHWM, supported wetland species, such as spotted ladysthumb (*Persicaria maculosa*), and obligate wetland species, such as California bulrush and cattail. Hydrophytic vegetation along the edge of the low-flow channel included facultative species, such as curly dock, cocklebur and Dallis grass, tall flatsedge, fringed willowherb, and wild mint (*Mentha arvensis*).

Seventy-seven (77) potential jurisdictional seasonal wetlands (totaling 8.33 acres) were mapped in the study area (Appendix F). Seasonal wetlands are present, adjacent to the intermittent stream channels in all reaches and at Llagas Creek at Lake Silveira. Most seasonal wetlands in the delineation study area are in channels at or below the OHWM, and some are outside of the main Llagas Creek channel. There are 15,465 linear feet of the seasonal wetlands. Cattail and California bulrush were observed in wetlands located at or below the OHWM and tall flatsedge, curly dock, cocklebur, and Dallis grass were often observed in wetlands that occurred at or just above the OHWM.



CNDDB, December 30, 2012

1, arcuate bush-mallow	6, legenere	11, pink creamsacs	16, Sycamore Alluvial Woodland
2, big-scale balsamroot	7, Loma Prieta hoita	12, San Francisco collinsia	17, Tiburon paintbrush
3, Coyote ceanothus	8, Metcalf Canyon jewel-flower	13, Santa Clara Valley dudleya	18, woodland woollythreads
4, Hall's bush-mallow	9, most beautiful jewel-flower	14, Serpentine Bunchgrass	
5, Hom's micro-blind harvestman	10, Mt. Hamilton fountain thistle	15, smooth lessingia	

Note: There is no critical habitat located within the 5 mile radius

Source: California Natural Diversity Database, December 30, 2012

Imagery: Microsoft, 05/12/2010

0 1 2 4 Miles

N

Upper Llagas Creek Project EIR

FIGURE 3.4-2

CNDDB Records of Special-Status Plants and Sensitive Communities in the Vicinity of the Tunnel Alternative Project Area

A total of 42.95 acres of non-wetland waters (other waters) were identified in the study area, corresponding to 53,473 linear feet (Table 3.4-2; Appendix F). These features are located in the low-flow channels and active floodplains within OHWM of the Llagas Creek watershed. Most of the non-wetland waters identified in the delineation study area are intermittent streams within a single channel. The intermittent streams did not often have surface water at the beginning of the delineation period in November 2012, but seasonal flows were observed later during the survey period after precipitation events in December 2012. Perennial features were only observed in Reach 6 and the portion of Llagas Creek near Lake Silveira and were the most complex stream channels in the delineation study area. Twenty culverts were also identified as other waters of the United States.

3.4.2.5 Special-status Plant Species

For the purpose of this section, special-status species are plant species that meet one or more of the definitions listed below.

> Species listed or proposed for listing as threatened or endangered under the federal ESA.

> Species that are Candidates for possible future listing as threatened or endangered under the federal ESA.

> Species listed or proposed for listing by the State of California as threatened, endangered, or rare under California Endangered Species Act (CESA).

> Species that meet the definitions of rare or endangered under CEQA Guidelines Section 15380. This includes plant species that have a California Rare Plant Rank (RPR) of 1A, 1B, or 2 (CNPS 2012).

A list of 55 special-status plant species that are known to occur or potentially occur in the vicinity of the study area were compiled and evaluated for their potential to occur within the study area. This list is provided in Appendix G and describes the species' scientific and common names, status, habitat, and potential to occur in the study area. The list was compiled based on a review of special-status species lists and records from the CNDDB (CDFW 2012), USFWS online species list (USFWS 2012), California Native Plant Society online *Inventory of Rare, Threatened, and Endangered Plants of California* (CNPS 2012) databases, and literature resources. The CNDDB and the USFWS databases were reviewed for special-status species that are known to occur or potentially occur in the three USGS, 7.5-minute topographic quadrangles that the study area is located within (Morgan Hill, Mount Madonna, and Gilroy), and the nine neighboring quadrangles: Chittenden, Gilroy Hot Springs, Loma Prieta, Mississippi Creek, Mount Sizer, San Felipe, Santa Teresa Hills, Watsonville East, Watsonville West, Lick Observatory, Isabel Valley, and San Jose East (Appendices H and I). The CNDDB records of special-status plant species and sensitive vegetation communities within 5 miles of the Project area were also reviewed and are shown in Figure 3.4-2. There is no Critical Habitat for special-status plant species within 10 miles of the study area.

The 55 special-status plant species in the Appendix G list were evaluated for their potential to occur in the study area. Based on an analysis of distribution, known occurrences, and habitat requirements four of the special-status plant species evaluated may occur in the study area (Table 3.4-3). Focused protocol-level surveys for special-status plant species have not been conducted in the study area, but no special-status plant species were observed during various site surveys such as the vegetation mapping on October 18, 19, and 21, 2011; and the wetland delineation on October 17 and 18, 2011, January 16 and 17, 2012, and April 17 through 20, 2012.

Table 3.4-3 Special-status Plant Species Potentially Occurring in the Study Area

Common Name	Scientific Name	Status
Big-scale balsamroot	*Balsamorhiza macrolepis var. macrolepis*	RPR 1B
Loma Prieta hoita	*Hoita strobilina*	RPR 1B
Fragrant fritillary	*Fritillaria liliacea*	RPR 1B
Arcuate bush-mallow	*Malacothamnus arcuatus*	RPR 1B

RPR 1B = Rare Plant Rank 1B: rare, threatened or endangered in California and elsewhere

None of these species are state or federally listed; and they have a California Rare Plant Rank of 1B, meaning that they are considered rare, threatened, or endangered in California and elsewhere. All four of these species are sometimes associated with serpentine soils, which is not present at the ground surface in the study area. However, these species may also occur in non-serpentine soils. Many other special-status plant species evaluated for potential to occur in the study area were eliminated from further consideration, because suitable habitat is not present in the study area. For example, many species are restricted to serpentine soils, which do not occur in the Project footprint (Appendix G). The four special-status plant species with the potential to occur in the study area are discussed below.

Big-scale balsamroot (Balsamorhiza macrolepis)

Big-scale balsamroot (*Balsamorhiza macrolepis*) is an RPR 1B species (CDFW 2012). This species is a perennial herb that occurs in chaparral, cismontane woodland, valley, and foothill grassland, and sometimes serpentine soils, at elevations between 90 and 1,555 meters (300 to 5,100 feet). Big-scale balsamroot is in the sunflower family (*Asteraceae*) and blooms from March to June.

This species may occur in the study area in grasslands or in various woodland habitats; although, no serpentine soils are present in the study area. There is one CNDDB (CDFW 2012) occurrence of this species within 10 miles of study area. This 1990 occurrence is approximately 2.6 miles northeast of the study area, west of Coyote Dam on SCVWD property (Figure 3.4-1).

Fragrant Fritillary (Fritillaria liliacea)

Fragrant fritillary (*Fritillaria liliacea*) is an RPR 1B species (CDFW 2012). This lily occurs in grasslands, coastal scrub, and coastal prairie on various soils that are often serpentine and sometimes heavy clay, at elevations from 3 to 410 meters (10 to 1,350 feet). It flowers from February to April.

Fragrant fritillary may occur in the study area in Grassland or woodland habitats. Serpentine soils are not present in the study area, but clay soils are present. There are five CNDDB (CDFW 2012) occurrences of fragrant fritillary within a 10-mile radius from the study area. These records range from 6.1 to 6.8 miles from the Project area. The closest occurrence is a 1989 record of 150 plants on private land in the East Santa Clara Valley, southeast of Metcalfe Canyon.

Loma Prieta hoita (Hoita strobilina)

Loma Prieta hoita (*Hoita strobilina*) is an RPR 1B species (CDFW 2012). This species usually occurs on serpentine, moist sites in cismontane woodland, riparian woodland, and chaparral, between 30 to 860 meters (100 to 2,825 feet) in elevation. Its primary habitat is woodland, especially in the understory of riparian woodlands or shaded slopes, and its secondary habitat is chaparral (ICF 2012). Although Loma Prieta hoita can inhabit non-serpentine soils, it is often associated with serpentine soils (Safford et al. 2005). It is a perennial herb in the legume family (*Fabaceae*) that blooms from May to July.

Loma Prieta hoita may occur in the study area in riparian woodlands and other woodland habitats; although, serpentine soils are not present in the study area. There are 12 CNDDB (CDFW 2012) records

of this species within 10 miles of the study area. The closest CNDDB occurrence is approximately 1.7 miles south of the Project area that is broadly mapped in Gilroy and is a historic record from 1918 that is possibly extirpated, but other records within 10 miles are believed extant.

Arcuate bush-mallow (Malacothamnus arcuatus) [Malacothamnus fasciculatus]

Arcuate bush-mallow (*Malacothamnus arcuatus*) [*Malacothamnus fasciculatus*] is an RPR 1B species (CDFW 2012). It occurs on gravelly soils and alluvium in chaparral and cismontane woodland at elevations between 15 to 355 meters (15 to 1,165 feet). This species is an evergreen shrub in the mallow family (*Malvaceae*) that blooms from April to September.

This species may occur in the study area in woodland habitats. There are CNDDB occurrences within 10 miles of in the study area. The closest CNDDB occurrence is approximately 2.0 miles from the Project area at the SCVWD's Chesbro Reservoir Spillway where two plants were observed in 2006 (Figure 3.4-1).

3.4.2.6 Protected Trees

The study area contains approximately 2,200 native and non-native trees that range in size from 2 to 90 inches in dbh. This total includes trees inventoried within the footprint of the Action Alternatives, as well as trees adjacent to the footprint. Some of the trees meet the criteria (dbh and species) to be considered protected trees under the City of Morgan Hill and the Santa Clara County tree ordinances and, therefore, would require removal permits. Common tree species include eucalyptus, western sycamore, various fruit trees (*Prunus* spp.), coast live oak, valley oak, black walnut, willow, and Fremont cottonwood.

3.4.3 Regulatory Environment

Federal regulations, standards, and guidelines, California state law, and other laws, ordinances, and regulations pertaining to potential Project effects on botanical resources are cited in the section below.

3.4.3.1 Federal

Endangered Species Act

Section 7 of the ESA of 1973, as amended (16 USC 1531), requires federal agencies to consult with the Secretary of the Interior USFWS and the Secretary of Commerce National Oceanic and Atmospheric Administration (NOAA) to ensure that agency actions do not jeopardize the continued existence of endangered or threatened species or adversely modify critical habitat that supports such species in accordance with ESA Section 7. The USACE must consult with the USFWS if federally listed plant species are identified within the study area. The USFWS then issues a biological opinion and, if the Project does not jeopardize the continued existence of the listed species, issues an incidental take permit if necessary.

Clean Water Act (CWA) of 1977

Section 404 of the CWA requires a permit before dredged or fill material may be discharged into waters of the United States, including wetlands. The USACE, in coordination and consultation with the USEPA, is responsible for the 404 permit program. The basic premise of the 404 permit program is that no discharge of dredged or fill material may be permitted if *"(1) a practicable alternative exists that is less damaging to the aquatic environment or (2) the nation's waters would be significantly degraded"* (USEPA 2007). The 404 permit program includes general permits and individual permits, with the former being applicable to most discharges that will have only minimal adverse effects and the latter being applicable to activities that have the potential for significant impacts. Both general permits and individual permits must also

demonstrate compliance with a number of other federal laws such as NEPA, the ESA, Section 106 of the National Historic Preservation Act, Section 401 of the CWA, and the Coastal Zone Management Act.

A wetland delineation was conducted in the study area to identify potential jurisdictional wetlands and waters of the United States, but it has not yet been submitted to the USACE for verification. The Proposed Project would affect potential wetlands and other waters of the United States; therefore, a final determination on the jurisdiction of those waters must be made by the USACE.

Executive Order 11990 – Protection of Wetlands

Executive Order 11990 directs federal agencies, in carrying out their responsibilities, to provide leadership to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. This policy states that federal agencies should avoid, to the extent possible, the long- and short-term adverse impacts associated with destruction or modification of wetlands. It also states that agencies should avoid undertaking and providing support for new construction in wetlands, including draining, dredging, channelizing, filling, diking, impounding, and other related activities, unless the agency finds that no practicable alternatives exist and all practical measures have been taken to minimize harm to wetlands.

All of the Project alternatives carried forward for detailed analysis in this EIR would result in the permanent and temporary loss of wetlands and riparian habitat. Each of the alternatives has been designed to minimize impacts on wetlands to the extent practicable.

3.4.3.2 State

California Endangered Species Act (CESA)

The CESA of 1974, as amended, is part of the CDFW Code. As a guide to state agencies, Section 2053 states that, *"it is the policy of the state that state agencies should not approve projects as proposed which would jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives consistent with conserving the species or its habitat which would prevent jeopardy."* CESA prohibits take of species listed or proposed for listing as endangered or threatened. Under Section 2081 of CESA, the CDFW may authorize take of state-listed species that is incidental to otherwise lawful activities.

California Fish and Game Code (Section 1600 Lake or Streambed Alteration Agreement Program)

The CDFW Code delineates the regulations for work that will substantially affect resources associated with rivers, streams, and lakes in California, pursuant to CDFW Code Sections 1600–1607. Under Section 1601 of the CDFW Code, any state or local governmental agency or public utility must notify CDFW if it proposes to (1) divert, obstruct, or change the natural flow or bed, channel, or bank of any river, stream, or lake designated by the CDFW in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit; (2) use materials from the streambeds designated by CDFW; or (3) dispose or deposit debris, waste, or other materials containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake designated by CDFW. Any person, governmental agency, or public utility proposing any activity that will divert or obstruct the natural flow or change the bed, channel, or bank of any river, stream, or lake or proposing to use any material from a streambed must first notify CDFW of such proposed activity. The deepening and widening of Upper Llagas Creek will require a Streambed Alteration Agreement with the CDFW (Native Plant Protection Act; CDFW Code §1900 et seq.).

Native Plant Protection Act; California Fish and Wildlife Code §1900 et seq.

The Native Plant Protection Act (NPT) is part of the CDFW Code. The purpose of this act is to preserve, protect, and enhance endangered or rare native plants of the state. The NPT allows for the designation of endangered and rare native plant species and states that no person shall take any native plant, or any part or product thereof that the commission has determined to be an endangered native plant or rare native plant, except as otherwise provided in the NPT.

3.4.3.3 Local

Santa Clara County General Plan

The General Plan for Santa Clara County General Plan, 1995–2010, was adopted in 1994. Section 3 of this plan addresses rural unincorporated area issues focusing upon the roles, which county government land use policies and regulations can play in achieving countywide urban development and resource management goals. Section 5 of this plan contains policies that have been jointly developed and adopted by the county and the cities of Morgan Hill and Gilroy. Two areas the plan policies focus on relating to wildlife concerns are maintaining the rural character of many unincorporated areas and how urban and rural futures are interrelated.

> *C-PR 10.* Recreation facilities and activities within regional parks and public open space lands should be located and designed to be compatible with the long-term sustainability of each site's natural and cultural resources, with particular attention to the preservation of unique, rare, or endangered resources (including historic and archeological sites, plant and animal species, special geologic formations, etc.).

> *C-RC 31.* Areas of habitat richest in biodiversity and necessary for preserving threatened or endangered species should be formally designated to receive greatest priority for preservation, including baylands and riparian areas, serpentine areas, and other habitat types of major significance.

> *C-RC 33.* Linkages and corridors between habitat areas should be provided to allow for migration and otherwise compensate for the effects of habitat fragmentation.

> *C-RC 35.* The status of various threatened and endangered species and the effectiveness of strategies and programs to preserve biodiversity should be monitored and evaluated on ongoing basis.

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

> *R-RC 41 #2.* Fencing should not restrict access by wildlife to the stream environment.

> *R-RC 51.* Preservation of habitat linkages and migration corridors should be encouraged where needed to allow for species migration, prevent species isolation, and otherwise compensate for the effects of habitat fragmentation.

> *SC 16.10.* Riparian systems, streamsides, and floodways should be maintained in open space or related open space uses such as wildlife habitat, recreation or agriculture. Implementation of the Llagas and Uvas Creeks as major streamside park chains should be actively promoted.

City of Morgan Hill General Plan

The Morgan Hill General Plan (Plan) envisions the city keeping its small-town character while offering new opportunities for businesses. The Plan foresees preserving the scenic hillsides that surround the city.

The overall combination of actions envisioned by the Plan will help Morgan Hill grow and prosper without compromising its historic and enduring rural charm. The goals, policies, and actions contained in each element of the General Plan together frame a mechanism for achieving the community's vision for its future. The following are the policies that apply to the botanical resources in Morgan Hill.

Open Space and Conservation

> *Policy 1a.* Work with the County, the Open Space Authority, appropriate conservancy organizations and land trusts, and property owners to preserve large open space areas, such as agricultural lands and outdoor recreation areas to conserve natural resources and retain the city's unique identity.

> *Policy 1e.* The South County includes a variety of open space areas, including the valley floor, stream corridors, lands around reservoirs, lands adjacent to scenic highways, foothills, inter-mountain valleys, and mountain areas beyond the foothills. Of these geographic areas: stream corridors, lands around the reservoirs, lands which provide greenbelts, and significant hillside features should receive highest priority for preservation as open space and future regional park location.

> *Policy 5b.* Maintain riparian systems, stream banks, and floodways in open space or related open space uses such as wildlife habitat, recreation or agriculture.

> *Policy 6a.* Preserve all fish and wildlife habitats in their natural state whenever possible. Consider development impacts upon wildlife and utilize actions to mitigate those environmental impacts.

> *Policy 6b.* Minimize impacts upon wildlife when considering extending annexations, urban service areas, and other governmental actions that permit urban development of previously undeveloped property.

> *Policy 6e.* Identify and protect wildlife, rare and endangered plants and animals and heritage resources from loss and destruction.

City of Gilroy General Plan

The City of Gilroy's General Plan is a strategic tool for guiding the city's physical development, and, in turn, its economic and social development. The General Plan helps guide the city's long-term development. It establishes the overall policy framework for development decision-making and defines the desired location, character, and quality of future development, as well as the process by which development should proceed. The study area is in the sphere of influence (SOI) of Gilroy and the following policies apply to botanical resources:

> *Policy 20.01a.* Natural resource and wildlife habitat areas, such as the Uvas Creek and Llagas Creek riparian communities; the heavily vegetated portions of the Santa Cruz mountains; steep hillsides and significant hillside features (such as serpentinite barrens); and natural features of high community value (e.g., the stands of trees along Miller Avenue and cedar trees bordering Hecker Pass).

> *Policy 20.03.* Plant and Wildlife Habitats. Preserve important plant and wildlife habitats, including riparian communities, heavily vegetated hillside areas, unique hillside ecosystems (e.g., serpentinite barrens), creeks, and sensitive nesting sites. Loss of these habitats should be fully offset through creation of habitat of equal value, with the compensation rate for habitat creation determined by a qualified biologist.

> *Policy 20.04.* Rare and Endangered Species. Limit development in areas that support the California Tiger Salamander and other rare or endangered species. If development of these areas must occur, any loss of habitat should be fully compensated onsite. If off-site mitigation is necessary, it should occur within the Gilroy Planning Area whenever possible, and must be accompanied by plans and a monitoring program prepared by a qualified biologist.

> *Action 20.B.* Habitat and Urban Streams/Creek Protection. Require development along creeks to be set back from the entire floodway of the creek. Require development along Uvas Creek and the main branch of Llagas Creek to be set back either the entire area of the floodway or 250 feet on either side of the creek centerline, whichever is greater.

Note: This action could also use a buffer identified as 50 to 100 feet from the top of the bank or edge of the riparian corridor, stretching outward, whichever is greater. Alternatively, setbacks for individual developments can be established through conditions developed during the regulatory permitting process with the trustee or resource agencies. Development of the buffer policy shall also create an exception or variance process for those situations where strict imposition of the standard would be reasonably infeasible.

Action 20B. Requires development along tributary creeks to be set back from the entire designated floodway of the creek. Setbacks required should allow adequate room for trails and access on both sides of the creek. The Santa Clara Valley Water District shall be consulted regarding the determination of creek setbacks and buffers to ensure that they will accommodate the restoration of riparian habitat, trails, flood control access, and the protection of riparian habitat. Setback land could be dedicated to the City by the sub-divider/developer or the City could purchase an easement over the setback area.

In addition, the City shall continue to work with Santa Clara County and the Santa Clara Valley Water District to enhance the Uvas Creek riparian corridor for fish and wildlife, including the removal of arundo, or giant reed, and other invasive exotics and replacement with native riparian species and enhancement efforts to help protect and recover native steelhead populations. Similar protections will be extended to cover Llagas Creek and the tributaries of both Uvas and Llagas Creeks.

> *Action 20.C.* Habitat Protection Ordinance. Comply with State and Federal laws regarding habitat protection to identify and protect areas of biological value, including creeks, native grasslands, oak woodlands, and native riparian communities. The ordinance should include setback requirements, guidelines for impact avoidance and mitigation, standards for compensation of habitat loss (as established by a qualified biologist), and requirements for monitoring and habitat enhancement plans. The ordinance should also strive to eliminate exotic, invasive pest plants in new projects, where feasible and practical, and should promote the use of native plants and noninvasive exotics in landscape plans for new development. The City should also review and revise its Street Tree Ordinance and Landscape Policy to include specific lists and landscape guidelines emphasizing native species for use in special habitat areas (i.e., riparian corridors and hillside areas).

Proposed projects, including City-initiated projects that may affect jurisdictional wetlands should be required to complete appropriate wetland delineation studies. Future development should avoid substantial adverse impacts on emergent wetland habitats. Unavoidable impacts to these habitats should be mitigated at a 3:1 ratio or as determined in consultation with the appropriate resource agencies. Any developments along Uvas and Llagas Creeks should include an appropriate setback or buffer from the top of the creek bank and planting of native riparian species within disturbed or non-native areas of this buffer. In addition, Project-specific biological surveys should be undertaken along natural tributaries to Uvas and Llagas Creeks to determine if setbacks or buffers are warranted for projects along other natural creeks.

> *Action 20.D.* Consultation on Fish and Wildlife Impacts. Continue to notify and consult with the California Department of Fish and Wildlife, the Army Corps of Engineers, National Marine Fisheries Service, and the US Fish and Wildlife Service for developments that may impact listed species that are known to or may potentially occur within the Gilroy Planning Area, including special status plant and wildlife species regulated by CDFW. Standardized or general mitigation measures for specific special status species can be accessed through the appropriate agencies. Prior to construction of a project in areas where special status species may be impacted, the appropriate jurisdiction shall

require preparation of a biological assessment to determine the presence or absence of any special status plant or wildlife species. If special status species are known to occur or have the potential to occur, appropriate resource agency contacts shall be made and mitigation developed in consultation with a qualified biologist and the resource agencies. If initial biological assessments for a proposed project determine the presence or potential presence of a state or federally listed species on the site, the project applicant shall consult with the CDFW or USFWS, respectively, for guidance on whether or not the project can avoid impacts to the species. The project shall avoid impacts through re-design wherever possible. If impacts cannot be avoided, the project shall incorporate mitigation to reduce impacts to the best extent possible based on consultation with a qualified biologist and the resource agencies.

Santa Clara Valley Water District Flood Protection and Stream Stewardship Master Plan

The objective of the master plan is to guide the strategic investment of public funds in Santa Clara County over the next 25 years. Specifically, the master plan will serve as a tool for strategic long term planning to achieve the SCVWD's goals and objectives. It will identify project and program priorities, establish guidance and project selection criteria, identify challenges and future funding considerations. Goals of the plan are natural flood protection for residents, businesses, and visitors; reduced potential for flood damage; healthy creek and bay ecosystems; clean, safe water in creeks and in the bay; and improved quality of life in Santa Clara County through trails, open space, and water resources management.

Morgan Hill Tree Ordinance

The city's municipal code outlines regulations ensuring that significant trees and tree communities on city or private property are preserved and/or replaced to protect the natural beauty of the area, protect property values, and prevent undesirable environmental changes, as described in Chapter 3.13. This ordinance applies to non-native species with a trunk circumference of 40 inches or more and native species with a circumference of 18 inches or more measured at breast height (4.5 feet from the surrounding grade). Native trees are those native to the Morgan Hill region, including but not limited to oaks (all types), California bays, madrones, sycamore, and alder. Native trees shall be planted to replace native trees removed unless practical reasons preclude this option. Regulated trees may be lawfully removed after securing an approved tree removal permit from the city. The Proposed Project will require the removal of trees that are protected under the Morgan Hill tree ordinance and will require a permit.

Santa Clara County Tree Ordinance

The county recognizes that the preservation of all trees on private and public property is necessary to protect the historical and scenic assets of the region, protect property values, and protect against environmental hazards, as described in the County Code of Ordinances Division C16, *"Tree Preservation and Removal"*. It is unlawful to remove without an approved permit any tree having a main trunk or stem measuring 37.7 inches or greater in circumference (12 inches or more in diameter) at a height of 4.5 feet above ground level dbh, or in the case of multi-trunk trees a total of 75.4 inches in circumference (24 inches or more of the diameter) of all trunks on parcels zoned "Hillsides", "d" zoning district. A replanting plan is required for tree removal applications. This plan must include in-kind tree replacement at a ratio to be determined by the Planning Department. Designated heritage trees are those, because of history, girth, height, species, or other unique qualities, that have been found by the county to have special significance. Removal of heritage trees requires review by the County Historical Heritage Commission and a public hearing before a determination will be made. The Proposed Project would require the removal of trees that are protected under the county tree ordinance and will require a permit.

3.4.4 Impact Analysis

Permanent and temporary impacts on botanical resources were analyzed based on existing resources present in each Project reach.

3.4.4.1 Significance Criteria

The following criteria were used to evaluate the significance of effects of the Project on botanical resources and federal and state waters, based on the CEQA Guidelines. Project evaluation criteria and the mandatory findings of significance as explained in CEQA, Public Resources Code Section 21083; Guidelines Section 15065, indicate that a project will have a significant effect on botanical resources or federal or state waters if meets any of the following criteria which are divided into categories for convenience of impact analysis below.

Rare or important plant communities

> Substantially degrade environmental quality;

> Threaten to eliminate a plant or animal community, or

> Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the resource agencies.

Special-status plant species

> Substantially reduce the numbers or range of a rare, threatened, or endangered plant species;

> Have a substantial adverse effect, either directly or through habitat modifications or lowered reproductive success, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the resource agencies (i.e., USFWS, CDFW, CNPS, etc.);

> Have a substantial adverse effect, either directly or through habitat modification, on botanical species of economic or social value to the region, or

> Have a substantial adverse effect on populations and/or habitats of plant species with populations of local, regional, national, or international importance.

State and federal wetlands and waters

> Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

Conflict with local policies and/or plans

> Conflict with any local policies or ordinances protecting botanical resources, such as a tree preservation policy or ordinance, or

> Conflict with the provisions of the long-term conservation goals of affected parks, wildlife refuges, or an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plans.

3.4.4.2 Approach to Analysis

Potential permanent and temporary impacts to vegetation, special-status plant species and potential jurisdictional waters were evaluated by quantifying the impacts to these existing resources for the Preferred Alternative. The Geographic Information System (GIS) footprint, based on the 65-percent design, was overlaid vegetation and habitats and potential jurisdictional waters to calculate acreages of

impacts. Relative impacts of the action alternatives were compared with the Preferred Alternative. The potential impacts to special-status plant species are based on an evaluation likelihood of occurrence in the study area and impacts to suitable habitat.

The vegetation impact analysis is based on impacts to CAR habitats (USFWS 2003). The canopy of all trees that would be removed for construction was considered permanent impacts to riparian forest (PFO). In addition, the determination of permanent impacts to trees outside of the Project footprint was based on analysis of impacts to critical root area. The critical root area is a radius equal to 1.25 times a trees' dbh reported in feet (Coder 2010). If construction would remove at least 33 percent of a trees' critical root area, then the tree was assumed permanently impacted. The same methodology was applied for impacts to California sycamore woodland, which is a subset of riparian forest. Permanent impacts also include any native Riparian Scrub-shrub (PSS) habitat that would be graded and any vegetation converted to hardscape within the Preferred Alternative footprint. Grading impacts to upland herbaceous habitat, perennial marsh and seasonal wetlands are considered temporary because these areas are expected to reestablish after grading. Additional GIS analysis was conducted for the Preferred Alternative to determine impacts to CAR habitats outside the CDFW boundary.

The impact analysis for vegetation and habitats as well as jurisdictional waters for the NRCS, Culvert/Channel, and Reach 6 Bypass alternatives are estimated because the exact Project footprints including the constructed stream widths have not been defined for these action alternatives. The impact analysis for these action alternatives are based on a qualitative comparison with the Preferred Alternative. However, the alternatives share a common footprint over most of the Project area so that the variation in botanical and waters area between the action alternatives is generally small as described in the following sections.

3.4.5 Impacts and Mitigation Measures

The action alternatives would result in temporary and permanent impacts to vegetation types and habitats and CDFW and USACE jurisdictional features that are associated with construction activities and operation and maintenance activities. Permanent construction impacts would be primarily a result of grubbing and grading, including removing mature riparian canopy trees along the creek corridor. Temporary impacts include areas that would be temporarily disturbed by access roads, equipment access, and staging areas, as well as areas that would be grubbed or graded areas in some vegetation types that would naturally regenerate following construction. Temporary disturbance to botanical resources could result in the eventual decline and the loss of stability or reproductive success of individual plants and vegetation communities. Operation and maintenance activities that permanently remove vegetation or temporarily disturb vegetation could also impact botanical resources. Construction or operation and maintenance activities that potentially result in erosion, sedimentation, or chemical contamination could damage or degrade botanical resources.

3.4.5.1 No Project Alternative

The No Project Alternative would consist of continuation of the current management regime through the period covered by existing project permits (10 years), as described in Chapter 2, Section 2.3. The Project would not be built and no construction activities would occur. This alternative consists of continued implementation of the SCVWD 2012–2022 SMP (SCVWD 2012c), including routine maintenance of stream channels, sediment removal, vegetation management, bank protection, and associated minor activities. The SMP includes a series of resource protection policies and BMPs. Vegetation management and giant reed control would be performed as part of the SCVWD's countywide SMP. The environmental permits associated with the SMP cover impacts associated with routine maintenance which would occur under the No Project Alternative.

BOT-1 NP—Potential for adverse effects on rare or important plant communities, and special-status plant species and their suitable habitat

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	N/A	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No channel modification or improvements would be constructed; therefore, no impacts to rare or important plant communities or special-status plant species would occur.

Operations and Maintenance

Maintenance activities in the channel would be carried out according to the SCVWD's SMP, first implemented in 2002 and currently undergoing re-authorization. The SMP procedures for routine maintenance of stream channels involve ongoing sediment removal, vegetation management, bank protection, and associated minor activities.

Some activities conducted under the SMP could impact rare or important plant communities or special-status plant species and their habitats. Rare or important plant communities in the study area that are under the jurisdiction of CDFW include broad-leaved woodland, California sycamore woodland, riparian native scrub, and riparian woodland. Permanent direct impacts include the direct mortality of special-status plant species and a loss of suitable habitat and direct loss of rare or important plant communities through authorized SMP activities including vegetation removal, giant reed control, and use of herbicides in all reaches. Potential indirect consequences from SMP activities include the spread and establishment of invasive non-native species, such as Himalayan blackberry that could eventually displace rare or important plant communities or special-status plant species and their habitats due to vegetation removal. However, BMPs under the SMP and the SMP EIR would avoid and minimize these potential consequences (see Section 2.3). The following section describes BMPs under the SMP that reduce or eliminate impacts to rare or important plant communities and special-status plant species and their habitats.

California sycamore woodlands would not be impacted under the No Project Alternative because there is no change to operations and maintenance; however, with hydrologic changes to Llagas Creek from agriculture and upstream development, including the construction of Chesbro Reservoir, this habitat type is expected to continue to decline.

Best Management Practices (BMPs)

The SCVWD has a standard list of BMPs implemented under the SMP. Appendix B provides details on the specific requirements for each BMP. The following summarizes SMP BMPs that avoid and minimize impacts on rare or important plant communities, special-status plant species and their habitats:

> **BANK-1:** Bank Stabilization Design to Prevent Erosion Downstream.

> **BANK-3:** Bank Stabilization Post-Construction Maintenance.

> **GEN-4:** Minimize the Area of Disturbance.

> **GEN-9:** Avoid Special-status Plant Species and Sensitive Natural Communities.

- **GEN-17:** Employee/Contractor Training.
- **GEN-18:** Paperwork Required Onsite.
- **GEN-20:** Erosion and Sediment Control Measures.
- **GEN-21:** Staging and Stockpiling of Materials.
- **GEN-22:** Sediment Transport.
- **GEN-23:** Stream Access.
- **GEN-24:** On-Site Hazardous Materials Management.
- **GEN-26:** Spill Prevention and Response.
- **GEN-30:** Vehicle and Equipment Maintenance.
- **GEN-31:** Vehicle Cleaning.
- **REVEG-1:** Seeding.
- **REVEG-2:** Planting Material.
- **SED-2:** Prevent Scour Downstream of Sediment Removal.
- **SED-3:** Restore Channel Features.
- **VEG-1:** Minimize Local Erosion Increase from In-channel Vegetation Removal.
- **VEG-2:** Non-native Invasive Plant Removal.
- **VEG-3:** Use Appropriate Equipment for Instream Removal.
- **VEG-4:** Use Flamers with Caution.
- **VEG-5:** Conduct Flaming During Appropriate Weather and Seasonal Conditions.
- **VEG-6:** Standard Grazing Procedures.

Some of the SMP maintenance activities do not directly affect vegetation (e.g., trash removal and graffiti removal), and for activities that potentially affect vegetation, the implementation of SMP BMPs would ensure that impacts to vegetation would be avoided and minimized; therefore, the SMP activities under the No Project Alternative would not significantly impact rare or important plant communities and special-status species or their habitat. BMPs GEN-17 and GEN-18 require that maintenance employees receive training on the requirements of the BMPs and on special-status species that may be present onsite and that copies of the SMP Manual, SMP BMPs, and relevant permits be kept onsite for review. Vegetation management, giant reed control, bank stabilization, sediment removal, grading, road maintenance, and structural repairs could impact vegetation; however, BMP GEN-9 requires that CNPS (2001) and CDFG (2009) protocol-level surveys for special-status plant species and rare or important plant communities be conducted prior to the commencement of the work. The use of herbicides is not allowed in areas identified as suitable habitat for special-status plant species or a potential rare or important plant communities until a qualified botanist has surveyed the area. Furthermore, BMP GEN-9 states that if special-status plant species or rare or important plant communities are found, these areas will be flagged and avoided to the extent possible. Other BMPs, such as GEN-4, GEN-21, VEG-3, VEG-4, VEG-5, and VEG-6, limit the potential disturbance to vegetation by limiting the disturbance area. Any areas that are disturbed are seeded or planted with appropriate native plant species as described under BMPs REVEG-1, REVEG-2, and VEG-2; this also reduces the spread of invasive non-native species that could degrade native habitats.

BMPs designed to prevent general environmental contamination also protect potential special-status plant habitats and sensitive communities. The prevention of erosion, erosion sedimentation, and hazardous materials contamination in the channel and in surrounding habitats in is addressed by BMPs BANK-1, BANK-3, GEN-20, GEN-22, GEN-23, GEN-24, GEN-26, GEN-30, GEN-31, SED-2, SED-3, and VEG-1.

With the implementation of the BMPs listed above, the impacts to plant species and communities would be less than significant.

BOT-2 NP—Potential for adverse effects on jurisdictional wetlands, other Waters of the United States and Waters of the State

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	N/A	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No channel modification or improvements would be constructed; therefore, no impacts to jurisdictional wetlands or other waters of the United States and waters of the state would occur.

Operations and Maintenance

Maintenance activities in the channel would be carried out according to the SCVWD's SMP. The results of these activities on wetlands could include removal of wetland vegetation and soils during sediment and vegetation management activities.

Best Management Practices (BMPs)

The following summarizes SMP BMPs that avoid and minimize impacts to jurisdictional wetlands and other Waters of the United States under the No Project Alternative:

> **BANK-1:** Bank Stabilization Design to Prevent Erosion Downstream.

> **BANK-3:** Bank Stabilization Post-Construction Maintenance.

> **GEN-1:** In-Channel Work Window.

> **GEN-4:** Minimize the Area of Disturbance.

> **GEN-9:** Avoid Special-status Plant Species and Sensitive Natural Communities.

> **GEN-16:** In-Channel Minor Activities.

> **GEN-17:** Employee/Contractor Training.

> **GEN-18:** Paperwork Required Onsite.

> **GEN-20:** Erosion and Sediment Control Measures.

> **GEN-21:** Staging and Stockpiling of Materials.

> **GEN-22:** Sediment Transport.

> **GEN-23:** Stream Access.

> **GEN-24:** On-Site Hazardous Materials Management.

> **GEN-26:** Spill Prevention and Response.
> **GEN-30:** Vehicle and Equipment Maintenance.
> **GEN-31:** Vehicle Cleaning.
> **GEN-33:** Dewatering for Non-Tidal Sites.
> **REVEG-1:** Seeding.
> **REVEG-2:** Planting Material.
> **SED-2:** Prevent Scour Downstream of Sediment Removal.
> **SED-3:** Restore Channel Features.
> **VEG-1:** Minimize Local Erosion Increase from In-channel Vegetation Removal.
> **VEG-2:** Non-native Invasive Plant Removal.
> **VEG-3:** Use Appropriate Equipment for Instream Removal.
> **VEG-4:** Use Flamers with Caution.
> **VEG-5:** Conduct Flaming During Appropriate Weather and Seasonal Conditions.
> **VEG-6:** Standard Grazing Procedures.

Some of the SMP maintenance activities do not affect wetlands or other waters. For activities that potentially affect these resources, the implementation of SMP BMPs would ensure that potential impacts to jurisdictional features are avoided and minimized. Sediment removal, grading, road maintenance, and structural repairs could impact jurisdictional features; however, BMPs, such as GEN-4, GEN-21, VEG-4, VEG-5, and VEG-6, limit the potential disturbance to vegetation by limiting the areas where the activities are conducted to what is necessary for completing maintenance activities. Any areas that are disturbed are seeded or planted or with appropriate native plant species as described under BMPs REVEG-1, REVEG-2, and VEG-2; this also prevents the spread of invasive non-native species that could degrade wetland habitats.

In addition to BMPs that apply to all vegetation, other BMPs are specifically designed to protect jurisdictional wetlands and other waters of the United States. BMPs GEN-16 and GEN-23 require that work is conducted from the top of the bank and temporary access roads are designed to avoid wetlands and other waters of the United States. BMPs GEN-1 and GEN-2 limit the work window and instream herbicide application to the dry season to reduce potential impacts to wetlands. The prevention of erosion and sedimentation in wetlands and Waters of the United States is addressed by BMPs BANK-1, GEN-20, GEN-22, GEN-24, GEN-26, GEN-30, GEN-31, GEN-33, SED-2, SED-3, and VEG-1. The implementation of SMP BMPs under the No Project Alternative reduces potential impacts to jurisdictional wetlands and other waters of the United States and waters of the state to less than significant.

BOT-3 NP—Conflicts with local policies and/or plans

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	N/A	N/A
Operation and Maintenance Activities	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No channel modification or improvements would be constructed; therefore, no conflicts with local policies and/or plans would occur.

Operations and Maintenance

Operation and maintenance activities developed under the No Project Alternative were developed to be consistent with existing plans and policies and the Project EIR determined that the SMP is consistent with local plans and policies. Therefore, the No Project Alternative would not conflict with local policies and/or plans.

Best Management Practices (BMPs)

None applicable

3.4.5.2 Preferred Alternative (Tunnel Alternative)

The Preferred Alternative includes a variety of channel widening, deepening, and other improvements as described in Chapter 2. This alternative was developed to reduce the footprint of the NRCS Alternative (see Section 3.2.5.3) in Reach 8 by creating an underground concrete tunnel instead of widening and deepening the channel through downtown Morgan Hill.

BOT-1 T—Potential for adverse effects on rare or important plant communities, and special-status plant species and their suitable habitat

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	S	N/A
Operation and Maintenance Activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Most construction activities in all reaches would result in the removal or temporary disturbance of vegetation that potentially provides suitable habitat for special-status plant species or that support rare or important plant communities. Tables 3.4-4, 3.4-5, and 3.4-6 summarize the impacts to vegetation types and habitats by reach that would result from construction of the Preferred Alternative. Table 3.4-4 shows vegetation and habitats impacts within the CDFW jurisdictional boundary which extends from the outer limits of either (1) the top of the bank, or (2) the limit of riparian tree canopies whichever is greater. Table 3.4-5 shows the breakdown of permanent and temporary impacts for the vegetation and habitats within CDFW jurisdiction. Table 3.4-6 shows impacts to upland habitats outside the CDFW jurisdictional boundary.

Table 3.4-4 Impacts to Vegetation Types and Habitats within CDFW Jurisdiction for the Preferred Alternative [1]

Reach	Riparian Forest (PFO) (ac)		Riparian Scrub-shrub (PSS) (ac)		Upland Herbaceous (U/H) (ac)	Perennial Emergent Marsh (PEM) (ac) [2]	Aquatic (ac) [3]
	Native	Non-native	Native	Non-native			
4	4.14	5.25	1.26	0.19	7.10	0.00	----
5	0.12	0.74	0.78	0.00	1.11	0.02	----
6	5.56	2.20	4.47	5.07	12.02	0.82	----
7a	0.00	0.00	0.00	0.00	1.02	1.44	----
7b	0.82	0.28	0.01	0.00	5.89	1.99	----
8	0.03	0.00	0.00	0.00	0.42	0.32	----
14	0.18	0.00	0.12	0.01	10.28	0.18	----
Total	**10.84**	**8.46**	**6.65**	**5.28**	**37.83**	**4.77**	**28.52**

Values are rounded to the nearest 1/100th of an acre.

[1] Impacts are permanent and temporary. Table 3.4-5 provides a breakdown of permanent and temporary impacts.

[2] Impacts associated with rip rap, access ramps, and other design features are not included in these totals, but would generally be minor.

[3] Impacts to Aquatic habitat is not broken down by reach.

Source: Adapted from H.T. Harvey & Associates 2013c

Table 3.4-5 Permanent and Temporary Impacts to USACE and CDFW Jurisdictional Habitats for the Preferred Alternative

Jurisdiction	Habitat	Permanent Impacts Area (ac)	Temporary Impacts Area (ac)
CDFW	Riparian Forest (PFO) and Riparian Shrub-scrub (PSS), Native	17.48	0.00
	Riparian Forest (PFO) and Riparian Shrub-scrub (PSS), Non-native	13.75	0.00
	Upland Herbaceous	0.42	37.42
USACE	Perennial Emergent Marsh (PEM)	0.32 [1]	4.45
	Aquatic	0.09*	28.43

[1] Permanent impacts to wetland and aquatic habitats were calculated based on the 65% design.

Source: adapted from H.T. Harvey & Associates 2013b

Table 3.4-6 Impacts to Vegetation Types and Habitats outside of CDFW Jurisdiction for the Preferred Alternative

Vegetation Type or Habitat	Permanent Impacts (Acres)	Temporary Impacts (Acres)
Reach 4		
Riparian Forest (PFO) (native and non-native)	0.8	1.9
Riparian Scrub-shrub (PSS) (native and non-native)	0.1	--
Upland Herbaceous (U/H)	--	29.0
Developed	--	0.7
Reach 5		
Riparian Forest (PFO) (native and non-native)	0.1	0.2
Riparian Scrub-shrub (PSS) (native and non-native)	--	--
Upland Herbaceous (U/H)	--	7.8
Developed	--	0.3
Reach 6		
Riparian Forest (PFO) (native and non-native)	0.4	0.6
Riparian Scrub-shrub (PSS) (native and non-native)	0.2	--
Upland Herbaceous (U/H)	--	22.9
Developed	--	3.9
Reach 7a		
Riparian Forest (PFO) (native and non-native)	0.2	0.4
Riparian Scrub-shrub (PSS) (native and non-native)	0.2	--
Upland Herbaceous (U/H)	--	34.3
Developed	--	0.4
Reach 7b		
Riparian Forest (PFO) (native and non-native)	0.1	0.5
Riparian Scrub-shrub (PSS) (native and non-native)	0.1	--
Upland Herbaceous (U/H)	--	9.5
Developed	--	1.0
Reach 8*		
Riparian Forest (PFO) (native and non-native)	0.3	--
Riparian Scrub-shrub (PSS) (native and non-native)	0.5	--
Upland Herbaceous (U/H)	--	3.4
Developed	--	0.2

Note: The area of permanent and temporary project impacts for Reach 8 between Hillwood Lane and Llagas Road are not available. As such, all Riparian Forest and Riparian Scrub-shrub within the work area was conservatively assumed permanently removed and upland herbaceous impacts are assumed to all be temporary.

Permanent direct impacts from construction include vegetation removal, which may result in direct mortality of special-status plant species and a loss of their potential habitats and direct loss of rare or important plant communities. Key impacting construction activities would include but are not limited to the construction of the tunnel and portal, new bypass channel in Reach 7A and new low flow channels, widening existing channels, constructing access roads, culvert installation and replacement, utility relocation and replacement, and exhuming bridges. Vegetation would be grubbed and areas would be graded, resulting in permanent removal of vegetation. In addition to the direct removal of vegetation, these construction activities would also be associated with temporary disturbance of rare or important plant communities and special-status plant species and their habitats. The installation of aquatic habitat enhancements could require removing or displacing sensitive wetland or riparian habitats.

The greatest acreage of habitat impacts would be to upland herbaceous in all reaches (Table 3.4-4). Construction would result in impacts to Riparian Forest (native and non-native) in all reaches and Riparian Scrub-shrub (native and non-native) in all reaches except Reach 5. However, impacts to Riparian Forest (native and non-native) and Riparian Scrub-shrub (native and non-native) would be comparatively minor to Upland Herbaceous. Impacts to Riparian Forest and Riparian Scrub-shrub, not including California sycamore woodland, would be considered significant due to rarity and important biological functions of these habitats; however, these impacts would be reduced to less than significant with the implementation of BOT-1c T.

The Preferred Alternative would result in the direct loss of up to 11.17 acres of California sycamore woodland, which is rare in the region due to changed hydrologic conditions that have altered habitat suitability in recent decades. Channels have become incised as a result of urban development, agricultural use, reservoir construction, and groundwater management in the study area. Of the approximately 600 western sycamore in the Project reaches, up to 292 would be removed. Avoidance and minimization measures will be refined to reduce impacts to this important resource as the Project design is finalized. Llagas Creek has limited sycamore restoration potential for the reasons stated in Section 3.4.2.2 and narrowing of the riparian corridor as a result of suburban development, agriculture, and leveed channels. Mitigation Measure BOT-1c T would include the replanting of native sycamores wherever they would be successful in the Project area, generally around Lake Silveira and near the confluence of the new Reach 7A Bypass and Reach 6 on Llagas Creek. However, sufficient area with appropriate conditions for replacement trees is not available to attain the number generally required by resource agencies for impacts to western sycamore trees. Hence, the remaining impact after implementation of Mitigation Measure BOT-1c T would remain significant.

Permanent direct impacts of the Project include the spread of non-native invasive species including giant reed, cape ivy, and Himalayan blackberry. Construction would disturb these populations which cause the spread of these invasive plant species downstream. The SCVWD would implement Mitigation Measure BOT-1e T to ensure invasive exotic species are properly handled and do not invade sensitive plant communities downstream.

Temporary impacts include areas that would be disturbed by equipment access and staging areas. Temporary disturbance would cause individual plants or plant communities to decline in vigor and reproductive capabilities or be displaced by the establishment of invasive non-native species, such as giant reed. Implementation of Mitigation Measures BOT-1a, BOT1b, and BOT1c T would reduce temporary and permanent impacts to special status plant species and rare or important plant communities to less than significant.

Without the implementation of BMPs many construction activities could also result in indirect permanent impacts from hazardous material releases or erosion and sedimentation that could potentially damage individual plants and lead to their decline or death. The use of standard BMPs related to hazardous materials and sediment control would ensure that such impacts are avoided or minimized and would be less than significant.

West Little Llagas would have reduced flows between the new bypass channel in Reach 7A and the Butterfield Detention Basins, except when flows exceed approximately the 5-year event, those high flows would continue to occur. Minimal flow regime changes would occur within West/East Little Llagas downstream of the Butterfield detention facility, except that low flows would be reduced. This reduction in water could indirectly permanently impact vegetation, particularly riparian habitat which is limited to scattered trees adjacent to agricultural fields in this area and wetland habitat, which is discussed below. The most common native trees in this area are oaks, but there are also many willows and scattered cottonwoods and western sycamores. Because this reach is relatively short (approximately 6,500 feet) and wetlands and riparian habitat is limited in this area, the potential additional area of impact would be relatively small. If physiological stress due to the changed flow regime causes reduced growth rates, morphological changes or mortality in mature trees, this impact would be a considered significant. Implementation of Mitigation Measure BOT-1d T, which would require the monitoring of West/East Little Llagas Creek and contingencies should mature trees or existing vegetation be adversely affected, would reduce this impact to less than significant.

Flows in Llagas Creek will increase immediately downstream from where the Reach 7A bypass channel would connect with Llagas Creek just downstream from Lake Silveira at the top of Reach 6. The Reach 7A bypass channel effectively increases the drainage area of Llagas Creek at this confluence point. Therefore, both the magnitude and the duration of flows will increase into Reach 6. Additionally, the Reach 7A bypass channel will intercept groundwater at the lower end of the reach near the lake, because there is a shallow groundwater table in this area and the channel bottom will be constructed several feet below the groundwater table elevation (see Chapter 3, Section 3.2.6). This will likely cause some shallow groundwater to be influent to the channel, expressing itself as surface flow in the lowermost segment of Reach 7A, including during the drier summer months, that will contribute to flow in Reach 6. These flow contributions are likely to be small over the summer months, but over time would help to sustain flow and support riparian growth and habitat in Reach 6. Although interception of groundwater in Reach 7A has the potential to lower the shallow groundwater table, which could in turn adversely affect the growth and survival of riparian vegetation close to the proposed channel construction, there is no existing Reach 7A channel and no existing riparian vegetation on the proposed channel alignment that could be affected.

Operations and Maintenance

Operation and maintenance activities of the newly constructed features would be as described in Section 2.4.5, and could result in permanent or temporary impacts to rare or important plant communities or special-status plant species and their habitats. Vegetation management would be expanded over existing conditions, because the Project would require the revegetation of much of the Project area. Vegetation maintenance would be determined based on the maintenance of design flows by maintaining the appropriate channel roughness coefficients as shown in Table 2.4.5.2. Areas restored as part of Mitigation Measure BOT-1c T that are not a part of channel improvements (such as Lake Silveira, infill planting areas, and areas where invasive non-native species are removed) would not require vegetation management and, therefore, there would be no impacts to these areas. In areas where vegetation management would be required (see Section 2.4.5.1 for description of maintenance activities and methods) to maintain channel capacity, the direct removal of vegetation would cause temporary disturbance to rare or important plant communities and permanent impacts to special-status plant species and their habitats if these species become established in the future. Special-status plant species or rare or important plant communities are not anticipated to become established in the channel at these locations. Therefore, impacts would be less than significant. Vegetation removed by mowing would be expected to resprout or grow back quickly; vegetation removed by herbicide use may take up to a year to re-establish.

Accumulated sediment at two locations (at the confluence of Reaches 4, 5 and 14; and near the top of Reach 6) would be removed every 10 or more years.

Minor maintenance activities would be performed on all reaches to repair and maintain SCVWD facility functions. Minor maintenance activities are described in Section 2.4.5. New channels are designed to minimize erosion; therefore, only minor erosion control is anticipated for the new channels.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that will avoid and minimize impacts on sensitive communities and special-status plants and their habitats during construction and operations and maintenance of the Tunnel Alternative (Appendix C):

> **BI-4:** Minimize Access Impacts.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species.

> **BI-10:** Minimize Impacts to Vegetation from Clearing and Trimming.

> **BI-11:** Minimize Root Impacts to Woody Vegetation.

> **BI-12:** Avoid Special-status Plant Species and Special Status Natural Communities.

> **BI-13:** Choose Local Ecotypes of Native Plants and Appropriate Erosion Control Seed Mixes.

> **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas.

> **HM-8** Comply with Restrictions on Herbicide Use in Aquatic Areas.

> **HM-9** Limit Vehicle and Equipment Cleaning to Appropriate Locations.

> **HM-10** Ensure Proper Vehicle and Equipment Fueling and Maintenance.

> **HM-12** Ensure Proper Hazardous Materials Management.

> **HM-13** Utilize Spill Prevention Measures.

> **WQ-5:** Limit Impacts from Staging and Stockpiling Materials.

> **WQ-6** Stabilize Construction Entrances and Exits.

> **WQ-9:** Minimize Erosion from Removal of In-channel Vegetation.

> **WQ-10** Limit Impact of Concrete Near Waterways.

> **WQ-14:** Use Seeding for Erosion Control, Weed Suppression, and Site Improvement.

> **WQ-40** Prevent Water Pollution.

The SCVWD BMP BI-12 will minimize potential impacts to sensitive vegetation communities and special-status plants and their potential habitats. This BMP requires that prior to construction activities, a qualified botanist conduct protocol-level focused special-status plant surveys that include surveys for sensitive vegetation communities. This BMP also specifies that special-status plants or sensitive communities that are found should be avoided to the extent possible by flagging the population, creating buffer zones, and timing construction to coincide with less sensitive cycles of the plant species.

Implementation of the BMPs BI-10, BI-11, and BI-6 would minimize the amount of vegetation removed during maintenance and protect and maintain the health of existing vegetation. BMP WQ-9 requires leaving vegetation at the toe of the bank to the maximum extent practicable to prevent bank erosion. Any areas disturbed during maintenance would be revegetated with local, native plant species, where feasible, according to BMPs BI-13 and WQ-14.

Other SCVWD BMPs would also minimize potential impacts on sensitive vegetation communities and special-status plants and their potential habitats during construction. BMPs BI-10 and BI-11 minimize the vegetation that is cleared and specify pruning techniques, setbacks, and mulching to protect vegetation

during construction activities. BMPs BI-4 and WQ-5 reduce potential impacts to vegetation during construction by limiting the disturbance to designated access roads, staging areas, and stockpiling areas. Post-construction revegetation of temporarily disturbed areas will be implemented by using native plant species when feasible according to BMP's BI-13 and WQ-14.

Mitigation Measures

The following mitigation measures would reduce impacts to special-status plant species and rare or important plant communities except California sycamore woodland to less than significant. Impacts to California sycamore woodland would remain significant after implementation of mitigation, as described above.

Mitigation Measure BOT-1a T: Conduct Focused Protocol-level Surveys for Special-status Plant Species. Pre-construction protocol-level focused special-status plant surveys shall be conducted in suitable habitat for the four special-status plant species that may occur in the study area (big-scale balsamroot, Loma Prieta hoita, fragrant fritillary, and arcuate bush-mallow). These surveys shall be conducted according to the CNPS (2001), CDFG (2009), and USFWS (2003) special-status plant survey protocols. Protocols require surveys during the appropriate blooming periods of the target species to determine presence or absence. Different species flower at different times of the year; therefore, more than one survey would likely be necessary. Surveys shall include mapping any sensitive communities observed during the focused plant surveys, except where they were mapped as part of this report.

Mitigation Measure BOT-1b T: Prepare a Mitigation Plan for Special-status Plant Species. If special-status plant species are found in the study area (see Mitigation Measure BOT-1a T), consultation shall be initiated with USFWS or CDFW to finalize a mitigation plan, as appropriate. If required, the mitigation plan shall minimally include:

> Preparation by a qualified botanist with experience in native plant restoration, mitigation, and management;

> Description of avoidance measures, such as construction setbacks, installation of exclusionary fencing prior to and during construction, and pre-construction training of construction personnel on the identification and location of these plants. If sensitive plant species can be avoided, then no further mitigation is required;

> If special-status plants cannot be avoided, compensatory mitigation for unavoidable impacts, which will include preservation or creation;

> Creation of a new population using propagules collected from the impact site or protection of an existing population at a ratio of 2 acres preserved for each acre removed or as determined in agency consultation; including clearly defined performance criteria focusing on plant establishment and non-native species control measures and locations and procedures for restoration. Plants shall be salvaged only where feasible as determined by a qualified botanist. Plant salvage will not be conducted in lieu of population creation using local propagules or population preservation.

> Specification of a minimum 5-year post-construction maintenance and monitoring plan for any plant salvage or habitat creation to ensure that the plant establishment performance criteria are met. The monitoring program shall include potential remedial action measures. Annual reports and a final report shall be prepared and submitted to USFWS or CDFW, as appropriate, to document the success of the mitigation;

> Secure a source of funding for mitigation and monitoring operations; and

> Alternatively, plant credits may be purchased at a mitigation bank at a ratio of 2:1 at a local site, or in southern Santa Clara Valley if local options are not available.

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan. A revegetation and monitoring plan shall be prepared to compensate for impacts to wetlands, riparian woodland, Riparian Scrub-shrub, and California sycamore woodland. This plan will address on-site revegetation, as well as off-site mitigation, and shall be consistent with the Draft Fish and Wildlife Coordination Act Report (CAR) (USFWS 2003) prepared for this Project. Mitigation ratios for impacts to riparian habitat proposed in the CAR shall be used per consultation between SCVWD and the regulatory agencies. Per the CAR, mitigation ratios for PFO and PSS habitat impacts range from 1.5:1 to 1.7:1 depending on the reach (USFWS 2003). As provided in the CAR, these ratios may be reduced 40 percent for impacts to non-native PFO and PSS. The SCVWD considered habitat value for native PSS under PFO canopy and proposed a 33 percent reduction in mitigation ratios for impacts to native PSS under PFO canopy that is not removed. Mitigation ratios for impacts to California sycamore woodland habitat may exceed CAR requirements as determined in consultation with the regulatory agencies (H. T. Harvey & Associates 2013c, 2013d).

The plan shall provide very specific mitigation requirements for western sycamores, including minimum number for planting, number that must meet performance criteria, very specific performance criteria (to measure vigor, height, stem diameter, period of time without irrigation, period of time without protection from herbivores, etc.), and remedial measures if trees fail.

The plan shall include the following minimum components:

> Funding

> Implementation schedule

> Limits of area for collection of propagules, including very specific requirements for western sycamores to ensure the non-hybrid stock

> Planting types and densities

> Irrigation plans

> Weed control

> Performance criteria for trees:

> Performance criteria for habitat:

> Reporting

> Adaptive management plan

The plan shall include a restoration element at the Lake Silveira site, as described in Section 2.4.6. This element shall include restoration of the historic creek channel for approximately 2,000 feet, converting much of the open water habitat at Lake Silveira to emergent perennial wetland and shallow open water, installation of islands in the open water habitat, and placement of large woody debris. In addition, the historic channel shall be restored including an aggressive non-native blackberry removal effort, as well as vegetative plantings both of the overstory and understory. While a reduction of flow would be anticipated in the channel that carries flow from the historic channel to the lake, flows are anticipated to be sufficient to support willow riparian vegetation that currently grows at the margins of the channel. The plan elements (see Section 2.4.6) are intended to enhance the proposed revegetation efforts and to provide a more complex, contiguous riparian corridor (H. T. Harvey & Associates 2013a).

Mitigation Measure BOT-1d T: Prepare a Monitoring Plan for West/East Little Llagas Creek. A plan will be prepared to monitor changes to vegetation and vegetative communities in West/East Little Llagas Creek that may result from altered hydrology related to the Project. Monitoring shall be conducted for a minimum of 5 years. The Plan will include monitoring timing, methods, reporting and funding contingencies for replacement for the loss of native mature trees at a minimum 5:1 ratio.

Mitigation Measure BOT-1e T: Dispose of Invasive Non-native Species. When invasive non-native species are removed during construction, precautions shall be taken to prevent the spread and establishment of these species, including off-site disposal and ensuring all plant parts capable of starting new individuals are hauled off site.

Implementation of the specified BMPs and Mitigation Measures BOT-1a, BOT-1b, BOT-1c, BOT-1d, and BOT-1e, and would reduce most potential impacts to less than significant. Impacts to sycamore woodland would remain significant and unavoidable.

BOT-2 T—Potential for adverse effects on jurisdictional wetlands, other waters of the United States and Waters of the State

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operation and Maintenance Activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction activities in all reaches would result in the direct removal regulated federal and state waters. Impacts to wetlands include jurisdictional perennial marsh and seasonal wetlands (PEM). Impacts to non-wetland waters (Aquatic) include intermittent streams, perennial stream, and culverts. Table 3.4-5 provides permanent and temporary impacts to these jurisdictional wetlands and non-wetland waters. Permanent impacts are a result of grubbing and grading for the construction of new channels, roads, , and the installation of culverts, except for areas proposed for replanting as compensatory mitigation for impacts to wetlands and other waters of the United States and state waters. Disturbed areas that are replanted are considered temporary impacts. Temporary impacts would also include areas that would be disturbed by temporary access roads, equipment access and staging areas.

Most impacts to USACE habitats are temporary due to channel excavations (32.88 acres). Only small amounts of fill (0.41 acre) would occur in USACE perennial marsh and aquatic habitats. This estimate is based on the 65-percent design and may change slightly as Project design is refined, but is not expected to increase. In general, the Preferred Alternative has lower direct impacts to jurisdictional wetlands and non-wetland waters than other action alternatives (except the Reach 6 Bypass Alternative), because the construction of the tunnel would reduce direct wetland removal by reducing in-channel construction in downtown Morgan Hill. With implementation of Mitigation Measure BOT-1c T, which requires revegetation of the creek and the creation of a new wetland at Lake Silveira, impacts to wetlands would be less than significant.

The diversion of West Little Llagas Creek into the new bypass channel on Reach 7A would result in a permanent indirect impact to waters of the United States and waters of the state. The reduced flow in this intermittent stream channel may convert wetland portions of this channel to upland habitat or reduce the jurisdictional width of the channel's flow. With implementation of Mitigation Measure BOT-1d T, which requires monitoring plan for the cut off section of the creek, impacts to wetlands would be less than significant.

In addition, the installation of aquatic habitat enhancements would constitute fill in jurisdictional wetlands and waters. Aquatic enhancements include the placement of large woody debris, boulders, root wads, wing log deflectors, and divider logs on Reaches 4, 5, 6, and 7A, which would minimally reduce the extent

of wetlands and waters. However, this impact would be less than significant after implementation of Mitigation Measure BOT-1c T.

Operations and Maintenance

Operation and maintenance activities of the newly constructed features could result in temporary loss of jurisdictional wetlands. The primary maintenance and operations activities involve vegetation removal and sediment removal, especially for the maintenance of channel capacity for the design flows based on the channel hydraulic roughness coefficients (Table 2.4.5.2). Vegetation removal methods include herbicides, hand pruning, hand removal, and mowing. Areas restored as part of Mitigation Measure BOT-1c T that are not a part of channel improvements would not require vegetation management and, therefore, there would be no maintenance impacts to these areas. In areas where vegetation management would be required to maintain channel capacity, activities would result in temporary disturbance of wetlands. Wetlands removed as part of vegetation maintenance and sediment removal would be expected to grow back within 2 years. The temporary disturbance of wetlands would be a significant impact which would be mitigated by Mitigation Measure BOT-1c T that would include additional allowances to account for temporal impacts associated with vegetation maintenance.

As discuss previously, accumulated sediment at two locations would be removed every 10 or more years. Wetland and other waters of the United States may become established in the channel at these locations and are assumed permanent impacts and are included in Mitigation Measure BOT-1c T.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that avoid and minimize impacts on jurisdictional wetlands and other waters under the Tunnel Alternative (Appendix C):

> **BI-4:** Minimize Access Impacts.

> **BI-5:** Remove Temporary Fills as Appropriate.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species.

> **BI-10:** Minimize Impacts to Vegetation from Clearing and Trimming.

> **BI-11:** Minimize Root Impacts to Woody Vegetation.

> **BI-13:** Choose Local Ecotypes of Native Plants and Appropriate Erosion Control Seed Mixes.

> **BI-14:** Maintain Low-Flow Fish Passage.

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom.

> **WQ-1:** Conduct work from the top of the bank.

> **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms.

> **WQ-4:** Limit Impacts of Sediments on Water Quality.

> **WQ-5:** Limit Impacts from Staging and Stockpiling Materials.

> **WQ-9:** Minimize Erosion from Removal of In-channel Vegetation.

> **WQ-12:** Isolate Work in Non-tidal Sites with the Use of Diversion Bypass.

> **WQ-13:** Minimize Hardscape in Bank Protection Design.

> **WQ-14:** Use Seeding for Erosion Control, Weed Suppression, and Site Improvement.

> **WQ-41:** Prevent Stormwater Pollution.

SCVWD BMPs would also minimize potential impacts on wetlands and waters during construction (Appendix C). BMPs BI-10 and BI-11 minimize the vegetation that is cleared and specify pruning techniques, setbacks, and mulching to protect vegetation during construction activities. BMPs BI-4 and WQ-5 reduce potential impacts to vegetation during construction by limiting the disturbance to designated access roads, staging areas, and stockpiling areas. Post-construction revegetation of temporarily disturbed areas would be implemented by using native plant species when feasible according to BMPs BI-13 and BMP WQ-14. These BMPs, along with Mitigation Measures BOT-1a and BOT-1b NRCS described above, would assure construction impacts to wetlands would be less than significant.

Implementation of the BMPs BI-10, BI-11, and BI-6 would minimize the amount of vegetation removed during maintenance, and protect and maintain the health of existing vegetation. Any areas disturbed during maintenance would be revegetated with local, native plant species, where feasible, according to BMPs BI-13 and WQ-14.

Mitigation Measures

The following mitigation measures that were described previously would apply. With implementation of these measures, impacts to jurisdictional wetlands and other waters of the United States and Waters of the State would be less than significant.

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

Mitigation Measure BOT-1d T: Prepare a Monitoring Plan for West/East Little Llagas Creek.

Mitigation Measure BOT-1e T: Dispose of Invasive Non-native Species.

Implementation of the specified BMPs and Mitigation Measures BOT-1c, BOT-1d, and BOT-1e T would reduce the potential impacts to less than significant.

BOT-3 T—Conflicts with local policies and/or plans

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operations and Maintenance Activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Several local plans and policies address preservation of riparian and wetland habitat, including from the Santa Clara County General Plan (C-RC31, R-RC31, and SC 16.10), City of Gilroy Open Space and Conservation Policies (1e and 5b), and the City of Gilroy General Plan Policies (20.01a and 20.03, 20.c). In addition, several other local plan and policies address preservation of special status plant species including the City of Gilroy General Plan Policy 20.04. Removal of riparian vegetation and impacts to special-status plant species would conflict with these policies. Implementation of Mitigation Measures BOT-1a through BOT-1d T would identify affected species, develop a revegetation plan, and implement revegetation resulting in impacts that would be less than significant.

Operations and Maintenance

Operation and maintenance activities could also conflict with local plans and policies. Impacts to riparian habitat, special-status plant species or wetlands could occur when vegetation is removed to maintain channel capacity or other maintenance work is conducted. Implementation of Mitigation Measures

BOT-1a through BOT-1d T would identify affected species, develop a revegetation plan, and implement revegetation resulting in impacts that would be less than significant.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

The following mitigation measures that were described previously would apply. With implementation of these measures conflicts with local policies and/or plans would be less than significant.

Mitigation Measure BOT-1a T: Conduct Focused Protocol-level Surveys for Special-status Plant Species.

Mitigation Measure BOT-1b T: Prepare a Mitigation Plan for Special-status Plant Species.

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

Mitigation Measure BOT-1d T: Prepare a Monitoring Plan for West/East Little Llagas Creek.

Implementation of the Mitigation Measures BOT-1a, BOT-1b, BOT-1c, and BOT-1d T would reduce the potential impacts to less than significant.

3.4.5.3 Natural Resources Conservation Service (NRCS) Alternative

The NRCS Alternative would have similar impacts as the Preferred Alternative, because the Project alignment, construction, and facilities are similar. The key difference between this alternative and the Preferred Alternative is (1) channel widening and improvements to the existing channel between West Main Avenue and West Dunne Avenue; and (2) omission of tunnels in this section to address high flow events. As a consequence, impacts are very similar to the Preferred Alternative, the primary difference being greater wetland and riparian vegetation removal in the section of between West Main Avenue and West Dunne Avenue where channel widening would be necessary.

BOT-1 NRCS—Potential for adverse effects on rare or important plant communities, and special-status plant species and their suitable habitat

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	S	N/A
Operation and Maintenance Activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

As described for the Preferred Alternative, most construction activities for the NRCS Alternative in all reaches would result in the removal or temporary disturbance of vegetation types and habitats that provide suitable habitat for four special-status plant species or that are rare or important plant communities. While the route and Project plans for most of the NRCS Alternative are well-defined, the extent of the impact area and precise plans has not been developed for the section of Reach 8 between West Main Avenue and West Dunne Avenue. For that reason, precise area of impact cannot be determined for this segment of channel, which represents about 4 percent of the total Project length. However, it is unlikely that special-status plant species occur within the disturbed sections of West Little

Llagas Creek in downtown Morgan Hill. Impacts for the rest of the Project are well defined, as described above under the Preferred Alternative.

Relative the Preferred Alternative, the NRCS Alternative would result in additional removal of rare or important plant communities in the additional 3,000-foot section that is not part of the Preferred Alternative. Impact activities for temporary and permanent impacts would be the same as described for the Preferred Alternative. Upland herbaceous habitat would account for the majority of the vegetation removal associated with this alternative and approximately 1.5 additional acres of native riparian forest would be removed as compared to the Preferred Alternative. Implementation of Mitigation Measures BOT-1a through BOT-1d T would reduce temporary and permanent impacts to special-status plant species and rare or important plant communities to less than significant.

Construction of the NRCS Alternative would result in the direct loss of up to 11.17 acres of California sycamore woodland, the same amount as for the Preferred Alternative. Mitigation Measure BOT-1c T would include the replanting of native sycamores where they would be successful. However, as discussed for the Preferred Alternative, sufficient area for replacement trees is not available and the impact would still be significant.

As described for the Preferred Alternative, construction would disturb invasive exotic species populations, which could spread downstream. The SCVWD would implement Mitigation Measure BOT-1e T to ensure invasive non-native species are properly handled and do not infest sensitive plant communities downstream.

Operations and Maintenance

Operation and maintenance activities of the newly constructed features would be the same as for the Preferred Alternative, as described in Section 2.4.5, except that maintenance would be required on West Little Llagas Creek between Main Avenue and West Dunne Avenue to ensure that high flows are not impeded. As described under the Preferred Alternative, maintenance activities could result in permanent or temporary impacts to rare or important plant communities or special-status plant species or their habitats. Vegetation removal would result in impacts to rare or important plant communities that require mitigation, as described for the Preferred Alternative. With implementation of Mitigation Measures BOT-1a through BOT-1e T, the impacts would be less than significant.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that will avoid and minimize impacts on sensitive communities, and special-status plants and their habitats during construction and operations and maintenance of the NCRS Alternative (Appendix C):

> **BI-4:** Minimize Access Impacts.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species.

> **BI-10:** Minimize Impacts to Vegetation from Clearing and Trimming.

> **BI-11:** Minimize Root Impacts to Woody Vegetation.

> **BI-12:** Avoid Special-status Plant Species and Special Status Natural Communities.

> **BI-13:** Choose Local Ecotypes of Native Plants and Appropriate Erosion Control Seed Mixes.

> **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas.

> **HM-8:** Comply with Restrictions on Herbicide Use in Aquatic Areas.

> **HM-9**: Limit Vehicle and Equipment Cleaning to Appropriate Locations.

> **HM-10:** Ensure Proper Vehicle and Equipment Fueling and Maintenance.

> **HM-12:** Ensure Proper Hazardous Materials Management.

> **HM-13:** Utilize Spill Prevention Measures.

> **WQ-5:** Limit Impacts from Staging and Stockpiling Materials.

> **WQ-6:** Stabilize Construction Entrances and Exits.

> **WQ-9:** Minimize Erosion from Removal of In-channel Vegetation.

> **WQ-10** Limit Impact of Concrete Near Waterways.

> **WQ-14:** Use Seeding for Erosion Control, Weed Suppression, and Site Improvement.

> **WQ-40** Prevent Water Pollution.

The SCVWD BMP BI-12 will minimize potential impacts to sensitive vegetation communities and special-status plants and their potential habitats. This BMP requires that prior to construction activities, a qualified botanist conduct protocol-level focused special-status plant surveys that include surveys for sensitive vegetation communities. This BMP also specifies that special-status plants or sensitive communities that are found should be avoided to the extent possible by flagging the population, creating buffer zones, and timing construction to coincide with less sensitive cycles of the plant species.

Implementation of the BMPs BI-10, BI-11, and BI-6 would minimize the amount of vegetation removed during maintenance and protect and maintain the health of existing vegetation. BMP WQ-9 requires leaving vegetation at the toe of the bank to the maximum extent practicable to prevent bank erosion. Any areas disturbed during maintenance would be revegetated with local, native plant species, where feasible, according to BMPs BI-13 and WQ-14.

Other SCVWD BMPs would also minimize potential impacts on sensitive vegetation communities and special-status plants and their potential habitats during construction. BMPs BI-10 and BI-11 minimize the vegetation that is cleared and specify pruning techniques, setbacks, and mulching to protect vegetation during construction activities. BMPs BI-4 and WQ-5 reduce potential impacts to vegetation during construction by limiting the disturbance to designated access roads, staging areas, and stockpiling areas. Post-construction revegetation of temporarily disturbed areas will be implemented by using native plant species when feasible according to BMP's BI-13 and WQ-14. The proposed hydroseed mixture is presented in Table 3.4.7.

Mitigation Measures

The following mitigation measures described above would apply to the NRCS Alternative. With implementation of these measures, impacts to special-status plant species and to rare and important plant communities would be less than significant except for California sycamore woodland, for which the impacts would be significant after implementation of mitigation measures for reasons that are described above.

Mitigation Measure BOT-1a T: Conduct Focused Protocol-level Surveys for Special-status Plant Species.

Mitigation Measure BOT-1b T: Prepare a Mitigation Plan for Special-status Plant Species.

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

Mitigation Measure BOT-1d T: Prepare a Monitoring Plan for West/East Little Llagas Creek.

Mitigation Measure BOT-1e T: Dispose of Invasive Non-native Species.

Implementation of the specified BMPs and Mitigation Measures BOT-1a, BOT-1b, BOT-1c, BOT-1d, and BOT-1e would reduce most potential impacts to less than significant. Impacts to sycamore woodlands would remain significant and unavoidable.

BOT-2 NRCS—Potential for adverse effects on jurisdictional wetlands, other waters of the United States and Waters of the State

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operation and Maintenance Activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

As discussed for the Preferred Alternative, construction activities in all reaches would result in the removal of features that are regulated as federal waters by the USACE and regulated as state waters by RWQCB and CDFW. Impacts to wetlands would include jurisdictional perennial marsh and seasonal wetlands (PEM) in similar quantity and quality to those described for the Preferred Alternative, except that impacts would be slightly greater, because they include the additional area of channel widening described above, which is estimated to be 0.3 acre of jurisdictional waters and 0.1 acre of jurisdictional wetlands. Activities that would result in permanent and temporary impacts would be the same as described for the Preferred Alternative. With creation and enhancement of wetlands and riparian forest at Lake Silveira and the implementation of Mitigation Measure BOT-1c T, which requires revegetation of the creek, impacts to wetlands would be less than significant.

As described for the Preferred Alternative, the diversion of West Little Llagas Creek into the new bypass channel on Reach 7A could result in a permanent indirect impact to wetlands in the cut-off channel of West Little Llagas Creek. This impact would be less than significant with implementation of Mitigation Measure BOT-1d T.

Operations and Maintenance

As described for the Preferred Alternative, operation and maintenance activities of the Project could potentially result in temporary loss of jurisdictional wetlands. The impacts types and quantities would be similar, as described for the Preferred Alternative, except that Little West Llagas Creek between West Main Avenue and West Dunne Avenue would be included in the maintenance area. The temporary disturbance of wetlands would be significant impact, which would be reduced to less than significant through implementation of Mitigation Measure BOT-1c T that includes additional habitat creation/restoration to account for temporal impacts associated with vegetation maintenance.

As described for the Preferred Alternative, accumulated sediment at two locations would be removed every 10 or more years. Mitigation for impacts to periodic removal of wetlands in this area are assumed to be permanent and would be included in Lake Silveira mitigation as part of Mitigation Measure BOT-1c T.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that will avoid and minimize impacts to jurisdictional wetland and waters during construction and operations and maintenance of the NCRS Alternative (Appendix C):

> **BI-4:** Minimize Access Impacts.

> **BI-5:** Remove Temporary Fills as Appropriate.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species.

> **BI-10:** Minimize Impacts to Vegetation from Clearing and Trimming.

> **BI-11:** Minimize Root Impacts to Woody Vegetation.

> **BI-13:** Choose Local Ecotypes of Native Plants and Appropriate Erosion Control Seed Mixes.

> **BI-14:** Maintain Low-Flow Fish Passage.

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom.

> **WQ-1:** Conduct work from the top of the bank.

> **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms.

> **WQ-4:** Limit Impacts of Sediments on Water Quality.

> **WQ-5:** Limit Impacts from Staging and Stockpiling Materials.

> **WQ-9:** Minimize Erosion from Removal of In-channel Vegetation.

> **WQ-12:** Isolate Work in Non-tidal Sites with the Use of Diversion Bypass.

> **WQ-13:** Minimize Hardscape in Bank Protection Design.

> **WQ-14:** Use Seeding for Erosion Control, Weed Suppression, and Site Improvement.

> **WQ-41:** Prevent Stormwater Pollution.

SCVWD BMPs would also minimize potential impacts on wetlands and waters during construction (Appendix C). BMPs BI-10 and BI-11 minimize the vegetation that is cleared and specify pruning techniques, setbacks, and mulching to protect vegetation during construction activities. BMPs BI-4 and WQ-5 reduce potential impacts to vegetation during construction by limiting the disturbance to designated access roads, staging areas, and stockpiling areas. Post-construction revegetation of temporarily disturbed areas would be implemented by using native plant species when feasible according to BMPs BI-13 and WQ-14. These BMPs along with Mitigation Measures BOT-1a and BOT-1b NRCS, described above, would assure construction impacts to wetlands would be less than significant.

Implementation of the BMPs BI-10, BI-11, and BI-6 would minimize the amount of vegetation removed during maintenance and protect and maintain the health of existing vegetation. Any areas disturbed during maintenance would be revegetated with local, native plant species, where feasible, according to BMPs BI-13 and WQ-14.

Mitigation Measures

The following mitigation measures described above would apply to the NRCS Alternative. With implementation of these measures, impacts jurisdictional wetlands, other waters of the United States and Waters of the State would be less than significant.

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

Mitigation Measure BOT-1d T: Prepare a Monitoring Plan for West/East Little Llagas Creek.

Mitigation Measure BOT-1e T: Dispose of Invasive Non-native Species.

Implementation of the specified BMPs and Mitigation Measures BOT-1c, BOT-1d, and BOT-1e T would reduce the potential impacts to less than significant.

BOT-3 NRCS—Conflicts with local policies and/or plans

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operation and Maintenance Activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Local plans and policies that address preservation of riparian and wetland habitat, as well as preservation of special status plant species, that apply to the Preferred Alternative would also apply to the NRCS Alternative. Removal of riparian vegetation and impacts to special-status plant species would conflict with these policies. Implementation of Mitigation Measures BOT-1a through BOT-1d T would identify affected species, develop a revegetation plan, and implement revegetation resulting in impacts that would be less than significant.

Best Management Practices (BMPs)

None applicable

Operations and Maintenance

Operation and maintenance activities could also conflict with local plans and policies when vegetation is removed to maintain channel capacity or other maintenance work is conducted that could impact riparian habitat, special-status plant species, or wetlands. This would be a significant impact that would be mitigated to less than significant through implementation of Mitigation Measures BOT-1a through BOT-1d T by identifying affected species, developing a revegetation plan, and implementing revegetation.

Mitigation Measures

The following mitigation measures described above would apply to the NRCS Alternative. With implementation of these measures, conflicts with local policies and/or plans would be less than significant.

Mitigation Measure BOT-1a T: Conduct Focused Protocol-level Surveys for Special-status Plant Species.

Mitigation Measure BOT-1b T: Prepare a Mitigation Plan for Special-status Plant Species.

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

Mitigation Measure BOT-1d T: Prepare a Monitoring Plan for West/East Little Llagas Creek.

Implementation of the Mitigation Measures BOT-1a, BOT-1b, BOT-1c, and BOT-1d T would reduce the potential impacts to less than significant.

3.4.5.4 Culvert/Channel Alternative

The Culvert/Channel Alternative would have similar impacts to the NRCS Alternative, because the Project alignment, construction, and facilities are similar. The key difference between this alternative and the NRCS Alternative is that an approximately 1,700-foot section of the channel would not be widened in Reach 8 and flows would be routed into two culverts under existing developed areas near downtown Morgan Hill. As a consequence, impacts are very similar, the primary difference being slightly less wetland and riparian vegetation removal in the section between Hale Avenue at the Britton School athletic fields and Del Monte Avenue where culvert would be built. In addition, flows in channel avoided section

would be limited to runoff from the local area as described below. Given the amount of impervious area and amount of irrigated landscape, flows are expected to be relatively low, but present periodically at least during the rainy season which will support some vegetation, but possibly at reduced quantity from the existing condition.

BOT-1 CC—Potential for adverse effects on rare or important plant communities, and special-status plant species and their suitable habitat

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	S	N/A
Operation and Maintenance Activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

As described for the NRCS Alternative, most construction activities for the Culvert/Channel Alternative in all reaches would result in the removal or temporary disturbance of vegetation types and habitats that provide suitable habitat for special-status plant species or that are rare or important plant communities. While the route and Project plans for most of the Culvert/Channel Alternative are well-defined the extent of the impact area and precise plans has not been developed for the section of Reach 8 between Hale Avenue at the Britton School athletic fields and Del Monte Avenue. For that reason, precise area of impact cannot be determined for this segment of channel or south of this location where channel widening would differ from the Preferred Alternative. Combined with the additional segment of the NRCS Alternative, this represents about 7 percent of the total Project length. However, impacts for the rest of the Project are well defined as described above under the Preferred Alternative.

Relative the NRCS Alternative, the Culvert/Channel Alternative would result in less removal of rare or important plant communities and potential habitat for special-status plant species in the 1,700-foot section that would be avoided by construction of the culverts. Impacting activities for temporary and permanent impacts would be the same as described for the Preferred Alternative. Upland herbaceous habitat would account for the majority of the vegetation removal associated with this alternative. As compared to the NRCS Alternative, approximately 1.12 acres of Riparian Forest and 0.02 acre of Riparian Scrub would not be removed, but could be indirectly affected by reduced flows in this section of creek. Additional planted trees around the athletic fields and streets would be removed, but this area was not part of biological surveys for the Project and the impacts cannot be quantified. Implementation of Mitigation Measures BOT-1a through BOT-1d T would reduce temporary and permanent impacts to special-status plant species and rare or important plant communities to less than significant.

Construction of the Culvert/Channel Alternative would result in the direct loss of up to 11.17 acres of California sycamore woodland, the same amount as for the Preferred Alternative. Mitigation Measure BOT-1c T would include the replanting of native sycamores where they would be successful. However, as discussed for the Preferred Alternative, sufficient area for replacement trees is not available and the impact would still be significant.

As described for the Preferred Alternative, construction would disturb invasive exotic species populations which could spread downstream. The SCVWD would implement Mitigation Measure BOT-1e T to ensure invasive non-native species are properly handled and do not infest sensitive plant communities downstream.

Operations and Maintenance

Operation and maintenance activities of the newly constructed features would be the same as for the NRCS Alternative, as described in Section 2.4.5, except that maintenance would not be required on West Little Llagas Creek between Hale Avenue at the Britton School athletic fields and Del Monte Avenue. As described under the Preferred Alternative, maintenance activities could result in permanent or temporary impacts to rare or important plant communities, or special-status plant species or their habitats. Vegetation removal would result in impacts to rare or important plant communities that require mitigation, as described for the Preferred Alternative. With implementation of Mitigation Measures BOT-1a through BOT-1e T, the impacts would be less than significant.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that will avoid and minimize impacts on sensitive communities and special-status plants and their habitats during construction and operations and maintenance of the Culvert/Channel Alternative (Appendix C):

> **BI-4:** Minimize Access Impacts.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species.

> **BI-10:** Minimize Impacts to Vegetation from Clearing and Trimming.

> **BI-11:** Minimize Root Impacts to Woody Vegetation.

> **BI-12:** Avoid Special-status Plant Species and Special Status Natural Communities.

> **BI-13:** Choose Local Ecotypes of Native Plants and Appropriate Erosion Control Seed Mixes.

> **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas.

> **HM-8:** Comply with Restrictions on Herbicide Use in Aquatic Areas.

> **HM-9**: Limit Vehicle and Equipment Cleaning to Appropriate Locations.

> **HM-10:** Ensure Proper Vehicle and Equipment Fueling and Maintenance.

> **HM-12:** Ensure Proper Hazardous Materials Management.

> **HM-13:** Utilize Spill Prevention Measures.

> **WQ-5:** Limit Impacts from Staging and Stockpiling Materials.

> **WQ-6:** Stabilize Construction Entrances and Exits

> **WQ-9:** Minimize Erosion from Removal of In-channel Vegetation.

> **WQ-10** Limit Impact of Concrete Near Waterways.

> **WQ-14:** Use Seeding for Erosion Control, Weed Suppression, and Site Improvement.

> **WQ-40** Prevent Water Pollution.

The SCVWD BMP BI-12 will minimize potential impacts to sensitive vegetation communities and special-status plants and their potential habitats. This BMP requires that, prior to construction activities, a qualified botanist conduct protocol-level focused special-status plant surveys, which include surveys for sensitive vegetation communities. This BMP also specifies that special-status plants or sensitive communities that are found should be avoided to the extent possible by flagging the population, creating buffer zones, and timing construction to coincide with less sensitive cycles of the plant species.

Implementation of the BMPs BI-10, BI-11, and BI-6 would minimize the amount of vegetation removed during maintenance and protect and maintain the health of existing vegetation. BMP WQ-9 requires

leaving vegetation at the toe of the bank to the maximum extent practicable to prevent bank erosion. Any areas disturbed during maintenance would be revegetated with local, native plant species, where feasible, according to BMPs BI-13 and WQ-14. Other SCVWD BMPs would also minimize potential impacts on sensitive vegetation communities and special-status plants and their potential habitats during construction. BMPs BI-10 and BI-11 minimize the vegetation that is cleared and specify pruning techniques, setbacks, and mulching to protect vegetation during construction activities. BMPs BI-4 and WQ-5 reduce potential impacts to vegetation during construction by limiting the disturbance to designated access roads, staging areas, and stockpiling areas. Post-construction revegetation of temporarily disturbed areas will be implemented by using native plant species when feasible according to BMP's BI-13 and WQ-14.

Mitigation Measures

The following mitigation measures, described above, would apply to the Culvert/Channel Alternative. With implementation of these measures, impacts to special-status plant species and to rare and important plant communities would be less than significant except for California sycamore woodland, for which the impacts would be significant after implementation of mitigation measures for reasons that are described above.

Mitigation Measure BOT-1a T: Conduct Focused Protocol-level Surveys for Special-status Species.

Mitigation Measure BOT-1b T: Prepare a Mitigation Plan for Special-status Plant Species.

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

Mitigation Measure BOT-1d T: Prepare a Monitoring Plan for West/East Little Llagas Creek.

Mitigation Measure BOT-1e T: Dispose of Invasive Non-native Species.

Implementation of the specified BMPs and Mitigation Measures BOT-1a, BOT-1b, BOT-1c, BOT-1d, and BOT-1e, would reduce most potential impacts to less than significant. Impacts to sycamore woodlands would remain significant and unavoidable.

BOT-2 CC—Potential for adverse effects on jurisdictional wetlands, other waters of the United States and Waters of the State

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operation and Maintenance Activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

As discussed for the Preferred Alternative, construction activities in all reaches would result in the removal of features that are regulated as federal waters by the USACE and regulated as state waters by RWQCB and CDFW. Impacts to wetlands would include jurisdictional perennial marsh and seasonal wetlands (PEM) in similar quantity and quality to those described for the NRCS Alternative, except that impacts to jurisdictional wetlands would be slightly higher because the part of the channel that would no longer carry flows from upstream may not support wetland vegetation (estimated at 0.35 acre). However, the channel is expected to carry sufficient flows from local precipitation and urban runoff to support jurisdictional waters of the United States. Activities that would result in permanent and temporary impacts

would be the same as described for the Preferred Alternative. With implementation of Mitigation Measure BOT-1c T, impacts to wetlands would be less than significant.

As described for the Preferred Alternative, the diversion of West Little Llagas Creek into the new bypass channel on Reach 7A could result in a permanent indirect impact to waters of the United States and waters of the state. This impact would be less than significant with implementation of Mitigation Measure BOT-1d T.

Operations and Maintenance

As described for the Preferred Alternative, operation and maintenance activities of the Project could potentially result in temporary loss of jurisdictional wetlands. The impacts types and quantities would be similar to as described for the NRCS Alternative, except that West Little Llagas Creek between Hale Avenue at the Britton School athletic fields and Del Monte Avenue would not be included in the maintenance area. The temporary disturbance of wetlands would be significant impact, which would be reduced to less than significant through implementation of Mitigation Measure BOT-1c T.

As described for the Preferred Alternative, accumulated sediment at two locations would be removed every 10 or more years. Mitigation for impacts to periodic removal of wetlands in this area are assumed to be permanent and would be included as part of Mitigation Measure BOT-1c T.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that avoid and minimize impacts on jurisdictional wetlands and other waters under the Tunnel Alternative (Appendix C):

> **BI-4:** Minimize Access Impacts.

> **BI-5:** Remove Temporary Fills as Appropriate.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species.

> **BI-10:** Minimize Impacts to Vegetation from Clearing and Trimming.

> **BI-11:** Minimize Root Impacts to Woody Vegetation.

> **BI-13:** Choose Local Ecotypes of Native Plants and Appropriate Erosion Control Seed Mixes.

> **BI-14:** Maintain Low-Flow Fish Passage.

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom.

> **WQ-1:** Conduct work from the top of the bank.

> **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms.

> **WQ-4:** Limit Impacts of Sediments on Water Quality.

> **WQ-5:** Limit Impacts from Staging and Stockpiling Materials.

> **WQ-9:** Minimize Erosion from Removal of In-channel Vegetation.

> **WQ-12:** Isolate Work in Non-tidal Sites with the Use of Diversion Bypass.

> **WQ-13:** Minimize Hardscape in Bank Protection Design.

> **WQ-14:** Use Seeding for Erosion Control, Weed Suppression, and Site Improvement.

> **WQ-41:** Prevent Stormwater Pollution.

SCVWD BMPs would also minimize potential impacts on wetlands and waters during construction (Appendix C). BMPs BI-10 and BI-11 minimize the vegetation that is cleared and specify pruning techniques, setbacks, and mulching to protect vegetation during construction activities. BMPs BI-4 and

WQ-5 reduce potential impacts to vegetation during construction by limiting the disturbance to designated access roads, staging areas, and stockpiling areas. Post-construction revegetation of temporarily disturbed areas would be implemented by using native plant species when feasible according to BMPs BI-13 and BMP WQ-14. These BMPs along with Mitigation Measures BOT-1a and BOT-1b NRCS described above would assure construction impacts to wetlands would be less than significant.

Implementation of the BMPs BI-10, BI-11, and BI-6 would minimize the amount of vegetation removed during maintenance and protect and maintain the health of existing vegetation. Any areas disturbed during maintenance would be revegetated with local, native plant species, where feasible, according to BMPs BI-13 and WQ-14.

Mitigation Measures

The following mitigation measures described above would apply to the Culvert/Channel Alternative. With implementation of these measures, impacts jurisdictional wetlands, other waters of the United States and Waters of the State would be less than significant.

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

Mitigation Measure BOT-1d T: Prepare a Monitoring Plan for West/East Little Llagas Creek.

Mitigation Measure BOT-1e T: Dispose of Invasive Non-native Species.

Implementation of the specified BMPs and Mitigation Measures BOT-1c, BOT-1d, and BOT-1e T would reduce the potential impacts to less than significant.

BOT-3 CC—Conflicts with local policies and/or plans

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operation and Maintenance Activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Local plans and policies that address preservation of riparian and wetland habitat, as well as preservation of special-status plant species, that apply to the Preferred Alternative would also apply to the Culvert/Channel Alternative. Removal of riparian vegetation and impacts to special-status plant species would conflict with these policies. Implementation of Mitigation Measures BOT-1a through BOT-1d T would identify affected species, develop a revegetation plan, and implement revegetation resulting in impacts that would be less than significant.

Operations and Maintenance

Operation and maintenance activities could also conflict with local plans and policies when vegetation is removed to maintain channel capacity or other maintenance work is conducted that could impact riparian habitat, special-status plant species or wetlands, but these impacts would be less than significant with implementation of Mitigation Measures BOT-1a through BOT-1d T by identifying affected species, developing a revegetation plan, and implementing revegetation.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

The following mitigation measures, described above, would apply to the Culvert/Channel Alternative. With implementation of these measures, conflicts with local policies and/or plans would be less than significant.

Mitigation Measure BOT-1a T: Conduct Focused Protocol-level Surveys for Special-status Plant Species.

Mitigation Measure BOT-1b T: Prepare a Mitigation Plan for Special-status Plant Species.

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

Mitigation Measure BOT-1d T: Prepare a Monitoring Plan for West/East Little Llagas Creek.

Implementation of the Mitigation Measures BOT-1a, BOT-1b, BOT-1c, and BOT-1d T would reduce the potential impacts to less than significant.

3.4.5.5 Reach 6 Bypass Alternative

Impacts of the Reach 6 Bypass Alternative would be similar to the Preferred Alternative, except that there would be (1) reduced high flow events in the Reach 6 below the bypass and in Reach 5; (2) the magnitude of high flow events will increase in Reach 14 due to the bypass; (3) there would be no construction disturbance to the lower part of Reach 6 below the junction with the bypass channel and in Reach 5; and (4) there would additional disturbance of Reach 14 to enlarge the channel to accommodate the additional flow from the bypass channel. This equates to substantially less vegetation and wetland removal in Reaches 5 and 6.

BOT-1 BY—Potential for adverse effects on sensitive vegetation communities, and special-status plant species and their potential suitable habitats

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	S	N/A
Operation and Maintenance Activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

As described for the Preferred Alternative, most construction activities for the Reach 6 Bypass Alternative in all reaches would result in the removal or temporary disturbance of vegetation types and habitats that provide suitable habitat for special-status plant species or that are rare or important plant communities. While the route for most of the Reach 6 Bypass Alternative is well-defined, the extent of the impact area and precise plans has not been developed for the bypass section. For that reason, area of impact cannot be determined for this segment, which represents about 2 percent of the total Project length. However, impacts to special-status plant species and to rare or important vegetation types would be less than significant due to the nature of the additional habitat that would be disturbed (agricultural fields). Impacts for the rest of the Project are well defined, as described above under the Preferred Alternative.

Relative the Preferred Alternative, the Reach 6 Bypass Alternative would result in less removal of rare or important plant communities and potential habitat for special-status plant species, because approximately 3 miles of channel downstream of the bypass would not be directly impacted by the Project. Impact activities for temporary and permanent impacts would be the same as described for the Preferred Alternative. Upland herbaceous habitat would account for the majority of the vegetation removal

associated with this alternative. However, approximately 3.1 acres of Riparian Forest and 13.7 acres Riparian Scrub (not including California sycamore woodland) would be avoided as compared to the Preferred Alternative. Implementation of Mitigation Measures BOT-1a through BOT-1d T would reduce temporary and permanent impacts to special status plant species and rare or important plant communities to less than significant.

Construction of the Reach 6 Bypass Alternative would result in the direct loss of up to approximately 8 acres of California sycamore woodland, which is less than for the Preferred Alternative. Mitigation Measure BOT-1c T would include the replanting of native sycamores where they would be successful. However, as discussed for the Preferred Alternative, sufficient area for replacement trees is not available and the impact would still be significant.

Indirect impacts include reduced vigor of riparian and wetland vegetation the portion of the creek that would be bypassed and introduction on non-native invasive species. Impacts to vegetation in the bypassed creek section are expected to be negligible to positive, because only high flows would be diverted and high flows are not generally necessary for the maintenance of vegetation and wetlands. Furthermore, high flows promote scour which can result in the loss of herbaceous wetland vegetation and small shrubs and trees.

As described for the Preferred Alternative, construction would disturb invasive exotic species populations which could spread downstream. The SCVWD would implement Mitigation Measure BOT-1e T to ensure invasive non-native species are properly handled and do not infest sensitive plant communities downstream.

Operations and Maintenance

Operation and maintenance activities of the newly constructed features would be the same as for the Preferred Alternative, as described in Section 2.4.5, except that maintenance would not be necessary on approximately 3 miles of channel downstream of the bypass in Reaches 5 and 6, as these are outside the construction footprint of this alternative. As described for the Preferred Alternative, maintenance activities could result in permanent or temporary impacts to rare or important plant communities, or special-status plant species, or their habitats. Vegetation removal would result in impacts to rare or important plant communities that require mitigation, as described for the Preferred Alternative. With implementation of Mitigation Measures BOT-1a through BOT-1e T, the impacts would be less than significant.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that will avoid and minimize impacts on sensitive communities and special-status plants and their habitats during construction and operations and maintenance of the Tunnel Alternative (Appendix C):

> **BI-4:** Minimize Access Impacts.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species.

> **BI-10:** Minimize Impacts to Vegetation from Clearing and Trimming.

> **BI-11:** Minimize Root Impacts to Woody Vegetation.

> **BI-12:** Avoid Special-status Plant Species and Special Status Natural Communities.

> **BI-13:** Choose Local Ecotypes of Native Plants and Appropriate Erosion Control Seed Mixes.

> **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas.

> **HM-8:** Comply with Restrictions on Herbicide Use in Aquatic Areas.

> **HM-9**: Limit Vehicle and Equipment Cleaning to Appropriate Locations.

> **HM-10:** Ensure Proper Vehicle and Equipment Fueling and Maintenance.

> **HM-12:** Ensure Proper Hazardous Materials Management.

> **HM-13:** Utilize Spill Prevention Measures.

> **WQ-5:** Limit Impacts from Staging and Stockpiling Materials.

> **WQ-6:** Stabilize Construction Entrances and Exits.

> **WQ-9:** Minimize Erosion from Removal of In-channel Vegetation.

> **WQ-10** Limit Impact of Concrete Near Waterways.

> **WQ-14:** Use Seeding for Erosion Control, Weed Suppression, and Site Improvement.

> **WQ-40** Prevent Water Pollution.

The SCVWD BMP BI-12 will minimize potential impacts to sensitive vegetation communities and special-status plants and their potential habitats. This BMP requires that prior to construction activities, a qualified botanist conduct protocol-level focused special-status plant surveys that include surveys for sensitive vegetation communities. This BMP also specifies that special-status plants or sensitive communities that are found should be avoided to the extent possible by flagging the population, creating buffer zones, and timing construction to coincide with less sensitive cycles of the plant species.

Implementation of the BMPs BI-10, BI-11, and BI-6 would minimize the amount of vegetation removed during maintenance and protect and maintain the health of existing vegetation. BMP WQ-9 requires leaving vegetation at the toe of the bank to the maximum extent practicable to prevent bank erosion. Any areas disturbed during maintenance would be revegetated with local, native plant species, where feasible, according to BMPs BI-13 and WQ-14.

Other SCVWD BMPs would also minimize potential impacts on sensitive vegetation communities and special-status plants and their potential habitats during construction. BMPs BI-10 and BI-11 minimize the vegetation that is cleared and specify pruning techniques, setbacks, and mulching to protect vegetation during construction activities. BMPs BI-4 and WQ-5 reduce potential impacts to vegetation during construction by limiting the disturbance to designated access roads, staging areas, and stockpiling areas. Post-construction revegetation of temporarily disturbed areas will be implemented by using native plant species when feasible according to BMP's BI-13 and WQ-14.

Mitigation Measures

The following mitigation measures, described above, would apply to the Reach 6 Bypass Alternative. With implementation of these measures, impacts to special-status plant species and to rare and important plant communities would be less than significant except for California sycamore woodland, for which the impacts would be significant after implementation of mitigation measures for reasons that are described above.

Mitigation Measure BOT-1a T: Conduct Focused Protocol-level Surveys for Special-status Plant Species.

Mitigation Measure BOT-1b T: Prepare a Mitigation Plan for Special-status Plant Species.

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

Mitigation Measure BOT-1d T: Prepare a Monitoring Plan for West/East Little Llagas Creek.

Mitigation Measure BOT-1e T: Dispose of Invasive Non-native Species.

Implementation of the specified BMPs and Mitigation Measures BOT-1a, BOT-1b, BOT-1c, BOT-1d, and BOT-1e, would reduce most potential impacts to less than significant. Impacts to sycamore woodlands would remain significant and unavoidable.

BOT-2 BY—Potential for adverse effects on jurisdictional wetlands, other waters of the United States and Waters of the State

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operation and Maintenance Activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

As discussed for the Preferred Alternative, construction activities in all reaches would result in the removal of features that are regulated as federal waters by the USACE and regulated as state waters by RWQCB and CDFW. Impacts to wetlands would include jurisdictional perennial marsh and seasonal wetlands (PEM), with impacts totaling about 0.8 acre less than the Preferred Alternative. In addition, impacts to jurisdictional waters would be about 7.7 acres less than the Preferred Alternative. Activities that would result in permanent and temporary impacts would be the same as described for the Preferred Alternative. With implementation of Mitigation Measure BOT-1c T, impacts to wetlands would be less than significant.

As described for the Preferred Alternative, the diversion of West Little Llagas Creek into the new bypass channel on Reach 7A could result in a permanent indirect impact to waters of the United States and waters of the state. This impact would be less than significant with implementation of Mitigation Measure BOT-1d T.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that avoid and minimize impacts on jurisdictional wetlands and other waters under the Tunnel Alternative (Appendix C):

> **BI-4:** Minimize Access Impacts.

> **BI-5:** Remove Temporary Fills as Appropriate.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species.

> **BI-10:** Minimize Impacts to Vegetation from Clearing and Trimming.

> **BI-11:** Minimize Root Impacts to Woody Vegetation.

> **BI-13:** Choose Local Ecotypes of Native Plants and Appropriate Erosion Control Seed Mixes.

> **BI-14:** Maintain Low-Flow Fish Passage.

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom.

> **WQ-1:** Conduct work from the top of the bank.

> **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms.

> **WQ-4:** Limit Impacts of Sediments on Water Quality.

> **WQ-5:** Limit Impacts from Staging and Stockpiling Materials.

> **WQ-9:** Minimize Erosion from Removal of In-channel Vegetation.

> **WQ-12:** Isolate Work in Non-tidal Sites with the Use of Diversion Bypass.

> **WQ-13:** Minimize Hardscape in Bank Protection Design.

> **WQ-14:** Use Seeding for Erosion Control, Weed Suppression, and Site Improvement.

> **WQ-41:** Prevent Stormwater Pollution.

SCVWD BMPs would also minimize potential impacts on wetlands and waters during construction (Appendix C). BMPs BI-10 and BI-11 minimize the vegetation that is cleared and specify pruning techniques, setbacks, and mulching to protect vegetation during construction activities. BMPs BI-4 and WQ-5 reduce potential impacts to vegetation during construction by limiting the disturbance to designated access roads, staging areas, and stockpiling areas. Post-construction revegetation of temporarily disturbed areas would be implemented by using native plant species when feasible according to BMPs BI-13 and BMP WQ-14. These BMPs, along with Mitigation Measures BOT-1a and BOT-1b NRCS described above, would assure construction impacts to wetlands would be less than significant.

Implementation of the BMPs BI-10, BI-11, and BI-6 would minimize the amount of vegetation removed during maintenance, and protect and maintain the health of existing vegetation. Any areas disturbed during maintenance would be revegetated with local, native plant species, where feasible, according to BMPs BI-13 and WQ-14.

Operations and Maintenance

As described for the Preferred Alternative, operation and maintenance activities could result in temporary loss of jurisdictional wetlands, but would be somewhat less due to the total shorter area of stream length that would be subject to maintenance in the Reach 6 Bypass Alternative. The temporary disturbance of wetlands would be significant impact, which would be reduced to less than significant through implementation of Mitigation Measure BOT-1c T that includes additional habitat creation/restoration to account for temporal impacts associated with vegetation maintenance.

As described for the Preferred Alternative, accumulated sediment at one location would be removed on average about every 10 or more years (the location where Reaches 4, 5 and 14 come together would not be constructed as part of this alternative). Mitigation for impacts to periodic removal of wetlands in this area are assumed to be permanent and would be included as part of Mitigation Measure BOT-1c T.

Mitigation Measures

The following mitigation measures described above would apply to the Reach 6 Bypass Alternative. With implementation of these measures, impacts Conflicts with local policies and/or plans would be less than significant.

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

Mitigation Measure BOT-1d T: Prepare a Monitoring Plan for West/East Little Llagas Creek.

Mitigation Measure BOT-1e T: Dispose of Invasive Non-native Species.

Implementation of the specified BMPs and Mitigation Measures BOT-1c, BOT-1d, and BOT-1e T would reduce the potential impacts to less than significant.

BOT-3 BY— Conflicts with local policies and/or plans

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operation and Maintenance Activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Local plans and policies that address preservation of riparian and wetland habitat as well as preservation of special-status plant species, that apply to the Preferred Alternative would also apply to the Reach 6 Bypass Alternative. Removal of riparian vegetation and impacts to special-status plant species would conflict with these policies. Implementation of Mitigation Measures BOT-1a through BOT-1d T would identify affected species, develop a revegetation plan, and implement revegetation resulting in impacts that would be less than significant.

Operations and Maintenance

Operation and maintenance activities could also conflict with local plans and policies when vegetation is removed to maintain channel capacity or other maintenance work is conducted that could impact riparian habitat, special-status plant species or wetlands, but would be less than significant with implementation of Mitigation Measures BOT-1a through BOT-1d T by identifying affected species, developing a revegetation plan, and implementing revegetation.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

The following mitigation measures described above would apply to the Reach 6 Bypass Alternative. With implementation of these measures, conflicts with local policies and/or plans would be less than significant.

Mitigation Measure BOT-1a T: Conduct Focused Protocol-level Surveys for Special-status Plant Species.

Mitigation Measure BOT-1b T: Prepare a Mitigation Plan for Special-status Plant Species.

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

Mitigation Measure BOT-1d T: Prepare a Monitoring Plan for West/East Little Llagas Creek.

Implementation of the Mitigation Measures BOT-1a, BOT-1b, BOT-1c, and BOT-1d T would reduce the potential impacts to less than significant.

3.4.6 Summary of Impacts to Botanical Resources

All action alternatives would have less-than-significant impacts to sensitive plant communities (except California sycamore woodland), riparian communities, special-status plants and their habitats, and jurisdictional wetlands and waters of the United States and state waters after implementation of mitigation. All action alternatives would result in unavoidable significant impacts to California sycamore woodlands. The Preferred Alternative would have fewer impacts to rare or important plant communities and special-status plant species compared to the NRCS and the Culvert Channel alternatives, primarily due to the smaller footprint in Reach 8 associated with the construction of the tunnel. The NRCS

Alternative, compared to other alternatives, has the highest acreage of impacts to vegetation communities that potentially support special-status plants or sensitive vegetation communities. The Reach 6 Bypass Alternative has the lowest acreage of impacts to vegetation communities. This alternative reduces the construction footprint in Reach 8 compared to the NRCS and Culvert/Channel alternatives and also has the smallest footprint in Reach 5 and in Reach 6 downstream of the bypass channel. The Culvert/Channel Alternative has a footprint in Reach 8 that is smaller than the NRCS Alternative but larger than the Preferred Alternative.

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3.5 Wildlife Resources

3.5.1 Introduction

This section describes the wildlife resources of the Project area, including wildlife habitats, common wildlife species, and special-status wildlife species. In addition, this section discusses potential Project impacts to special-status wildlife species and their habitats that occur within the Project area. Section 3.5.3, Regulatory Setting, describes the regulations and ordinances that apply to wildlife resources.

A list of special-status wildlife species was compiled for the Project area based on the following sources: the CDFW, California Natural Diversity Data Base (CNDDB; Appendix H; Figure 3.5-1), the USFWS species lists for the Project Quadrangles, and the Santa Clara County List (Appendix I).

Baseline information on wildlife resources in the Project area, including special-status species and their habitats, was compiled from existing published and unpublished literature describing biological resources in the region, environmental database searches, consultation with local wildlife professionals, and information provided by staff from the CDFW, USFWS Pacific Southwest Region, the SCVWD, and the USACE. Primary data sources include the following:

> Baseline Biological Resources/Habitat Mapping—Verification and updated habitat map of the 2006 Tetra Tech habitat map and updated California Natural Diversity Database (CNDDB) query of the Upper Llagas Creek Flood Protection Project. Condor Country Consulting, Inc. 2012. (prepared for Cardno ENTRIX).

> Biological Resources Report for Lake Silveira Master Plan – H.T. Harvey & Associates (prepared for Amphion Environmental Inc.) 1988.

> Hydrography, Hydrology, Water Quality, and Plant Communities of Lake Silveira, Morgan Hill area, Santa Clara County. July 23, 2012 (prepared for Cardno ENTRIX).

> Baseline Biological Study of Lake Silveira - prepared by Condor Country Consulting, Inc.

> Surveys for Red-legged Frog and California Tiger Salamander – prepared by Santa Clara Valley Water District.

> Butterfield Biological Boulevard Resources Extension Assessment – Wetlands Research Associates (WRA), Inc. May 2010 (prepared for the City of Morgan Hill, California).

> California Red-legged frog distribution and status—1997. H.T. Harvey & Associates (prepared for SCVWD).

> California Tiger Salamander Distribution and Status—1999. H.T. Harvey & Associates (prepared for SCVWD).

> California Tiger Salamander Surveys and Site Assessments at Selected Santa Clara County Locations H.T. Harvey & Associates (August 2012).

> Final Recovery Plan for the Least Bell's Vireo (*Vireo bellii pusillus*) – U.S. Fish and Wildlife Service (USFWS). March 1998.

> Draft Upper Llagas Creek Flood Protection Project Biological Assessment—Santa Clara County. November 2001.

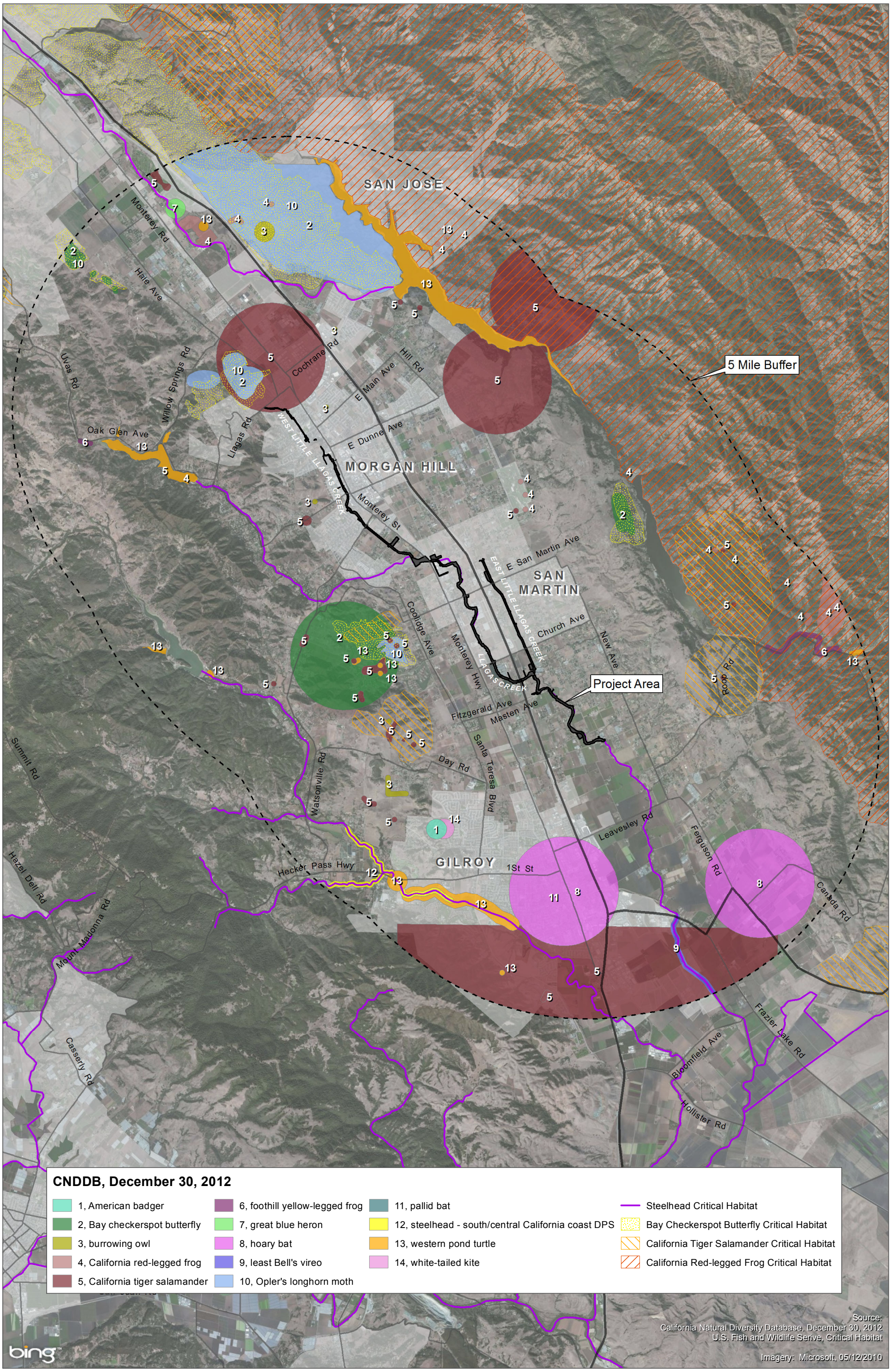
> Lake Silveira Restoration Project Design Development Report – H.T. Harvey & Associates (Prepared for RMC Water and Environment). October 18, 2013.

> Least Bell's vireo breeding records in the Central Valley following decades of extirpation - Howell, C.A., Wood, J.K., Dettling, M.D., Griggs, K., Otte, C.C., Lina, L., Gardali, T. 2010. pp. 105-113.

- Lower Llagas Creek Least Bell's Vireo Surveys (Project # 3035-14), H.T. Harvey & Associates. August 19, 2010.
- Upper Llagas Creek Bridge and Culvert Surveys for Bat Habitat (HTH Project #3270-18) – H.T. Harvey & Associates (prepared for SCVWD). January 28, 2013.
- Upper Llagas Creek Flood Protection Project: Inclusion of Bat Evaluations into Environmental Documents -- Technical Memorandum from Melissa Moore to Mitchell Katzel—Cardno ENTRIX. February 6, 2013.
- Upper Llagas Creek Flood Protection Project: Biological Report – Least Bell's Vireo Assessment. Technical memorandum from Stephen M. Ferranti to Mitchell Katzel -- Cardno ENTRIX. February 6, 2013.
- Upper Llagas Creek Flood Protection Project Burrowing Owl Survey and Impact Assessment, H.T. Harvey & Associates. July 5, 2013.
- Upper Llagas Creek Flood Protection Project least Bell's vireo Assessment. Unpublished report prepared by Dr. Rottenborn, H. T. Harvey & Associates. September 26, 2011.
- Upper Llagas Creek Flood Protection Project, Notice of Preparation, SCH #2012102032, Santa Clara County. California Department of Fish and Wildlife.
- Upper Llagas Creek Flood Protection Project: West Little Llagas Creek Wildlife Habitat Assessment Technical Memorandum (HTH Project#3270-21) – H.T. Harvey & Associates (prepared for SCVWD). September 13, 2013.
- Upper Llagas Creek Project: Lake Silveira special study: focused surveys for detection of California red-legged frog and California tiger salamander final report. Santa Clara Valley Water District (SCVWD). 2012.
- Upper Llagas Creek Tunnel Bat Exclusion Design (HTH Project #3270-17) – H.T. Harvey & Associates (prepared for SCVWD). December 21, 2012.

3.5.2 Study Area

The study area for wildlife resources is the area that has potential for unobstructed movement of wildlife species within a maximum of 2.5 miles from the Project area and includes all areas that may be directly and indirectly disturbed by the Project (Chapter 2.1, Figure 2.1-1). The Project consists of the upper seven reaches (4, 5, 6, 7A, 7B, 8, and 14) of Llagas Creek, East Little Llagas Creek, and West Little Llagas Creek, starting at the downstream boundary about 1,000 feet below Buena Vista Avenue upstream to Llagas Road. The study area is approximately 13.1 miles long and includes 6.1 miles of the main branch of Llagas Creek, 2.8 miles along West Little Llagas Creek, 2.4 miles of East Little Llagas Creek (a tributary of Llagas Creek), and 1.3 miles of a new bypass that would be constructed along West Little Llagas Creek to Llagas Creek. The terrestrial portion of the study area extends 100 feet from top of bank from both sides of the aforementioned portion of Llagas Creek to include the riparian corridor.



Upper Llagas Creek Project EIR

FIGURE 3.5-1

CNDDB Records of Special-Status Animals and Critical Habitat in the Vicinity of the Project Area

Cardno ENTRIX

3.5.2.1 Environmental Setting

This section describes wildlife resources by Project reach as described in Chapter 2, Project Description.

Project Reach 4

Reach 4 is an intermittent stream channel that winds 2.4 miles through agricultural and suburbanized areas from just downstream of Buena Vista Avenue in the south to the East Little Llagas Creek/Llagas Creek confluence in the north (Figure 2.1-7). Typically this reach is ephemeral: dry in the summer and fall months. The stream banks are typically steep and well defined and support a mixture of riparian and non-riparian species. The stream channel bed supports sparse mature vegetation, such as mule fat (*Baccharis salicifolia*). The canopy consists of non-native trees, such as red gum (*Eucalyptus camaldulensis*) and native trees, such as Fremont cottonwood (*Populus fremontii*), western sycamore (*Platanus racemosa*), coast live oak (*Quercus agrifolia*), and Northern California black walnut (*Juglans hindsii).* The understory consists of annual non-native grasses, such as wild oats (*Avena* spp.), ripgut brome *(Bromus diandrus*), weeds (such as Italian thistle (*Carduus pycnocephalus*), and yellow star thistle (*Centaurea solstitialis*) (Cardno ENTRIX 2012b). Along the majority of this reach, the vegetation is sparse and open, with a scant understory (H.T. Harvey & Associates 2011). Tree canopy along this reach is patchy; however it is more extensive than any other Project reach. The habitat along and adjacent to Reach 4 may provide suitable habitat for a variety of nesting birds, some reptiles, and small mammals.

Project Reach 5

Reach 5 is a short riparian corridor approximately 0.5 mile long from the East Little Llagas Creek/Llagas Creek confluence in the east to 700 feet upstream of U.S. 101 in the west connecting Reaches 6 and 14 (Figure 2.1-6). The channel contains Upper Llagas Creek that runs ephemeral drying in the summer and fall months. As a result of the limited availability of water, riparian vegetation is sparse along this section of the creek, consisting of species, such as mule fat in the stream channel, red gum at the top of bank, and annual grassland dominate the understory throughout that may provide suitable habitat for nesting migratory birds. There is a large grove of Monterey pine (*Pinus radiata*) on the bank above the southeast portion of the reach, but this species is not native to the Project area (Cardno ENTRIX 2012b). The habitat along this reach is characterized by very open vegetation with extensive areas dominated by weedy herbaceous species (H.T. Harvey & Associates 2011).

Project Reach 6

Reach 6 travels south for approximately 3.2 miles from Monterey Road in the north to 700 feet upstream of U.S. 101 in the south (Figure 2.1-5). This section of Upper Llagas Creek is the most dense and well-vegetated riparian corridor of the reaches within the Project area (Cardno ENTRIX 2012b). Due to releases from Chesbro Reservoir, Reach 6 is typically a perennially flowing stream from just downstream of Lake Silveira to San Martin Avenue, a distance of approximately 1.3 miles. The southern portion of the reach is considered intermittent. The reach is characterized by a narrow band of stratified riparian forest with multiple canopy layers. The southern portion of this reach contains riparian species, such as mule fat and willow (*Salix* spp.) in the stream channel and a patchy mix of native and non-native canopy species consisting of coast live oak, red gum, and western sycamore on top of the banks. Native plants comprise the majority of vegetation in the riparian forest and scrub communities. Dominant species include willow and California blackberry (*Rubus ursinus*). Invasive weeds, such as giant reed (*Arundo donax*) and Himalayan blackberry (*Rubus armeniacus*) are abundant amid the annual grassland. The southwestern portion of Reach 6 is adjacent to several SCVWD percolation ponds and the south eastern portion of Reach 6 is adjacent to greenhouses and agricultural fields. Portions of the reach traverse through agricultural fields, corporation yards, suburbanized areas, and is adjacent to paved roads. The northern portion of Reach 6 passes through a commercial and residential area while the southern portion is

adjacent to agricultural areas. The habitat along and adjacent to Reach 6 would provide suitable habitat for a variety of nesting birds, amphibians, and small mammals.

Project Reach 7A

Reach 7A is approximately 1.55 miles long extending from Reach 6 just above the Monterey Road Bridge in the south to South La Crosse Drive in the north (Figure 2.1-4). The southern half of Reach 7A is currently a non-channelized flat section of land with agricultural use (plowed fields). All Project alternatives would excavate a proposed earthen diversion channel through this section of Reach 7A approximately 1.25 miles long to divert flows from West Little Llagas Creek upstream of Watsonville Road to Llagas Creek downstream of Lake Silveira at Monterey Road. The southern portion of Reach 7A connects to mainstem Llagas Creek just downstream of Lake Silveira. Llagas Creek is a contiguous, perennial riparian corridor up to Chesbro Reserboir; therefore the connection to this higher-quality habitat increases the diversity and biological value of this portion of the reach. The northern half of Reach 7A runs through a residential neighborhood with the northern most 0.3-mile section consisting of a trapezoidal shaped constructed channel. Vegetation in this section consists of row crops and annual, non-native grassland on fallowed lands. Reach 7A would potentially provide suitable habitat for a variety of wildlife.

Project Reach 7B

Reach 7B runs for approximately 1.4 miles through a residential suburban area of Morgan Hill between South La Crosse Drive in the south and West Dunne Avenue in the north (Figure 2.1-3). West Little Llagas Creek in this section is intermittent. The riparian corridor along Reach 7B is disturbed habitat and the creek is intermittently channelized. Portions of the corridor have been developed or are adjacent to roads and residences. A paved recreational path runs along 0.4 mile of the southern portion of the channel. Annual grasslands, ruderal or developed habitat are the prevalent habitat type adjacent to the creek. The stream channel contains riparian scrub species (e.g., nutsedges, [*Cyperus* spp.]) and the non-disturbed areas contain annual grassland species. The tree canopy consists of a combination of planted exotic and native trees, such as coast live and valley oaks, and Fremont cottonwood. In the northern portion, the stream channel includes emergent wetland vegetation, some taller trees, is adjacent to small businesses, and is in an underground culvert for the last 650 feet on the north end. Sections of Reach 7B may provide suitable habitat for migratory nesting birds, some amphibians and reptiles, and mammals.

Project Reach 8

Reach 8 is approximately 1.1 miles long and is located in downtown Morgan Hill between West Dunne Avenue to the south and Llagas Road to the north (Figure 2.1-2). This portion of West Little Llagas Creek is an intermittent stream. The channel is developed and transects a heavily urbanized area with businesses, residential areas, and roads abutting many portions of the channel. The channel varies from sections with no vegetation, to areas with broad-leaved cattails (*Typha latifolia*), and hardstem bulrush (*Schoenoplectus acutus*); and the banks are predominately vegetated with annual grassland species. A large portion of this reach has a canopy of exotic trees with occasional patches of remnant coast live and valley oaks. The northern-most section runs along Hale Avenue, and hosts mostly ruderal vegetation, with some cattail and scattered oaks throughout. Although wildlife habitat suitability is low, Reach 8 may provide suitable habitat for migratory nesting birds and common reptiles, amphibians, and small mammals.

Project Reach 14

Reach 14 extends approximately 2.4 miles along East Little Llagas Creek from the Llagas Creek confluence in the south to just downstream of the Corralitos Creek confluence in the north (Figure 2.1-8). This portion of the creek is ephemeral, typically with dry summer and fall months. The riparian corridor is

disturbed, dominated by agriculture with both sides of the channel lined with roads or ruderal habitat. The channel bottom consists of a mix of annual grassland species and bare ground. The stream banks are predominately annual grasslands with a few scattered trees that are mostly native. Riprap is also prevalent along portions of this reach. Beyond the roads on each side of the channel, are agricultural fields or suburbanized areas. Reach 14 is highly disturbed and may provide suitable habitat for common wildlife and migratory nesting birds.

East/West Little Llagas Creek

The section of East/West Little Llagas Creek to be cut-off from flows by diversion in Reach 7A extends nearly 9,600 feet from near La Crosse Drive flowing east toward U.S. 101 where it confluences with East Little Llagas Creek. East Little Llagas Creek at this point is in a straightened ditch paralleling U.S. 101 for about 5,500 feet before it reaches the beginning of Reach 14. The cut-off channel passes through mostly open fields with a few scattered homes and a trailer court, and flows through culverts at six road crossings. This entire existing section of West Little Llagas Creek to East Little Llagas Creek is intermittent, flowing only when there is sufficient rain to generate runoff. Under all action alternatives, there will be no flows entering the cut-off channel segment from West Little Llagas Creek. Only local runoff, including two detention basins and eight outfalls will continue to discharge to the channel. The channel is expected to continue to flow only intermittently under post-Project conditions (see Section 3.2, Hydrology and Water Quality).

3.5.2.2 Wildlife Habitat

Fifteen habitat types were identified in the Project area during botanical surveys and vegetation mapping (Section 3.4.2.1 Vegetation Types and Habitats) conducted in the Project area along the Upper Llagas Creek (Figure 3.4-1). These 15 habitat types were mapped in the Project area, according to classifications in *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986), with the exception of ruderal and urban habitat types. The 15 habitats in the Project area are agricultural, bare channel, barren, broad-leaved woodland, developed, California sycamore woodland, eucalyptus, horticultural, freshwater marsh, grassland, riparian exotic scrub, riparian native scrub, riparian woodland, ruderal, and upland scrub. Section 3.4.2.1 provides a detailed description of the floristic composition and distribution of these habitat types in the Project area. A discussion of wildlife that has been documented or that typically occurs in these habitats in the Project area or in the vicinity is presented below. Other sources of information for this section include documented field observations during field surveys, databases, regional literature, reports prepared for this Project and nearby projects as listed above in Section 3.5.1 and *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer 1988).

The predominant wildlife habitats in the area consist of riparian (both woodland and scrub), agricultural, urban (e.g., developed, residential), annual grassland, and ruderal lands. Although the majority of these habitat types include regular human presence, many of these habitat types support a number of resident, migratory, and common and special-status wildlife species. Additional details on vegetation type and habitats are provided in Section 3.4.1.1.

Agriculture

Agricultural habitats are areas with agricultural activity or recently fallowed fields, orchards, and row crops. This habitat type provides foraging habitat for a variety of wildlife, including migratory birds and mammals. Avian species, such as European starlings (*Sturnus vulgris*), American crow (*Corvus brachyrhynchos*), American robin (*Turdus migratorius*), Great blue heron (*Area herodias*), Great Egret (*Area alba*), and cow bird (*Molothrus ater*) are commonly associated with agricultural habitat. Agricultural ditches boarding planted fields and irrigation canals may provide suitable habitat for a variety of common reptiles and amphibians, including bullfrog (*Rana catesbeiana*) and Pacific gopher snake (*Pituophis catenifer catenifer*). Many species of small mammals are adapted to agricultural croplands

(CWHR 1988a). Rodents and mammals that forage in agricultural areas include California vole (*Microtus californicus*), California ground squirrel (*Otospermophilus beecheyi*), black-tailed jackrabbit (*Lepus californicus*), and raccoon (*Procyon lotor*). This habitat type predominates Reach 7A and occurs adjacent to Reaches 4, 5, 6, and 14. Reaches 7A and 14 contain this agricultural habitat type which could possibly be affected by Project-related activities.

Bare Channel

Bare channel habitat includes: concrete lined channels, perennial stream channel (i.e., contains water year round), and seasonal streambeds (i.e., a streambed with over 50 percent bare ground composed primarily of sand and gravel and is without water for at least three months of the year). The habitat value to wildlife may be dependent upon the variety and complexity of vegetation that is growing adjacent to the channel, as well as other geomorphic characteristics (e.g., the presence of riparian vegetation).

Bare channels may provide suitable foraging and loafing habitat for common waterfowl, such as mallards (*Anas platyrhynchos*) and mergansers (*Mergus* spp.); wading birds, such as great blue heron; and great egret and other birds, such as kingfishers (*Alcedines* spp.). Common mammals, such as raccoon, skunks (*Mephitis mephitis*), and coyote (*Canis latrans*) will also forage in or around bare channels for small amphibians and invertebrate prey. If the channel contains sufficient emergent wetland vegetation and basking sites, amphibians and reptiles may also utilize this habitat type. The Western pond turtle, a California species of special concern (CDFG 2011), has been documented in Lower Llagas Creek and Lake Silveria (H.T. Harvey & Associates 2010) (H.T. Harvey & Associates 2013a). This habitat type occurs at various parts of all Project reaches, except Reach 6. The reaches with the most area of this habitat type, which could be affected by Project activities, are Reaches 4 and 14.

Barren

Barren areas are habitats that have sparse or no vegetated cover. The structure and composition of the substrate is largely determined by the region and surrounding environment; along rivers and creeks, barren habitat may include creek banks and canyon walls (CHWR 1988b). In urban settings, barren habitat may be covered in pavement or gravel. Barren habitat locations may change seasonally and are dependent upon management regimes (e.g., disked or plowed agricultural fields are barren until re-sowed or flooded, but this situation is included in the agriculture type). Barren habitat is usually found adjacent to other habitat types and the value to wildlife is dependent upon the structure of the non-vegetated substrate. For example, barren areas may support wildlife that nest on rock ledges, such as hawks and falcons; it may support wading birds that rely on open ground covered with sand or gravel for foraging and constructing small scrape nests (e.g., plovers and terns). Within this Project area, wildlife that may utilize barren habitat would include mallard, killdeer (*Charadrius vociferus*), rock pigeon (*Columba livia*), western fence lizard (*Sceloporus occidentalis*), and bank swallow (*Riparia riparia*). This habitat type occurs adjacent to various parts of all Project reaches. The reaches with the most area of this habitat type that could be affected by Project activities are Reaches 6 and 7A.

Broad-leaved Woodland

This habitat type includes California broadleaf woodland and oak woodland (e.g., mixed *Quercus* spp.) and is present in the driest reaches of the Project area, often lining seasonal drainages of north and west-facing slopes. This habitat type is an upland habitat consisting of a tree layer composed of mixed oaks and California buckeye (*Aesculus californica*) with a dominant shrub species consisting of poison oak (*Toxicodendron diversilobum*). In all oak-dominated habitats, an understory of blackberry, poison oak, and invasive annual grasses is common. A variety of common nesting birds found within or adjacent to the Project that utilize this habitat type for foraging and nesting include acorn woodpeckers (*Melanerpes formicivorus*) and Northern flicker (*Colaptes auratus*). Raptors, including red-shoulder hawks (*Buteo lineatus*) and red-tailed hawk (*Buteo jamaicensis*), utilize this habitat type. Although unlikely, this habitat

type may be used as a migratory corridor for special-status mammals, such as the American badger (*Taxidea taxus*) and San Joaquin kit fox (*Vulpes macrotis mutica*). This habitat type occurs adjacent to all Project reaches. The reaches with the most area of this habitat type that could be affected by Project activities are Reaches 4 and 7A.

Developed

Developed habitat includes urban disturbed areas, such as gravel and asphalt surface roads, riprap, and water channels that run underground inside large diameter pipes and areas within residential and commercial structures above, roads, and riprap. Urban areas provide limited wildlife habitat and generally support only generalist and sometimes non-native wildlife species that are tolerant of human presence and activities. Raccoon, opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), black-tailed jackrabbit, California slender salamander (*Batrachoseps attenuatus*), and western fence lizard (*Sceloporus occidentalis*) are common urban wildlife species that may be found utilizing developed areas in Llagas Creek. Birds adapted to urban environments and documented within or adjacent to the Project area include Western scrub-jay (*Aphelocoma californica*), white-crowned sparrow (*Zonotrichia atricapilla*), house finch (*Carpodacus mexicanus*), mourning dove (*Zenaida macroura*), and house sparrows (*Passer domesticus*) (Balance Hydrologics et al. 2012). Developed habitat is adjacent to all Project reaches. The reaches with the most area of this habitat type to be affected from Project activities are Reaches 8 and 14.

California Sycamore Woodland

This habitat type is a specific riparian community dominated by western sycamore with an understory composed of herbaceous annuals and shrubs that have adapted to fluvial depositional plains consisting of sandy loam to coarse alluvium substrate (Gillies 1998). Other vegetation species that are found in the Project area include coast live oak, valley oak, sandbar willow, red willow, arroyo willow, and black walnut (H.T. Harvey & Associates 2013c). This habitat type is distributed in lower elevations from central to southern California and serves as a critical wildlife corridor for a variety of species, such as resident and migratory birds (i.e., red-shouldered hawk, California quail, spotted towhee, white-breasted nuthatch, and chestnut-back chickadee) and mule deer (*Odocoileus hemionus*) (Keeler-Wolf 1993; Sawyer and Keeler-Wolf 1995; CWHR 2006). This habitat type is found in discontinuous patches in all reaches; except Reach 14 where it is not present. California sycamore woodland in the Project area provides habitat for many of the same species discussed in Riparian habitat (see below). The California sycamore trees in the Project area provide important habitat, however, degradation as a result of channel incision and hydrologic modifications have substantially impacted their habitat value (H.T. Harvey & Associates 2013c). California sycamore woodland habitat is found in Project Reaches 4, 5, and 6. The reaches with the most area of this habitat type to be affected by Project activities are Reaches 4 and 6.

Eucalyptus

This habitat type is a woodland community dominated by a Eucalyptus tree canopy, with a relative tree cover of greater than 80 percent. Red gum is the predominate Eucalyptus species in the Project area. Other scattered Eucalyptus species in the Project area include Blue gum (*E. globulus*) and forest red gum (*E. tereticornis*). There is little understory in this community type; however, annual grasses and small shrubs may be present. Eucalyptus is known to become established along stream courses, encroaching upon existing riparian vegetation (CWHR 1988c). This habitat type provides suitable roosting and perching habitat, as well as nesting habitat for a number of bird species, particularly raptors. The stringy bark or rapid deposition of litter creates suitable habitat for a variety of smaller wildlife including alligator lizard (*Elgaria multicarinata*), gopher snake, and wood rat species (*Neotoma* spp.). Characteristic wildlife species and those species associated with this habitat type within the Project area include barn owl (*Tyto alba*), red-tailed hawk, and red-shouldered hawk. Eucalyptus woodlands generally adjoin other wildlife

habitat. This habitat type can be found along Reaches 4, 5, 6, 7B, and 14. The reaches with the most area of this habitat type that could be affected by Project activities are Reaches 4 and 6.

Horticultural and Landscape Plantings

Horticultural or landscaped habitats typically contain non-native or ornamental species, but can contain native planted trees. These areas generally support non-native vegetation, and adjacent land use includes residential, commercial, and urban areas. The Project area occurs adjacent to residential housing and commercial businesses where this habitat type dominates. Horticultural and landscaped areas can provide forage and refugia for wildlife adapted to a more suburban environment; although, the wildlife diversity tends to be low. Wildlife species associated with this habitat type include raccoon, western fence lizard, bullfrog, and many species of nesting birds including mourning dove, black Phoebe (*Sayornis nigricans*), and house finch. This habitat type is found adjacent to all Project reaches. The reaches containing the largest amount of this habitat type potentially affected by Project activities are Reaches 7B and 8.

Freshwater Marsh

Freshwater marsh communities are dominated by emergent vegetation and found in low-lying perennially wet areas. Freshwater marsh or wetlands includes both vegetated areas and pockets of open water within the channel. It is found along the edges of Llagas Creek and can occupy most of the channel in reaches with sediment build up, resulting in reduced water flows and establishment of marsh vegetation. The location of freshwater marshes and open-water habitats can shift from year to year, depending on annual rainfall. Typical vegetation species found in this habitat include cattails, California bulrush (*Scirpus californicus*), and salt grass (*Distichlis spicata*). Agricultural ditches and man-made basins are included in this habitat type in the Project area and provide lower quality habitat than emergent marshes, but support similar wildlife species.

Freshwater marsh habitat with emergent vegetation provides a high quality seasonal resource a variety of nesting birds including the following birds observed adjacent to the Project area: pied-billed grebe (*Podilymbus podiceps*), black-crowned night-heron (*Nycticorax nycticorax*), common mallard, egrets, and herons. A number of amphibians require standing or flowing water for breeding, including western toad (*Bufo boreas*), Northern Pacific tree frog (*Pseudacris regilla*) and bull frogs. The Western pond turtle, a California species of special concern, is found in freshwater marsh that is adjacent to open water, which is present within the Project area (H.T. Harvey & Associates 2010). This habitat type may be found in all reaches with perennial flows and is found in disconnected patches throughout the main channel of Llagas Creek and its tributaries. It is predominately present along Reaches 6, 7A, 7B, and 8.The reaches containing the largest amount of this habitat type potentially affected by Project activities are Reaches 7A and 7B.

Grassland

Grassland habitat is the dominant vegetation type in the Project area and consists of a combination of naturalized annual plants, such as wild oats, ripgut brome, Italian ryegrass, or a combination of naturalized perennial grasses, such as Bermuda grass. Within the Project area, this habitat type is usually dominated by non-native grasses and can be found along banks, along the outside of levee maintenance roads, and undeveloped, open space. Non-native grasslands generally support relatively low wildlife diversity, but could be used by common and special-status species for foraging habitat and migratory corridors. Many common species, such as birds, reptiles, and mammals use annual grasslands. Typical species associated with annual grassland include western fence lizard, gopher snake, Western meadowlark (*Sturnella neglecta*), and song sparrow (*Melospiza melodia*). Additionally, grassland habitat provides foraging habitat for predatory birds that nest in the adjacent woodlands, such as red-tailed hawk and American kestrel (*Falco sparverius*). This habitat type is found in all Project reaches. The reaches

containing the largest amount of this habitat type potentially affected by Project activities are Reaches 4 and 6.

Riparian

Riparian habitat includes riparian scrub (both exotic scrub and native scrub) and riparian woodland. Riparian habitat is an important habitat in California for many wildlife species. This habitat type provides food, water, cover, and migration and dispersal corridors for a diversity of amphibians, reptiles, birds, and mammals. This habitat type occurs along creek banks where trees and shrubs species prefer a moist environment. Plant species found in exotic riparian scrub include giant reed and Himalayan blackberry. Vegetation found in native riparian scrub includes poison oak, mule fat, willow, and Arroyo willow (*Salix lasiolepis*). Vegetation species associated with riparian woodland habitat include Fremont cottonwood, buckeye (*Aesculus californicus*), and walnut.

Riparian scrub and woodlands provide high habitat suitability for foraging and nesting for a variety of common and special-status wildlife species. Common wildlife species associated with riparian habitat include cavity nesting birds (e.g., acorn woodpecker) and other small passerines, raptors, small mammals (e.g., raccoon, tree squirrels, fox squirrel, wood rats, etc.), and reptiles (e.g., Western fence lizard [*Sceloporus occidentalis*]). Special-status wildlife species that typically use riparian habitat and are found in or around Llagas Creek include Western pond turtle and dusky footed woodrat (*Neotoma fuscipes*) (WRA 2010).

Riparian scrub and woodland habitat is most dense in Reach 6 and in some parts of Reach 7A. Patches of riparian scrub are also present in parts of Reaches 4, 5, 7B, and 14. Patches of riparian forest are present in parts of all Project reaches. The reaches containing the largest amount of this habitat type potentially affected by Project activities are Reaches 4 and 6.

Ruderal

Ruderal areas consist of weedy, upland vegetation that typically occurs in areas where soils and native vegetation have been significantly disturbed by grading, plowing, construction or other land-clearing activities. These areas are dominated by non-native annual grasses and forbs that are adapted to disturbances. This habitat is present in the Project area along, benches, road shoulders, and other disturbed areas. Ruderal habitats provide limited wildlife habitat and generally support only generalist, and sometimes non-native wildlife species that are tolerant of human presence and activities. Terrestrial wildlife species commonly associated with ruderal habitats in the Project area may include western fence lizard, California ground squirrel (*Spermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), white-crowned sparrow (*Zonotrichia leucophrys*), and European starlings. This habitat type is only found in Reach 8 where approximately only 1 acre could be affected by Project activities.

Upland Scrub

Upland habitat is dominated by shrubs with thick evergreen leaves (CWHR 1988d).Typical vegetation associated with upland scrub include annual grasses and upland forbs, such as wild oats (*Avena barbata*), coyote brush (*Baccharis pilularis*), yellow star thistle, ceanothus (*Ceanothus* spp.*),* Manzanita, and California buckeye and oaks. Upland scrub habitats support many common wildlife species including California towhee, California quail, California thrasher (*Toxostoma redivivum*), and red-tailed hawk. Common mammals occurring within this habitat include brush rabbit (*Sylvilagus bachmani*), black-tailed jackrabbit, and mule deer (CDFG 2008a). Upland scrub habitat is only present in the downstream portion of Reach 7A. This stretch of habitat is proposed for a new channel that would connect West Little Llagas Creek to the mainsteam of Llagas Creek. Less than 1 acre of this habitat type will be affected by Project activities.

3.5.2.3 Special-status Wildlife Species

For the purpose of this section, special-status species are wildlife species that meet one or more of the definitions listed below.

- Species listed or proposed for listing as threatened or endangered under the federal ESA (50 CFR 17.11).
- Species that are Candidates for possible future listing as threatened or endangered under the federal ESA (61 FR 7591).
- Species listed or proposed for listing by the State of California as threatened or endangered under CESA (14 CCR 670.5).
- Species that meet the definitions of rare or endangered under CEQA Guidelines Section 15380.
- Animals fully protected in California (CDFW Code, Section 3511, 4700, 5050, and 5515).
- Animal species of special concern to CDFW (CDFW 2011a).

A list of special-status wildlife that are known to occur or potentially occur in the vicinity of the Project area was compiled and evaluated for their potential for occurrence within the Project area. This list is available in Appendix I and provides each species' scientific and common names, status, habitat, and potential to occur in the Project area. The list was compiled based on a review of special-status species records from CNDDB (CDFW 2012), USFWS online species list (USFWS 2012), and literature resources. The CNDDB and USFWS database was reviewed for special-status wildlife species that are known to occur or potentially occur in the following U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles: Chittenden, Gilroy, Gilroy Hot Springs, Isabel Valley, Lick Observatory, Loma Prieta, Mississippi Creek, Morgan Hill, Mt. Madonna, Mt. Sizer, San Felipe, Santa Teresa Hill, and Watsonville East. The CNDDB records of special-status wildlife within 5 miles of the Project area were also reviewed and are shown in Figure 3.5-1.

There is federally designated Critical Habitat for special-status wildlife within 2.5 miles of the Project area (USFWS 2013). Critical habitat for California red-legged frog (CRLF [*Rana aurora draytonii*]) is located over 2.5 miles east of the Project area. Critical habitat for California tiger salamander (CTS [*Ambystoma californiense*]) is located within 2.5 miles and is located south and east of the Project area and southwest of Reaches 5 and 6. Critical habitat for Bay checkerspot butterfly is located within 2.5 miles of the Project area and is found east of Reach 14, north of Reach 8, and west of Reach 6.

The 36 special-status wildlife species in Appendix C were evaluated for their potential to occur in the Project area. Based on an analysis of distribution, known occurrences, and habitat requirements, 17 of the 36 special-status wildlife species evaluated have potential to occur in the Project area (Table 3.5-1). Species evaluated as being unlikely to occur within the Project area are considered to be beyond their known range or to have low habitat suitability for reproduction, cover, and/or foraging. These species are not discussed further. Species without listing status are not discussed further. Habitat assessments and field surveys for special-status wildlife have been conducted in the Project area, and special-status wildlife was observed during field surveys on November 24, 2009 (WRA 2010), January 4-11, 2013 (H.T. Harvey & Associates 2013e), and May 15 and June 5 and 26, 2013 (H.T. Harvey & Associates 2013f). Species with potential to occur within the Project area, based on the analysis presented in Table 3.5-1 are discussed in further detail below.

Based on USFWS and CNDDB information, 17 special-status wildlife species or groups are known to occur, or potentially occur, in the vicinity of the Project area including four mammals, six birds, two reptiles, three amphibians and two invertebrates. These species are discussed below.

Table 3.5-1 Special-status Wildlife Species Potentially Occurring in the Project Area

Species	Status	Species	Status
Mammals			
Pallid bat *Antrozous pallida*	CSC	San Joaquin kit fox *Vulpes macrotis mutica*	FE, CT
San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	CSC	American badger *Taxidea taxus*	CSC
Birds			
Western burrowing owl *Athene cunicularia*	CSC	Tricolored blackbird *Agelaius tricolor*	CSC
Least bell's vireo *Vireo bellii pusillus*	FE, CE	White-tailed kite *Elanus leucurus*	FP
Bank swallow *Riparia riparia*	CT	Yellow warbler *Dendroica petechial*	CSC
Reptiles			
Western pond turtle *Actinemys marmorata*	CSC	Coast horned lizard *Phrynosoma blainvillii*, formerly *P. coronatum frontale*	CSC
Amphibians			
California tiger salamander *Ambystoma californiense*	FT, ST, CSC	Foothill yellow-legged frog *Rana boylii*	CSC
California red-legged frog *Rana aurora draytonii*	FT, CSC		
Invertebrates			
Bay checkerspot butterfly *Euphydryas editha bayensis*	FT	Opler's longhorn moth *Adela oplerella*	FC

Status Codes:

FE: Federally Endangered

FT: Federally listed as Threatened

FP: Fully Protected by the California Department of Fish and Wildlife (CDFW)

FC: Federal Candidate; USFWS have enough information on biological vulnerability and threats to support a proposal to list as endangered or threatened.

CT: State listed as Threatened in California

CE: State listed as Endangered in California

CSC: California species of special concern

Pallid bat (*Antrozous pallidus*)

The pallid bat (*Antrozous pallidus*) is a California species of special concern (CDFG 2011). This species ranges from western Canada to central Mexico and is widely distributed at lower elevations in California (Zeiner et al. 1990a). The pallid bat utilizes a variety of habitats, including grasslands, shrublands, woodlands, and forests; although, it is most commonly found in open habitats with rocky areas for roosting and prefers to forage in the open (Zeiner et al. 1990a). Their day and night roosts include crevices in rocky outcrops and cliffs, caves, mines, and trees (Sherwin and Rimbaldini 2005). Roosts in trees include deciduous trees in riparian areas, the bole cavities of oak (*Quercus* spp.*)* trees, and exfoliating valley oak (*Quercus lobata*) bark (Sherwin and Rimbaldini 2005). Pallid bats also roost in

human structures, such as bridges, barns, bat boxes, and vacant to lightly used buildings (Sherwin and Rimbaldini 2005; Zeiner et al. 1990a). Pallid bats breed from late October through February, and young are born from April through July (Zeiner et al. 1990a).

Review of the CNDDB indicates one occurrence of Pallid bat within 5 miles of the Project area. The occurrence is approximately 2 miles south of Reach 4 near the intersection of Monterey Highway and 1st Street. Based on surveys conducted in 2013 (H.T. Harvey & Associates 2013e), most of the bridges, culverts, and other structures within the Project area do not provide potential habitat for roosting bat; however, Monterey Road and UPRR has potential for roosting bats, but no evidence of roosting on these structures was observed. Four structures in Reaches 4, 5, and 6 (Masten Avenue, U.S. 101 north and south, and Llagas Avenue) have potential habitat and evidence that bat night-roost on the structure (H.T. Harvey & Associates 2013e). Moreover, two species of bats "*regularly night-roost during summer months in low numbers in*" some of the structures (H.T. Harvey & Associates 2013e; SCVWD 2013d). The pallid bat could potentially roost in these structures; although, no evidence of presence has been documented (H.T. Harvey & Associates 2013e).

Near Reach 7B and 8, the proposed tunnel in the Preferred Alternative could provide potential bat roosting habitat and may be attractive to two species of bats (H.T. Harvey & Associates 2012a). Bats may roost at the three planned access points in the tunnel, because the access points would have warmer than ambient temperatures through the night and bats are known to commonly forage along the Upper Llagas Creek corridor (H.T. Harvey & Associates 2012a). Additionally, appropriate foraging and roosting habitat occurs in the immediate vicinity of the Project area (H.T. Harvey & Associates 2013e; SCVWD 2013d).

San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*)

San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*) is a California species of special concern (CDFG 2011). This subspecies is found on the Peninsula southward to Santa Cruz County and in the East Bay hills. It is a medium-sized rodent. Dusky-footed woodrats are widespread in chaparral, woodland, and forest habitats with well-developed undergrowth (Carraway and Verts 1991). Their stick houses may be as much as 6 feet tall and contain multiple chambers used for sleeping and food storage. Houses are usually occupied by single adults or females with young and can be used by successive generations of woodrats. Woodrat houses provide cover for many other animal species, including small mammals, reptiles, amphibians, and arthropods (Cranford 1982; Vestal 1938). The reproductive season typically occurs between December to September, with a peak in mid-spring (Zeiner et al. 1990b). Carraway and Verts (1991) summarized data suggesting that breeding is sometimes extended through September.

Although CNDDB records do not indicate occurrences within 5 miles of the Project area, there is potentially suitable habitat for this species along the mainstem of Llagas Creek and Lake Silveira (Balance Hydrologics et al. 2012). The species could also utilize the riparian corridor along Reach 6 and the mainstem above Monterey Road. Nests of this species were observed along West Little Llagas Creek in the live oak riparian habitat south of the Watsonville Road/Monterey Road intersection (approximately 1,100 feet east of Reach 7A) (WRA 2010).

San Joaquin kit fox (*Vulpes macrotis mutica*)

The San Joaquin kit fox (*Vulpes macrotis mutica*) is federally listed as endangered and is state-listed as threatened (USFWS 1967). No critical habitat has been designated for the species.

Kit fox occur in annual grassland or mixed shrub/grassland habitats throughout low, rolling hills and in the valleys (e.g., foothill annual grassland, oak savannah, and agricultural areas). The San Joaquin kit fox is active mostly at night. In the southern range, kit fox inhabit grassland and scrubland communities, including those that have been modified by development, such as with oil exploration, wind turbines, agricultural, and grazing (USEPA 2010a). The San Joaquin kit fox will also utilize woody croplands and

remnant patches of scrubland in valley floor areas (USFWS 1998a). The fox requires underground dens for shelter and reproduction and will commonly modify and use dens constructed by other animals and human-made structures, such as culverts, abandoned pipelines, or banks in sumps or roadbeds (USFWS 1998a). Dens are most often found in relatively level areas or gently sloped terrain, such as washes and roadside berms (Morrell 1972; ICF International 2012b) on loose-textured soils; however, the San Joaquin kit fox den characteristics vary across the species geographic range (USFWS 1998a).

The San Joaquin kit fox has been cited in southern Santa Clara County (Morell 1972 as cited in SCVWD 2011b). Although there are no record occurrences within 5 miles of the Project area, there are two CNDDB records for San Joaquin kit fox occurrence within 10 miles of the Project area (north of Felipe and southeast of Coyote Reservoir). The CNDDB occurrences are located within the distributional range of the species and two individuals were documented near the town of Coyote in 1992 (WRA 2010).

Kit foxes are now generally acknowledged to be rare in Santa Clara County and found only in areas adjacent to access from the Central Valley populations centers (SCVWD 2011). Kit fox is expected only to occur in the vicinity of Pacheco Creek and the uppermost portions of the Pajaro River and would only be occasional dispersants in this area while moving to breeding locations outside the county (SCVWD 2011). According to an Independent Science Advisors report, although several individual kit foxes have been observed as roadkill in the southernmost portions of the county, no breeding population has been demonstrated within Santa Clara County despite substantial survey efforts (CBI 2006). The Science Advisors assumed that the southern Santa Clara Valley is not an important area to the conservation of this species and that there is little suitable habitat (CBI 2006) The Project area is surrounded by urban and agricultural development and open habitat is fragmented and disturbed. It is unlikely the San Joaquin kit fox would utilize the Project area for breeding or hunting, although, it may occur within or adjacent to the Project area during dispersal between areas of known habitat outside of the Project area. The potential to occur within the Project Area is low or unlikely.

American badger (*Taxidea taxus)*

American badger was listed as a CDFW Species of Special Concern in 1987. A member of the weasel family, American badger (*Mustelidae*), has a wide distribution in North America, spanning from Alberta to Mexico and from the Pacific Coast to the Great Lakes. With the exception of the humid coastal forests of Del Norte County and the northwestern portion of Humboldt County, the species is known to occur throughout California. In California, the badger occupies a diversity of habitats, including grasslands, savannas, chaparral, and riparian habitats, with typically less than 50 percent plant cover. Badgers require friable soils for digging burrows that are used for cover and reproduction (Zeiner et al. 1990). Largely nocturnal, the American badger primarily feeds on burrowing rodents, including gophers (*Thomomys* sp.), California ground squirrels, and kangaroo rats (*Dipodomys* sp.) (Williams 1986).

Review of the CNDDB reported one occurrence of the species within 5 miles of the Project area and three occurrences of the species within 10 miles of the Project area. The nearest occurrence is approximately 2.8 miles southwest of Reach 4. There is low or unlikely potential for this special-status ground dwelling mammal species to occur within the Project area (SCVWD 2012c). Badgers are known to occur primarily in foothill grasslands, but only occur occasionally on the valley floor primarily during dispersal events (SCVWD 2011). The potential for occurrence is low or unlikely, because (1) American badgers typically require large expanses of open habitat which is not typically found along riparian edges (SCVWD 2011; CBI. 2006); (2) low numbers of suitable denning burrows were observed in the study area (Balance Hydrologics et al. 2012); (3) the disturbed areas adjacent to the channel do not provide suitable habitat for the species; and (4) there is habitat fragmentation between known occurrences for this species. Although it is unlikely for the species to occur, there are a few sections of Reach 5 that contain sandy, friable soils preferred by this species that could provide habitat (Condor Country Consulting, Inc. 2012a). American badger may occupy agricultural fields adjacent to the Project area, particularly if the fields are pastured or fallowed; intensively cultivated fields inhibit the permanent establishment of dens. The

species may also use agricultural fields adjacent to the Project area for dispersal. However, its potential to occur within the Project area is low or unlikely.

Western burrowing owl (*Athene cunicularia*)

The western burrowing owl (BUOW) is a California species of special concern (CDFG 2011). Burrowing owls range throughout most of the interior western United States, southern Canada, the Central Valley of California, southern California, throughout Mexico into Central America, and along the western half of Florida. Burrowing owls inhabit open, dry, gently rolling to flat grasslands, scrublands, road and railway ROWs, open urban habitats (i.e., airfields, campuses, and golf courses), and agricultural lands. Essential habitat characteristics for the burrowing owl are low-growing, sparse vegetation, and the occurrence of larger burrowing rodents, such as ground squirrels and prairie dogs (CDFG 2012a). The nesting season for burrowing owls occurs from February through August, with peak breeding occurring in April and May. Burrowing owl occur year-round in Santa Clara Valley (Trulio 2007 as cited in SCVWD 2011), and is commonly present in agricultural or grassland habitat with small mammal burrows. Burrowing owls are more widespread in the county in winter than during the breeding season; therefore, some potential exists for use of the Project area as roosting and foraging habitat (H.T. Harvey & Associates 2013f). This species has been increasingly disappearing due to development along the valley floor and has practically disappeared as a breeder from areas south of San Jose (SCVWD 2011). The species exhibits high site fidelity and will attempt to use an area even after the site has been developed (SCVWD 2011). SCVWD performed surveys at 41 stream maintenance sites throughout Santa Clara County in 1998, but did not detect burrowing owls, nor its habitat (SCVWD 1998 as cited in SCVWD 2011). In 2007 and 2008, a habitat assessment, burrow mapping study, and standardized breeding-season, protocol surveys for burrowing owl were conducted along multiple sections of SCVWD managed waterways (EDAW 2008 as cited in SCVWD 2011), including waterways in Santa Clara and Gilroy. Surveys identified active burrowing owl activity at a few locations and potential habitat for the species was determined to be present along a number of creeks but not within the Llagas watershed (EDAW 2008 as cited in SCVWD 2011).

A habitat assessment has been conducted by the SCVWD (H.T. Harvey & Associates 2013f). The survey results suggest that no breeding owls are present in the Project area; however, suitable nesting and roosting habitat is located along Reaches 6, 7A, and 14. There is potential for this ground dwelling species to occur within the Project area due to small mammal burrows observed within the Project area (Balance Hydrologics et al. 2012) and the adjacent agricultural land, particularly the drier ruderal/annual grassland habitat adjacent to the channel; although, generally disturbed, may provide suitable habitat for the species (WRA 2010). Review of the CNDDB found six occurrences of the species within 5 miles of the Project area. The closest reported occurrence is 0.5 mile northeast of Reach 8. In 2012, the CDFW provided a guideline to evaluate Project impacts (CDFW 2012). The three progressive steps of the guideline assist in evaluating whether projects will result in impacts to burrowing owls. The information, gained from the steps, inform any subsequent avoidance, minimization, and mitigation measures. The steps for project impact evaluations are: (1) habitat assessment, (2) surveys, and (3) impact assessment. Field surveys to determine if existing habitat for BUOW exists adjacent to the Project area was performed by the SCVWD between April and June of 2013. The results of the assessment suggest that it is unlikely that burrowing owls breed anywhere in the Project vicinity (H.T. Harvey & Associates 2013f).

Least bell's vireo (*Vireo bellii pusillus*)

Least Bell's vireo (*Vireo bellii pusillus*) is federally and state listed as endangered (Federal Register 1986; CDFG 2011). A draft recovery plan has been completed for this species (USFWS 1998b). Critical habitat has been designated for the least Bell's vireo, but the Proposed Project is not located within critical habitat area (Federal Register 1994).

Least Bell's vireo is a neo-tropical migrant that historically nested from interior northern California (Tehama County) to northwestern Baja California, Mexico. When this subspecies was federally listed in

1986, the breeding distribution was limited to scattered locations in southern California and northwestern Baja California, Mexico. Although breeding pairs of the least Bell's vireo had long been absent from the Central Valley, a breeding pair was observed in the San Joaquin Wildlife Refuge in Stanislaus County in the summer of 2005 (Howell et al. 2010).

Habitat requirements for the least Bell's vireo consist of dense riparian willow thickets with well-developed understories, and low densities of aquatic and herbaceous cover, in the immediate vicinity of watercourses. The understory typically contains dense shrub thickets, consisting of willow or mule fat. Foraging habitat includes both the riparian nesting habitat and adjacent chaparral. The least Bell's vireo arrives in its breeding habitat in mid-March to early April. Although this vireo nests primarily in willows, it also uses a variety of other shrubs, trees, and vines. The least Bell's vireo leaves its breeding grounds in late August and September for its wintering range in Mexico (Federal Register 1986).

There is no evidence in the historical record or in any pattern of recent occurrences of the species that the least Bell's Vireo is likely to colonize the Project area (H.T. Harvey & Associates 2011). The narrow nature of the riparian corridor, along with encroachment by adjoining industrial, commercial, and residential land uses, reduce the likelihood of use by the least Bell's vireo in most Project areas, even where vegetation is considered potentially suitable, such as in Reach 6 (H.T. Harvey & Associates 2011). Breeding pairs of the least Bell's vireo have long been absent from central and northern coastal California; although, the most recent sighting of a breeding pair in the Central Valley may indicate the species is expanding its existing range. Based on CNDDB records, there was only one occurrence of the least Bell's vireo within 10 miles of the Project area south of Reach 4, and a known nesting occurrence in a reach south of the Project area for this species from a 2001 sighting (H.T. Harvey & Associates 2011).

Bank swallow (*Riparia riparia*)

The bank swallow (*Riparia riparia*) is state listed as threatened (CDFG 2011). The bank swallow is found primarily in riparian and other lowland habitats in California west of the desert. The bank swallow is a common migrant within the interior of the state during the spring-through-fall period, and less common along the coast. There are few records of the bank swallow during the winter months for California. This species arrives in California from South America in early March, and remains until early August when colonies are abandoned and migration begins. During the summer, the bank swallow is restricted to riparian, lacustrine, and coastal areas with vertical banks, bluffs, and cliffs with fine-textured or sandy soils. This swallow is a colonial breeder. Approximately 75 percent of the current breeding population in California nests along the banks of the Sacramento and Feather River in the northern Central Valley. The bank swallow breeds from early May through July, digging horizontal nesting tunnels and burrowing along the side of stream banks and cliffs. Most colonies contain between 100 and 200 nesting pairs. The bank swallow feeds predominantly over open riparian areas, but will also forage over brushland, grassland, wetlands, water, and irrigated crop land. The bank swallows' diet includes a wide variety of aerial and terrestrial soft-bodied insects, including flies, bees, and beetles (Zeiner et al. 1990a).

Review of CNDDB indicates no occurrences within 5 miles of the Project area. The closest reported occurrence is 9.4 miles south of Reach 4. There is potential for this species to occur in more open reaches during fall and spring migrations due to the presence of suitable foraging adjacent to the Project area (i.e., grassland, streams, and agricultural areas). However, its potential for occurrence in the Project area is low, as the species prefers to nest in areas with steep banks and this habitat structure is not found within the Project area (Condor Country Consulting, Inc. 2012a).

Tricolored blackbird (*Agelaius tricolor*)

The tricolored blackbird (*Agelaius tricolor*) is a medium-sized passerine bird, which is very similar in appearance to red-winged blackbird (*Agelaius phoeniceus*). It is designated by the CDFW as a Species of Special Concern (SSC) and is designated as a Bird of Conservation Concern by the USFWS (USFWS 2008a; TBWG 2007).

Nearly all tricolored blackbird populations occur within California. While no major changes in their overall geographic distribution have been noted, large gaps in the occupied range now exist due to loss of habitat (e.g., Kings, San Joaquin, Riverside, and San Bernardino counties) and populations have significantly declined (BDCP 2013). This species typically breeds in areas with access to open water and protected nesting sites, often including flooded, thorny, or spiny vegetation. Tricolored blackbirds will nest in freshwater marsh habitat in vegetation including tules, cattails, willows, thistles, or nettles. Nests may also be concentrated in grain fields, giant reed, and riparian scrubland and forest areas (BDCP 2013). Birds may forage as much as 8 miles from nest sites (Beedy and Hamilton 1999) in areas that support insect prey. Pasturelands, alfalfa, dairies, grassland, and shrubland habitats may be used in lieu of natural flooded habitat (CDFG 2008b).

Although no CNDDB occurrences for this species have been reported within 5 miles of the Project area, there is potential for this species to occur in the more open reaches and in adjacent agricultural fields, due to the presence of suitable foraging habitat in the Project area, particularly in reaches with perennial water that would support dense stands of emergent wetland vegetation. In Reach 4, there is low potential for tricolored blackbird to occur in the adjacent agricultural and naturalized annual grassland areas (Condor Country Consulting, Inc. 2012a).

White-tailed kite (*Elanus leucurus*)

The white-tailed kite (*Elanus leucurus*) is a fully protected species in California (CDFG 2012b). Fully protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock (CDFG 2012b). This kite is a year-long resident in coastal and valley lowlands, and is rarely found away from agricultural areas. This species is a permanent resident in California and western Oregon.

Suitable habitat for white-tail kite consists of tree-dotted lowlands or hillsides, ungrazed or fallowed grasslands, marshes, croplands, savannas, and emergent wetlands. These areas provide foraging habitat that is abundant with preferred food sources that include primarily voles and other small diurnal mammals, occasionally birds, large insects, reptiles, and amphibians. Nesting for the white-tailed kite takes place in trees with nest placement well above the ground and within close proximity to foraging sites. Breeding takes place from mid-March to early April through late September (Zeiner et al. 1990b).

There is low potential for this species to occur due to suitable nesting habitat and foraging habitat within and adjacent to the Project area. Preferred nest trees are extremely variable, ranging from small shrubs (less than 10 feet tall) to large trees (greater than 150 feet tall) (Dunk 1995). Fallow agricultural fields, orchards, and riparian habitat within and adjacent to the Project area provide high quality foraging and nesting habitat for this species (WRA 2010). The closest reported CNDDB occurrence of white-tailed kite is 6.5 miles southwest of Reach 4, northwest of Gilroy. There is low potential for the species to occur in the Project area.

Yellow warbler (*Dendroica petechial*)

The yellow warbler (*Dendroica petechial*) is a state species of special concern (CDFG 2011). Its breeding distribution ranges from northern coastal Del Norte County, east to Modoc plateau, south to coastal Ventura County, and along the western slope of the Sierra Nevada. The species also breeds along the eastern side of California and in several southern California mountain ranges, and is known to breed locally in small numbers in Sonoma, Marin, Alameda, San Mateo, Santa Clara, Santa Cruz, Monterey, and San Luis Obispo counties (Shuford and Gardali 2008). Breeding occurrences in lowlands are in decline and it is rare to uncommon in many lowland areas where it was formerly common (CDFG 2005); however, small numbers of yellow warblers breed in remnant riparian areas within Santa Clara County (Bousman 2007 as cited in SCVWD 2011).

The yellow warbler breeds in riparian woodlands in close proximity to water along streams and wet meadows, from coastal and desert lowlands up to 8,000 feet, montane chaparral, and in open pine and mixed conifer habitats with substantial amounts of brush (CDFG 2005; Shuford and Gardali 2008). The species prefers riparian deciduous habitats consisting of cottonwoods, willows, alders, and other small trees and shrubs typical of low, open-canopy riparian woodland. In California, the species utilizes numerous other species of riparian shrubs or trees and varies by biogeographic region (Shuford and Gardali 2008). Tall trees provide suitable foraging habitat and heavy brushy understories are used for nesting; and the species shows a high degree of site fidelity. In migration, the species will utilize riparian woodland, forest, and shrub habitats.

There is potential for this species to occur, particularly along parts of Reach 6, due to suitable nesting habitat and foraging habitat within the Project area. Although there are no recorded occurrences of the yellow warbler within 10 miles of the Project area, the species may occasionally move through the study area from other suitable locations. However, its potential to occur within the Project area is low or unlikely.

Western pond turtle (*Actinemys marmorata*)

The western pond turtle (WPT [*Actinemys marmorata]*), a state species of special concern (CDFG 2011), 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. Elevation range is between sea level and approximately 4,700 feet (1,430 meters) (Jennings and Hayes 1994).

WPT require some slow-water aquatic habitat and are uncommon in high-gradient streams (Jennings and Hayes 1994). The banks of inhabited waters usually have thick vegetation, but basking sites, such as logs, rocks, or open banks, must also be present (Zeiner et al. 1988). Depending on the latitude, elevation, and habitat type, WPT may become inactive over winter or remain active year-round. Nest sites are typically on unshaded slopes with high clay or silt composition (Jennings and Hayes 1994). Eggs are laid from March to August, depending on local conditions, and incubation lasts from 73 to 80 days.

Potential habitat for the WPT is present within the Project area wherever there are suitable perennial waters along the Project reaches, such as pooled waters at Reach 6. All perennial creeks, many intermittent creeks, and most ponds that are not completely isolated by development have some potential to support the turtle; however, the loss of upland nesting habitat because of development and construction of movement barriers between the creeks and nesting areas have reduced the pond turtles potential for occurrence (SCVWD 2011). The CNDDB lists several records for WPT west of Reach 6 within 2.5 miles of the Project area (CNDDB 2013; Figure 3.5-1).WPT are known to occur in Reaches 1 and 2 of Llagas Creek and Lake Silveira (H.T. Harvey & Associates 2010). Therefore potential for the species to move in to the perennial segments of the Project area is high.

Coast horned lizard (*Phrynosoma blainvillii*)

The Coast horned lizard (*also known as Blainville's horned lizard*) is a subspecies of the Coast horned lizard and is a California species of special concern (CDFG 2011). It is uncommon to common in valley-foothill hardwood, coniferous, and riparian habitats, as well as in pine-cypress, juniper, and annual grassland habitats (Zeiner et al. 1988c). The subspecies is endemic to California and ranges include: the Central Valley from southern Tehama County south, the Sierra foothills from Butte to Tulare counties below 4,000 feet, throughout the Coast Ranges south from Sonoma County; and below 6,000 feet in the mountains of southern California in northern Santa Barbara, Ventura, and Los Angeles counties (Jennings and Hayes 1994). The Coast horned lizard inhabits a variety of open habitat, characterized by sandy loosely textured soil areas, washes, flood plains, and wind-blown deposits. The species may be found in chaparral, coastal scrub, annual grassland, and clearings in riparian woodland (Jennings and Hayes 1994). The reproductive season for the Coast horned lizard varies from year to year and geographically depending on local conditions (Zeiner et al. 1988); however, reproductive activity is conspicuous in April and May and hatchlings first appear in July and August (Jennings and Hayes 1994).

Its numbers are declining due to habitat loss, extensive collecting on wildlands near urban development, and the introduction of Argentine “grease ants”, which eliminate the native ant species eaten by horned lizards, harvester ants (*Pogonomyrmex barbatus*).

The Coast horned lizard is strongly associated with loose soils free of plant debris, and with the presence of its primary food source. Review of the CNDDB reported no occurrences of Coast horned lizard within 5 miles of the Project area with the closest occurrences being recorded approximately 7.25 miles from the Project area in an adjacent USGS 7.5 minute quad (Gilroy Hot Springs).There is no potential for occurrence within the Project area due to unsuitable vegetation and lack of suitable soils (Balance Hydrologics et al 2012); therefore, Coast horned lizard will not be analyzed further.

California tiger salamander (*Ambystoma californiense*)

The CTS is federally and state listed as threatened (Federal Register 2004). Critical habitat has been designated in 19 counties in California. The Project area does not include, or is located within designated critical habitat or a recovery unit (Figure 3.5-1). Two critical habitat units, Lions Peak 10a and 10b, are encompassed within the Llagas Creek watershed and are located west of Reach 6. A third critical habitat unit, Cebata Flat Unit 9, is located southeast of the Llagas Creek watershed and is east of Reach 14.

The CTS historically ranged from Sonoma and Colusa counties to Tulare and Santa Barbara counties. It is found in grasslands and lowest foothill regions (Zeiner, at al. 1988). It migrates at night from its underground refuges to breeding ponds, covering distances of as much as 1 mile. The CTS breed and lay eggs in temporary rainwater ponds, reservoirs, and in vernal pools, and may sometimes use human-made ponds if predatory fish are absent (Zeiner et al. 1988). During non-breeding season, adult CTS will remain in subterranean refugia, especially burrows of California ground squirrels.

Although the likelihood of the species utilizing the Project area is very low, there is potential for this species to occur in the Project area, due to the presence of potentially suitable breeding habitat (i.e., ponded water, suitable upland habitat adjacent to the channel) and dispersal habitat for this species is present adjacent to the main channel of Upper Llagas Creek; however, the habitat is fragmented by development (H.T. Harvey & Associates 2012b; WRA 2010). The Project area is within the migration range of potential breeding habitat, including designated critical habitat (Balance Hydrologics et al. 2012).

The main channel of Upper Llagas Creek has low suitability for breeding as streams are rarely used for reproduction (Zeiner et al. 1988) and the presence of predators (i.e., bullfrogs and fish). However, percolation ponds adjacent to the Project area provide marginal breeding habitat for the species and the upland habitat adjacent to the main channel may be used for subterranean refugia. Although potential suitable breeding habitat exists adjacent to Upper Llagas Creek, there is very low likelihood the species would occur within the Project area due primarily to distance from potential breeding ponds and/or impediments to dispersal from breeding ponds to the Project area (H.T. Harvey & Associates 2012b). Moreover, field studies report low number of small mammal burrows necessary for CTS underground refugia (Condor County Consulting 2012b). Lake Silveira is hydrologically connected to Reach 7A and has perennial surface, thus has the hydrology to support larval development periods for CTS. Field studies, however, did not yield observations of adult, larval, or egg masses of CTS during sampling at Lake Silveira (Balance Hydrologics et al. 2012).

Nevertheless, the presence of CTS cannot be ruled out, as one CTS juvenile was observed in 2010 at the Main Avenue Percolation Ponds adjacent to the Project area (H.T. Harvey & Associates 2012b); and there is designated critical habitat for CTS approximately 1.5 miles to the west of Reach 6 and approximately 2 miles east of Reach 14. Review of the CNDDB found 79 occurrences within 10 miles and 26 occurrences of CTS within 5 miles of the Project area. The closest reported occurrence is 0.01 mile west of Reach 8 along West Edmundson Avenue. The proximity of the site to other records suggests the possibility that CTS from other breeding sites could disperse into the Project area.

California red-legged frog (*Rana aurora draytonii*)

The CRLF is federally listed as threatened (Federal Register 1996) and is a California species of special concern. The USFWS made a final rule on March 17, 2010 to designate Critical habitat (75 FR 12816) for this species. The Project is located approximately 2.5 miles west of a designated critical habitat unit. The USFWS released a recovery plan in 2002 (USFWS 2002).

Historically, the CRLF occurred in coastal mountains from Marin County south to northern Baja California, and along the floor and foothills of the Central Valley from about Shasta County south to Kern County (Jennings and Hayes 1994). Currently, this subspecies generally only occurs in the coastal portions of its historic range and is apparently extirpated from the valley and foothills and in most of southern California south of Ventura County. CRLF are usually confined to aquatic habitats, such as creeks, streams, and ponds, and occur primarily in areas having pools approximately 3 feet deep, with adjacent dense emergent or riparian vegetation (Jennings and Hayes 1994). Adult frogs move seasonally between their egg-laying sites and foraging habitat; but, generally, they rarely move large distances from their aquatic habitat. CRLF breed from November to March. Egg masses are attached to emergent vegetation and eggs hatch within 6 to 14 days. Metamorphosis generally occurs between July and September.

There is little or no potential for the occurrence of CRLF due to the presence of barriers to migration into the Project area from known occurrences and to habitat degradation. The closest occurrences are in ponds at a golf course 2.2 miles east of Reach 7A, which are separated from the Project area by farmland, urban development, and many roads, including U.S. 101 (Balance Hydrologics et al. 2012). The nearest CRLF population with a connection via aquatic habitat to Lake Silveira is more than 5 miles upstream at Chesbro Reservoir, upstream of the dam and reservoir. However, the presence of predatory fish and bullfrogs reduces the potential for this species to breed successfully in Lake Silveira or the neighboring stream channels, even if they were able to reach the lake. The only suitable upland habitat is located in the immediate study area, and the banks upstream of Lake Silveira have been cleared of understory vegetation. The areas outside the study area have degraded habitat (from urbanization and agriculture) that is unsuitable for this species. The nearest designated critical habitat for the CRLF is approximately 4 miles to the east of Lake Silveira, in the foothills of the Diablo Range (75 FR 12816). This critical habitat unit is separated from Lake Silveira by farmlands, urban development, and many roads, including U.S. 101 (Balance Hydrologics et al. 2012). The next closest critical habitat unit is over 15 miles away, west of Watsonville. The reach of Llagas Creek that includes Lake Silveira historically supported savanna or was unvegetated (SFEI 2008). Where Llagas Creek emerged from the hills onto the alluvial plain, it was a non-perennial channel with a braided morphology and was much less incised (SFEI 2008). Thus it is unlikely that this reach supported CRLF historically. Review of the CNDDB found 101 occurrences of the CRLF within 10 miles and 18 occurrences within 5 miles of the Project area, the latest of which was documented in 2007 at Coyote Creek Dam. However, surveys in the Project area and vicinity indicate that CRLF no longer occurs in the lowlands of the valley (H.T. Harvey & Associates 1997) and the Project area is within a region in which the CRLF is presumed to be extinct (SCVWD 2011b). Focused surveys were conducted in the spring of 2012 of the study area at Lake Silveira and no frogs at any life stage were found (Balance Hydrologics et al. 2012).

Foothill yellow-legged frog (*Rana boylii*)

The foothill yellow-legged frog (FYLF [*Rana boylii*]) is a California species of special concern. In California, this frog occurs in the Coast Range from Oregon to San Luis Obispo County and into the western foothills of the Sierra Nevada. The FYLF was historically distributed throughout the foothills of a majority of the Pacific drainages from the northern Oregon to the San Gabriel River, while populations have been greatly decreased in its southern reaches. This species has been found at elevations from sea level up to 6,500 feet in the Sierra Nevada (Zeiner et. al. 1988).

The FYLF can be found in partly shaded or near clear, cool rocky streams in a variety of habitats (Jennings and Hayes 1994). They occur in a range of stream habitats from small intermittent creeks to

large river systems. They require shallow, slow-flowing water in streams with some cobble-sized substrate. Adults are usually found near water and prefer some riffle habitat or cascade and pool areas with rocky banks (Zeiner et. al. 1988). Breeding occurs between mid-March and May.

There is little or no potential for the occurrence of FYLF due to the presence of barriers to migration into the Project area from known occurrences and habitat degradation. Review of the CNDDB found two occurrences of the FYLF within 5 miles of the Project area; the closest of which was documented in 2003 west of Chesbro Reservoir along Oak Glen Avenue (CNDDB 2013). However, the nearest occurrence with a connection via aquatic habitat to Lake Silveira is more than 5 miles upstream at Chesbro Reservoir, upstream of the dam and reservoir. The presence of predatory fish and bullfrogs reduces the potential for these species to breed successfully in Lake Silveira or the neighboring stream channels, even if they were able to reach the Lake (Balance Hydrologics et al. 2012). The only suitable upland habitat is located in the immediate study area, and the banks upstream of Lake Silveira have been cleared of understory vegetation. The areas outside of the study area have degraded habitat (from urbanization and agriculture) that is unsuitable for FYLF. The reach of Llagas Creek that includes Lake Silveira historically supported savanna or was unvegetated (SFEI 2008). Where Llagas Creek emerged from the hills onto the alluvial plain, it was a non-perennial channel with a braided morphology and was much less incised (SFEI 2008). Thus it is unlikely that this reach supported FYLFs historically. No FYLFs at any life stage were found during spring surveys of the study area in 2012 at Lake Silveira (Balance Hydrologics et al. 2012).

Bay Checkerspot Butterfly (*Euphydryas editha bayensis*)

Bay checkerspot butterfly is federally listed as threatened (USFWS 1987). The only known populations of this species occur in San Mateo and Santa Clara counties; although, the species historically was found in many other counties around the San Francisco Bay Area. The current known range has been reduced to Santa Clara County, where patches of the species' habitat are still present (USFWS 2008b). Critical habitat was designated for this species in San Mateo and Santa Clara counties, but after a final rule in 2008, was reduced (USFWS 2008b). Three of this species' critical habitat units occur adjacent to the Project area; however, the Project area does not include critical habitat for Bay checkerspot butterfly (USFWS 2013). The distribution of the Bay checkerspot butterfly adjacent to the Project area is well represented by critical habitat; this distribution and designated critical habitat are shown in Figure 3.5-1. These areas contain serpentine grassland that provide suitable habitat and conditions of the species primary larval host plant, dwarf plantain (*Plantago erecta),* secondary host plants for both larvae and adults purple owl's clover (*Castilleja densiflora),* and exserted paintbrush (*Castilleja exserta*) (Black and Vaughn 2005 as cited in SCVWD 2011).

The lifecycle of the butterfly is closely associated with native grasslands on serpentine soils or similar infertile soils and its primary larval host plant. Pupae emerge as butterflies between late February and early May, correlating with the blooming of their nectar plants for feeding. Following the emergence is the active portion of their life-cycle with feeding, mating, and egg laying occurring over the course of 4 to 6 weeks. In dry years, larvae can continue diapause until the following spring when conditions have potentially improved (USEPA 2010b). Populations of the Bay checkerspot butterfly are restricted to areas with serpentine soils that have substantial populations of dwarf plantain.

Relative to the location of the Project area, the Bay checkerspot butterfly is likely to occur very infrequently (e.g., only in or following years of high population size), or only as a migrant through the Project area because of unsuitability of habitat. Designated critical habitat is west and northwest of Reaches 6 and 8, respectively; Reach 6 is within 2 miles of critical habitat. There is low potential for the butterfly to move through the Project area, particularly through those reaches, as it migrates to more suitable habitat. Review of the CNDDB found five occurrences of Bay checkerspot butterfly within 5 miles of the Project area with the closest occurrence at 0.7 mile west of Reach 8 northwest of Morgan Hill. The Project area lies in between USFWS designated critical habitat units for the species and is within

dispersal distance for the species. Previous field survey efforts (Balance Hydrologics et al. 2012) to document existing vegetation and habitat conditions around the Project area were completed during a season in which the native plants were not in bloom, thus the absence of the butterflies' host plant cannot be ruled out. Although the likelihood of the species utilizing the Project area is low, a spring botanical survey for the three annual native food plant species (i.e., dwarf plantain, purple owl's clover, and exserted paintbrush) will be performed by a qualified botanist prior to construction and throughout the blooming season to determine whether there is any potential habitat for the Bay checkerspot (Balance Hydrologics et al. 2012).

Opler's longhorn moth (*Adela oplerella*)

Opler's longhorn moth (*Adela oplerella*) is a candidate species to be federally listed as threatened or endangered. In California, this species has been found along the west side of San Francisco Bay, Alameda County, Marin County, Sonoma County, Santa Cruz County, Santa Clara County, and the inner Coast Ranges (WRA 2003) on both serpentine and possibly non-serpentine grassland. The documented presence of a population of this species on non-serpentine soils in Santa Cruz County suggests the species is not a serpentine obligate (USFWS 1998c).

Habitat for the Opler's longhorn moth includes serpentine, or similar soils, that support the moth's host plant, cream cups (*Platystemon californicus)*; however, the species may also be found on potential nectar plants, such as goldfields (*Lastehenia* spp.), tidy tips (*Layia* sp.), and Linanthus (*Linanthus* sp.) (USFWS 1988c). This moth completes the active portions of its life cycle during the winter-spring wet season, laying eggs between mid-March and April. Eggs are deposited into unopened flowers of the host plant and larvae feed on developing seeds prior to emergence.

Relative to the location of the Project area, the Opler's longhorn moth is likely to occur very infrequently (e.g., only in or following years of high population size), or only as a migrant through the Project area because of unsuitability of habitat. However, populations of the Opler's longhorn moth have been recorded in Santa Clara County (USFWS 1998c), and the moth may potentially occur in the Project area if it's host plant is present, especially on serpentine-dominated grasslands. Review of the CNDDB indicates four occurrences of Opler's longhorn moth within 5 miles of the Project area. The closest occurrence of this species was found 0.7 mile west of Reach 8 northwest of Morgan Hill. Previous field survey efforts (Balance Hydrologics et al. 2012) to document existing vegetation and habitat conditions around the Project area were completed during a season in which the native plants were not in bloom, thus the absence of the moth's host plant cannot be ruled out. Although the likelihood of the species utilizing the Project area is low, a spring botanical survey for the annual native food plants species (i.e., California creamcups, goldfields, tidy tips, etc.) will be performed by a qualified botanist prior to construction and throughout the blooming season to determine whether there is any potential habitat for the Opler's Longhorn moth.

Other Bats

Natural communities in the proposed Project area may support suitable roosting habitat for special-status bats. Bats generally exhibit a wide range of habitat usage depending on the species, season, time of day, availability of resources, and level of disturbance; however, bats often exhibit high site fidelity and specificity for roost selection. Roost sites consist of maternity (nursery colonies), bachelor, day, night, and feeding sites within caves, mines, cliffs, rock crevices, tree hollows, loose tree bark, foliage, and in man-made structures, such as buildings and bridges. Some species of bats have complex habitat requirements that vary seasonally. Generally, bat habitat should be managed on a temporal and spatial scale that accounts for each species' specific habitat requirements, resource availability, and sensitivity to disturbance (H.T. Harvey & Associates 2004).

Appendix J, Special-status Wildlife Species Potentially Occurring in the Project Vicinity, identifies three bat species with potential to roost or forage in the Proposed Project area. One of these species, pallid

bat, is discussed above. The other two species, hoary bat (*Lasiurus cinereus*) and Yuma myotis (*Myotis yumaensis*), are not federally or state listed, nor are they categorized as state species of special concern. Potential roosting and foraging habitat for the following bats is present in the Project area.

Hoary bat (*Lasiurus cinerus*)

Hoary bat (*Lasiurus cinerus*) is found in any location in California; although, distribution is patchy in southeastern deserts (Zeiner et al. 1990a). This solitary species winters along the coast and in southern California, breeding inland and north of its winter range. Suitable habitat includes all woodlands and forests with medium to large-size trees and dense foliage (Zeiner et al. 1990a). Hoary bat are solitary roosters and roost in dense foliage of both coniferous and deciduous trees, near the end of branches (Bolster 2005); preferred sites are hidden from above, with few branches below, and have ground cover of low reflectivity, 3–13 meters above ground (Bolster 2005; Zeiner et al. 1990a). Roosts are usually at the edge of a clearing (Bolster 2005).The species prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Breeding occurs in the autumn, followed by delayed fertilization. Young are born from mid-May through early July (Zeiner et al. 1990a).

Review of the CNDDB found two occurrences of hoary bat within 5 miles of the Project area, the latest of which was documented in 1938. The closest reported occurrence is 1.7 miles south of Reach 4 near the intersection of Monterey Highway and 1st Street.

Yuma myotis (*Myotis yumanensis*)

Yuma myotis (*Myotis yumanensis*) is common and widespread in California and found in a variety of habitats including riparian, arid scrubland and deserts, and forests (Bogan et al. 2005); optimal habitats in open forest and woodlands with sources of water (CDFG 1990). The bat roosts in buildings, mines, caves, or rock crevices; the species also roosts in abandoned swallow nests, trees, and under bridges (Bogan et al. 2005). Separate, more open night roosts may be used (CDFG 1990). Maternity colonies are found in buildings, caves, mines, and under bridges. Yuma myotis feed over water sources, such as ponds, streams, and stock tanks. The species breeds in the fall and young are born from late May to mid-June with a peak in early June (CDFG 1990).

Suitable habitat for this species is present in the Project area and the potential for occurrence in the Project area is moderate. The closest reported occurrence of this species is 1.9 miles northwest of Reach 8; and Yuma myotis could potentially roost at future access points to the proposed tunnel (Tunnel Alternative, Preferred Alternative) (SCVWD 2013d).

Raptors and Migratory Birds

Trees and other vegetation, as well as man-made structures, such as bridges that span within and adjacent to the Project area, provide potential nest sites for common raptors that could also forage within the area. Migratory birds also forage and nest in a variety of habitats, including riparian and coastal scrub regions and man-made structures, such as bridges. Active bird nests potentially found within the Project area are protected under the Migratory Bird Treaty Act (MBTA) and Section 3503.5 of the Fish and Game Code, which prohibits their disturbance or destruction.

3.5.3 Regulatory Environment

The following federal, state, regional, and local requirements for the Project are described below.

3.5.3.1 Federal

Endangered Species Act (FESA)

Section 7 of the Endangered Species Act (FESA) of 1973, as amended (16 USC 1531), requires federal agencies to consult with the Secretary of the Interior (USFWS) to ensure that agency actions do not

jeopardize the continued existence of endangered or threatened species or adversely modify critical habitat that supports such species. Species are listed as endangered if found to be in danger of extinction throughout all or a significant portion of their ranges; species are listed as threatened if they are likely to become endangered within the foreseeable future. The FESA also protects designated critical habitat for listed species, which are areas of physical or biological features essential to the conservation of the species and which may require special management considerations. The FESA requires federal agencies to consult with USFWS, as applicable, before initiating any action that may affect a listed species.

The SCVWD plans to consult with the USFWS through the USACE regarding the CTS, CRLF, and Bay checkerspot butterfly. In addition, a biological assessment (BA) will be prepared to address the effects from construction of flood protection components, mitigation, and ongoing vegetation maintenance within the river channel and the resulting potential for incidental take of these listed species. Incidental take authorization for the Project might be necessary, thus formal consultation under Section 7 of the ESA is warranted. The USFWS is expected to issue a biological opinion (BO) regarding the CTS.

Critical Habitat

Under the FESA, critical habitat is formally designated by the Secretary of Interior (or Commerce as appropriate) for survival and recovery of listed species. Critical habitat designations are specific areas within a geographic region that are occupied by a species and determined to be critical to its survival in accordance with FESA. Federal entities issuing permits or acting as a lead agency must show that their actions do not negatively affect the critical habitat to the extent that it impedes the recovery of the species. The Project area does not include designated critical habitat for any FESA-listed species; however, critical habitat for CTS, CRLF, and the Bay checkerspot butterfly are within the vicinity of the Project area. The CTS designated critical habitat is less than 2 miles east of Reach 4 and 1.5 miles west of Reach 6; additional designated critical habitat units are north and south of the Project area. The CRLF critical habitat is located approximately 4 miles east of Reach 14; however, this unit is separated from the Project area by farmland, urban development, and numerous roads, including U.S. 101. There are three designated critical habitat units for Bay checkerspot butterfly within the vicinity of the Project area: approximately 1.25 miles west of Reach 6, approximately 0.5 mile northwest of Reach 8, and approximately 2.5 miles northeast of Reach 14.

Fish and Wildlife Coordination Act (FWCA)

The FWCA (16 USC 661 et seq.) requires federal agencies to consult with the USFWS, or, in some instances, with NOAA Fisheries, and with state fish and wildlife resource agencies before undertaking or approving water projects that control or modify surface water. The purpose of this consultation is to ensure that wildlife resources held in public trust receive appropriate consideration and be coordinated with the features of these water resource development projects. Federal agencies undertaking water projects are required to fully consider recommendations made by the USFWS, NMFS, and state fish and wildlife resource agencies in project reports, such as documents prepared to comply with NEPA and CEQA, and to include measures to reduce impacts on wildlife in project plans.

The USACE (being the federal applicant in the Proposed Project) engaged USFWS to evaluate the probable effects on fish and wildlife resources and mitigation needs, if any, of the Project. The USFWS completed a revised draft of their Coordination Act Report (CAR) for the Project in May 2003. One objective of this draft was to provide full disclosure and opportunity for review of the USFWS analyses and recommendations by involved agencies, groups, and individuals. The 2003 CAR is the guideline for mitigation for this Project.

Migratory Bird Treaty Act (MBTA)

The MBTA (16 USC 703 et seq.) implements various treaties and conventions among the United States, Canada, Japan, Mexico, and Russia; providing protection for migratory birds as defined in 16 USC 715j.

The MBTA makes it unlawful for any "person" to take, kill, capture, collect, possess, buy, sell, trade, ship, import, or export any migratory bird, including feathers, parts, nests, or eggs. The MBTA does not protect the habitat of migratory birds. Violations of the MBTA are considered criminal offenses.

Case law from 1977 held that federal agencies are not considered persons under the MBTA and are considered exempt from its provisions. Therefore, the provisions of the MBTA do not regulate the USACE activities. SCVWD activities, however, continue to be regulated by the MBTA.

Executive Order 11990 – Protection of Wetlands

Executive Order 11990 directs federal agencies, in carrying out their responsibilities, to provide leadership to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. This policy states that federal agencies should avoid, to the extent possible, the long- and short-term adverse impacts associated with destruction or modification of wetlands. It also states that agencies should avoid undertaking and providing support for new construction in wetlands, including draining, dredging, channelizing, filling, diking, impounding, and other related activities unless the agency finds that no practicable alternatives exist and all practical measures have been taken to minimize harm to wetlands. All of the Project alternatives carried forward for detailed analysis in this Draft EIR would result in the temporary loss of wetlands (riparian habitat). Each of the alternatives has been designed to minimize impacts on wetlands to the extent practicable.

3.5.3.2 State

California Fish and Wildlife / Code (Section 1602 Lake or Streambed Alteration Agreement)

The CDFW (previously California Department of Fish and Game) regulates work that will substantially affect resources associated with rivers, streams, and lakes in California, pursuant to CDFW Code Sections 1600 and 1607. Under CDFW Section 1602 Fish and Game Code, any state or local governmental agency or public utility must notify CDFW if it proposes to (1) divert, obstruct, or change the natural flow or bed, channel, or bank of any river, stream, or lake designated by the CDFW in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit; (2) use materials from the streambeds designated by CDFW; or (3) dispose or deposit debris, waste, or other materials containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake designated by CDFW. Any person, governmental agency, or public utility proposing any activity that will divert or obstruct the natural flow or change the bed, channel, or bank of any river, stream, or lake or proposing to use any material from a streambed must first notify CDFW of such proposed activity.

Under the CWA Water Quality Certification (Sections 404 and 401) the USACE and CCRWQCB consult with the CDFW. The SCVWD will submit an application for a Streambed Alteration Agreement permit for the Project to complete construction of the Proposed Project in the streambed and bank and to maintain the flood conveyance capacity to design specifications.

California Endangered Species Act (CESA)

The CESA of 1974, as amended, is part of the California Fish and Wildlife Code. As a guide to state agencies, Section 2053 states that, *"it is the policy of the state that state agencies should not approve projects as proposed which would jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives consistent with conserving the species or its habitat which would prevent jeopardy"*. CESA prohibits take of species listed or proposed for listing as endangered or threatened. Under Section 2081 of CESA, the CDFW may authorize take of state-listed species that is incidental to otherwise lawful activities. Fully Protected Species-California Fish and Game Code §§ 3511, 4700, 5050, and 5515.

In general, fully protected species may not be taken or possessed at any time, and no licenses or permits may be issued for their take, except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock. Many fully protected species have also been listed as threatened or endangered species under the more recent endangered species laws and regulations; however, because the original statutes have not been repealed or amended, the legal protection of "no take" is still generally applicable. However, the take of fully protected species "whose conservation and management" is provided for in an approved Natural Community Conservation Plan has recently been authorized (Senate Bill 618).

One fully protected species that may potentially occur within or adjacent to the Project area is the White-tailed kite (*Elanus leucurus*).

Protection of Nesting Birds – California Fish and Game Code §§ 3503.5 and 3513

Section 3503.5 states that it is "unlawful to take, possess, or destroy the nests or eggs of any such bird of prey (i.e., species in the order *falconiformes* and *strigiformes*) except as otherwise provided by this code or any other regulation adopted hereto." Section 3513 states that it is also unlawful to take or possess any migratory non-game bird (or part of such migratory non-game bird) as designated in the MBTA. Disturbance that causes nest abandonment and/or reproductive failure is considered a take by CDFW. This statute does not provide for the issuance of an incidental take permit.

3.5.3.3 Local

Santa Clara Valley Habitat Plan

The Santa Clara Valley Habitat Plan (Valley HP) provides a framework for promoting the protection and recovery of natural resources, including endangered species, while streamlining the permitting process for planned development, infrastructure, and maintenance activities. Portions of the Project fall within the boundaries of the Valley HP area. Mitigations outlined in this report are designed to be comparable to the SCVHP. The SCVWD is proposing to provide mitigation through the Valley HP as a compensatory measure for impacts to upland habitat for the protection of CTS.

> *Goal 4.* Maintain and enhance functional grassland communities that benefit covered species and promote native biodiversity.

> *Goal 5.* Maintain and enhance functional chaparral and northern coastal scrub communities to benefit covered species and promote native biodiversity.

> *Goal 6.* Maintain and enhance functional oak woodland communities to benefit covered species and promote native biodiversity.

> *Goal 7.* Maintain and enhance functional conifer woodland communities to benefit covered species and promote native biodiversity.

> *Goal 8.* Improve the quality of streams and the hydrologic and geomorphic processes that support them to maintain a functional aquatic and riparian community to benefit covered species and promote native biodiversity.

> *Goal 9.* Maintain a functional riparian forest and scrub community at a variety of successional stages and improve these communities to benefit covered species and promote native biodiversity.

> *Goal 10.* Maintain, enhance, and create or restore functional pond, freshwater perennial wetland, and seasonal wetland habitats that benefit covered species and promote native biodiversity.

> *Goal 11.* Improve the viability of existing Bay checkerspot butterfly populations, increase the number of populations, and expand the geographic distribution to ensure the long-term persistence of the species in the study area.

> *Goal 13.* Increase the size and sustainability of the breeding population and increase the distribution of breeding and wintering burrowing owls in the study area.

> *Goal 14.* Increase the ability of San Joaquin kit fox to move into and within the study area and provide habitat to increase the likelihood of breeding.

> *Goal 15.* Provide for the expansion of a breeding population of least Bell's vireos into the study area and increase reproductive success of least Bell's vireo.

> *Goal 16.* Conserve existing populations of the foothill yellow-legged frog population where possible and increase the overall population of FYLF in biologically appropriate locations in the study area.

> *Goal 17.* Conserve existing populations of CRLF, CTS, and WPT where possible, and increase the number of individuals and expand the overall distribution of populations of these species in biologically appropriate locations within the study area to maintain viable populations and contribute to the regional recovery of these species.

> *Goal 18.* Increase the population size of tricolored blackbird to enhance the viability of the species in the study area.

> *Goal 20.* Maintain viability, protect, and increase the size and number of populations of covered serpentine plant species, including Coyote ceanothus, Santa Clara Valley dudleya, Metcalf Canyon jewelflower, most beautiful jewelflower, smooth lessingia, fragrant fritillary, Mt. Hamilton thistle, Loma Prieta Hoita, and Tiburon paintbrush, within the study area.

> *Goal 21.* Protect and increase the size and number of Loma Prieta Hoita within the study area.

Santa Clara Valley Water District Flood Protection and Stream Stewardship Master Plan

The objective of the master plan is to guide the strategic investment of public funds in Santa Clara County over the next 25 years. Specifically, the master plan will serve as a tool for strategic long-term planning to achieve the SCVWD's goals and objectives. It will identify project and program priorities, establish guidance and project selection criteria, identify challenges and future funding considerations. Goals of this plan are natural flood protection for residents, businesses, and visitors; reduced potential for flood damage; healthy creek and bay ecosystems; clean, safe water in creeks and in the bay; and improved quality of life in Santa Clara County through trails, open space, and water resources management.

Santa Clara County General Plan

The Santa Clara County General Plan, 1995–2010, was adopted in 1994. Section 3 of this plan addresses rural unincorporated area issues focusing upon the roles that county government land use policies and regulations can play in achieving countywide urban development and resource management goals. Section 5 of this plan contains policies that have been jointly developed and adopted by the county and the cities of Morgan Hill and Gilroy. Two areas the plan policies focus on relating to wildlife concerns are maintaining the rural character of many unincorporated areas and how urban and rural futures are interrelated.

> *C-PR 10.* Recreation facilities and activities within regional parks and public open space lands should be located and designed to be compatible with the long term sustainability of each site's natural and cultural resources, with particular attention to the preservation of unique, rare, or endangered resources (including historic and archeological sites, plant and animal species, special geologic formations, etc.).

> *C-RC 27.* Habitat types and biodiversity within Santa Clara County and the region should be maintained and enhanced for their ecological, functional, aesthetic, and recreational importance.

> *C-RC 28.* The general approach to preserving and enhancing habitat and biodiversity countywide should include the following strategies:

> Improve current knowledge and awareness of habitats and natural areas.

> Protect the biological integrity of critical habitat areas.

> Encourage habitat restoration.

> Evaluate the effectiveness of environmental mitigations.

> *C-RC 31.* Areas of habitat richest in biodiversity and necessary for preserving threatened or endangered species should be formally designated to receive greatest priority for preservation, including baylands and riparian areas, serpentine areas, and other habitat types of major significance.

> *C-RC 33.* Linkages and corridors between habitat areas should be provided to allow for migration and otherwise compensate for the effects of habitat fragmentation.

> *C-RC 35.* The status of various threatened and endangered species and the effectiveness of strategies and programs to preserve biodiversity should be monitored and evaluated on ongoing bases.

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

> *R-RC 41 #2.* Fencing should not restrict access by wildlife to the stream environment.

> *R-RC 51.* Preservation of habitat linkages and migration corridors should be encouraged where needed to allow for species migration, prevent species isolation, and otherwise compensate for the effects of habitat fragmentation.

> *SC 16.10.* Riparian systems, streamsides, and floodways should be maintained in open space or related open space uses, such as wildlife habitat, recreation, or agriculture. Implementation of the Llagas and Uvas Creeks as major streamside park chains should be actively promoted.

City of Morgan Hill General Plan

The Morgan Hill General Plan envisions the city keeping its small-town character while offering new opportunities for businesses. The plan foresees preserving the scenic hillsides that surround the city. The overall combination of actions envisioned by this plan will help Morgan Hill grow and prosper without compromising its historic and enduring rural charm. The goals, policies, and actions contained in each element of the General Plan together frame a mechanism for achieving the community's vision for its future.

Open Space and Conservation

> *Policy 1a.* Work with the county, the Open Space Authority, appropriate conservancy organizations and land trusts, and property owners to preserve large open space areas, such as agricultural lands and outdoor recreation areas to conserve natural resource and retain the city's unique identity.

> *Policy 1e.* The South County includes a variety of open space areas, including the valley floor, stream corridors, lands around reservoirs, lands adjacent to scenic highways, foothills, inter-mountain valleys, and mountain areas beyond the foothills. Of these geographic areas, stream corridors, lands around the reservoirs, lands which provide greenbelts, and significant hillside features should receive highest priority for preservation as open space and future regional park location.

> *Policy 5b.* Maintain riparian systems, stream banks and floodways in open space or related open space uses, such as wildlife habitat, recreation, or agriculture.

> *Policy 6a.* Preserve all fish and wildlife habitats in their natural state whenever possible. Consider development impacts upon wildlife and utilize actions to mitigate those environmental impacts.

> *Policy 6b.* Minimize impacts upon wildlife when considering extending annexations, urban service areas, and other governmental actions that permit urban development of previously undeveloped property.

> *Policy 6e.* Identify and protect wildlife, rare and endangered plants and animals and heritage resources from loss and destruction.

City of Gilroy General Plan

The City of Gilroy's General Plan is a strategic tool for guiding the city's physical development and, in turn, its economic and social development. The General Plan helps guide the city's long-term development. It establishes the overall policy framework for development decision making and defines the desired location, character, and quality of future development, as well as the process by which development should proceed.

> *Policy 20.01a.* Natural resource and wildlife habitat areas, such as the Uvas Creek and Llagas Creek riparian communities; the heavily vegetated portions of the Santa Cruz Mountains; steep hillsides and significant hillside features (such as serpentinite barrens); and natural features of high community value (e.g., the stands of trees along Miller Avenue and cedar trees bordering Hecker Pass).

> *Policy 20.03.* Plant and Wildlife Habitats. Preserve important plant and wildlife habitats, including riparian communities, heavily vegetated hillside areas, unique hillside ecosystems (e.g., serpentinite barrens), creeks, and sensitive nesting sites. Loss of these habitats should be fully offset through creation of habitat of equal value, with the compensation rate for habitat creation determined by a qualified biologist.

> *Policy 20.04.* Rare and Endangered Species. Limit development in areas that support the California Tiger Salamander and other rare or endangered species. If development of these areas must occur, any loss of habitat should be fully compensated onsite. If off-site mitigation is necessary, it should occur within the Gilroy Planning Area whenever possible, and must be accompanied by plans and a monitoring program prepared by a qualified biologist.

> *Action 20.B.* Habitat and Urban Streams/Creek Protection. Require development along creeks to be set back from the entire floodway of the creek. Require development along Uvas Creek and the main branch of Llagas Creek to be set back either the entire area of the floodway or 250 feet on either side of the creek centerline, whichever is greater.

> Note: This action could also use a buffer identified as 50 to 100 feet from the top of the bank or edge of the riparian corridor, stretching outward, whichever is greater. Alternatively, setbacks for individual developments can be established through conditions developed during the regulatory permitting process with the trustee or resource agencies. Development of the buffer policy shall also create an exception or variance process for those situations where strict imposition of the standard would be reasonably infeasible.

Require development along tributary creeks to be set back from the entire designated floodway of the creek. Setbacks required should allow adequate room for trails and access on both sides of the creek. The Santa Clara Valley Water District shall be consulted regarding the determination of creek setbacks and buffers to ensure that they will accommodate the restoration of riparian habitat, trails, flood control access, and the protection of riparian habitat. Determination of actual layout and size of these creekside linear parks is recommended for further study, which could be addressed in the city's Parks and Recreation Master Plan.

Setback land could be dedicated to the city by the subdivider/developer or the city could purchase an easement over the setback area.

In addition, the city shall continue to work with Santa Clara County and the Santa Clara Valley Water District to enhance the Uvas Creek riparian corridor for fish and wildlife, including the removal of arundo, or giant reed, and other invasive exotics and replacement with native riparian species and enhancement efforts to help protect and recover native steelhead populations. Similar protections will be extended to cover Llagas Creek and the tributaries of both Uvas and Llagas Creeks.

> *Action 20.C: Habitat Protection Ordinance.* Comply with state and federal laws regarding habitat protection to identify and protect areas of biological value, including creeks, native grasslands, oak woodlands, and native riparian communities. The ordinance should include setback requirements, guidelines for impact avoidance and mitigation, standards for compensation of habitat loss (as established by a qualified biologist), and requirements for monitoring and habitat enhancement plans. The ordinance should also strive to eliminate exotic, invasive pest plants in new projects, where feasible and practical, and should promote the use of native plants and noninvasive exotics in landscape plans for new development. The city should also review and revise its Street Tree Ordinance and Landscape Policy to include specific lists and landscape guidelines emphasizing native species for use in special habitat areas (i.e., riparian corridors and hillside areas).

> Proposed projects, including city-initiated projects that may affect jurisdictional wetlands should be required to complete appropriate wetland delineation studies. Future development should avoid substantial adverse impacts on emergent wetland habitats. Unavoidable impacts to these habitats should be mitigated at a 3:1 ratio or as determined in consultation with the appropriate resource agencies. Any developments along Uvas and Llagas Creeks should include an appropriate setback or buffer from the top of the creek bank and planting of native riparian species within disturbed or non-native areas of this buffer. In addition, project-specific biological surveys should be undertaken along natural tributaries to Uvas and Llagas Creeks to determine if setbacks or buffers are warranted for projects along other natural creeks.

> *Action 20.D: Consultation on Fish and Wildlife Impacts.* Continue to notify and consult with the CDFW, the USACE, National Marine Fisheries Service (NMFS), and the USFWS for developments that may impact listed species that are known to or may potentially occur within the Gilroy Planning Area, including special-status plant and wildlife species regulated by CDFG. Standardized or general mitigation measures for specific special-status species can be accessed through the appropriate agencies. Prior to construction of a project in areas where special-status species may be impacted, the appropriate jurisdiction shall require preparation of a biological assessment to determine the presence or absence of any special-status plant or wildlife species. If special-status species are known to occur or have the potential to occur, appropriate resource agency contacts shall be made and mitigation developed in consultation with a qualified biologist and the resource agencies. If initial biological assessments for a proposed project determine the presence or potential presence of a state or federally listed species on the site, SCVWD shall consult with the CDFW or USFWS, respectively, for guidance on whether or not the project can avoid impacts to the species. The project shall avoid impacts through re-design wherever possible. If impacts cannot be avoided, the project shall incorporate mitigation to reduce impacts to the extent possible based on consultation with a qualified biologist and the resource agencies.

3.5.4 Impact Analysis

The Project would affect riparian habitat, adjacent grasslands, and would adversely affect some wildlife associated with those habitats. The potential impacts on state and federally listed species, as well as species of special concern, are described below. Measures to reduce and offset impacts to less-than-significant levels are included for each potentially significant impact.

3.5.4.1 Significance Criteria

Impacts on wildlife resources were analyzed based on existing biological conditions and resources present at each Project element site and a review of the current working design for the Proposed Project elements. For the purposes of this analysis, in accordance with Appendix G of the CEQA Guidelines, an impact was considered to be significant and to require mitigation if it would result in any of the following:

> A substantial adverse effect, either directly or indirectly, on any candidate, endangered, or threatened species listed under either the California or federal Endangered Species Acts;

> A substantial permanent adverse effect on sensitive habitat identified in local or regional plans, policies, or regulations or by the CDFW, USFWS, or NMFS;

> The substantial reduction in habitat for wildlife species (mandatory findings of significance) such that the viability of an existing population would be threatened or jeopardized due to the amount of habitat removed;

> Causing a wildlife population to drop below self-sustaining levels (mandatory finding of significance). This includes an action that isolates a population of a species from other populations with which it normally breeds;

> 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;

> A temporary but substantial sustained disturbance to wildlife resulting from construction activities, such as noise and vibration within 100 feet of sensitive wildlife habitat areas, or introduction of human activities into the area including night work, domestic animals, and nuisance species;

> Conflict with any local policy or ordinance protecting botanical or wildlife resources;

> Conflict with the provisions of an adopted HCP, Natural Community Conservation Plan, or other approved local, regional, or state HCP; and

> Contribute to a substantial reduction or elimination of wildlife species diversity or abundance.

Each impact discussion includes a summary table identifying the level of impact associated each Project activity, followed by text analysis.

3.5.4.2 Approach to Analysis

Impacts on wildlife biological resources were qualitatively evaluated using an approach that links Project activities to direct and indirect impacts to special-status wildlife species and their habitats. Effects on terrestrial biological resources can be direct and/or indirect. Direct impacts on biological resources result when biological resources or critical habitats are altered, destroyed, or removed during the course of Project implementation. Direct impacts also include the mortality of individual specimens during Project activities, such as construction work and maintenance activities (e.g., an individual crushed by an excavator, abandonment of a nest with chicks due to construction disturbance, crushing of buried eggs). Indirect impacts on biological resources may occur when Project-related activities that result in environmental changes, such as night lighting, can indirectly influence the survival, distribution, or abundance of native species (or increase the abundance of undesired non-native species). Indirect impacts do not cause the immediate mortality of an individual, but that may reduce suitable habitat or eliminate the species over time. Impacts may also be classified as beneficial impacts (i.e., changes to habitat that would benefit the species) and impacts may be short- or long term. Generally short-term impacts are not significant.

Potential to conflict with an adopted conservation plan (including but not limited to habitat conservation plans and natural community conservation plans) is usually also identified as a significant impact under CEQA. However, as a flood protection undertaking subject to stringent mitigation and BMP requirements, the Proposed Project would not result in any such conflicts, and this issue is not addressed further.

Impacts on wildlife biological resources are also classified as either impacts as a result of construction activities (Construction Impacts) or as impacts as a result of operation and maintenance activities (Operation/Maintenance Impacts). Direct impacts as a result of construction activities could include injury or mortality in the event that wildlife individuals were to enter the immediate construction area, staging area, or access routes to the Project area. Individual wildlife could be trampled or crushed beneath equipment or vehicles and dens/houses/burrows could be destroyed. Indirect construction impacts could occur if sediment, debris, or hazardous materials were to accidentally be released into the creeks, resulting in impacts on water quality, thus indirectly resulting in impacts to foraging and roosting habitat.

Operations and maintenance include activities to maintain design capacity of the channel for flood protection. Removal of sediment, debris, and vegetation would be required if these "obstructions" in the channel would reduce flow below the specified design capacity. Operations and maintenance activities would result in indirect impacts on adjacent wildlife habitat. Routine control and removal of vegetation from the channel (e.g., understory shrubs and tree foliage) would disrupt wildlife and damage this emergent habitat, including potential nesting or roosting habitat.

Under the Section 15065(a)(1) of the CEQA Guidelines, a lead agency shall find that a project may have a significant effect on the environment where there is substantial evidence that the project has the potential to (1) substantially reduce the habitat of a fish or wildlife species; (2) cause a fish or wildlife population to drop below self-sustaining levels; or (3) substantially reduce the number or restrict the range of an endangered, rare, or threatened species.

For the purposes of this Draft EIR, the definition of the word "substantial", as used in the significance criteria above, has three principal components, each of which contributes to some degree in the analysis of impacts on biological resources:

> Magnitude and duration of the impact (e.g., substantial/not substantial);

> Uniqueness of the affected resource (rarity); and

> Susceptibility of the affected resource to disturbance.

3.5.5 Impacts and Mitigation Measures

3.5.5.1 No Project Alternative

Under the No Project Alternative, the Project would not be built, and no new land purchases or construction activities would occur. Goals and objectives of the Project would not be met. Flooding in the residential areas of Morgan Hill and San Martin would continue. Storm runoff would continue through the West Little Llagas Creek, East Little Llagas Creek, and Llagas Creek channel reaches. The bypass channel in Reach 7A would not be constructed under the No Project Alternative, and channel bank erosion and widening would likely continue. Maintenance of the Upper Llagas Creek facilities would be conducted in accordance with the guidelines established in the SMP Update 2012–2022 (SCVWD 2011). SMP activities, including routine maintenance of stream channels involving ongoing sediment removal, vegetation management, bank protection, and associated minor activities, would continue to directly and indirectly impact wildlife and wildlife habitat. The SMP includes a series of resource protection policies and BMPs to reduce impacts to wildlife. The SMP also includes measures to nuisance and invasive species including vegetation management and giant reed (*Arundo* spp.) control.

WILD-1 NP—Potential for adverse effects on common and special-status nesting birds

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sediment maintenance	N/A	LTS
Vegetation management	N/A	LTS
Minor maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Under the No Project Alternative, construction activities and channel improvement would not occur. Therefore, no impacts to common and special-status nesting birds would occur.

Operations and Maintenance

Maintenance activities in the channel would continue to be carried out according to the SCVWD's SMP. The SMP established procedures for routine maintenance of stream channels involving ongoing sediment removal, vegetation management, bank protection, and associated minor activities, as described in Section 2.3.

Operation and maintenance activities may result in both direct and indirect impacts by disturbing nesting birds during vegetation removal (i.e., through the removal of suitable nesting habitat). Work activities resulting in excess noise or increased human activity may potentially disturb nesting birds and affect the behavior of the birds to the point of abandonment of eggs and or young. Nesting birds may avoid work sites and possibly become exposed to increased competition with other individuals of their species in the area to which they disperse and to increased levels of predation caused by unfamiliarity with the new area. Equipment used for minor maintenance activities could physically crush an individual bird hiding in the work area.

The SMP incorporated a wetland and riparian mitigation program, a series of resource protection policies, and BMPs to address and reduce environmental impacts from the aforementioned maintenance activities. The BMPs listed below would avoid or minimize impacts to nesting birds through identification and avoidance of occupied nesting habitat and use of biological monitors where suitable habitat could not be avoided. Maintenance of the Upper Llagas Creek facilities would be conducted in accordance with the guidelines established in the SMP.

Best Management Practices (BMPs)

The following summarizes the SCVWD SMP BMPs that avoid and minimize impacts on nesting birds from construction, operation, and management activities within the active channel:

> **GEN-4:** Minimize the Area of Disturbance—applicable to operation and maintenance phase of all elements.

> **GEN-6:** Minimize Impacts to Nesting Birds via Site Assessments and Avoidance Measures—applicable to operation and maintenance phase of all elements.

> **GEN-6.5:** Protection of Nesting Least Bell's Vireo—applicable to operation and maintenance phase of all elements.

> **GEN-7:** Protection of Burrowing Owls—applicable to operation and maintenance phase of all elements.

- **GEN-8:** Protection of Sensitive Fauna Species from Herbicide Use—applicable to operation and maintenance phase of all elements.
- **GEN-9:** Avoid Impacts to Special-Status Plant Species and Sensitive Natural Vegetation Communities—applicable to operation and maintenance phase of all elements.
- **GEN-19:** Work Site Housekeeping—applicable to operation and maintenance phase of all elements.
- **GEN-20:** Erosion and Sediment Control Measures—applicable to operation and maintenance phase of all elements.
- **GEN-21:** Staging and Stockpiling of Materials—applicable to operation and maintenance phase of all elements.
- **GEN-23:** Stream Access—applicable to operation and maintenance phase of all elements.
- **GEN-30:** Vehicle and Equipment Maintenance—applicable to operation and maintenance phase of all elements.
- **GEN-31:** Vehicle Cleaning—applicable to operation and maintenance phase of all elements.
- **GEN-32:** Vehicle and Equipment Fueling—applicable to operation and maintenance phase of all elements.
- **ANI-3:** Burrowing Owl, Bald eagle, and golden eagle buffer zone—applicable to operation and maintenance phase of all elements.
- **VEG-1:** Minimize Local Erosion In-channel Vegetation Removal—applicable to operation and maintenance phase of all elements.
- **REVEG-1:** Seeding—applicable to operation and maintenance phase of all elements.
- **REVEG-2:** Planting Material—applicable to operation and maintenance phase of all elements.

Implementation of BMPs would reduce impacts to less than significant.

WILD-2 NP—Potential for adverse effects on special-status reptiles and amphibians, including western pond turtle and California tiger salamander

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Vegetation management in Reaches 4, 5, 6, 7A, 7B, 8, and 14	N/A	LTS
Sediment maintenance in Reaches 4, 5, 6, 7A, 7B, 8, and 14	N/A	LTS
Minor channel maintenance activities in Reaches 4, 5, 6, 7A, 7B, 8, and 14	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Under the No Project Alternative, construction activities and channel improvement would not occur. No impacts to special-status reptiles or amphibians would occur.

Operations and Maintenance

Existing maintenance activities established by the SCVWD include a SMP. These routine maintenance activities that are currently being performed within the Project reaches would continue under the SMP. Management of vegetation and removal of channel obstructions (e.g., trash that collects in the channel) in and adjacent to creeks, is necessary to maintain the channel flood conveyance capacity. Most channels require some type of periodic vegetation control, and channel maintenance would occur on a regular basis. The operation and maintenance activities would result in trimming and possible removal of various amounts of riparian and streambed vegetation and the temporary disturbance of the stream channel. Routine sediment maintenance that is currently being performed within the Project reaches under the SMP would continue. Sediment removal is conducted in a couple of areas on regular intervals. Removal of sediment on Reach 14 to the confluence with Llagas Creek occurs approximately every 5 years while sediment in front of the Church Ponds inlet structure (Reach 6) occurs approximately every 4 years.

In-channel and upland operation and maintenance activities could potentially disturb Western pond turtle and CTS. The pond turtle uses riparian and instream vegetation for foraging, cover, and egg laying and CTS may be taking underground refuge in upland habitat adjacent to the channel. Removal of in-channel emergent vegetation and upland vegetation (e.g., grasses and shrubs) in Project reaches during operation and maintenance activities could result in indirect impacts to the species by removing suitable nesting or dispersal habitat. Vegetation removal activities may reduce in stream habitat structure, including basking sites, vegetation for cover from predators, and habitat that may support prey species. In-channel activities, including sediment removal and bank stabilization, may affect aquatic habitat used by aquatic reptiles and amphibians for foraging or dispersal, as well as lead to injury or mortality of individuals. For example, direct impact to individuals could occur if maintenance equipment or personnel crushes, injures, kills, buries, or desiccates an individual. Activities requiring dewatering also would result in temporary loss of aquatic habitat. The above impacts may occur from operation and maintenance activities, such as vegetation management activities, sediment removal, bank stabilization activities, and other minor maintenance activities.

The SMP includes provisions for minimizing impacts to aquatic reptiles and amphibians. Implementation of these SMP provisions would reduce impacts to water quality (e.g., erosion and sediment control), ensure that the best means to bypass flows through a work area would be used, minimize disturbance to the channel, and avoid direct mortality of aquatic animals. These measures would reduce this impact to less-than-significant level.

Best Management Practices (BMPs)

The following summarizes SCVWD SMP BMPs that avoid and minimize impacts on aquatic reptiles and amphibians, including WPT and CTS from construction, operation, and management activities within the active channel:

> **GEN-2:** Instream Herbicide Application Work Window—applicable to operation and maintenance phase of all elements.

> **GEN-4:** Minimize the Area of Disturbance—applicable to operation and maintenance phase of all elements.

> **GEN-8:** Protection of Sensitive Fauna Species from Herbicide Use—applicable to operation and maintenance phase of all elements.

> **GEN-9:** Avoid Impacts to Special-Status Plant Species and Sensitive Natural Vegetation Communities—applicable to operation and maintenance phase of all elements.

> **GEN-12:** Protection of Special-Status Amphibian and Reptile Species—applicable to operation and maintenance phase of all elements.

- **GEN-15:** Salvage Native Aquatic Vertebrates from Dewatered Channels—applicable to operation and maintenance phase of all elements.
- **GEN-16:** In-channel Minor Activities—applicable to operation and maintenance phase of all elements.
- **GEN-17:** Employee/Contractor Training—applicable to operation and maintenance phase of all elements.
- **GEN-19:** Work Site Housekeeping—applicable to operation and maintenance phase of all elements.
- **GEN-20:** Erosion and Sediment Control Measures—applicable to operation and maintenance phase of all elements.
- **GEN-21:** Staging and Stockpiling of Materials—applicable to operation and maintenance phase of all elements.
- **GEN-23:** Stream Access—applicable to operation and maintenance phase of all elements.
- **GEN-24:** On-site Hazardous Materials Management—applicable to operation and maintenance phase of all elements.
- **GEN-26:** Spill Prevention and Response—applicable to operation and maintenance phase of all elements.
- **GEN-30:** Vehicle and Equipment Maintenance—applicable to operation and maintenance phase of all elements.
- **GEN-31:** Vehicle Cleaning—applicable to operation and maintenance phase of all elements.
- **GEN-32:** Vehicle and Equipment Fueling—applicable to operation and maintenance phase of all elements.
- **GEN-33:** Dewatering for Non-Tidal Sites—applicable to operation and maintenance phase of all elements.
- **SED-2:** Prevent Scour Downstream of Sediment Removal—applicable to operation and maintenance phase of all elements.
- **SED-3:** Restore Channel Features—applicable to operation and maintenance phase of all elements.
- **VEG-1:** Minimize Local Erosion In-channel Vegetation Removal—applicable to operation and maintenance phase of all elements.
- **VEG-3:** Use Appropriate Equipment for Instream Removal—applicable to operation and maintenance phase of all elements.
- **BANK-1:** Bank Stabilization Design to Prevent Erosion Downstream—applicable to operation and maintenance phase of all elements.
- **BANK-2:** Concrete Use Near Waterways—applicable to operation and maintenance phase of all elements.
- **BANK-3:** Bank Stabilization Post-Construction Maintenance—applicable to operation and maintenance phase of all elements.
- **REVEG-1:** Seeding—applicable to operation and maintenance phase of all elements.
- **REVEG-2:** Planting Material—applicable to operation and maintenance phase of all elements.
- **ANI-4:** Animal Control in Sensitive Amphibian Habitat—applicable to operation and maintenance phase of all elements.

Implementation of BMPs would reduce impacts to less than significant.

WILD-3 NP—Potential for adverse effects on common and special-status bats

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Vegetation management	N/A	LTS
Structural Element Maintenance	N/A	LTS
Minor maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Under the No Project Alternative, construction activities and channel improvement would not occur. Therefore, no impacts to common and special-status bats would occur.

Operations and Maintenance

Operation and maintenance activities that may impact roosting bats, such as pallid and hoary bat, would include vegetation maintenance, structural element maintenance (e.g., maintenance of culverts bridge structures and buildings), and possibly some minor maintenance activities. Removal of smaller trees and trees with dense foliage would also reduce roosting habitat and result in both direct and indirect impacts to roosting bats. Generally operation and maintenance activities result in limited trimming and possible removal of limited amounts of woody riparian vegetation and does not include removing large, mature trees that could potentially disturb roosting bats. Direct impacts to roosting bats would occur when individual bats are physically injured or killed during removal of riparian vegetation, subjected to stress from being disturbed during hibernation, or face increased risk of predation as bats leave preferred habitat or other roosting sites. Structural element maintenance would be performed on an as needed basis. Some bat species, such as Yuma myotis and pallid bat may roost and breed on, in, or under various structural elements. Maintenance of structural elements (e.g., culverts and bridges) could disturb nursing bats and result in abandonment of the colony and pups. Minor maintenance activities that reduce prey habitat (e.g., stream channel or grassland) may result in indirect impacts on bats by reducing suitable foraging habitat.

The SMP includes specific resource protection policies and BMPs to address and reduce environmental impacts from the aforementioned maintenance activities, such as provisions for revegetating channel banks and benches, identification and avoidance of occupied roosts, and implementation of no-work buffers around active maternal colonies. Implementation of these measures would reduce impacts to roosting bats to a less-than-significant level.

Best Management Practices (BMPs)

The following summarizes SCVWD SMP BMPs that avoid and minimize impacts on special-status bats from construction, operation, and management activities within the active channel:

> **GEN-4:** Minimize the Area of Disturbance—applicable to operation and maintenance phase of all elements.

> **GEN-8:** Protection of Sensitive Fauna Species from Herbicide Use—applicable to operation and maintenance phase of all elements.

> **GEN-9:** Avoid Impacts to Special-Status Plant Species and Sensitive Natural Vegetation Communities—applicable to operation and maintenance phase of all elements.

> **GEN-13:** Protection of Bat Colonies—applicable to operation and maintenance phase of all elements.

- **GEN-16:** In-channel Minor Activities—applicable to operation and maintenance phase of all elements.
- **GEN-17:** Employee/Contractor Training—applicable to operation and maintenance phase of all elements.
- **GEN-19:** Work Site Housekeeping—applicable to operation and maintenance phase of all elements.
- **GEN-20:** Erosion and Sediment Control Measures—applicable to operation and maintenance phase of all elements.
- **GEN-21:** Staging and Stockpiling of Materials—applicable to operation and maintenance phase of all elements.
- **GEN-23:** Stream Access—applicable to operation and maintenance phase of all elements.
- **GEN-24:** On-site Hazardous Materials Management—applicable to operation and maintenance phase of all elements.
- **GEN-26:** Spill Prevention and Response—applicable to operation and maintenance phase of all elements.
- **GEN-30:** Vehicle and Equipment Maintenance—applicable to operation and maintenance phase of all elements.
- **GEN-31:** Vehicle Cleaning—applicable to operation and maintenance phase of all elements.
- **GEN-32:** Vehicle and Equipment Fueling—applicable to operation and maintenance phase of all elements.
- **SED-3:** Restore Channel Features—applicable to operation and maintenance phase of all elements.
- **VEG-1:** Minimize Local Erosion In-channel Vegetation Removal—applicable to operation and maintenance phase of all elements.
- **REVEG-1:** Seeding—applicable to operation and maintenance phase of all elements.
- **REVEG-2:** Planting Material—applicable to operation and maintenance phase of all elements.

Implementation of BMPs would reduce impacts to less than significant.

WILD-4 NP—Potential for adverse effects on San Francisco dusky-footed woodrats

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sediment management	N/A	LTS
Minor maintenance	N/A	LTS
Vegetation management	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Under the No Project Alternative, construction activities and channel improvement would not occur. Therefore no impacts to San Francisco dusky-footed wood rat would occur.

Operations and Maintenance

Future operation and maintenance activities, such as sediment management, minor maintenance work, and vegetation management may result in direct impacts to woodrat through injury or mortality from equipment use (e.g., weed whackers, pruners, and tree trimmers), vehicle traffic and maintenance crew foot traffic, and grading of stream banks. Trimming and possible removal of limited amounts of understory woody riparian vegetation would reduce suitable denning habitat. Alteration of riparian scrub near the channel would result in the abandonment of dens and increased predation risk as the rats move to new habitation areas. Indirect affects as a result of maintenance activities could occur when individuals lose habitat and move to areas already occupied by other individuals, resulting in increased competition for food and denning resources. Populations of woodrats may be fragmented if large patches of suitable habitat are cleared and rodents are not able to disperse from one suitable habitat patch to another.

The SMP includes specific provisions for the protection of woodrats including, re-vegetating channel banks and benches, species identification and avoidance of occupied nests where possible, and implementation of nest relocation measures. Implementation of these measures would reduce impact to San Francisco dusky-footed woodrat to a less-than-significant level.

Best Management Practices (BMPs)

The following summarizes SCVWD SMP BMPs that avoid and minimize impacts San Francisco dusky-footed woodrat from construction, operation, and management activities within the active channel:

> **GEN-4:** Minimize the Area of Disturbance—applicable to operation and maintenance phase of all elements.

> **GEN-8:** Protection of Sensitive Fauna Species from Herbicide Use—applicable to operation and maintenance phase of all elements.

> **GEN-9:** Avoid Impacts to Special-Status Plant Species and Sensitive Natural Vegetation Communities—applicable to operation and maintenance phase of all elements.

> **GEN-14:** Protection of San Francisco Dusky-footed Woodrat—applicable to operation and maintenance phase of all elements.

> **GEN-16:** In-channel Minor Activities—applicable to operation and maintenance phase of all elements.

> **GEN-17:** Employee/Contractor Training—applicable to operation and maintenance phase of all elements.

> **GEN-19:** Work Site Housekeeping—applicable to operation and maintenance phase of all elements.

> **GEN-20:** Erosion and Sediment Control Measures—applicable to operation and maintenance phase of all elements.

> **GEN-21:** Staging and Stockpiling of Materials—applicable to operation and maintenance phase of all elements.

> **GEN-23:** Stream Access—applicable to operation and maintenance phase of all elements.

> **GEN-24:** On-site Hazardous Materials Management—applicable to operation and maintenance phase of all elements.

> **GEN-26:** Spill Prevention and Response—applicable to operation and maintenance phase of all elements.

> **GEN-30:** Vehicle and Equipment Maintenance—applicable to operation and maintenance phase of all elements.

> **GEN-31:** Vehicle Cleaning—applicable to operation and maintenance phase of all elements.

- **GEN-32:** Vehicle and Equipment Fueling—applicable to operation and maintenance phase of all elements.
- **ANI-1:** Avoid Redistribution of Rodenticides—applicable to operation and maintenance phase of all elements.
- **SED-3:** Restore Channel Features—applicable to operation and maintenance phase of all elements.
- **VEG-1:** Minimize Local Erosion In-channel Vegetation Removal—applicable to operation and maintenance phase of all elements.
- **REVEG-1:** Seeding—applicable to operation and maintenance phase of all elements.
- **REVEG-2:** Planting Material—applicable to operation and maintenance phase of all elements.

Implementation of BMPs would reduce impacts to less than significant.

WILD-5 NP—Potential for adverse effects on special-status invertebrates (i.e., Opler's longhorn moth and Bay checkerspot butterfly)

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Vegetation maintenance	N/A	LTS
Minor maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Under the No Project Alternative, construction activities and channel improvement would not occur. Therefore, no impacts to special-status invertebrates would occur.

Operations and Maintenance

Future operation and maintenance activities could result in impacts to serpentine-associated invertebrate species including Opler's longhorn moth and Bay checkerspot butterfly in areas where the creek is adjacent to serpentine habitat. These invertebrate species are more likely to occur in the grassland in the Project area rather than in the creek itself; thus sediment management activities will not affect these special-status invertebrates and other vegetation and minor maintenance activities above the water elevation are unlikely to cause impacts. Vegetation maintenance and minor maintenance activities may result in both direct and indirect impacts to special-status invertebrates if the activities kills or injures an individual invertebrate and removes, crush, or destroy host and nectar providing plants. Upland vegetation maintenance along the edge of the creek and along access roads would reduce suitable habitat for the species and decrease food source availability. Maintenance crew foot traffic and/or equipment used for maintenance activities could also crush individual host plants, individual invertebrates, and crush larvae.

The SMP includes specific provisions for addressing impacts of activities on serpentine-dependent special-status invertebrate species, including pre-Project planning to minimize ground disturbance, re-vegetating channel banks and benches, and avoidance of serpentine habitat. Implementation of these measures would reduce impacts to special-status invertebrates to a less-than-significant level.

Best Management Practices (BMPs)

The following summarizes SCVWD SMP BMPs that avoid and minimize impacts on special-status invertebrates, including Bay checkerspot butterfly and Opler's longhorn moth from construction, operation, and management activities within the active channel:

- **GEN-4:** Minimize the Area of Disturbance—applicable to operation and maintenance phase of all elements.
- **GEN-8:** Protection of Sensitive Fauna Species from Herbicide Use—applicable to operation and maintenance phase of all elements.
- **GEN-9:** Avoid Impacts to Special-Status Plant Species and Sensitive Natural Vegetation Communities—applicable to operation and maintenance phase of all elements.
- **GEN-10:** Avoid Impacts to Bay Checkerspot Butterfly and Associated Critical Habitat—applicable to operation and maintenance phase of all elements.
- **GEN-16:** In-channel Minor Activities—applicable to operation and maintenance phase of all elements.
- **GEN-17:** Employee/Contractor Training—applicable to operation and maintenance phase of all elements.
- **GEN-19:** Work Site Housekeeping—applicable to operation and maintenance phase of all elements.
- **GEN-20:** Erosion and Sediment Control Measures—applicable to operation and maintenance phase of all elements.
- **GEN-21:** Staging and Stockpiling of Materials—applicable to operation and maintenance phase of all elements.
- **GEN-23:** Stream Access—applicable to operation and maintenance phase of all elements.
- **GEN-24:** On-site Hazardous Materials Management—applicable to operation and maintenance phase of all elements.
- **GEN-26:** Spill Prevention and Response—applicable to operation and maintenance phase of all elements.
- **GEN-30:** Vehicle and Equipment Maintenance—applicable to operation and maintenance phase of all elements.
- **GEN-31:** Vehicle Cleaning—applicable to operation and maintenance phase of all elements.
- **GEN-32:** Vehicle and Equipment Fueling—applicable to operation and maintenance phase of all elements.
- **VEG-1:** Minimize Local Erosion In-channel Vegetation Removal—applicable to operation and maintenance phase of all elements.
- **BANK-1:** Bank Stabilization Design to Prevent Erosion Downstream—applicable to operation and maintenance phase of all elements.
- **REVEG-1:** Seeding—applicable to operation and maintenance phase of all elements.
- **REVEG-2:** Planting Material—applicable to operation and maintenance phase of all elements.

Implementation of BMPs would reduce impacts to less than significant.

WILD-6 NP—Potential for adverse effects on migratory mammals, including San Joaquin kit fox and American badger

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Vegetation maintenance	N/A	LTS
Sediment removal	N/A	LTS
Minor maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Under the No Project Alternative, construction activities and channel improvement would not occur. Therefore, no impacts to migratory mammals, including San Joaquin kit fox and American badger, would occur.

Operations and Maintenance

Potential habitat occurs within the Project area that could provide suitable migratory corridors for common and special-status mammalian species, such as coyote, deer, bobcat, San Joaquin kit fox, and American badger. These species could use habitat within the Project area and habitat adjacent to the Project area for foraging, water, and as refugia during migration or dispersal to more suitable foraging and or breeding areas. Although the San Joaquin kit fox and American badger would be expected to occur infrequently and at very low number of individuals, the species could move through the Project area during dispersal, between areas of known breeding habitat and to areas outside of the Project area.

Vegetation maintenance, sediment removal, and or minor maintenance activities could result in: disturbance from maintenance personnel, noise, and maintenance equipment; accidental trapping and killing of individuals if equipment (e.g., trucks, excavators, etc.) compacts or fills burrows. Vegetation maintenance of upland habitat and in-channel sediment and vegetation removal may reduce and remove suitable prey habitat and/or decrease availability of prey species (e.g., frogs, fish, invertebrates, rodents, etc.), thus impacting larger special-status mammal species foraging opportunities. Special-status migratory mammalian species may be forced to move from suitable, temporary refuge habitat to less suitable habitat due to removal of understory vegetation and or emergent vegetation in or around the channel (e.g., deer are known to seek shelter in dense cattails during low channel flows and/or around sand bars that form in the channel as a result of sediment accumulation).

The SMP incorporated a series of resource protection policies and BMPs to address and reduce environmental impacts from the aforementioned maintenance activities. These BMPs would avoid or minimize impacts to migratory mammals, including San Joaquin kit fox and American badger.

Best Management Practices (BMPs)

The following summarizes SCVWD SMP BMPs that avoid and minimize impacts on migratory mammals, including San Joaquin kit fox and American badger from construction, operation, and management activities within the active channel.

> **GEN-4:** Minimize the Area of Disturbance—applicable to operation and maintenance phase of all elements.

> **GEN-8:** Protection of Sensitive Fauna Species from Herbicide Use—applicable to operation and maintenance phase of all elements.

- **GEN-9:** Avoid Impacts to Special-Status Plant Species and Sensitive Natural Vegetation Communities—applicable to operation and maintenance phase of all elements.
- **GEN-15.5:** Avoidance of Impacts on the San Joaquin Kit Fox—applicable to operation and maintenance phase of all elements.
- **GEN-16:** In-channel Minor Activities—applicable to operation and maintenance phase of all elements.
- **GEN-17:** Employee/Contractor Training—applicable to operation and maintenance phase of all elements.
- **GEN-19:** Work Site Housekeeping—applicable to operation and maintenance phase of all elements.
- **GEN-20:** Erosion and Sediment Control Measures—applicable to operation and maintenance phase of all elements.
- **GEN-21:** Staging and Stockpiling of Materials—applicable to operation and maintenance phase of all elements.
- **GEN-23:** Stream Access—applicable to operation and maintenance phase of all elements.
- **GEN-24:** On-site Hazardous Materials Management—applicable to operation and maintenance phase of all elements.
- **GEN-26:** Spill Prevention and Response—applicable to operation and maintenance phase of all elements.
- **GEN-30:** Vehicle and Equipment Maintenance—applicable to operation and maintenance phase of all elements.
- **GEN-31:** Vehicle Cleaning—applicable to operation and maintenance phase of all elements.
- **GEN-32:** Vehicle and Equipment Fueling—applicable to operation and maintenance phase of all elements.
- **SED-3:** Restore Channel Features—applicable to operation and maintenance phase of all elements.
- **BANK-3:** Bank Stabilization Post-Construction Maintenance—applicable to operation and maintenance phase of all elements.
- **REVEG-1:** Seeding—applicable to operation and maintenance phase of all elements.
- **REVEG-2:** Planting Material—applicable to operation and maintenance phase of all elements.
- **ANI-1:** Avoid Redistribution of Rodenticides—applicable to operation and maintenance phase of all elements.

Implementation of BMPs would reduce impacts to less than significant.

3.5.5.2 Tunnel Alternative (Preferred Alternative)

The Preferred Alternative includes channel improvements (i.e., widening and deepening), excavation of diversion channels, and construction of permanent maintenance roads, reinforced concrete boxes, and grade control structures in Reaches 4, 5, 6, 7A, 7B, 8, and 14. In Reach 8 an underground concrete tunnel would be constructed under Nob Hill to convey high flows. A 250-foot-long sediment detention basin and inlet weir would be constructed between Wright Avenue and Hillwood Lane to capture sediments from traveling to downstream reaches. Culverts would be constructed leading downstream from the sediment basin to the tunnel entrance along Hale Avenue and from the tunnel outlet to downstream of Ciolino Avenue. Under the Preferred Alternative culverts in Reach 6, drainages in Reach 14, and a new channel in Reach 7A would also be constructed. Two bridges in Reach 7A would

be exhumed and culverts in Reach 7B would be modified. The Lake Silveira mitigation element would consist of constructed inlet and outlet structures to split flow from Llagas Creek into the historic Llagas Creek channel and Lake Silveira, as well as restoration activities to increase riparian and wetland habitat (see Section 2.4.6 for further details). Construction activity associated with the Preferred Alternative would affect wildlife resources within the Project area as compared to the No Project Alternative. Under the Preferred Alternative, operation and maintenance activities (i.e., vegetation management, sediment removal, and maintenance of other features, such as roads, culverts, and grade control structures) would be similar to the No Project Alternative with the added maintenance of new constructed features, such as the tunnel and grade control structures. Operation and maintenance activities would be implemented as described in Section 2.4.5.

WILD-1 T—Potential for adverse effects on common and special-status nesting birds

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Vegetation removal and maintenance management	LTSM	LTS
Upland grading (access to maintenance roads/pedestrian paths)	LTSM	LTS
Channel modification (excavation and grading)	LTSM	N/A
Construction, operation, and maintenance of maintenance roads	LTSM	LTS
Cut-off of West Little Llagas Creek	N/A	LTS
Sediment management	N/A	LTS
Construction of sediment detention basin and inlet weir – Reach 8	LTSM	LTS
Construction of tunnel	LTS	N/A
Construction and maintenance of the Lake Silveira element	LTSM	B
Minor maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Without the implementation of BMPs (listed below) construction activities may result in impacts to nesting, foraging, or breeding habitat, and or to individual nesting bird. Removal of riparian vegetation (e.g., native shrub and hardwood trees), in-channel emergent vegetation, and upland vegetation in Project area reaches during channel construction could result in potential impacts to nesting special-status birds, migratory birds and non-special-status birds protected by the MBTA (including raptors, wading birds, and other passerines) if foraging and nesting activities occur in or adjacent to the construction site. Removal of riparian vegetation would decrease or remove suitable foraging habitat, roosting, and nesting habitat for tree and shrub nesting birds. Upland grading, for the construction of maintenance roads, would remove riparian scrub vegetation that would provide habitat for a variety of nesting birds. Upland grading and excavation of a channel through agricultural and open habitat could result in potential impacts to ground nesting birds, such as western burrowing owl, western Meadowlark, and killdeer. Potential disturbance to breeding individuals and/or destruction of burrows, nests, and scrapes could occur during the nesting season if ground nests are located in or adjacent to the construction zone.

A sediment detention basin and inlet weir would be constructed in the channel through a ruderal field in Reach 8. This new feature would also have a maintenance/access road installed at the top one bank of the channel. Direct impacts would occur if construction equipment and personnel kill, injure, or crush ground nesting birds, and/or modify habitat suitability for nesting birds (i.e., through the removal of suitable ground nesting habitat to construct the detention basin). Construction of permanent maintenance roads on channel banks could result in impacts to nesting birds that utilize the channel banks for foraging and or nesting opportunities, as well as burrow destruction and direct loss of habitat or individual through disturbance of grassland areas that support small mammal habitat.

Habitat enhancement of Lake Silveira and rewatering the historic Llagas Creek channel would require some vegetation removal in order to construct the inlet and outlet structures and to provide access for equipment and personnel. Habitat loss for nesting birds would be temporary and the majority of vegetation removed would be invasive blackberry. These areas would be restored with native riparian woodland plant species, further benefiting nesting birds. The restoration of the lake would increase the amount of emergent marsh habitat and would attract bird species not currently supported at the site (H.T. Harvey & Associates 2013g).

The noise associated with construction of the tunnel may disturb birds nesting within the vicinity of the construction area. However, impacts are likely to be less than significant, as the noise disruption would be temporary and the birds would be able to move to adjacent suitable habitat outside of the noise range.

Excavation and grading of a channel, particularly through agricultural l (predominately through Reach 7A) could impact ground nesting species, such as western burrowing owl and western meadowlark, and foraging habitat for diurnal raptors, such as red-tailed hawk and American kestral. These species are associated with annual and perennial grassland and commonly observed in open, agricultural areas with ground squirrel activity. Excavation through this habitat would result in compaction of burrows and direct mortality, decreasing suitable habitat for prey species. However, the Project would not impact nesting habitat for burrowing owls due to the absence of breeding owls. The Project has limited potential to impact foraging habitat for owls breeding outside the Project area; and, although, there is some potential to impact roosting and foraging habitat for wintering owls, these affected areas represent a small portion of the regionally available foraging habitat (H.T. Harvey & Associates 2013f).

Operations and Maintenance

Operation and maintenance activities in the channel would be carried out as described in Section 2.4.5, and could potentially result in temporary impacts to nesting birds. Minor maintenance activities would be performed to repair and maintain channel capacity and SCVWD facility functions and could occur anywhere within the Project area. Pruning or removal of riparian vegetation could potentially disturb a variety of common and special-status nesting birds that rely on this habitat type for foraging and nesting activities. Maintenance activities that disturb nesting birds have the potential to result in nesting birds abandoning their nests, resulting in failure of nesting attempts or loss of chicks. Abandonment of a nest resulting in the failure of eggs or death of chicks would be a significant impact. Removal of in-stream vegetation associated with sediment removal activities may result in the temporary loss of breeding and/or foraging habitat. Sediment management would be reduced in downstream Project reaches with the newly constructed detention basin capturing sediments traveling from upstream.

Re-grading of existing access roads and pedestrian paths could result in the destruction of ground nesting bird scrapes and/or mortality of adults and chicks in ground nests (e.g., common dove and kill deer commonly occupy ground nests in gravel and disturbed areas). Minor maintenance activities could result in a reduction in the quality of breeding or foraging habitat because of the accidental introduction of non-native vegetation (i.e., mud on the underside of construction crew boots may contain seeds of invasive weeds and grasses). Minor vegetation removal (i.e., trimming of shrubs and mowing of annual grasses) would decrease suitable habitat for invertebrate prey species and small mammal cover that are important food sources for nesting birds, including raptors. Loss of small mammals, from small mammal

controls (either through rodenticide or trapping), would reduce the availability of burrows and prey for western burrowing owl.

The cut-off section of West Little Llagas Creek would have reduced flows except for local runoff (due to construction of a bypass channel in Reach 7A) would indirectly impact nesting birds (such as great egret, great blue heron, or mallards) by decreasing foraging habitat; intermittent flows at West Little Llagas Creek may support small prey species (e.g., amphibians, small mammals, fish, and invertebrates, etc.) that wading birds utilize for forage. Loss of flows to this creek could decrease suitable habitat for the prey species, thus indirectly decreasing foraging habitat for nesting birds. However suitable nesting habitat for common and special-status nesting birds is absent from the site and from adjacent areas along West Little Llagas Creek (H.T. Harvey & Associates 2013g).

Best Management Practices (BMPs)

SCVWD project BMPs would minimize impacts on nesting birds. BMPs BI-8 and BI-9 includes provisions to conduct preconstruction surveys by a qualified biologist to determine the potential presence of nesting birds prior to start of construction and the installation of nesting exclusion devices to prevent potential establishment of nest in work areas. BMP BI-16 includes provisions to secure all construction equipment and prevent wildlife from becoming inadvertently trapped or establishing nesting inside construction material. BMPs that would minimize the direct and indirect construction impacts on nesting birds include the following:

> **BI-4:** Minimize Access Impacts—applicable to Maintenance and Operations phase of all elements.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-8:** Avoid Impacts to Nesting Migratory Birds—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-9:** Avoid Impacts to Nesting Migratory Birds from Pending Construction—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-10:** Minimize Impacts to Vegetation from Clearing and Trimming—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-11**: Minimize Root Impacts to Woody Vegetation—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-12:** Avoid Special Status Plant Species and Special Status Natural Communities- applicable to the Maintenance and Operations of all elements.

> **BI-13:** Plant Local Ecotypes of Native Plants and Choose Appropriate Erosion-Control Seed Mixes—applicable to the Maintenance and Operations phase of all elements.

> **BI-16:** Avoid Animal Entry and Entrapment– applicable to the construction, operation, and maintenance phase of all elements.

> **BI-17:** Minimize Predator-Attraction Effects on Wildlife- applicable to the Maintenance and Operations phase of all elements.

> **HM-9:** Clean Vehicles and Equipment—applicable to the construction, operation, and maintenance phase of all elements.

> **HM-10:** Assure Proper Vehicle and Equipment Fueling—applicable to the construction, operation, and maintenance phase of all elements.

> **WQ-14:** Use Temporary Seeding for Erosion Control as Appropriate—applicable to the construction, operation, and maintenance phase of all elements.

> **WQ-18:** Maintain Clean Conditions at Work Sites—applicable to the construction, operation, and maintenance phase of all elements.

Implementing the above SCVWD BMPs would reduce impacts to common and special-status nesting birds by preventing their injury or mortality. However, impacts to nesting bird habitat would occur if loss of occupied breeding habitat could not be avoided. Loss or removal of breeding habitat from Project activities may result in a substantial impact to regional populations of some nesting birds, including in which case the impact would be considered significant. When impacts to occupied habitat cannot be avoided and must be impacted as a result of the Project activities, the following mitigation measures would be implemented to reduce the construction impacts to nesting birds to a less-than-significant level.

Mitigation Measures

Mitigation Measure WILD-1a T: Vegetation Removal during Avian Non-breeding Season. To the extent possible, vegetation will be removed during the avian non-breeding season between September 1 and February 1. If vegetation removal occurs outside of this timeframe, a general preconstruction survey for nesting bird will be conducted no more than 14 days before ground disturbance and no more than 7 days before vegetation removal to avoid disturbance to active nests, eggs, and/or young. If an active nest is discovered within the work area, a "no disturbance" buffer zone will be established around the nest until a qualified biologist has determined that all young have fledged and are independent of parental care; the buffer zone size would depend on the species, location, and placement of nest, in consultation with CDFW. The removal of vegetation will be the minimal amount necessary to achieve Project goals.

Implementation of the specified BMPs and Mitigation Measure WILD-1a T would reduce the construction related impacts to common and special status nesting birds to less than significant.

WILD-2 T—Potential for adverse effects on special-status reptiles and amphibians including western pond turtle and California tiger salamander

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Vegetation removal and maintenance	LTSM	LTS
Upland grading (access to maintenance roads/pedestrian paths)	LTSM	LTS
Channel modifications (excavation and grading)	LSTM	N/A
Construction, operation, and maintenance of maintenance roads	LTSM	LTS
Construction and maintenance of the Lake Silveira element	LTSM	B
Sediment management	N/A	LTS
Night work	LTSM	N/A
Minor maintenance activities	N/A	LTS
Construction, operation, and maintenance of sediment detention basin and inlet weir – Reach 8	LTSM	LTS
Construction and maintenance of culverts	LTSM	LTS
Construction of tunnel	LTSM	N/A

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Without the implementation of BMPs (listed below) upland grading and excavation through annual grassland and open habitat adjacent to the channel would result in potential impacts to special-status amphibian and reptile species, such as WPT and CTS. These species use upland habitat for estivation and egg laying and construction activities, such as upland grading, road improvements/grading, and a variety of excavation work near the channel bank would potentially adversely affect these species. Vegetation removal, including removal of in-channel emergent vegetation and adjacent upland vegetation in Project area reaches during channel construction could result in potential impacts to special-status amphibians and reptiles through direct mortality from construction equipment and indirect effects from modifying suitable breeding and/or estivating habitat. Any construction activities requiring night lighting could cause disorientation and change natural behaviors of special-status amphibians and reptiles resulting in vulnerability to predators or traffic, reduced foraging, or mating. Channel modifications activities, including installation of instream flow structures, and installation of new structures (i.e., culverts, grade control, or instream flow structures, etc.) could result in direct mortality to individuals as well as egg masses and juvenile inhabiting the channel, open water, or vegetated habitat adjacent to where structures are proposed for installation.

In-stream work could alter water quality through accidental discharge of hazardous material or discharging sediment downstream and impair foraging and breeding habitat for aquatic reptiles and amphibians. Special-status amphibians and reptiles habitat would be lost if the aforementioned structures are placed in occupied breeding, foraging, or estivating habitat for the species. Construction along the channel would remove riparian vegetation that could provide refuge and shelter from predators; removal of this vegetation may increase predation risks for amphibians by decreasing suitable habitat that provided cover and possibly making the modified habitat attractive to predatory animals (e.g., cats, coyotes, raptors, and raccoons).

Direct mortality or injury to the amphibian and reptile individuals would occur if any individual crossing access roads into the Project area, are crushed by construction vehicles, or become entrapped in construction trenches associated with channel excavation. Impacts that result in the loss of special-status reptiles and amphibians would be significant. Indirect impacts could occur if necessary foraging and nesting habitat is altered or destroyed, if water quality is impaired as a result of construction activities, or through the introduction of predators.

Restoration of the historic Llagas Creek channel adjacent to Lake Silveira would require some vegetation removal in order to construct the inlet and outlet structures and to provide access for equipment and personnel. Upland habitat loss for special-status amphibians and reptiles would be temporary and the majority of vegetation removed would be invasive blackberry. Portions of the lake would be filled in order to create a complex of wetland “islands”. Western pond turtles present at these sites would be impacted during filling by direct injury or mortality. These areas would be restored with native riparian woodland plant species, benefitting these species. Large woody debris would be installed to increase basking habitat for WPT (H.T. Harvey & Associates 2013a).The restoration of the lake would increase the amount of emergent wetland habitat. This would increase the amount of breeding habitat for all frogs, including bullfrog (*Rana catesbeiana*) that could predate on native special-status amphibians and reptiles. Although the restoration effort would possibly increase bullfrog populations, the habitat would be improved for native frogs.

Construction of a sediment detention basin and inlet weir along the channel in Reach 8 could cause direct and/or indirect impacts to special-status amphibians and reptiles. Excavation of the basin in ruderal, open habitat could also result in potential impacts to special-status reptiles and amphibians when using upland habitat for estivation. Direct mortality would occur when occupied burrows are crushed by equipment and/or crews. Indirect impacts could occur through alteration of habitat suitability. Construction of a sediment detention basin could directly harm WPT that maybe inhabiting the channel in Reach 8. Indirect effects would also occur through alteration of the channels habitat suitability (e.g., decrease emergent

wetland vegetation or basking sites). Similar direct impacts would occur as a result of construction of culverts.

Direct mortality or injury to special-status amphibians and reptiles would occur if any individual crossing access roads into the Project area, are crushed by construction vehicles, or become entrapped in construction trenches associated with excavation of the detention basin.

Operations and Maintenance

Operation and maintenance activities of the newly constructed features would be as described in Section 2.4.5, and could result in permanent or temporary impacts to special-status reptiles and amphibians and their habitats. Minor maintenance activities would be performed to repair and maintain SCVWD facility functions and could occur anywhere within the Project area. Vegetation management would likely be expanded over existing conditions since the Project would require the revegetation of much of the Project area. Vegetation maintenance would be based on the maintenance of design flows according to the roughness coefficients, as shown in Table 2.4.5.2. Vegetation removal methods include herbicides, hand pruning, hand removal, and mowing. Amphibians could be impacted by the absorption of chemicals through their skin. Hand or mechanical pruning or removal impacts along channel banks could include mortality of individuals crushed or injured by vehicles or equipment and disturbance to mammal burrows used as refugia. Sediment removal would be conducted in a couple of areas on regular intervals. Removal of sediment is estimated to be required no more than once every 10 years.

Habitat would be disturbed as WPT uses riparian and instream vegetation for foraging, cover, and egg laying. Vehicles and crews maintaining new structures could disturb or crush amphibians and reptiles taking underground refuge adjacent to the channel.

Impacts from basin maintenance would occur if special-status amphibians and reptiles were killed, injured, or crushed while using the basin for foraging and/or cover habitat. Vegetation removal and sediment excavation around the detention basin may displace or directly harm special-status reptiles, such as WPT. Direct impacts would result if adults, larvae, juveniles, or egg masses of special-status amphibians were destroyed. Implementation of project BMPs would reduce maintenance impacts to special-status amphibians and reptiles to less than significant levels.

Best Management Practices (BMPs)

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-4:** Minimize Access Impacts—applicable to Maintenance and Operations phase of all elements.

> **BI-5:** Remove Temporary Fills as Appropriate—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-10:** Minimize Impacts to Vegetation Whenever Clearing (or Trimming) is Necessary—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-11:** Minimize Root Impacts to Woody Vegetation—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-12:** Avoid Special Status Plant Species and Special Status Natural Communities—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-13:** Plant Local Ecotypes of Native Plants and Choose Appropriate Erosion-Control Seed Mixes—applicable to the construction, operation, and maintenance phase of all elements.

- **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the construction and operation phase of all elements.
- **BI-16:** Avoid Animal Entry and Entrapment—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-17:** Minimize Predator-Attraction Effects on Wildlife—applicable to the Maintenance and Operations phase of all elements.
- **HM-3:** Consult the Pest Control Advisor for Alternatives Evaluation & Approval of Pest Control—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-5:** Comply with All Pesticide Usage Requirements—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-8:** Comply with Restrictions on Herbicide Use in Aquatic Areas—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-10:** Ensure Proper Vehicle and Equipment Fueling and Maintenance—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-1:** Conduct Work from Top of Bank—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-4:** Limit Impacts of Sediments on Water Quality—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-5:** Limit Impacts from Staging and Stockpiling Materials—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-9:** Minimize Erosion from Removal of In-channel Vegetation—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-10:** Limit Impact of Concrete Near Waterways—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-12:** Isolate Work in Non-tidal Sites with Use of Diversion of Bypass—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-14:** Use Temporary Seeding for Erosion Control as Appropriate—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-18:** Maintain Clean Conditions at Work Sites—applicable to the construction, operation, and maintenance phase of all elements.

Implementing the above project BMPs would reduce impacts to special-status amphibians and reptiles by preventing their injury or mortality. However, impacts to foraging and breeding may occur if loss of occupied breeding habitat could not be avoided. Loss or removal of breeding habitat from Project activities may result in a substantial impact to regional populations of some aquatic wildlife, including WPT, in which case the impact would be significant. When impacts to occupied habitat cannot be avoided and must be impacted as a result of the Project activities, the following mitigation measures would be implemented to reduce the construction impacts to special-status reptiles and amphibians to a less-than-significant level.

Mitigation Measures

While the above BMPs would reduce direct impacts to special-status amphibians and reptiles, there would be residual impacts because it would not be possible to avoid nests with eggs, individuals in underground refugia, and habitat loss while still meeting Project goals. The loss of individuals or of important aquatic or upland habitat could reduce the viability of large populations as a whole; this impact would be significant (Significance Criteria 3.5.4.1).

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

Mitigation Measure WILD-2a T: Preconstruction Surveys for Special-status Amphibian and Reptile Species. Preconstruction survey for special-status amphibian and reptiles will include, but not be limited to WPT and CTS. Surveys will be conducted by a qualified biologist in reaches with perennial water, standing ponds, and where in-water construction would be required. Surveyed area would also include adjacent upland habitat, including scrub and annual grassland and clearings in riparian woodland, within dispersal range of the species. Preconstruction surveys will be performed by a qualified biologist within 48-hours prior to construction activities. For areas where construction would occur within identified CTS habitat, SCVWD will consult with CDFW and USFWS to obtain authorization for activities that could affect the species and implement all applicable protection measures specified through the consultation. Protection measures shall be focused on locations where special-status species have been identified within and adjacent to the ROW and where special-status amphibian and reptiles could potentially be affected, as determined in consultation with CDFW and/or USFWS. Protection measures could include, but are not limited to, the following:

> Where impacts on potential special-status amphibians and reptile breeding habitat can be avoided, establish site-specific exclusion zones to protect these areas. Install temporary fencing around the exclusion areas with “Sensitive Habitat Area” signs posted.

> Where it is not possible to avoid work within or adjacent to potential special-status amphibians and reptile breeding sites, limit work in those areas to the period of June 1 to October 14 or From October 15 to May 31, within potential CTS dispersal habitat, minimize operation of proposed Project vehicles and equipment at night off pavement during rain events and within 24 hours following rain events. Check under vehicles parked overnight off pavement before moving them.

> From April 1 to August 31 within potential WPT dispersal habitat, minimize operation of proposed Project vehicles and equipment in upland habitat to minimize potential of crushing nests and dispersing females.

If special-status amphibian and reptile species are found, SCVWD will consult with regulatory agencies regarding translocation to suitable habitat that will not be affected by construction activity. In the unlikely event that egg nests or suitable estivating burrows are discovered within upland habitat, the area will be flagged and a buffer will be installed until proper guidance is received from the appropriate regulatory agencie(s). If an individual is discovered, aquatic barriers will be installed and the animal will be relocated by a qualified USFWS and/or CDFW-approved biologist and excluded from the work area.

Mitigation Measure WILD-2b T: Biological Monitor for Dewatering Activities. During clearance of the work area, after preconstruction surveys have been conducted, an on-site biological monitor will be present, from prior to start of construction activities until the site is dewatered and completely isolated. The monitor will inspect the work area to determine if any wildlife are present and have become entrapped during the dewatering. If special-status species are detected, all construction activity will cease, except as directed by the biological monitor, until these species can be captured and relocated following the guidance of the appropriate regulatory agency.

Mitigation Measure WILD-2c T: Relocate Special-status Species from Construction Area. If special-status amphibians and reptiles, such as WPT and CTS, are found in the construction area and need to be

relocated, CDFW or USFWS, as appropriate, will be notified prior to commencing the relocation effort. Prior to capturing the animals, the biologist will propose a capture method, handling procedures, and area to which the animals will be moved with the agencies listed above. The person performing the relocation will have all necessary permits for doing such work including FESA Section 10(a)(1)(A) permit. The individual performing the rescue could also be covered under another's 10(a)(1)(A) permit.

Mitigation Measure WILD-2d T: Implement Compensatory Mitigation for Special-status Amphibians and Reptiles, including California tiger salamander. SCVWD will provide mitigation to compensate for unavoidable impacts to special-status amphibians and reptiles and their habitat. Quantification of impacts to special-status amphibians and reptiles will be completed by determining the extent of impacts to lands that are within potentially suitable habitat based upon scientific information and occurrence or in consultation with the appropriate resource agency. The extent of impacts to suitable upland CTS habitat will guide the ratio of compensation necessary to mitigate impacts to less than significant. The ratio of and type of compensation for impacts will follow the appropriate resource agency guidance and recommendation. SCVWD will work with resource agencies to utilize the Valley HP to provide compensation for the protection, enhancement, and/or management of suitable habitat that currently supports or could support the species; mitigation lands for CTS. The suitable habitat will consist of upland habitat, must be located within Santa Clara County, and within the area where the species is thought to currently occur. Mitigation lands identification would be based on scientific information and/or in consultation with the appropriate resource agency.

Mitigation Measure WILD-2e T: Minimize Nightwork Disruption to Wildlife. Operational area boundaries should be determined prior to nightfall. As construction areas shift throughout the project, night work areas will be determined prior to construction. Illumination beyond the immediate work area will be minimized. All required lights should be shielded and pointing downward to control light beyond the immediate work area. If possible, red filters or red vellum should be placed over any lights attached to equipment. Acceptable stationary light fixtures include: Low Pressure Sodium (LPS) 18w, 35w, red, orange or amber LED (true red, orange or amber diodes, NOT filters), true red neon, other lighting sources that produce light of 560 nm or longer. Equipment shall not be operated at speeds that exceed a fast walk (< 5 mph) if off road. Noise beyond necessary operations should be minimized. Verbal communication should be at a conversational level.

Mitigation Measure WILD-2f T: Special-status Species Environmental Awareness Training and Construction Avoidance Measures. Worker training will be conducted to educate workers about the potential presence of special-status wildlife with potential for occurrence within and adjacent to the Project area. Training will include, but not be limited to, special-status amphibian and reptile species with potential to occur in the Project area. The training will include a brief description of special-status wildlife's listing status, identification keys, behavior, habitat, sensitivity to human disturbance, the definition of take and consequences, and Project measures to implement to protect the biological resource and prevent take of the species. Protection measures may include limiting construction activities to daylight hours (beginning when the sun rises and ending when the sun goes down in most situations), speed limits, and clean construction.

Mitigation Measure WILD-2g T: Bullfrog Population Monitoring and Control at Lake Silveira. SCVWD will initiate a bullfrog population monitoring program prior to the restoration project construction at Lake Silveira and include three sets of day and night surveys to be conducted in the spring or early summer (i.e., the bullfrog breeding season). The three sets of day/night surveys will be repeated every 3 years. If significant increases in the bullfrog population are observed, SCVWD, in consultation with resource agencies, may undertake control measures, to reduce the population.

As discussed under Botanical Resources (Section 3-4), Mitigation Measure BOT-1c T would require SCVWD to provide compensatory mitigation for impacts to wetland, aquatic, and riparian habitats. Mitigation for impacts to those habitats would benefit WPT upland and aquatic habitat, directly and

indirectly. The above BMPs and implementation of Mitigation Measures BOT-1c T and WILD-2a through WILD-2g T would reduce impacts to special-status amphibians and reptiles to a less-than-significant level.

WILD-3 T—Potential for adverse effects on common and special-status bats

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Vegetation removal and maintenance	LTSM	LTS
Upland grading (access to maintenance roads/pedestrian paths)	LTSM	LTS
Channel modification (excavation and grading)	LTSM	N/A
Bridge/culvert replacement/install and maintenance	LTSM	LTS
Exhume two bridges- Reach 7A	LTS	B
Construction and maintenance of the Lake Silveira element	LTSM	B
Structure Relocation	LTSM	LTS
Cut-off of West Little Llagas Creek	N/A	LTSM
Construction of sediment detention basin and inlet weir-Reach 8	LTSM	LTS
Night work	LTSM	N/A
Sediment management	N/A	LTSM
Minor maintenance activities	N/A	LTS
Construction and operation of tunnel	NI	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Without the implementation of BMPs (listed below) construction activities could result in impacts to roosting, foraging, and maternal colonies, and/or to individual bats. Vegetation removal and upland grading of large, mature riparian trees and in upland habitat along all Project reaches during the construction phase would potentially displace and/or directly harm special-status roosting bats, such as pallid bat, hoary bat, and Yuma myotis removal of vegetation that provides habitat for day roosts, night roosts, as well as maternity roosts, would result in impacts to bats.

Construction related channel modifications (including placement and installation of culverts) may disturb or destroy foraging habitat for hoary bat, Yuma myotis, as well as other species of bats; channel modification may result in the loss of prey items (e.g., small invertebrates) that are killed during construction activities. Loss of foraging habitat, through the loss of open water sources and small insect prey associated with West Little Llagas Creek, could affect the ability of the bats to find food and force bats to forage far from roosting habitat, force them to forage in less suitable habitat, and increase their potential exposure to predation.

Bats are expected to use the existing structures found in the Project area as only night-roosts, as the structures lack appropriate crevices, weep hole, or other features that could be used by day-roosting bats. Furthermore, bats are expected to use the Masten Avenue (Reach 4), U.S. 101 north and south (Reach 5), and Llagas Avenue (Reach 6) bridges only during the warmer months based on lack of fresh guano below roost sites during field surveys conducted in late winter (H.T. Harvey & Associates 2013e).

Displacement or directly harming of roosting bats in culverts being replaced could occur in various Project reaches. Removal of agricultural, residential, and commercial/industrial buildings in the Project area would also result in loss of roosting areas. If night work requiring light occurs in these areas, it would result in delay of their nightly emergence in the presence of lighting, which could result in shortened feeding time, difficulty in foraging, or increased mortality due to impairment of night vision.

Yuma myotis and pallid bat are known to commonly use bridges as roosts (Johnston et al. 2004 as cited in H.T. Harvey & Associates 2012a). Bridges are frequently used as roosts, because the upper surface of the bridge heats ups during the day and remains warmer than ambient temperatures through the night. Tunnels are often used the same species where the tunnels ceiling surface is warmer. Two buried bridges are to be exhumed as part of the Preferred Alternative. Following their construction, these bridges may be beneficial impact under NEPA and No Impact under CEQA to special-status bats by providing suitable roosting habitat for some species.

Restoration of Lake Silveira and the historic Llagas Creek channel would require some vegetation removal in order to construct the inlet and outlet structures and to provide access for equipment and personnel. Roosting or foraging habitat loss for common and special-status bats would be temporary and the majority of vegetation removed would be invasive blackberry. These areas would be restored with native riparian woodland plant species, further benefiting bat species. The restoration of the lake would increase the amount of emergent marsh habitat and would increase the amount of foraging habitat supported at the site.

A sediment detention basin and inlet weir would be constructed in the channel through a ruderal field in Reach 8. This new feature would also have a maintenance/access road installed at the top one bank of the channel. Direct impacts would occur if construction equipment and personnel may kill or injury roosting bats.

Operations and Maintenance

Without the implementation of BMPs (listed below) operations and maintenance activities of the newly constructed features as described in Section 2.4.5 could potentially result in impacts to common and special-status bats and their habitats. Minor maintenance activities would be performed to repair and maintain SCVWD facility functions and would occur anywhere within the Project area.

Under the Preferred Alternative, the tunnel would be constructed under Nob Hill between Warren Avenue and Del Monte Avenue and culverts would be constructed in Reaches 7B and 8. There will be no regular maintenance required in the tunnel. The tunnel would be constructed to minimize smaller crevices and openings for bats to roost in. It is anticipated that air would regularly flow through the tunnel with differences in the ambient outside temperature and the in-tunnel temperature. It is less likely that bats would roost in situations with air movement; however, bats would be expected to roost in warm dead air spaces, such as the area inside three planned access points (H.T. Harvey & Associates 2012a). If bats develop a roosting colony in the tunnel they could present a water quality problem due to the presence and build-up of guano which can introduce *E. coli* and nitrogen. Additionally, if a colony establishes in the tunnel, then they could be subject to injury or killed when high flows occur. Consequently to ensure that bats are not injured and to protect water quality they should be precluded from establishing a roosting colony in the tunnel.

Maintenance culverts would need to be periodically performed and could adversely affect pallid bat and Yuma myotis. These two species of bats commonly use bridges, culverts, and other tunnels for roosting habitat (H.T. Harvey & Associates 2012a). Tunnels and culverts are used by the bats when the “tunnel ceiling approaches the ground or road surface as access points where solar heat warms through to the tunnel’s ceiling surface” (H.T. Harvey & Associates 2012a). Maintenance activities in the culverts include sediment and debris removal, and may displace or directly harm common and special-status roosting bats that are attracted to the structure and use it as a day, night, or maternity roosts. Individual bats could be

harmed or killed; loss of individual special-status bats would be a significant impact. The types of operation and maintenance impacts (both direct and indirect) to roosting bats would be similar to those described in WILD-3 NP.

Best Management Practices (BMPs)

SCVWD BMPs would minimize construction impacts on special-status bats. BMPs that would minimize the direct and indirect construction impacts on bats include:

- **BI-4:** Minimize Access Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-7:** Avoid Secondary Poisoning from Rodenticide Use—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-10:** Minimize Impacts to Vegetation Whenever Clearing (or Trimming) is Necessary—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-11:** Minimize Root Impacts to Woody Vegetation—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-12:** Avoid Special Status Plant Species and Special Status Natural Communities—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-13:** Plant Local Ecotypes of Native Plants and Choose Appropriate Erosion-Control Seed Mixes—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-17:** Minimize Predator-Attraction Effects on Wildlife—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-3:** Consult the Pest Control Advisor for Alternatives Evaluation & Approval of Pest Control—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-5:** Follow All Posting & Notification Requirements for Pesticide Use—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-10:** Assure Proper Vehicle and Equipment Fueling—applicable to the construction, operation, and maintenance phase of all elements.
- **NO-1:** Minimize Noise Pollution—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-4:** Limit Impacts of Sediments on Water Quality—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-14:** Use Temporary Seeding for Erosion Control as appropriate—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-18:** Maintain Clean Conditions at Work Sites—applicable to the construction, operation, and maintenance phase of all elements.

Implementing the above project BMPs would reduce impacts to common and special-status bats by preventing their injury or mortality. However, impacts to bat habitat would occur if loss of occupied breeding habitat could not be avoided. Loss or removal of maternal roosting habitat from Project activities

may result in a substantial impact to regional populations of some species of bats, such as pallid bat, if disturbance of a maternity roost resulted in roost abandonment; and in that case, the impact would be significant. Generally bat populations and available habitat are limited locally; the removal of local habitat would have an effect on regional populations of the species. When impacts to occupied habitat, roost, or an individual cannot be avoided the following mitigation measures would be implemented to reduce the construction impacts to roosting bats to a less-than-significant level.

Mitigation Measures

Mitigation Measure WILD-2e T: Minimize Nightwork Disruption to Wildlife.

Mitigation Measure WILD-3a T: Preconstruction Surveys for Common and Special-status Bats prior to Removal of Trees and Removal/Replacement of Road Culverts. If tree and building removal is undertaken during the migration season from late August through October, no additional measures are required. For tree or building removal during the breeding and maternity season from November through mid-August, preconstruction surveys of trees and structures proposed for removal within the Project area would be conducted.

Before tree and culvert removal activities occur, a qualified biologist will conduct a preconstruction survey for roosting bats in the trees scheduled for removal no more than 7 days prior to removal activities and culverts scheduled for replacement or removal no more than 7 days prior to disturbance activity. If bats, or the presence of bats (e.g., guano), are detected roosting in the trees or man-made structures identified for removal, the biologist will work with CDFW (if the bat species detected is a special-status bat species) to determine acceptable ways to minimize disturbance to roosting bats.

Project activities will avoid occupied roosts, implement non-disturbance buffers around active maternity colonies and hibernacula in consultation with wildlife agencies, and ensure safe eviction of non-breeding bats where avoidance is not feasible.

If the roost is determined to be a maternity roost, the biologist will consult with the appropriate resource agency biologists to determine appropriate measures to protect the maternity roost. Such measures could include the prohibition of removal of the maternity roost tree and trees within 250 feet of the tree until the maternity roost is no longer active.

Mitigation Measure WILD-3b T: Provide Alternative Bat Roost. In coordination with the resource agency, to compensate for the loss of roosting trees, bat boxes will be installed in the areas of the removed roosting habitat, but at least 150 feet from construction zone. The number and location of the bat boxes will be determined in consultation with CDFW.

If a tree or structure containing special-status bats, such as pallid bat, is removed, destroyed, and its suitability to provide habitat for the bat is diminished by Project activities, then a qualified biologist will design and determine an appropriate location for an alternative roost. If a tree or structure containing a maternity roost of special-status bats is disturbed by Project activities, to the point that the disturbance causes abandonment of the roost site, then an alternative roost will be constructed. The type and placement of an alternative roost will be determined by a qualified biologist in consultation with the appropriate resource agency. The alternative roost site will be monitored until occupancy is determined (or based on guidance by the appropriate resource agency); if by that time the structure is not occupied by special-status bats, a qualified bat biologist, in consultation with CDFW, will identify alternative structures, placement locations, and monitoring lengths.

Mitigation Measure WILD-3c T: Development and Implementation of a Bat Monitoring Program and Development of Bat/Tunnel Exclusion Devices. Air flow through the tunnel would be maintained to inhibit the use of the tunnel by roosting bats. Exterior grade plywood would be used to exclude bats from smaller manholes and a braided nylon net with 0.25 inch mesh suspended over larger access points (H.T. Harvey & Associates 2012a). Visual inspections by a qualified biologist for bats and bat sign (i.e., individual

animals and guano) will be conducted in the tunnel annually. If bats are detected acoustic monitoring with AnaBat™ or Petersson units will installed to monitor the number of bats using the tunnel. After establishing a baseline count of bats occupying the tunnel, resource agencies would be consulted to determine if further action is necessary. In the event that bats would need to be excluded from the tunnel, SCVWD staff would install one-way exits at the tunnel entrances through which the bats can leave but cannot return. Exits would consist of netting with 0.25 inch mesh to prevent bats from returning. This mitigation measure would identify if bats are using the tunnel, and if so would exclude them. This would reduce the potential for harm or injury in case of a large flood, and would additionally protect against water quality degradation.

Implementation of above BMPs and Mitigation Measures WILD-2e, WILD-3a, WILD-3b, and WILD-3c T would reduce impacts on common and special-status bats to less-than-significant levels.

WILD-4 T—Potential for adverse effects on San Francisco dusky-footed woodrat

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Vegetation removal and maintenance	LTSM	LTS
Sediment management	N/A	LTS
Upland grading (access to maintenance roads/pedestrian paths)	LTSM	LTS
Channel modification (excavation and grading)	LTSM	N/A
Construction and maintenance of the Lake Silveira element	LTSM	B
Night work	LTSM	N/A
Minor maintenance activities	N/A	LTS
Construction of sediment detention basin and inlet weir – Reach 8	LTSM	LTS
Bridge/culvert replacement/construction and maintenance	LTSM	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

San Francisco dusky-footed woodrat nests were observed adjacent to Reach 7A near the intersection of Watsonville Road and Monterey Road in (WRA 2010). Nests were observed along West Little Llagas Creek at the edge of riparian woodland habitat. Wood rats may use more than one nest and may move from nest to nest as they forage within their home range. The nest serves as a place of residence to store food and bear young. Due to this dependency, nests are of particular importance to wood rats and disturbance to them would be avoided to the extent possible. Removal or conversion of riparian habitat would directly impact active woodrat nests, individual woodrats, and would reduce woodrat nesting and foraging habitat. If night work occurs in the vicinity of these nests, it could result in delay of their nightly emergence in the presence of lighting, which could result in shortened feeding time, difficulty in foraging, or increased mortality due to impairment of night vision.

Without the implementation of BMPs (listed below) construction activities, such as vegetation removal or cutting off West Little Llagas Creek, would result in the loss of nesting and foraging habitat and would negatively impact woodrats. Vegetation removal, particularly riparian scrub and some upland vegetation, during channel construction activities would potentially result in adverse effects on the San Francisco dusky-footed woodrat through direct mortality of individual woodrats or destruction of dens and nests.

Destruction of nests and loss of individual wood rats would result in a significant impact. Various Project reaches provide suitable nesting habitat for San Francisco dusky-footed woodrat; and the species has been observed utilizing Reach 6. Although cutting off of West Little Llagas Creek would reduce riparian vegetation, this reach contains little suitable habitat for San Francisco dusky-footed woodrat and numbers of individuals on this reach would be low or none; thus impacts of this Project activity would be less than significant.

The construction of a sediment detention basin and inlet weir at Reach 8 and construction of a culvert in Reach 7B could cause direct and/or indirect impacts to San Francisco dusky-footed woodrat. These new features would also have associated maintenance/access roads installed. Direct impacts would occur to woodrats if construction activities kill or injure an individual woodrat or destroy a woodrat den. Indirect impacts could occur if habitat suitability for woodrat were decreased. Destruction of nests and loss of individual wood rats would result in a significant impact.

Restoration of the historic Llagas Creek channel adjacent to the present location of Lake Silveira would require some vegetation removal in order to construct the inlet and outlet structures and to provide access for equipment and personnel. Riparian or foraging habitat loss for San Francisco dusky-footed woodrat would be temporary and the majority of vegetation removed would be invasive blackberry. These areas would be restored with native riparian woodland plant species, ultimately increasing suitable riparian habitat for this species. Vegetation removal, particularly riparian scrub and upland vegetation, during channel construction activities would potentially result in adverse effects on the San Francisco dusky-footed woodrat; however, under the Preferred Alternative, there would be less vegetation removal in some Project reaches. Impacts to San Francisco dusky-footed woodrat are lessened with reduced vegetation removal along the existing West Little Llagas Creek channel. With construction of the tunnel under Nob Hill, there would be no channel widening as the channel section through downtown Morgan Hill would be avoided, thus reducing nesting and foraging habitat impacts to woodrats.

Operations and Maintenance

Without the implementation of BMPs (listed below), operation and maintenance activities of the newly constructed features, as described in Section 2.4.5, could result in impacts to the San Francisco dusky-footed woodrat. Vegetation management and minor maintenance activities would be performed to repair and maintain channel capacity and SCVWD facility functions and could occur anywhere within the Project area.

Impacts to San Francisco dusky-footed woodrat could occur if woodrats were harmed or killed during maintenance of the sediment detention basin in Reach 8 and culverts constructed in Reaches 7B and 8. All other impacts from maintenance activities would be similar to those described in WILD-4 NP. Implementation of SCVWD project BMPs would reduce direct and indirect operation and maintenance impacts to less-than-significant levels.

Best Management Practices (BMPs)

SCVWD project BMPs would minimize direct and indirect impacts on San Francisco dusky-footed woodrat. These BMPs include:

> **BI-4:** Minimize Access Impacts—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species Impacts—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-10:** Minimize Impacts to Vegetation from Clearing and Trimming Impacts—applicable to the construction, operation, and maintenance phase of all elements.

- **BI-11:** Minimize Root Impacts to Woody Vegetation Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-12:** Avoid Special Status Plant Species and Special Status Natural Communities Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-13:** Choose Local Ecotypes of Native Plants and Appropriate Erosion-Control Seed Mixes Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-16:** Avoid Animal Entry and Entrapment Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-17:** Minimize Predator-Attraction Effects on Wildlife Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-3:** Minimize Use of Pesticides Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-5:** Comply with All Pesticide Usage Requirements Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-9:** Limit Vehicle and Equipment Cleaning to Appropriate Locations Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-10:** Ensure Proper Vehicle and Equipment Fueling and Maintenance Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **NO-1:** Minimize Noise Pollution Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-14:** Use Temporary Seeding for Erosion Control as Appropriate—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-18:** Maintain Clean Conditions at Work Sites—applicable to the construction, operation, and maintenance phase of all elements.

Implementing the above project BMPs would reduce impacts to San Francisco dusky-footed woodrat by preventing their injury or mortality. However, impacts to San Francisco dusky-footed woodrat habitat may occur if loss of occupied breeding habitat could not be avoided. Loss or removal of suitable habitat from Project activities may result in a substantial impact to local populations of woodrat, in which case the impact would be significant. When impacts to occupied habitat cannot be avoided as a result of the Project activities, the following mitigation measures would be implemented to reduce the construction impact to San Francisco dusky-footed woodrat to a less-than-significant level.

Mitigation Measures

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

Mitigation Measure WILD-2e T: Minimize Nightwork Disruption to Wildlife.

Mitigation Measure WILD-4 T: Preconstruction Surveys for San Francisco Dusky-footed Woodrat Nests prior to Vegetation Removal. A preconstruction survey would be conducted for San Francisco dusky-footed woodrats and woodrat nests within a 10-foot buffer area of areas proposed for vegetation removal and areas that provide suitable habitat for the species, such as riparian forests along the West Little Llagas Creek, the confluence of Lake Silveira and West Little Llagas Creek, and East Little Llagas Creek. Pre-construction surveys will be conducted no more than 30 days prior to the period of disturbance. If

wood rat nests are found, they would be reported to CDFW and flagged for avoidance. Stakes, flags, or plastic tape will be used to enforce avoidance. If any woodrat nests are found that cannot be avoided, trapping and relocation of the wood rat(s) upstream or to a suitable adjacent river or creek nearby will be implemented in consultation with CDFW. If pups are found within the nest, the nest material should be replaced until young are weaned (up to 6 weeks from birth) and are independent of parental care, at which point the nest should be dismantled and relocated.

The species' habitat is relatively widespread; impacts to woodrat habitat would not require additional species-specific mitigation. However, implementation of Mitigation Measure BOT-1c T would increase riparian habitat supporting the dusky-footed woodrat, by providing riparian mitigation that could benefit the species.

With the implementation of above BMPs and Mitigation Measures WILD-2e, WILD-4, and BOT-1c T, the Project impacts on San Francisco dusky-footed woodrats would be reduced to less-than-significant levels.

WILD-5 T—Potential for adverse effects on special-status invertebrates (i.e., Opler's longhorn moth and Bay checkerspot butterfly)

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Vegetation removal and maintenance	LTSM	LTS
Upland grading (access to maintenance roads/pedestrian paths)	LTSM	LTS
Construction and maintenance of tunnel	NI	NI
Night work	LTSM	N/A
Minor maintenance activities	N/A	LTS
Construction and maintenance of the Lake Silveira element	NI	B

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Opler's longhorn moth and Bay checkerspot butterfly have the potential to occur within the Project area and in adjacent serpentine grasslands where their host plants could occur. Any construction activity, during vegetation management, sediment removal, grading, equipment use, vehicle traffic, and worker foot traffic that would occur in or adjacent to serpentine habitat may result in the injury or mortality of individual serpentine associated plant and serpentine associated invertebrate. Vegetation removal, particularly removal of serpentine grasslands adjacent to the channel and upland grading for access and maintenance roads, would have the potential to remove and/or destroy larval food plant. Direct impacts to individuals would occur if the species is within the construction zone and construction equipment or personnel kill, injury, or trample a special-status invertebrate. Construction activities within channel would likely not impact the Bay checkerspot butterfly or Opler's longhorn beetle, as it is unlikely these species would be utilizing the channel for forage. Many moths are attracted to artificial lights and stay in close proximity to the light as long as it is turned on. This could result in use of excessive energy, which could result in interference in mating or make them easy prey for nocturnal predators, such as bats.

Restoration of Lake Silveira would not impact special-status serpentine associated invertebrates, because the areas to be impacted during construction do not support serpentine grassland habitat.

The construction of a tunnel under Nob Hill would not impact special-status serpentine associated invertebrates, because the location of the tunnel would be through an existing urban environment and there would be no likelihood of serpentine grassland to occur there.

Operations and Maintenance

These species could be adversely affected by the conversion of habitat by the introduction of non-native species to areas on or near serpentine soils. Sediment removal would be limited to the stream channel; therefore, impacts to terrestrial invertebrates would occur during the operation of equipment in staging and access areas. All other operation and maintenance impacts to special-status invertebrates would be similar to those described in WILD-5 NP. Implementation of the following BMPs would reduce operation and maintenance impacts to special-status invertebrates to less-than-significant levels.

Best Management Practices (BMPs)

The following SCVWD project BMPs would minimize construction impacts on special-status invertebrates.

> **BI-4:** Minimize Access Impacts—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-10:** Minimize Impacts to Vegetation from Clearing and Trimming—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-11:** Minimize Root Impacts to Woody Vegetation—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-12:** Avoid Special Status Plant Species and Special Status Natural Communities—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-13:** Choose Local Ecotypes of Native Plants and Appropriate Erosion-Control Seed Mixes—applicable to the construction, operation, and maintenance phase of all elements.

> **HM-3:** Minimize Use of Pesticides—applicable to the construction, operation, and maintenance phase of all elements.

> **HM-5:** Comply with All Pesticide Usage Requirements—applicable to the construction, operation, and maintenance phase of all elements.

> **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas—applicable to the construction, operation, and maintenance phase of all elements.

> **HM-9:** Limit Vehicle and Equipment Cleaning to Appropriate Locations—applicable to the construction, operation, and maintenance phase of all elements.

> **HM-10:** Ensure Proper Vehicle and Equipment Fueling and Maintenance—applicable to the construction, operation, and maintenance phase of all elements.

Implementing the above project BMPs would reduce impacts to special-status invertebrates by preventing their injury or mortality. However, impacts to foraging and breeding habitat, serpentine grassland, may occur if loss of occupied breeding habitat could not be avoided. Loss or removal of breeding habitat from Project activities may result in a substantial impact to local populations and in that case the impact would be considered significant. When impacts to occupied habitat cannot be avoided the following mitigation measures would be implemented to reduce the impact to special-status invertebrates to a less-than-significant level.

Mitigation Measures

Mitigation Measure WILD-2e T: Minimize Nightwork Disruption to Wildlife.

Mitigation Measure WILD-5a T: Conduct Plant Surveys for Host Plants of Special-status Invertebrates. Plant surveys will be conducted during the appropriate blooming period for host plants of special-status invertebrates within the Project area. Plant surveys will be conducted in annual grassland habitat (or other suitable habitat for serpentine associated plants) that would be proposed for removal or impacted by Project activities. Surveys would focus on primary host plants of special-status invertebrates and will include *Plantago erecta* and *Platystemon californicus*, as well as secondary host plants, *Castilleja densilforous* and *C.exerta*. Surveys will be conducted by a qualified biologist/botanist and if native host plants are observed the area, they will be flagged and avoided. No vegetation removal will occur within designated buffer until guidance has been provided by appropriate regulatory agencies. For additional details related to preconstruction botanical surveys, see Section 3.4, Botanical Resources.

Mitigation Measure WILD-5b T: Compensatory Mitigation for Impacts to Serpentine-associated Special-status Invertebrates. If impacts to serpentine-associated special-status invertebrates cannot be avoided, SCVWD will compensate for impacts as a result of Project activities through the preservation and management of serpentine communities. Serpentine habitat will be mapped and quantification of impacts to serpentine habitat would occur will be completed by determining the extent of impacts to lands that are within potentially suitable habitat for the species based upon scientific information and occurrence or in consultation with the appropriate resource agency. Compensation for unavoidable impacts to serpentine communities will be provided through the enhancement, management, or protection of in-kind communities at a ratio identified by the appropriate resource agency. Procedures for identifying impacts to potential habitat and preservation and management of mitigation lands, will follow the guidance and recommendation of appropriate resource agencies. Prior to Project implementation, a management and monitoring plan will be developed in consultation with the USFWS or appropriate resource agency.

Implementation of the above BMPs and Mitigation Measures WILD-2e, WILD-5a, and WILD-5b T would reduce impacts on special-status invertebrates to less-than-significant levels.

WILD-6 T—Potential for adverse effects on migratory mammals, including San Joaquin kit fox and American badger

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Vegetation removal and maintenance	LTSM	LTS
Channel modification (excavation and grading)	LTSM	LTS
Upland grading (access to maintenance roads/pedestrian paths)	LTSM	LTS
Construction of sediment detention basin and inlet weir – Reach 8	LTS	N/A
Construction of tunnel	LTS	N/A
Construction and maintenance of the Lake Silveira element	LTSM	B
Night work	LTSM	N/A
Minor maintenance activities	N/A	LTS
Construction and maintenance of maintenance access roads	LTSM	LTS
Sediment maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Within the Project area, the San Joaquin kit fox and American badger would likely occur only as a rare dispersant between areas of known habitat. Their occurrence is expected to be very low and infrequent.

Potential habitat occurs within the Project area that could provide suitable migratory corridors for common and special-status species, such as coyote, deer, bobcat, San Joaquin kit fox, and American badger. Mammalian wildlife could use the habitats within the Project area and habitat adjacent to the Project area for foraging, water, and as refugia. During the construction phase, portions of the channel would not be available for wildlife to use as a migratory corridor, because exclusionary fencing would be installed around facilities and adjacent work areas that are to be protected from construction-related disturbance. Discontinuity of riparian vegetation and habitat would possibly interrupt the ability of mammalian wildlife to move from one suitable habitat patch to another, especially if the migratory corridor goes through the Project area.

Construction equipment, noise, lights for night work, and increased human presence would likely deter wildlife from entering the work area that would normally utilize the area for forage or refuge; even if construction activities were performed during the day, alteration of existing habitat (as a result of channel widening and deepening and upland grading) may result in decreased habitat suitability for many wildlife species. The habitats within the Project area provide valuable foraging and refuge resources for wildlife; if wildlife species are excluded from using these habitats, it would force them into adjacent habitat that would be less suitable and could result in both direct and indirect impacts to the species. Direct impacts could result if, for example, a dispersing bobcat were to normally migrate through the riparian corridor within the Project was not able to because of construction disturbance and was forced to cross busy streets and residential area, the bobcat could be struck by a vehicle and killed.

Indirect impacts would result to migratory mammalian species, if the Project area were utilized as a “resting stop” between patches of more suitable habitat; if habitat within the Project area was no longer available to the species, the individual would be forced to continue moving at the expense of increased physiological stress that could affect survivability. The disruption of movement corridor as a result of construction activities would range from 1 to 5 years. Impacts on movement corridors for wildlife species would be significant without mitigation.

Restoration of the historic Llagas Creek channel adjacent to Lake Silveira would require some vegetation removal in order to construct the inlet and outlet structures and to provide access for equipment and personnel. Suitable migratory corridors for common and special-status mammalian species could be temporarily impacted. These areas would be restored with native riparian woodland plant species, ultimately increasing suitable habitat for these species.

Construction of sediment detention basin and tunnel under Nob Hill would occur in downtown Morgan Hill. This area is highly developed and urbanized, thus does not provide a high quality migratory corridor to such mammalian species; migratory species would not likely occur in that reach. Thus impacts from construction of these structures in Reach 8 would result in a less-than-significant impact on wildlife corridors.

Operations and Maintenance

Without the implementation of BMPs (listed below), operations and maintenance activities of the newly constructed features, as described in Section 2.4.5, would potentially result in impacts to wildlife corridors. Vegetation management will be conducted throughout all Project reaches periodically to maintain flood conveyance capacity. Periodic removal of riparian vegetation to maintain conveyance capacities could potentially disturb wildlife corridors. Loss of understory vegetation resulting from pruning or mowing could reduce cover habitat and dispersal ability of species associated with dense vegetation. Vehicles and crews maintaining new structures could disturb both common and special-status mammalian species taking refuge adjacent to the channel. All other operation and maintenance impacts (both direct and

indirect) to migratory mammalian species, including San Joaquin kit fox and American badger, would be similar to those described in WILD-6 NP. Implementation of the project BMPs listed below would reduce impacts to migratory mammals to less-than-significant levels.

Best Management Practices (BMPs)

The following SCVWD BMPs would reduce impacts to migratory mammals.

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-4:** Minimize Access Impacts—applicable to the construction, operation, and maintenance phase of all elements.

> **Bi-5:** Remove Temporary Fills as Appropriate—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-8:** Avoid Impacts to Nesting Migratory Birds—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-10:** Minimize Impacts to Vegetation from Clearing and Trimming**—**applicable to the construction, operation, and maintenance phase of all elements.

> **BI-11:** Minimize Root Impacts to Woody Vegetation—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-12:** Avoid Special Status Plant Species and Special Status Natural Communities—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-13:** Plant Local Ecotypes of Native Plants and Choose Appropriate Erosion-Control Seed Mixes—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the construction, operation, and maintenance phase of all elements.

> **HM-3:** Consult the Pest Control Advisor for Alternatives Evaluation & Approval of Pest Control—applicable to the construction, operation, and maintenance phase of all elements.

> **HM-5:** Comply with All Pesticide Usage Requirements—applicable to the construction, operation, and maintenance phase of all elements.

> **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas—applicable to the construction, operation, and maintenance phase of all elements.

> **HM-9:** Clean Vehicles and Equipment - applicable to the construction, operation, and maintenance phase of all elements.

> **HM-10:** Assure Proper Vehicle and Equipment Fueling—applicable to the construction, operation, and maintenance phase of all elements.

> **WQ-1:** Conduct Work from Top of Bank—applicable to the construction, operation, and maintenance phase of all elements.

> **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms—applicable to the construction, operation, and maintenance phase of all elements.

> **WQ-4:** Handle Sediments so as to Minimize Water Quality Impacts—applicable to the construction, operation, and maintenance phase of all elements.

- **WQ-5:** Avoid Runoff from Soil Stockpiles—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-14:** Use Temporary Seeding for Erosion Control as Appropriate—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-18:** Maintain Clean Conditions at Work Sites—applicable to the construction, operation, and maintenance phase of all elements.
- **NO-1:** Minimize Noise Pollution—applicable to the construction, operation, and maintenance phase of all elements.

Implementing the above BMPs would reduce impacts to common and special-status mammalian species, including San Joaquin kit fox and American badger, by preventing their injury or mortality. The following mitigation measures would be implemented to reduce the construction impacts to migratory special-status mammalian species, including San Joaquin kit fox and American badger, to a less-than-significant level with mitigation.

Mitigation Measures

Mitigation Measure WILD-2e T: Minimize Nightwork Disruption to Wildlife.

Mitigation Measure WILD-2f T: Special-status Species Environmental Awareness Training and Construction Avoidance Measures.

Mitigation Measure WILD-6 T: Implementation of USFWS Standardized Recommendations for Protection of the San Joaquin Kit Fox prior to or during Ground Disturbance. To prevent the potential take and avoid any short- or long-term impact to San Joaquin kit fox, SCVWD will comply with BMPs outlined in the USFWS Standardized Recommendations for Protection of the San Joaquin Kit Fox prior to or during Ground Disturbance (USFWS 1999) during the construction phase of the Project to mitigate for potential impacts. Recommended measures include:

- Restrict Project-related vehicle traffic to established roads or other designated areas onsite. Vehicles should observe a 20 MPH speed limit in all Project areas (except on paved pre-existing roads with an established speed limit). Off-road traffic outside of the designated Project areas should be prohibited;
- All excavated, steep-walled holes or trenches more than 2 feet deep shall be covered at the close of each working day by plywood or similar materials or provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, each shall be thoroughly inspected for trapped animals that should be allowed to escape before proceeding;
- All construction pipes, culverts, or similar structures with a diameter of 4 inches or greater that are stored open onsite for one or more nights shall be thoroughly inspected for animals before the pipe is subsequently buried, capped, or otherwise used or moved in any way;
- All food-related trash items, such as wrappers, cans, bottles, and food scraps, shall be disposed of in closed containers and removed at least once a week from the Project site;
- No firearms shall be allowed on the Project site; and
- No pets (i.e., dogs, cats, etc.) shall be permitted onsite.

If a kit fox is found onsite, all work within the area should cease until a qualified biologist, approved by SCVWD, is notified in order to outline additional avoidance measures to be implemented, as well as consult with regulatory agencies (USFWS and CDFW). Any recommendations from the agencies shall be implemented.

The American badger, like the kit fox, could occur only as an occasional dispersant between areas of known habitat. Their occurrence is likely very low and infrequent. American badger and San Joaquin kit fox will be included in the special-status species environmental awareness training. With the implementation of above BMPs and Mitigation Measures WILD-2e, WILD-2f, and WILD-6 T, the impacts to migratory mammalian species, including San Joaquin kit fox and American badger, would be reduced to less-than-significant levels.

3.5.5.3 Natural Resources Conservation Service (NRCS) Alternative

The NRCS Alternative differs from the Preferred Alternative in that it would increase the Project footprint in Reach 8. The NRCS Alternative would require a larger ROW, increase the amount of vegetation to be removed along the existing West Little Llagas Creek, increase the extent of bank excavation, increase utilities relocation, and increase culvert replacements through downtown Morgan Hill. The construction approach and duration for the NRCS Alternative would be the same throughout the entire Project reaches as previously described for the Preferred Alternative, except in Reach 8. The NRCS Alternative would require 3,600 feet of channel modifications, culvert replacements between West Main Avenue and West Dunne Avenue, and increase the Project footprint in Reach 8 as compared to the Preferred Alternative.

WILD-1 NRCS—Potential for adverse effects on common and special-status nesting birds

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Vegetation removal and maintenance	LTSM	LTS
Upland grading (access to maintenance roads/pedestrian paths)	LTSM	LTS
Channel excavation and grading	LTSM	N/A
Construction, operation, and maintenance of maintenance roads	LTSM	LTS
Construction and maintenance of the Lake Silveira element	LTSM	B
Cut-off of West Little Llagas Creek	N/A	LTSM
Sediment management	N/A	LTS
Minor maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

There are several features unique to the NRCS Alternative that could cause direct and/or indirect impacts to common and special-status nesting birds. Increased channel widening and deepening between West Main Avenue and West Dunne Avenue in Reach 8 as compared to the Preferred Alternative could cause direct impacts would occur if construction equipment and personnel may kill, injury, or crush nesting birds, and/or modify habitat suitability for nesting birds (i.e., through the removal of suitable nesting trees).

Channel widening/deepening and culvert replacements would increase nesting and foraging habitat indirect impacts to nesting birds at that reach with the removal of riparian habitat for nesting birds. Overall, more construction activities would increase both direct and indirect impacts to nesting birds compared to the Preferred Alternative.

All other construction related impacts to common and special-status nesting birds are similar to those described in Impact WILD-1 T.

Operations and Maintenance

Operation and maintenance related impacts to nesting birds are similar to those described in Impact WILD-1 T. Impacts would be increased in downstream Project reaches without the constructed detention basin capturing sediments traveling from upstream, as well as increased amounts of channel in Reach 8 to maintain; therefore, management activities and impacts would be increased as compared to the Preferred Alternative. Implementation of project BMPs would reduce operation and maintenance related impacts to nesting birds to less-than-significant levels.

Best Management Practices (BMPs)

The following SCVWD BMPs would reduce impacts to nesting birds:

> **BI-4:** Minimize Access Impacts—applicable to Maintenance and Operations phase of all elements.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-8:** Avoid Impacts to Nesting Migratory Birds—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-9:** Avoid Impacts to Nesting Migratory Birds from Pending Construction—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-10:** Minimize Impacts to Vegetation from Clearing and Trimming—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-11**: Minimize Root Impacts to Woody Vegetation—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-12:** Avoid Special Status Plant Species and Special Status Natural Communities—applicable to the Maintenance and Operations of all elements.

> **BI-13:** Plant Local Ecotypes of Native Plants and Choose Appropriate Erosion-Control Seed Mixes—applicable to the Maintenance and Operations phase of all elements.

> **BI-16:** Avoid Animal Entry and Entrapment—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-17:** Minimize Predator-Attraction Effects on Wildlife—applicable to the Maintenance and Operations phase of all elements.

> **HM-9:** Clean Vehicles and Equipment—applicable to the construction, operation, and maintenance phase of all elements.

> **HM-10:** Assure Proper Vehicle and Equipment Fueling—applicable to the construction, operation, and maintenance phase of all elements.

> **WQ-14:** Use Temporary Seeding for Erosion Control as Appropriate—applicable to the construction, operation, and maintenance phase of all elements.

> **WQ-18:** Maintain Clean Conditions at Work Sites—applicable to the construction, operation, and maintenance phase of all elements.

Implementing the above BMPs would reduce impacts to common and special-status nesting birds by preventing their injury or mortality. However, impacts to nesting bird habitat may occur if loss of occupied breeding habitat could not be avoided. When impacts to occupied habitat cannot be avoided the following mitigation measures would be implemented to reduce the impact to nesting birds to a less-than-significant level with mitigation.

Mitigation Measures

Mitigation Measure WILD-1a T: Vegetation Removal during Avian Non-breeding Season.

Implementation of BMPs and Mitigation Measure WILD-1a T would reduce direct and indirect construction impacts on nesting birds to less than significant and further reduce operation and maintenance impacts.

WILD-2 NRCS—Potential for adverse effects on special-status reptiles and amphibians, including western pond turtle and California tiger salamander

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Vegetation removal and maintenance	LTSM	LTS
Upland grading (access to maintenance roads/pedestrian paths)	LTSM	LTS
Channel modification (excavation and grading)	LTSM	LTS
Construction, operation, and maintenance of maintenance roads	LTSM	LTS
Construction and maintenance of the Lake Silveira element	LTSM	B
Construction and maintenance of culverts	LTSM	LTS
Night work	LTSM	N/A
Minor maintenance activities	N/A	LTS
Construction and maintenance of culverts	LTSM	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Without the implementation of BMPs (listed below) channel modification and culvert replacement work could cause direct mortality of special-status retile and amphibians could occur when burrows are crushed by equipment and/or crews. Indirect impacts could occur through alteration of habitat suitability. Indirect effects could also occur through alteration of the channels habitat suitability (e.g., decrease emergent wetland vegetation or basking sites). Direct mortality or injury to special-status amphibians and reptiles could occur if any individual crossing access roads into the Project area, are crushed by construction vehicles, or become entrapped in construction trenches associated with excavation.

As compared to the Preferred Alternative, more channel widening/deepening and culvert replacements through downtown Morgan Hill in Reach 8 would be needed for this alternative, thus increasing impacts on breeding, foraging, or estivating habitats of special-status amphibians and reptiles. Impacts are further increased with greater amounts of vegetation removal along the existing West Little Llagas Creek channel as part of this alternative. A larger ROW would increase the extent of upland habitat modification and result in more impact to habitat suitability for special-status amphibians and reptiles, although downtown Morgan Hill is not likely to support special-status amphibians and reptiles.

All other construction related impacts to special-status amphibians and reptiles are similar to those described in Impact WILD-2 T. Direct and indirect impacts that result in the loss of special-status reptiles and amphibians would be reduced to less than significant with BMPs and mitigation.

Operations and Maintenance

Operation and maintenance related impacts to special-status amphibians and reptiles are similar to those described in Impact WILD-2 T, except for the level of sediment management. The amount of sediment needed to be removed from downstream reaches would be increased as compared to the Preferred Alternative, without the construction of the upstream sediment basin. Implementation of project BMPs would reduce maintenance impacts to special-status amphibians and reptiles to less-than-significant levels.

Best Management Practices (BMPs)

The following SCVWD project BMPs would reduce impacts to special-status amphibians and reptiles:

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-4:** Minimize Access Impacts—applicable to Maintenance and Operations phase of all elements.

> **BI-5:** Remove Temporary Fills as Appropriate—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-10:** Minimize Impacts to Vegetation Whenever Clearing (or Trimming) is Necessary—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-11:** Minimize Root Impacts to Woody Vegetation—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-12:** Avoid Special Status Plant Species and Special Status Natural Communities—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-13:** Plant Local Ecotypes of Native Plants and Choose Appropriate Erosion-Control Seed Mixes—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the construction and operation phase of all elements.

> **BI-16:** Avoid Animal Entry and Entrapment—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-17:** Minimize Predator-Attraction Effects on Wildlife—applicable to the Maintenance and Operations phase of all elements.

> **HM-3:** Consult the Pest Control Advisor for Alternatives Evaluation & Approval of Pest Control—applicable to the construction, operation, and maintenance phase of all elements.

> **HM-5:** Comply with All Pesticide Usage Requirements—applicable to the construction, operation, and maintenance phase of all elements.

> **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas—applicable to the construction, operation, and maintenance phase of all elements.

> **HM-8:** Comply with Restrictions on Herbicide Use in Aquatic Areas—applicable to the construction, operation, and maintenance phase of all elements.

> **HM-10:** Ensure Proper Vehicle and Equipment Fueling and Maintenance—applicable to the construction, operation, and maintenance phase of all elements.

- **WQ-1:** Conduct Work from Top of Bank—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-4:** Limit Impacts of Sediments on Water Quality—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-5:** Limit Impacts from Staging and Stockpiling Materials—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-9:** Minimize Erosion from Removal of In-channel Vegetation—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-10:** Limit Impact of Concrete Near Waterways—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-12:** Isolate Work in Non-tidal Sites with Use of Diversion of Bypass—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-14:** Use Temporary Seeding for Erosion Control, as appropriate—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-18:** Maintain Clean Conditions at Work Sites—applicable to the construction, operation, and maintenance phase of all elements.

Implementing the above project BMPs would reduce impacts to special-status amphibians and reptiles by preventing their injury or mortality. However, impacts to foraging and breeding habitat may occur if loss of occupied breeding habitat could not be avoided. Loss or removal of breeding habitat from Project activities may result in a substantial impact to some amphibian and reptiles, including CTS and WPT, thus the impact would be significant. When impacts to occupied habitat cannot be avoided the following mitigation measures would be implemented to reduce the construction impacts to special-status amphibians and reptiles to a less-than-significant level.

Mitigation Measures

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

Mitigation Measure WILD-2a T: Preconstruction Surveys for Special-status Amphibian and Reptile Species.

Mitigation Measure WILD-2b T: Biological Monitor for Dewatering Activities.

Mitigation Measure WILD-2c T: Relocate Special-status Species from Construction Area.

Mitigation Measure WILD-2d T: Implement Compensatory Mitigation for Special-status Amphibians and Reptiles, including California tiger salamander.

Mitigation Measure WILD-2e T: Minimize Nightwork Disruption to Wildlife.

Mitigation Measure WILD-2f T: Special-status Species Environmental Awareness Training and Construction Avoidance Measures.

Mitigation Measure WILD-2g T: Bullfrog population monitoring and control at Lake Silveira.

With the implementation of the above BMPs and Mitigation Measures BOT-1c T and WILD-2a through WILD-2g T, impacts to special-status amphibians and reptiles would be reduced to a less-than-significant level.

WILD-3 NRCS—Potential for adverse effects on common and special-status bats

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Vegetation removal and maintenance	LTSM	LTS
Upland grading (access to maintenance roads/pedestrian paths)	LTSM	LTS
Channel modification (excavation and grading)	LTSM	LTS
Bridge/culvert replacement/install and maintenance	LTSM	LTS
Exhume two bridges- Reach 7A	LTS	B
Construction and maintenance of the Lake Silveira element	LTSM	B
Structure Relocation	LTSM	LTS
Cut-off of West Little Llagas Creek	N/A	LTSM
Night work	LTSM	N/A
Sediment management	N/A	LTSM
Minor maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction related impacts to special-status bats would be similar as described in Impact WILD-3 T, except under the NRCS Alternative there would be more impact to upland habitat because this alternative requires a larger ROW and an increased amount of vegetation removed in Reach 8; increased construction related impacts to upland and riparian habitat would results in more direct and indirect impacts to roosting bats through more disturbance to potential roosting and foraging habitat. With increased channel widening/deepening and culvert replacement activity through downtown Morgan Hill in Reach 8, impacts to roosting and foraging habitat for bats would be increased compared to the Preferred Alternative.

All other construction related impacts to roosting bats are similar to those described in Impact WILD-3 T.

Operations and Maintenance

As with the Preferred Alternative, periodic maintenance activities as described in Section 2.4.5 could potentially disturb foraging habitat. Sediment and debris removal as part of culvert maintenance could also disturb roosting bats.

Operation and maintenance related impacts to roosting bats are similar to those described in Impact WILD-3 T, but there would be no new tunnel for bats to potentially colonize.

Best Management Practices (BMPs)

The following SCVWD project BMPs would reduce impacts to roosting bats:

> **BI-4:** Minimize Access Impacts—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species—applicable to the construction, operation, and maintenance phase of all elements.

- **BI-7:** Avoid Secondary Poisoning from Rodenticide Use—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-10:** Minimize Impacts to Vegetation Whenever Clearing (or Trimming) is Necessary—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-11:** Minimize Root Impacts to Woody Vegetation—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-12:** Avoid Special Status Plant Species and Special Status Natural Communities—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-13:** Plant Local Ecotypes of Native Plants and Choose Appropriate Erosion-Control Seed Mixes—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-17:** Minimize Predator-Attraction Effects on Wildlife—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-3:** Consult the Pest Control Advisor for Alternatives Evaluation & Approval of Pest Control—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-5:** Follow All Posting & Notification Requirements for Pesticide Use—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-10:** Assure Proper Vehicle and Equipment Fueling—applicable to the construction, operation, and maintenance phase of all elements.
- **NO-1:** Minimize Noise Pollution—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-4:** Limit Impacts of Sediments on Water Quality—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-14:** Use Temporary Seeding for Erosion Control, as appropriate—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-18:** Maintain Clean Conditions at Work Sites—applicable to the construction, operation, and maintenance phase of all elements.

Implementing the above project BMPs would reduce impacts to common and special-status bats by preventing their injury or mortality. However, impacts to roosting bats and their habitat may occur if loss of occupied maternal colonies or roosting habitat could not be avoided. When impacts to occupied habitat cannot be avoided the following mitigation measures would be implemented to reduce the construction impacts to roosting bats to a less-than-significant level.

Mitigation Measures

Mitigation Measure WILD-2e T: Minimize Nightwork Disruption to Wildlife.

Mitigation Measure WILD-3a T: Preconstruction Surveys for Common and Special-status Bats prior to Removal of Trees and Removal/Replacement of Road Culverts.

Mitigation Measure WILD-3b T: Provide Alternative Bat Roost.

With the implementation of the above BMPs, Mitigation Measures WILD-2e, WILD-3a, and WILD-3b T, impacts to special-status bats would be reduced to less-than-significant levels.

WILD-4 NRCS—Potential for adverse effects on San Francisco dusky-footed woodrat

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Vegetation removal and maintenance	LTSM	LTS
Sediment management	N/A	LTS
Upland grading (access to maintenance roads/pedestrian paths)	LTSM	LTS
Channel modification (excavation and grading)	LTSM	N/A
Construction and maintenance of the Lake Silveira element	LTSM	B
Night work	LTSM	N/A
Minor maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

San Francisco dusky-footed woodrat have the potential to occur with the Project area and in riparian woodland habitat. Vegetation removal, particularly removal of riparian scrub adjacent to the channel, and upland grading for access and maintenance road would have the potential to remove and or destroy nesting habitat. Under the NRCS Alternative there would be an increased right of way, increased amounts of vegetation removal along the existing West Little Llagas channel, and increased culvert replacements as compared to the Preferred Alternative. Increased upland habitat disturbance and increased vegetation removal under this alternative would increase the potential for direct and indirect impacts to woodrats.

All other construction related impacts to San Francisco dusky-footed woodrat are similar to those described in Impact WILD-4 T.

Operations and Maintenance

The types and extent of impacts resulting from operation and maintenance activities would be similar as those described in Impact WILD-4 T. Implementation of SCVWD project BMPs as described in Impact WILD-4 T would reduce direct and indirect operation and maintenance impacts to less-than-significant levels.

Best Management Practices (BMPs)

The following SCVWD project BMPs would reduce impacts on San Francisco dusky-footed woodrat.

> **BI-4:** Minimize Access Impacts—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species Impacts—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-10:** Minimize Impacts to Vegetation from Clearing and Trimming Impacts—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-11:** Minimize Root Impacts to Woody Vegetation Impacts—applicable to the construction, operation, and maintenance phase of all elements.

- **BI-12:** Avoid Special Status Plant Species and Special Status Natural Communities Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-13:** Choose Local Ecotypes of Native Plants and Appropriate Erosion-Control Seed Mixes Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-16:** Avoid Animal Entry and Entrapment Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-17:** Minimize Predator-Attraction Effects on Wildlife Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-3:** Minimize Use of Pesticides Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-5:** Comply with All Pesticide Usage Requirements Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-9:** Limit Vehicle and Equipment Cleaning to Appropriate Locations Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-10:** Ensure Proper Vehicle and Equipment Fueling and Maintenance Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **NO-1:** Minimize Noise Pollution Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-14:** Use Temporary Seeding for Erosion Control, as appropriate—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-18:** Maintain Clean Conditions at Work Sites—applicable to the construction, operation, and maintenance phase of all elements.

Implementing the above project BMPs would reduce impacts to San Francisco dusky-footed woodrat by preventing their injury or mortality. However, impacts to woodrat habitat may occur if loss of occupied breeding habitat could not be avoided. Loss or removal of breeding habitat from Project activities may result in a substantial impact to the regional populations of this species, and in that case the impact would be significant. When impacts to occupied habitat cannot be avoided, the following mitigation measures would be implemented to reduce the construction impacts to San Francisco dusky-footed woodrat to a less-than-significant level.

Mitigation Measures

Mitigation Measure BOT-1c T: Prepare a Revegetation and Monitoring Plan.

Mitigation Measure WILD-2e T: Minimize Nightwork Disruption to Wildlife.

Mitigation Measure WILD-4 T: Preconstruction Surveys for San Francisco Dusky-footed Woodrat Nests prior to Vegetation Removal.

With the implementation of above BMPs and Mitigation Measures BOT-1c, WILD-2e, and WILD-4 T, the impacts to San Francisco dusky-footed woodrats would reduce impacts to less-than-significant levels.

WILD-5 NRCS—Potential for adverse effects on special-status invertebrates (i.e., Opler's longhorn moth and Bay checkerspot butterfly)

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Vegetation removal and maintenance	LTSM	LTS
Upland grading (access to maintenance roads/pedestrian paths)-	LTSM	LTS
Construction and maintenance Lake Silveira element	LTSM	B
Night work	LTSM	N/A
Minor maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Opler's longhorn moth and Bay checkerspot butterfly have the potential to occur with the Project area and in adjacent grasslands where their host plants could occur. Vegetation removal, particularly removal of grasslands adjacent to the channel, and upland grading for access and maintenance road would have the potential to remove and or destroy larval food plant. Under the NRCS Alternative there would be an increased right of way, increased amounts of vegetation removal along the existing West Little Llagas channel, and increased culvert replacements as compared to the Preferred Alternative, although there are not known serpentine habitats through downtown Morgan Hill. All other construction related impacts to serpentine associated special-status invertebrates are similar to those described in Impact WILD-5 T.

Operations and Maintenance

Operation and maintenance impacts to special-status invertebrates would be similar to those described in WILD-5 T. Operation and maintenance, such as vegetation maintenance activities (e.g., vegetation trimming and removal), would be managed similarly to the SCVWD SMP but under permits and conditions for the Proposed Project. Implementation of the following BMPs would reduce operation and maintenance impacts to special-status invertebrates to less-than-significant levels.

Best Management Practices (BMPs)

The SCVWD project BMPs would minimize direct and indirect construction impacts on special-status invertebrates. These BMPs include the following:

> **BI-4:** Minimize Access Impacts—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-10:** Minimize Impacts to Vegetation from Clearing and Trimming—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-11:** Minimize Root Impacts to Woody Vegetation—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-12:** Avoid Special Status Plant Species and Special Status Natural Communities—applicable to the construction, operation, and maintenance phase of all elements.

- **BI-13:** Choose Local Ecotypes of Native Plants and Appropriate Erosion-Control Seed Mixes—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-3:** Minimize Use of Pesticides—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-5:** Comply with All Pesticide Usage Requirements—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-9:** Limit Vehicle and Equipment Cleaning to Appropriate Locations—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-10:** Ensure Proper Vehicle and Equipment Fueling and Maintenance—applicable to the construction, operation, and maintenance phase of all elements.

Implementing the above project BMPs would reduce impacts to special-status invertebrates by preventing their injury or mortality. However, impacts to foraging and breeding habitat, serpentine grassland, may occur if loss of occupied breeding habitat could not be avoided. Loss or removal of breeding habitat from Project activities may result in a substantial impact to local populations and in that case the impact would be significant. When impacts to occupied habitat cannot be avoided the following mitigation measures would be implemented to reduce the impact to special-status invertebrates to a less-than-significant level.

Mitigation Measures

Mitigation Measure WILD-2e T: Minimize Nightwork Disruption to Wildlife.

Mitigation Measure WILD-5a T: Conduct Plant Surveys for Host Plants of Special-status Invertebrates.

Mitigation Measure WILD-5b T: Compensatory Mitigation for Impacts to Serpentine-associated Special-status Invertebrates.

The implementation of the above BMPs and Mitigation Measures WILD-2e, WILD-5a, and WILD-5b T would reduce impacts on special-status invertebrates to less-than-significant levels.

WILD-6 NRCS—Potential for adverse effects on migratory mammals, including San Joaquin kit fox and American badger

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Vegetation removal and maintenance	LTSM	LTS
Channel modification (excavation and grading)	LTSM	LTS
Upland grading (access to maintenance roads/pedestrian paths)	LTSM	LTS
Construction and maintenance of the Lake Silveira element	LTSM	B
Night work	LTSM	N/A
Minor maintenance activities	N/A	LTS
Construction and maintenance of maintenance access roads	LTSM	LTS
Sediment management	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Potential habitat occurs within the Project area that could provide suitable migratory corridors for common and special-status species, such as coyote, deer, bobcat, San Joaquin kit fox, and American badger. Wildlife could use the habitats within the Project area and habitat adjacent to the Project area for foraging, water, and as refugia.

Under the NRCS Alternative there would be an increased ROW, increased vegetation removal along West Little Llagas Creek channel, and increased culvert replacement in Reach 8 compared to the Preferred Alternative. Increased construction activities would increase potential impacts to habitat that migratory mammals would use during dispersal events. This area is highly developed and urbanized, thus does not provide a high quality migratory corridor to such mammalian species as the San Joaquin kit fox or American badger; these species would not likely occur in that reach. Impacts from construction of these structures in Reach 8 would result in a less-than-significant impact on San Joaquin kit fox and American badger.

All other construction impacts to migratory mammals, including San Joaquin kit fox and American badger, are similar to those described in Impact WILD-6 T.

Operations and Maintenance

Operation and maintenance related impacts to migratory mammals, including San Joaquin kit fox and American badger, are similar to those described in Impact WILD-6 T. There would be in increased in vegetation sediment in downstream reaches compared to the Preferred Alternative. Periodic removal of riparian vegetation to maintain conveyance capacities could potentially disturb foraging habitat. Vehicles and crews maintaining new structures could disturb both common and special-status mammalian species taking refuge adjacent to the channel. The operation and maintenance impacts (both direct and indirect) to migratory mammalian species, including San Joaquin kit fox and American badger, would be similar to those described in Impact WILD-6 T.

Best Management Practices (BMPs)

The SCVWD project BMPs would minimize direct and indirect construction impacts on migratory mammalian species, including San Joaquin kit fox and American badger. These BMPs include the following:

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-4:** Minimize Access Impacts—applicable to the construction, operation, and maintenance phase of all elements.

> **Bi-5:** Remove Temporary Fills as Appropriate—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-8:** Avoid Impacts to Nesting Migratory Birds—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-10:** Minimize Impacts to Vegetation from Clearing and Trimming**—**applicable to the construction, operation, and maintenance phase of all elements.

> **BI-11:** Minimize Root Impacts to Woody Vegetation—applicable to the construction, operation, and maintenance phase of all elements.

- **BI-12:** Avoid Special Status Plant Species and Special Status Natural Communities—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-13:** Plant Local Ecotypes of Native Plants and Choose Appropriate Erosion-Control Seed Mixes—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-3:** Consult the Pest Control Advisor for Alternatives Evaluation & Approval of Pest Control—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-5:** Comply with All Pesticide Usage Requirements—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-9:** Clean Vehicles and Equipment—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-10:** Assure Proper Vehicle and Equipment Fueling—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-1:** Conduct Work from Top of Bank—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-4:** Handle Sediments so as to Minimize Water Quality Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-5:** Avoid Runoff from Soil Stockpiles—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-14:** Use Temporary Seeding for Erosion Control as Appropriate—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-18:** Maintain Clean Conditions at Work Sites—applicable to the construction, operation, and maintenance phase of all elements.
- **NO-1:** Minimize Noise Pollution—applicable to the construction, operation, and maintenance phase of all elements.

Implementing the above project BMPs would reduce impacts to common and special-status mammalian species, including San Joaquin kit fox and American badger, by preventing their injury or mortality. However, impacts would occur if loss of occupied breeding habitat could not be avoided. When impacts to migration corridors cannot be avoided the following mitigation measures would be implemented to reduce the construction impacts to migratory special-status mammalian species, including San Joaquin kit fox and American badger, to a less-than-significant level.

Mitigation Measures

Mitigation Measure WILD-2e T: Minimize Nightwork Disruption to Wildlife.

Mitigation Measure WILD-2f T: Special-status Species Environmental Awareness Training and Construction Avoidance Measures.

Mitigation Measure WILD-6 T: Implementation of USFWS Standardized Recommendations for Protection of the San Joaquin Kit Fox prior to or during ground disturbance.

The implementation of above BMPs and Mitigation Measures WILD-2e, WILD-2f, and WILD-6 T would reduce impacts to less-than-significant levels.

3.5.5.4 Culvert/Channel Alternative

The Culvert/Channel Alternative would require a larger ROW and increase the amount of vegetation to be removed along the existing West Little Llagas Creek in Reach 8 relative to the Preferred Alternative. The Culvert/Channel Alternative differs from the Preferred Alternative in that it would increase the Project footprint in Reach 8 with the construction of a 1,700-foot segment of a double box culvert through the Britton School athletic fields and continue under Del Monte Avenue to West 2nd Street. Flows would pass through this section and would result in a 1,820-foot section of the existing channel drying up, except for local runoff. Substantially reducing flows through this section could result in the permanent loss of up to 0.33 acre of jurisdictional wetlands; however, several other habitat categories would be less impacted than for the NRCS Alternative (see Section 3.4, Botanical Resources, for detailed discussion). From West 2nd Street to West Dunne Avenue the same channel widening and deepening, along with culvert replacements at 2nd, 3rd, 4th, and 5th streets, would be the same as described under the NRCS Alternative. All other Project reaches would have the same features described in the Preferred Alternative. The construction approach and duration for the Culvert/Channel Alternative would be the same throughout the entire Project reaches, as previously described for the Preferred Alternative. Operation and maintenance activities would be similar to those described for the Preferred Alternative, except for Reach 8 where the widened channel through Morgan Hill would need to be maintained along with periodic culvert maintenance.

WILD-1 CC—Potential for adverse effects on common and special-status nesting birds

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Vegetation removal and maintenance	LTSM	LTS
Upland grading (access to maintenance roads/pedestrian paths)	LTSM	LTS
Channel excavation and grading	LTSM	N/A
Construction, operation, and maintenance of maintenance access roads	LTSM	LTS
Construction and maintenance of the Lake Silveira element	LTSM	B
Cut-off of West Little Llagas Creek	N/A	LTSM
Sediment management	N/A	LTS
Minor maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Increased construction activities in Reach 8 through commercial areas would result in more construction related direct or indirect impacts to nesting birds as compared to the Preferred Alternative. Although this is marginally suitable habitat, construction of the double box culvert through Reach 8 will take place on previously disturbed areas; however, channel modification and vegetation removal would occur between

West 2nd Street and West Dunne Avenue. Increased construction related impacts to upland and riparian habitat would result in more direct and indirect impacts to nesting birds through more disturbance to nesting and foraging habitat as compared to the Preferred Alternative.

All other construction related impacts to common and special-status nesting birds are similar to those described in Impact WILD-1 T.

Operations and Maintenance

Operations and maintenance related impacts to common and special-status nesting birds are similar to those described in Impact WILD-1 T, except that maintenance would be increased through downtown Morgan Hill in Reach 8 due to more channel to maintain.

Best Management Practices (BMPs)

The following SCVWD project BMPs would reduce impacts to nesting birds.

- **BI-4:** Minimize Access Impacts—applicable to Maintenance and Operations phase of all elements.
- **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-8:** Avoid Impacts to Nesting Migratory Birds—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-9:** Avoid Impacts to Nesting Migratory Birds from Pending Construction—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-10:** Minimize Impacts to Vegetation from Clearing and Trimming—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-11**: Minimize Root Impacts to Woody Vegetation—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-12:** Avoid Special Status Plant Species and Special Status Natural Communities—applicable to the Maintenance and Operations of all elements.
- **BI-13:** Plant Local Ecotypes of Native Plants and Choose Appropriate Erosion-Control Seed Mixes—applicable to the Maintenance and Operations phase of all elements.
- **BI-16:** Avoid Animal Entry and Entrapment—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-17:** Minimize Predator-Attraction Effects on Wildlife—applicable to the Maintenance and Operations phase of all elements.
- **HM-9:** Clean Vehicles and Equipment—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-10:** Assure Proper Vehicle and Equipment Fueling—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-14:** Use Temporary Seeding for Erosion Control, as appropriate—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-18:** Maintain Clean Conditions at Work Sites—applicable to the construction, operation, and maintenance phase of all elements.

Implementing the project BMPs for Impact WILD-1 T would reduce impacts to common and special-status nesting birds by preventing their injury or mortality. However, impacts to nesting bird habitat may occur if

loss of occupied breeding habitat could not be avoided. Loss or removal of breeding habitat from Project activities may result in a substantial impact to regional populations of some nesting birds, including western burrowing owl; thus, the impact could be significant. When impacts to occupied habitat cannot be avoided the following mitigation measures would be implemented to reduce the construction impacts to nesting birds to a less-than-significant level.

Mitigation Measures

Mitigation Measure WILD-1a T: Vegetation Removal during Avian Non-breeding Season.

Implementation of BMPs and Mitigation Measure WILD-1a T would reduce direct and indirect construction impacts on nesting birds to less than significant and would further reduce operation and maintenance impacts.

WILD-2 CC—Potential for adverse effects on special-status reptiles and amphibians including western pond turtle and California tiger salamander

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Upland grading (access to maintenance roads/pedestrian paths)	LTSM	LTS
Vegetation removal and maintenance	LTSM	LTS
Channel modification (excavation and grading)	LTSM	LTS
Construction, operation, and maintenance of maintenance roads	LTSM	LTS
Construction and maintenance of the Lake Silveira element	LTSM	B
Night work	LTSM	N/A
Sediment management	N/A	LTS
Minor maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Increased construction activities in Reach 8 through residential property could result in more construction related impacts to special-status amphibians and reptiles as compared to the Preferred Alternative. Increased construction related impacts to upland and riparian habitat could result in more direct and indirect impacts to amphibians and reptiles through more disturbance to foraging habitat. Construction of the double box culvert through Reach 8 along Hale Avenue, through the Britton School athletic fields, and under Del Monte Avenue will take place on previously disturbed, developed areas. However, flows would bypass approximately 1,820 feet of the existing channel between Hale Avenue and the Del Monte Avenue/West 2nd Street intersection, leaving this section dry except for local runoff thus reducing the availability of wetland habitat (see Section 3.4, Botanical Resources, for detailed discussion). It is unlikely, however, that special-status amphibians and reptiles would be occupying this section due to the surrounding urbanization; therefore, there would not be significant impacts from this activity.

All other construction related impacts to special-status amphibian and reptiles are similar to those described in Impact WILD-2 T; therefore, implementation of BMPs and mitigation would reduce impact to less than significant.

Operations and Maintenance

Operation and maintenance related impacts to special-status amphibians and reptiles are similar to those described in Impact WILD-1 T, except that maintenance would be increased through downtown Morgan Hill in Reach 8 due to more channel to maintain. Implementation of BMPs would reduce impacts to less than significant.

Best Management Practices (BMPs)

The following SCVWD project BMPs would reduce impacts to special-status reptiles and amphibians.

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-4:** Minimize Access Impacts—applicable to Maintenance and Operations phase of all elements.

> **BI-5:** Remove Temporary Fills as Appropriate—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-10:** Minimize Impacts to Vegetation Whenever Clearing (or Trimming) is Necessary—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-11:** Minimize Root Impacts to Woody Vegetation—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-12:** Avoid Special Status Plant Species and Special Status Natural Communities—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-13:** Plant Local Ecotypes of Native Plants and Choose Appropriate Erosion-Control Seed Mixes—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the construction and operation phase of all elements.

> **BI-16:** Avoid Animal Entry and Entrapment—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-17:** Minimize Predator-Attraction Effects on Wildlife—applicable to the Maintenance and Operations phase of all elements.

> **HM-3:** Consult the Pest Control Advisor for Alternatives Evaluation & Approval of Pest Control—applicable to the construction, operation, and maintenance phase of all elements.

> **HM-5:** Comply with All Pesticide Usage Requirements—applicable to the construction, operation, and maintenance phase of all elements.

> **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas—applicable to the construction, operation, and maintenance phase of all elements.

> **HM-8:** Comply with Restrictions on Herbicide Use in Aquatic Areas—applicable to the construction, operation, and maintenance phase of all elements.

> **HM-10:** Ensure Proper Vehicle and Equipment Fueling and Maintenance—applicable to the construction, operation, and maintenance phase of all elements.

> **WQ-1:** Conduct Work from Top of Bank—applicable to the construction, operation, and maintenance phase of all elements.

- **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-4:** Limit Impacts of Sediments on Water Quality—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-5:** Limit Impacts from Staging and Stockpiling Materials—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-9:** Minimize Erosion from Removal of In-channel Vegetation—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-10:** Limit Impact of Concrete Near Waterways—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-12:** Isolate Work in Non-tidal Sites with Use of Diversion of Bypass—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-14:** Use Temporary Seeding for Erosion Control as Appropriate—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-18:** Maintain Clean Conditions at Work Sites—applicable to the construction, operation, and maintenance phase of all elements.

Implementing the project BMPs for Impact WILD-2 T would reduce impacts to special-status amphibians and reptiles by preventing their injury or mortality. However, impacts to foraging and breeding may occur if loss of occupied breeding habitat could not be avoided. Loss or removal of breeding habitat from Project activities may result in a substantial impact to regional populations of some special-status reptiles and amphibians, including WPT and CTS, in which case the impact would be significant. When impacts to occupied habitat cannot be avoided the following mitigation measures would be implemented to reduce the construction impacts to these species to a less-than-significant level.

Mitigation Measures

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

Mitigation Measure WILD-2a T: Preconstruction Surveys for Special-status Amphibian and Reptile Species.

Mitigation Measure WILD-2b T: Biological Monitor for Dewatering Activities.

Mitigation Measure WILD-2c T: Relocate Special-status Species from Construction Area.

Mitigation Measure WILD-2d T: Implement Compensatory Mitigation for Special-status Amphibians and Reptiles, including California tiger salamander.

Mitigation Measure WILD-2e T: Minimize Nightwork Disruption to Wildlife.

Mitigation Measure WILD-2f T: Special-status Species Environmental Awareness Training and Construction Avoidance Measures.

Mitigation Measure WILD-2g T: Bullfrog Population Monitoring and Control at Lake Silveira.

With the implementation of the above BMPs and Mitigation Measures BOT-1c T and WILD-2a through WILD-2g T, impacts to special-status amphibians and reptiles would be reduced to a less-than-significant level.

WILD-3 CC—Potential for adverse effects on common and special-status bats

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Vegetation removal and maintenance	LTSM	LTS
Upland grading (access to maintenance roads/pedestrian paths)	LTSM	LTS
Channel modification (excavation and grading)	LTSM	LTS
Bridge/culvert replacement/install and maintenance	LTSM	LTS
Exhume two bridges- Reach 7A	LTS	B
Construction and maintenance of the Lake Silveira element	LTSM	B
Structure Relocation	LTSM	LTS
Cut-off of West Little Llagas Creek	N/A	LTSM
Night work	LTSM	N/A
Sediment Management	N/A	LTS
Minor maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Increased construction activities in Reach 8 through residential property could result in more construction related impacts to common and special-status bats as compared to the Preferred Alternative. Increased construction related impacts to upland and riparian habitat from channel modification and vegetation removal between West 2nd Street and West Dunne Avenue could result in more direct and indirect impacts to roosting bats through more disturbance to roosting and foraging habitat. The construction of the double box culvert will take place in previously disturbed areas without removal of roosting habitat; therefore, there would not be any impact associated with this activity.

All other construction related impacts to common and species-status bats are similar to those described in Impact WILD-3 T and implementation of BMPs and mitigation would reduce the potential for impacts to less than significant levels.

Operations and Maintenance

Under the Culvert Channel Alternative, the double box culvert constructed could potentially be used for night roosts (H.T. Harvey & Associates 2013e). Culverts would need to be periodically inspected and debris removed. Maintenance activities may displace or directly harm bats using this structure; loss of individual special-status bats would be a significant impact. West Little Llagas Creek would travel through the culvert instead of the segment of the channel between Hale Avenue and Del Monte Avenue. Vegetation and sediment management activities and associated in channel activities would be increased for this alternative; therefore, maintenance impacts to this species would be increased compared to the Preferred alternative.

All other operation and maintenance related impacts to roosting bats are similar to those described in Impact WILD-3 T. Impacts would be reduce to less than significant with the implementation of BMPs.

Best Management Practices (BMPs)

The following SCVWD project BMPs would reduce impacts to roosting bats.

- **BI-4:** Minimize Access Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-7:** Avoid Secondary Poisoning from Rodenticide Use—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-10:** Minimize Impacts to Vegetation Whenever Clearing (or Trimming) is Necessary—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-11:** Minimize Root Impacts to Woody Vegetation—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-12:** Avoid Special Status Plant Species and Special Status Natural Communities—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-13:** Plant Local Ecotypes of Native Plants and Choose Appropriate Erosion-Control Seed Mixes—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-17:** Minimize Predator-Attraction Effects on Wildlife—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-3:** Consult the Pest Control Advisor for Alternatives Evaluation & Approval of Pest Control—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-5:** Follow All Posting & Notification Requirements for Pesticide Use—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-10:** Assure Proper Vehicle and Equipment Fueling—applicable to the construction, operation, and maintenance phase of all elements.
- **NO-1:** Minimize Noise Pollution—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-4:** Limit Impacts of Sediments on Water Quality—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-14:** Use Temporary Seeding for Erosion Control as Appropriate—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-18:** Maintain Clean Conditions at Work Sites—applicable to the construction, operation, and maintenance phase of all elements.

Implementing the project BMPs from Impact WILD-3 T would reduce impacts to common and special-status bats by preventing their injury or mortality. However, impacts to roosting bat habitat may occur if loss of occupied maternal colonies or roosting habitat could not be avoided. When impacts to occupied habitat cannot be avoided the following mitigation measures would be implemented to reduce the impact to roosting bats to a less-than-significant level.

Mitigation Measures

Mitigation Measure WILD-2e T: Minimize Nightwork Disruption to Wildlife.

Mitigation Measure WILD-3a T: Preconstruction Surveys for Special-status Bats prior to Removal of Trees and Removal/Replacement of Road Culverts.

Mitigation Measure WILD-3b T: Provide Alternative Bat Roost.

With the implementation of above BMPs and Mitigation Measures WILD-2e T, WILD-3a T, and WILD-3b T, the impacts on common and special-status bats would be reduced to less-than-significant levels.

WILD-4 CC—Potential for adverse effects on San Francisco dusky-footed woodrat

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Vegetation removal and maintenance	LTSM	LTS
Sediment management	N/A	LTS
Upland grading (access to maintenance roads/pedestrian paths)	LTSM	LTS
Channel modification (excavation and grading)	LTSM	LTS
Construction of culverts	NI	LTS
Construction and maintenance of the Lake Silveira element	LTSM	B
Night work	LTSM	N/A
Minor maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Increased construction activities in Reach 8 through residential property could result in more construction related impacts to San Francisco dusky-footed woodrat as compared to the Preferred Alternative. Increased construction related impacts to upland and riparian habitat from channel modification and vegetation removal between West 2nd Street and West Dunne Avenue could result in more direct and indirect impacts to woodrats through more disturbance to denning and foraging habitat. The construction of the double box culvert will take place in previously disturbed areas without removal of riparian habitat; therefore, there would not be any impact associated with this activity.

All other construction related impacts to San Francisco dusky-footed woodrat are similar to those described in Impact WILD-4 T. Implementation of BMPs and mitigation would reduce the impact to less than significant levels.

Operations and Maintenance

Operation and maintenance activities, such as vegetation and minor maintenance, would be similar to those described in Impact WILD-4 T, except for the maintenance of the channel between West 2nd Avenue and West Dunne Avenue. Vegetation and sediment management activities and associated with in channel activities would be increased for this alternative compared to the Preferred Alternative; however the use of project BMPs would reduce the potential for impacts to less than significant levels.

Best Management Practices (BMPs)

The following SCVWD project BMPs would reduce impacts on San Francisco dusky-footed wood rat.

- **BI-4:** Minimize Access Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-10:** Minimize Impacts to Vegetation from Clearing and Trimming Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-11:** Minimize Root Impacts to Woody Vegetation Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-12:** Avoid Special Status Plant Species and Special Status Natural Communities Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-13:** Choose Local Ecotypes of Native Plants and Appropriate Erosion-Control Seed Mixes Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-16:** Avoid Animal Entry and Entrapment Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-17:** Minimize Predator-Attraction Effects on Wildlife Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-3:** Minimize Use of Pesticides Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-5:** Comply with All Pesticide Usage Requirements Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-9:** Limit Vehicle and Equipment Cleaning to Appropriate Locations Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-10:** Ensure Proper Vehicle and Equipment Fueling and Maintenance Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **NO-1:** Minimize Noise Pollution Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-14:** Use Temporary Seeding for Erosion Control as Appropriate—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-18:** Maintain Clean Conditions at Work Sites—applicable to the construction, operation, and maintenance phase of all elements.

Implementing the project BMPs from Impact WILD-4 T would reduce impacts to San Francisco dusky-footed wood rat by preventing their injury or mortality. However, impacts to San Francisco dusky-footed wood rat habitat may occur if loss of occupied breeding habitat could not be avoided. Loss or removal of suitable habitat from Project activities may result in a substantial impact to local populations of woodrat, in which case the impact would be significant. When impacts to occupied habitat cannot be avoided the following mitigation measures would be implemented to reduce the impact to San Francisco dusky-footed woodrat to a less-than-significant level.

Mitigation Measures:

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

Mitigation Measure WILD-2e T: Minimize Nightwork Disruption to Wildlife.

Mitigation Measure WILD-4 T: Preconstruction Surveys for San Francisco Dusky-footed Woodrat Nests prior to Vegetation Removal.

With the implementation of above BMPs and Mitigation Measures BOT-1c, WILD-2e T, and WILD-4 T, the impacts on San Francisco dusky-footed woodrats would reduce impacts to less-than-significant levels.

WILD-5 CC—Potential for adverse effects on special-status invertebrates (i.e., Opler's longhorn moth and Bay checkerspot butterfly)

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Vegetation removal and maintenance	LTSM	LTS
Upland grading (access to maintenance roads/pedestrian paths)	LTSM	LTS
Construction of culverts	NI	N/A
Construction and maintenance of the Lake Silveira element	LTSM	B
Night work	LTSM	N/A
Minor maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Increased construction activities in Reach 8 through residential property could result in more construction related impacts to special-status invertebrates as compared to the Preferred Alternative. Under the Culvert/Channel Alternative there would be increased ROW and increased amounts of vegetation removed along the existing West Little Llagas channel. Increased upland habitat disturbance and increased vegetation removal under this alternative could increase the potential for direct and indirect impacts to special-status invertebrates; however this is unlikely given the lack of serpentine grasslands present. The construction of the double box culvert would not impact special-status serpentine associated invertebrates, because the location of the culvert would be through an existing urban environment and there would be no likelihood of serpentine grassland to occur there.

All other construction related impacts to serpentine associated special-status invertebrates are similar to those described in Impact WILD-5 T. Implementation of BMPs and mitigation would reduce the impact to less than significant levels.

Operations and Maintenance

Operation and maintenance related impacts to special-status invertebrates are similar to those described in Impact WILD-5 T. Implementation of BMPs would reduce the impact to less than significant levels.

Best Management Practices (BMPs)

The following SCVWD project BMPs would minimize construction impacts on special-status invertebrates.

- **BI-4:** Minimize Access Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-10:** Minimize Impacts to Vegetation from Clearing and Trimming—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-11:** Minimize Root Impacts to Woody Vegetation—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-12:** Avoid Special Status Plant Species and Special Status Natural Communities—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-13:** Choose Local Ecotypes of Native Plants and Appropriate Erosion-Control Seed Mixes—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-3:** Minimize Use of Pesticides—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-5:** Comply with All Pesticide Usage Requirements—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-9:** Limit Vehicle and Equipment Cleaning to Appropriate Locations—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-10:** Ensure Proper Vehicle and Equipment Fueling and Maintenance—applicable to the construction, operation, and maintenance phase of all elements.

Implementing the project BMPs from Impact WILD-5 T would reduce impacts to special-status invertebrates by preventing their injury or mortality. However, impacts to foraging and breeding habitat, serpentine grassland, may occur if loss of occupied breeding habitat could not be avoided. Loss or removal of breeding habitat from Project construction activities may result in a substantial impact to local populations, and thus the impact would be significant. When impacts to occupied habitat cannot be avoided the following mitigation measures would be implemented to reduce the construction impact to special-status invertebrates to a less-than-significant level.

Mitigation Measures

Mitigation Measure WILD-2e T: Minimize Nightwork Disruption to Wildlife.

Mitigation Measure WILD-5a T: Conduct Plant Surveys for Host Plants of Special-status Invertebrates.

Mitigation Measure WILD-5b T: Compensatory Mitigation for Impacts to Serpentine-associated Special-status Invertebrates.

The implementation of the above BMPs and Mitigation Measures WILD-2e, WILD-5a, and WILD-5b T would reduce impacts to less-than-significant levels.

WILD-6 CC— Potential for adverse effects on migratory mammals, including San Joaquin kit fox and American badger

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Vegetation removal and maintenance	LTSM	LTS
Channel modification (excavation and grading)	LTSM	LTS
Upland grading (access to maintenance roads/pedestrian paths)	LTSM	LTS
Construction and maintenance of the Lake Silveira element	LTSM	B
Construction of culverts	NI	N/A
Night work	LTSM	N/A
Construction and maintenance of maintenance access roads	LTSM	LTS
Sediment management	N/A	LTS
Minor maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Under the Culvert/Channel Alternative there would be increased ROW and vegetation removal along West Little Llagas channel as compared to the Preferred Alternative. Increased construction activities would increase potential impacts to habitat that migratory mammals could use during dispersal events. The construction of the double box culvert between Hale Avenue and Del Monte Avenue is not anticipated to have impacts to migratory mammals. This area is highly developed and urbanized, thus may not provide a high quality migratory corridor to such mammalian species as the San Joaquin kit fox or American badger. Thus, impacts from construction of this structure in Reach 8 would result in no impact on migratory mammals including San Joaquin kit fox and American badger.

Operations and Maintenance

Operation and maintenance related impacts to migratory mammals are similar to those described in Impact WILD-6 T.

Best Management Practices (BMPs)

The following SCVWD project BMPs would reduce impacts to migratory mammals.

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-4:** Minimize Access Impacts—applicable to the construction, operation, and maintenance phase of all elements.

> **Bi-5:** Remove Temporary Fills as Appropriate—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species—applicable to the construction, operation, and maintenance phase of all elements.

- **BI-8:** Avoid Impacts to Nesting Migratory Birds—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-10:** Minimize Impacts to Vegetation from Clearing and Trimming—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-11:** Minimize Root Impacts to Woody Vegetation—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-12:** Avoid Special Status Plant Species and Special Status Natural Communities—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-13:** Plant Local Ecotypes of Native Plants and Choose Appropriate Erosion-Control Seed Mixes—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-3:** Consult the Pest Control Advisor for Alternatives Evaluation & Approval of Pest Control—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-5:** Comply with All Pesticide Usage Requirements—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-9:** Clean Vehicles and Equipment - applicable to the construction, operation, and maintenance phase of all elements.
- **HM-10:** Assure Proper Vehicle and Equipment Fueling—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-1:** Conduct Work from Top of Bank—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-4:** Handle Sediments so as to Minimize Water Quality Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-5:** Avoid Runoff from Soil Stockpiles—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-14:** Use Temporary Seeding for Erosion Control as Appropriate—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-18:** Maintain Clean Conditions at Work Sites—applicable to the construction, operation, and maintenance phase of all elements.
- **NO-1:** Minimize Noise Pollution—applicable to the construction, operation, and maintenance phase of all elements.

Implementing the above project BMPs would reduce construction and maintenance impacts to common and special-status mammalian species, including San Joaquin kit fox and American badger, by preventing their injury or mortality. The following mitigation measures would be implemented to reduce the construction impacts to migratory special-status mammalian species, including San Joaquin kit fox and American badger, to a less-than-significant level.

Mitigation Measures

Mitigation Measure WILD-2e T: Minimize Nightwork Disruption to Wildlife.

Mitigation Measure WILD-2f T: Special-status Species Environmental Awareness Training and Construction Avoidance Measures.

Mitigation Measure WILD-6 T: Implementation of USFWS Standardized Recommendations for Protection of the San Joaquin Kit Fox prior to or during Ground Disturbance.

The implementation of above BMPs and Mitigation Measures WILD-2e, WILD-2f and WILD-6 T would reduce impacts to less-than-significant levels.

3.5.5.5 Reach 6 Bypass Alternative

The Reach 6 Bypass Alternative differs from the Preferred Alternative in that it would construct a bypass channel between Reach 6 of Llagas Creek and Reach 14 of East Little Llagas Creek to carry flows over the 10 year event. The bypass would run east through open fields, continue under Murphy Avenue and U.S. 101, then connect to Reach 14. East Little Llagas Creek downstream of the bypass (Reach 14) would be designed to carry the extra flow from the upstream channel capacity. The construction approach and duration for the Reach 6 Bypass Alternative would be similar to the Preferred Alternative except for the following: no creek modifications in Reaches 5 and 6 downstream of bypass, greater channel widening in Reach 14 as compared to Preferred Alternative (approximately two times greater), control structures (hydraulic gates) at Reach 6, three bridge constructions at U.S. 101 and Murphy Road, maintenance roads would be constructed at the top of banks on both side of the bypass channel, and culvert modification at Reach 14. Project activities for the upstream Project Reaches 8, 7A, 7B, and 14 (downstream of E. San Martin Avenue to the confluence with Llagas Creek reach) and for the downstream Reach 4 would remain the same as described for the Preferred Alternative. Maintenance of Reaches 5 and 6 would be conducted under the SCVWD SMP since these reaches are not part of this alternative. All other maintenance activities (e.g., vegetation removal, sediment removal, and other minor activities) would be maintained according to the BMPs outlined in Section 2.4.5.

WILD-1 BY—Potential for adverse effects on common and special-status nesting birds

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Vegetation removal and maintenance	LTSM	LTS
Upland grading (access to maintenance roads/pedestrian paths)	LTSM	LTS
Channel modification (excavation and grading)	LTSM	N/A
Construction, operation, and maintenance of maintenance access roads	LTSM	LTS
Construction and maintenance of the Lake Silveira element	LTSM	B
Sediment management	N/A	LTS
Minor maintenance activities	N/A	LTS
Construction of sediment detention basin and inlet weir	LTSM	LTS
Construction of tunnel	LTS	N/A
Bridge construction	LTSM	B
Grade Control Structure - Reach 6	LTSM	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

There are several features unique to the Reach 6 Bypass Alternative that could result in direct and/or indirect impacts to common and special-status nesting birds. Greater channel widening in Reach 14 (approximately two times wider than under the Preferred Alternative) would result in greater losses of nesting bird habitat and could potentially lead to greater direct impacts to nesting birds. Construction activities associated with Reach 6 Bypass, including construction of maintenance roads on top of both side of the bypass channel, could result in direct impacts to nesting birds if construction equipment and personnel kill, injury, or crush ground nesting birds. Indirect impacts to nesting birds could occur if construction activities modified the habitat such that habitat suitability for nesting birds was reduced or destroyed (i.e., through the removal of suitable nesting trees along the maintenance road ROWs). Construction of hydraulic control structures at Reach 6 would have similar direct and indirect impact to nesting birds, as construction activities of the Reach 6 Bypass.

Construction of three new bridges at Murphy Avenue, and U.S. 101 southbound and northbound would have an impact if construction and laydown yards associated with the construction activity removed suitable nesting habitat. However, upon the completion of the bridge construction, some species of nesting birds (e.g., swallows) may utilize the bridge for nesting; thus the impact would be beneficial.

Under the Reach 6 Bypass Alternative, no channel modification would occur in Reaches 5 and 6 downstream of the bypass; this would remove the impacts to nesting birds, as compared to proposed activities under the Preferred Alternative at these reaches. Project activities for upstream Project Reaches 8, 7A, 7B and 14 (downstream of E. San Martin Avenue), and for downstream Reach 4, would be the same as described under the Preferred Alternative (WILD-1 T); thus, the types and levels of impacts would be the same.

Operations and Maintenance

Operation and maintenance impacts to nesting birds are similar to those described in Impact WILD-1 NP and WILD-1 T, except for the maintenance of hydraulic gates to the bypass channel, maintenance of access roads to the bypass channel, and the maintenance of bridges built under the Reach 6 Bypass Alternative. Impacts from hydraulic gates and access roads at the bypass could occur if nesting birds are disturbed, killed, or injured by maintenance activities. Impacts from bridge maintenance work would occur if there were swallows nesting on the structure. Maintenance of Reaches 5 and 6 downstream of the bypass would be carried out through the SCVWD SMP, since these reaches would not be improved under this alternative.

Best Management Practices (BMPs)

The following SCVWD project BMPs would reduce impacts to nesting birds.

> **BI-4:** Minimize Access Impacts- applicable to Maintenance and Operations phase of all elements.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species– applicable to the construction, operation, and maintenance phase of all elements.

> **BI-8:** Avoid Impacts to Nesting Migratory Birds—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-9:** Avoid Impacts to Nesting Migratory Birds from Pending Construction—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-10:** Minimize Impacts to Vegetation from Clearing and Trimming—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-11**: Minimize Root Impacts to Woody Vegetation—applicable to the construction, operation, and maintenance phase of all elements.

- **BI-12:** Avoid Special Status Plant Species and Special Status Natural Communities- applicable to the Maintenance and Operations of all elements.
- **BI-13:** Plant Local Ecotypes of Native Plants and Choose Appropriate Erosion-Control Seed Mixes—applicable to the Maintenance and Operations phase of all elements.
- **BI-16:** Avoid Animal Entry and Entrapment—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-17:** Minimize Predator-Attraction Effects on Wildlife—applicable to the Maintenance and Operations phase of all elements.
- **HM-9:** Clean Vehicles and Equipment—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-10:** Assure Proper Vehicle and Equipment Fueling—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-14:** Use Temporary Seeding for Erosion Control as Appropriate—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-18:** Maintain Clean Conditions at Work Sites—applicable to the construction, operation, and maintenance phase of all elements.

Implementing the above project BMPs would reduce impacts to common and special-status nesting birds by preventing their injury or mortality. However, impacts to nesting bird habitat may occur if loss of occupied breeding habitat could not be avoided. Loss or removal of breeding habitat from Project activities may result in a substantial impact to regional populations of some nesting birds in which case the impact would be significant. When impacts to occupied habitat cannot be avoided the following mitigation measures would be implemented to reduce the construction impacts to nesting birds to a less-than-significant level.

Mitigation Measures

Mitigation Measure WILD-1a T: Vegetation Removal during Avian Non-breeding Season.

Implementation of BMPs and Mitigation Measure WILD-1a T would reduce direct and indirect construction impacts on nesting birds to less than significant and further reduce the operation and maintenance impacts.

WILD-2 BY—Potential for adverse effects on special-status reptiles and amphibians, including western pond turtle and California tiger salamander

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Vegetation removal and maintenance	LTSM	LTS
Upland grading (access to maintenance roads/pedestrian paths)	LTSM	LTS
Channel modifications (excavation and grading)	LSTM	LTS
Construction, operation, and maintenance of maintenance access roads	LTSM	LTS
Sediment management	N/A	LTS
Minor maintenance activities	N/A	LTS
Construction of tunnel	LTSM	LTS
Bridge/culvert replacement/install and maintenance	LTSM	LTS
Grade Control Structure	LTSM	LTS
Construction of sediment detention basin and inlet weir	LTSM	LTS
Construction and maintenance of the Lake Silveira element	LTSM	B
Night work	LTSM	N/A

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

There are several features unique to the Reach 6 Bypass Alternative that could result in direct and/or indirect impacts to common and special-status amphibians and reptiles, including Western pond turtle and CTS. Greater channel widening in Reach 14, (approximately two times wider than under the Preferred Alternative), would result in greater losses of aquatic habitat and could potentially lead to greater direct impacts to special-status amphibians and reptiles. Agriculture dominates the area surrounding Reach 14. Reach 14 is ephemeral and typically dry in summer and fall months; and the channel contains a combination of annual grasses and bare ground. Vegetation along the channel also contains native trees. Because the channel is ephemeral, the potential for occurrence of aquatic reptiles and amphibians is reduced; however, agricultural drainages and ditches (in particular, drainages with emergent vegetation) adjacent to the planted fields could provide suitable habitat for species, such as the WPT.

Construction activities associated with Reach 6 Bypass, including construction of maintenance roads on top of both side of the bypass channel. These actions could result in direct impacts to WPT and CTS primarily through the use of construction equipment. Indirect impacts to special-status amphibians and reptiles could occur if construction activities modified the habitat such that habitat suitability for these species was reduced or destroyed (i.e., destruction of underground burrows necessary for estivation along the maintenance road ROWs). Construction of hydraulic control structures at Reach 6 would have similar direct and indirect impact to amphibians and aquatic reptiles as construction activities of the Reach 6 Bypass. Any construction activities requiring night lighting could cause disorientation and change natural behaviors of special-status amphibians and reptiles resulting in vulnerability to predators or traffic, reduced foraging or mating.

Construction of three new bridges at Murphy Avenue, and U.S. 101 southbound and northbound would have an impact if construction and laydown yards associated with the construction activity, removed suitable aquatic foraging and or breeding habitat.

Reduced construction activities in Reaches 5 and 6 downstream of the bypass would reduce impacts to special-status amphibians and reptiles as compared to the Preferred Alternative. Project activities for upstream Project Reaches 8, 7A, 7B, and 14 (downstream of E. San Martin Avenue), and for downstream Reach 4, would be the same as described under the Preferred Alternative (WILD-2 T); thus, the types and levels of impacts would be the same.

Operations and Maintenance

Operation and maintenance impacts to special-status amphibians and reptiles are similar to those described in Impacts WILD-2 T, except for the maintenance of hydraulic gates to the bypass channel, maintenance of access roads to the bypass channel, and the maintenance of bridges built under the Reach 6 Bypass Alternative. Impacts from hydraulic gates and access roads at the bypass could occur if special-status amphibians and reptiles are disturbed, killed, or injured by maintenance activities. However the use of project BMPs would reduce the potential for impacts to less than significant levels. Maintenance of Reaches 5 and 6 downstream of the bypass would be carried out through the SCVWD SMP since these reaches are not part being improved in this alternative.

Best Management Practices (BMPs)

The following SCVWD project BMPs would reduce impacts to special-status amphibians and reptiles.

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-4:** Minimize Access Impacts—applicable to Maintenance and Operations phase of all elements.

> **BI-5:** Remove Temporary Fills as Appropriate—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-10:** Minimize Impacts to Vegetation Whenever Clearing (or Trimming) is Necessary—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-11:** Minimize Root Impacts to Woody Vegetation—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-12:** Avoid Special Status Plant Species and Special Status Natural Communities—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-13:** Plant Local Ecotypes of Native Plants and Choose Appropriate Erosion-Control Seed Mixes—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the construction and operation phase of all elements.

> **BI-16:** Avoid Animal Entry and Entrapment—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-17:** Minimize Predator-Attraction Effects on Wildlife—applicable to the Maintenance and Operations phase of all elements.

> **HM-3:** Consult the Pest Control Advisor for Alternatives Evaluation & Approval of Pest Control—applicable to the construction, operation, and maintenance phase of all elements.

- **HM-5:** Comply with All Pesticide Usage Requirements—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-8:** Comply with Restrictions on Herbicide Use in Aquatic Areas—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-10:** Ensure Proper Vehicle and Equipment Fueling and Maintenance—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-1:** Conduct Work from Top of Bank—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-4:** Limit Impacts of Sediments on Water Quality—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-5:** Limit Impacts from Staging and Stockpiling Materials—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-9:** Minimize Erosion from Removal of In-channel Vegetation—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-10:** Limit Impact of Concrete Near Waterways—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-12:** Isolate Work in Non-tidal Sites with Use of Diversion of Bypass—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-14:** Use Temporary Seeding for Erosion Control as Appropriate—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-18:** Maintain Clean Conditions at Work Sites—applicable to the construction, operation, and maintenance phase of all elements.

Implementing the project BMPs would reduce impacts to special-status amphibians and reptiles by preventing their injury or mortality. However, impacts to foraging and breeding may occur if loss of occupied breeding habitat could not be avoided. Loss or removal of breeding habitat from Project activities may result in a substantial impact to regional populations of some reptiles and amphibians, including WPT and CTS, in which case the impact would be significant. When impacts to occupied habitat cannot be avoided and must be impacted as a result of the Project activities, the following mitigation measures would be implemented to reduce the impact to special-status reptiles and amphibians to a less-than-significant level.

Mitigation Measures

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

Mitigation Measure WILD-2a T: Preconstruction Surveys for Special-status Amphibian and Reptile Species.

Mitigation Measure WILD-2b T: Biological Monitor for Dewatering Activities.

Mitigation Measure WILD-2c T: Relocate Special-status Species from Construction Area.

Mitigation Measure WILD-2d T: Implement Compensatory Mitigation for Special-status Amphibians and Reptiles, including California tiger salamander.

Mitigation Measure WILD-2e T: Minimize Nightwork Disruption to Wildlife.

Mitigation Measure WILD-2f T: Special-status Species Environmental Awareness Training and Construction Avoidance Measures.

Mitigation Measure WILD-2g T: Bullfrog Population Monitoring and Control at Lake Silveira.

With the implementation of the above BMPs and Mitigation Measures BOT-1c, WILD-2a through WILD-2g T, impacts to special-status amphibians and reptiles would be reduced to a less-than-significant level.

WILD-3 BY—Potential for adverse effects on common and special-status bats

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Vegetation removal and maintenance	LTSM	LTS
Upland grading (access to maintenance roads/pedestrian paths)	LTSM	LTS
Channel modification (excavation and grading)	LTSM	LTS
Bridge/culvert replacement/install and maintenance	LTSM	LTS
Exhume two bridges- Reach 7A	LTSM	B
Structure Relocation	LTSM	LTS
Cut-off of West Little Llagas Creek	N/A	LTSM
Minor maintenance activities	N/A	LTS
Grade Control structure at Reach 6	LTSM	LTS
Construction and maintenance of the Lake Silveira element	LTSM	B
Night work	LTSM	N/A
Sediment management	N/A	LTSM
Construction of tunnel	LTSM	N/A

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction activities associated with Reach 6 Bypass Alternative have the potential to result impacts to common and special-status bats. Greater channel widening in Reach 14 would result in greater loss of roosting bat foraging areas and/or roosting trees, in addition to potential for direct loss of individual bats. Construction of Reach 6 Bypass, and its associated maintenance/access roads and hydraulic control structures, would also reduce roosting bat habitat if construction activities removed suitable roosting trees. Direct impacts would occur if individual bats and maternal colonies were lost or abandon as a result of construction related disruption (e.g., noise, increase human presence etc.). If night work requiring light occurs, it could result in delay of their nightly emergence in the presence of lighting, which could result in shortened feeding time, difficulty in foraging, or increased mortality due to impairment of night vision.

Construction of three new bridges at Murphy Avenue, and U.S. 101 southbound and northbound would have an impact if construction and laydown yards associated with the construction activity, removed

suitable roosting habitat. However, upon the completion of the bridge construction, some species of bats found within the Project area, would utilize the bridge for roosting; thus, the impact would be beneficial to common and special-status roosting bats.

Reduced construction activities in Reaches 5 and 6 (downstream of the bypass) would reduce potential impacts to roosting bats. All other Project activities for upstream Project Reaches 8, 7A, 7B, and 14 (downstream of E. San Martin Avenue), and downstream Reach 4 would result in the same type and extent of construction impacts to bats as described in Impact WILD-3 T.

Operations and Maintenance

Impacts to common and special-status roosting bats could occur as a result of maintenance of hydraulic gates at the bypass channel, maintenance of access roads for the bypass channel, and maintenance of bridges built at Murphy Avenue, and U.S. 101 northbound and southbound. The pallid bat could potentially use the newly constructed structure as a night-roost and during the warmer months (H.T. Harvey & Associates 2013e); thus, maintenance activities have the potential to directly impact roosting bats through killing or injuring an individual that may be roosting upon the structure. Operation and maintenance impacts could result from maintenance of hydraulic gates and/or roads to the bypass channel, if roosting trees are disturbed or removed as a result of the maintenance activity. Maintenance of Reaches 5 and 6 downstream of the bypass would be carried out through the SCVWD SMP since these reaches are not being improved in this alternative. All other maintenance related impacts to roosting bats are similar to those described in Impact WILD-3 T.

Best Management Practices (BMPs)

The following SCVWD project BMPs would reduce impacts to roosting bats.

> **BI-4:** Minimize Access Impacts—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-7:** Avoid Secondary Poisoning from Rodenticide Use—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-10:** Minimize Impacts to Vegetation Whenever Clearing (or Trimming) is Necessary—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-11:** Minimize Root Impacts to Woody Vegetation—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-12:** Avoid Special Status Plant Species and Special Status Natural Communities—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-13:** Plant Local Ecotypes of Native Plants and Choose Appropriate Erosion-Control Seed Mixes—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-17:** Minimize Predator-Attraction Effects on Wildlife—applicable to the construction, operation, and maintenance phase of all elements.

> **HM-3:** Consult the Pest Control Advisor for Alternatives Evaluation & Approval of Pest Control—applicable to the construction, operation, and maintenance phase of all elements.

> **HM-5:** Follow All Posting & Notification Requirements for Pesticide Use—applicable to the construction, operation, and maintenance phase of all elements.

> **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas—applicable to the construction, operation, and maintenance phase of all elements.

- **HM-10:** Assure Proper Vehicle and Equipment Fueling—applicable to the construction, operation, and maintenance phase of all elements.
- **NO-1:** Minimize Noise Pollution—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-4:** Limit Impacts of Sediments on Water Quality—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-14:** Use Temporary Seeding for Erosion Control as Appropriate—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-18:** Maintain Clean Conditions at Work Sites—applicable to the construction, operation, and maintenance phase of all elements.

Implementing the project BMPs would reduce impacts to common and special-status bats by preventing their injury or mortality. However, impacts to roosting bats and their habitat may occur if loss of occupied maternal colonies or roosting habitat could not be avoided during construction. When impacts to occupied habitat cannot be avoided the following mitigation measures would be implemented to reduce the impact to roosting bats to a less-than-significant level.

Mitigation Measures

Mitigation Measure WILD-2e T: Minimize Nightwork Disruption to Wildlife.

Mitigation Measure WILD-3a T: Preconstruction Surveys for Common and Special-status Bats prior to Removal of Trees and Removal/Replacement of Road Culverts.

Mitigation Measure WILD-3b T: Provide Alternative Bat Roost.

Mitigation Measure WILD-3c T: Development and Implementation of a Bat Monitoring Program and Development of Bat/Tunnel Exclusion Devices.

With the implementation of above BMPs and Mitigation Measures WILD-2e, WILD-3a, and WILD-3c T would reduce impacts to less-than-significant levels.

WILD-4 BY—Potential for adverse effects on San Francisco dusky-footed woodrat

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Vegetation removal and maintenance	LTSM	LTS
Sediment management	N/A	LTSM
Upland grading (access to maintenance roads/pedestrian paths)	LTSM	LTS
Channel modification (excavation and grading)	LTSM	N/A
Construction and maintenance of sediment detention basin and inlet weir – Reach 8	LTSM	LTS
New Grade Control Structures	LTSM	LTS
Bridge/culvert replacement/construction and maintenance	LTSM	LTS
Construction and maintenance of the Lake Silveira Mitigation element	LTSM	B
Night work	LTSM	N/A
Minor maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Features of the Reach 6 Bypass Alternative that could result in direct and/or indirect impacts to San Francisco dusky-footed woodrat include construction of the bypass through Reach 6, construction of hydraulic control structures at Reach 6, and construction of access and maintenance roads to the bypass. Construction equipment and personnel may kill, injury, or displace woodrats and their dens. If night work occurs in the vicinity of these nests, it could result in delay of their nightly emergence in the presence of lighting, which could result in shortened feeding time, difficulty in foraging, or increased mortality due to impairment of night vision.

Habitat modification (i.e., through the removal of riparian trees and scrub) at Reach 6 following construction activities may reduce suitability for woodrat and could result in indirect impacts.

There would be greater channel widening and deepening through Reach 14, as compared to the Preferred Alternative; however, construction activities associated with this reach would likely not have a significant impact on San Francisco dusky-footed wood rat as the area is open and does not provide high habitat suitability for woodrats.

Construction of three new bridges at Murphy Avenue, and U.S. 101 southbound and northbound would have an impact if construction and laydown yards associated with the construction activity were placed in suitable woodrat habitat. Construction of the bridges would not impact woodrats, as they are not expected to occur at the proposed bridge locations which are currently in agricultural use.

Reduced construction activities in Reaches 5 and 6 downstream of the bypass would reduce potential impacts to San Francisco dusky-footed woodrat as compared to the Preferred Alternative. Project activities for upstream Project Reaches 8, 7A, 7B and 14 (downstream of E. San Martin Avenue), and for downstream Reach 4 would be the same as described under the Preferred Alternative (WILD-4 T); thus, the types and levels of impacts would be the same.

Operations and Maintenance

The operations and maintenance activities, such as vegetation and minor maintenance, would be similar to those described in Impact WILD-4 T, except for the maintenance of control structures and access/maintenance roads associated with Reach 6 Bypass, and the newly constructed channel. Impacts to woodrats would occur if woodrats were harmed, killed, or displaced from their dens during maintenance activities. Maintenance activities associated with the bridges would not impact woodrats. All other operation and maintenance impacts to San Francisco dusky-footed woodrat are similar to those described in Impact WILD-4 T.

Best Management Practices (BMPs)

The following SCVWD project BMPs would reduce impacts on San Francisco dusky-footed wood rat.

> **BI-4:** Minimize Access Impacts—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species Impacts—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-10:** Minimize Impacts to Vegetation from Clearing and Trimming Impacts—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-11:** Minimize Root Impacts to Woody Vegetation Impacts—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-12:** Avoid Special Status Plant Species and Special Status Natural Communities Impacts—applicable to the construction, operation, and maintenance phase of all elements.

- **BI-13:** Choose Local Ecotypes of Native Plants and Appropriate Erosion-Control Seed Mixes Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-16:** Avoid Animal Entry and Entrapment Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-17:** Minimize Predator-Attraction Effects on Wildlife Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-3:** Minimize Use of Pesticides Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-5:** Comply with All Pesticide Usage Requirements Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-9:** Limit Vehicle and Equipment Cleaning to Appropriate Locations Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-10:** Ensure Proper Vehicle and Equipment Fueling and Maintenance Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **NO-1:** Minimize Noise Pollution Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-14:** Use Temporary Seeding for Erosion Control as Appropriate—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-18:** Maintain Clean Conditions at Work Sites—applicable to the construction, operation, and maintenance phase of all elements.

Implementing the above BMPs would reduce impacts to San Francisco dusky-footed wood rat by preventing their injury or mortality. However, impacts to San Francisco dusky-footed wood rat may occur if loss of occupied breeding habitat could not be avoided. Loss or removal of suitable habitat from Project activities may result in a substantial impact to local populations of woodrat, in which case the impact would be significant. When impacts to occupied habitat cannot be avoided the following mitigation measures would be implemented to reduce the construction impacts to San Francisco dusky-footed woodrat to a less-than-significant level.

Mitigation Measures

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

Mitigation Measure WILD-2e T: Minimize Nightwork Disruption to Wildlife.

Mitigation Measure WILD-4 T: Preconstruction Surveys for San Francisco Dusky-footed Woodrat Nests prior to Vegetation Removal.

With the implementation of above BMPs and Mitigation Measures BOT-1c, WILD-2e and WILD-4 T, the impacts to San Francisco dusky-footed woodrat would be reduced to less-than-significant levels.

WILD-5 BY—Potential for adverse effects on special-status invertebrates (i.e., Opler's longhorn moth and Bay checkerspot butterfly)

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Vegetation removal - and maintenance	LTSM	LTS
Upland grading (access to maintenance roads/pedestrian paths)	LTSM	LTS
Minor maintenance activities	N/A	LTS
Construction and maintenance of the Lake Silveira element	LTSM	B
Night work	LTSM	N/A

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Opler's longhorn moth and Bay checkerspot butterfly have the potential to occur within the Project area and in adjacent grasslands where their host plants could occur. Construction activity that resulted in the removal of grasslands, particularly in serpentine soils, adjacent to the channel, and upland grading for access and maintenance road would have the potential to remove and/or destroy larval food plant. Construction activities associated with Reach 6 Bypass Alternative would result in construction of a bypass channel through Reach 6 and additional widening of Reach 14 (upstream of E. San Martin Avenue). If serpentine soils are within or adjacent to the construction zone, there is potential to directly and indirectly impact serpentine associated special-status invertebrates, including Bay checkerspot butterfly.

Many moths are attracted to artificial lights and stay in close proximity to the light as long as it is turned on. This could result in use of excessive energy, which could result in interference in mating or make them easy prey for nocturnal predators, such as bats if night-time lighting is required for construction.

Construction impacts, both direct and indirect, could occur as a result of construction activities from installation of three bridges under this alternative if the construction area, laydown, and staging area occurs in serpentine soils.

Reduced construction activities in Reaches 5 and 6 downstream of the bypass would reduce impacts to special-status invertebrates as compared to the T Alternative. Project activities for upstream Project Reaches 8, 7A, 7B, and 14 (downstream of E. San Martin Avenue), and for downstream Reach 4, would be the same as described under the Preferred Alternative (WILD-5 T); thus, the types and levels of impacts would be the same.

Operations and Maintenance

Operation and maintenance impacts to special-status invertebrates are similar to those described in Impacts WILD-5 T, with the exception of the maintenance of hydraulic gates to the bypass channel and maintenance of access roads to the bypass channel. Although unlikely, impacts from hydraulic gates and access roads at the bypass could occur if special-status invertebrates are disturbed, killed, or injured by maintenance activities. No impacts to special-status invertebrates would be expected to occur from bridge maintenance since this does not involve vegetation management. Maintenance of Reaches 5 and 6 would be carried out through the SCVWD SMP since these reaches are not part of this alternative. All other maintenance related impacts to special-status invertebrates are similar to those described in Impact WILD-5 T. Implementation of BMPs would reduce the potential of impact to less than significant.

Best Management Practices (BMPs)

The following SCVWD project BMPs would minimize construction impacts on special-status invertebrates.

- **BI-4:** Minimize Access Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-10:** Minimize Impacts to Vegetation from Clearing and Trimming—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-11:** Minimize Root Impacts to Woody Vegetation—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-12:** Avoid Special Status Plant Species and Special Status Natural Communities—applicable to the construction, operation, and maintenance phase of all elements.
- **BI-13:** Choose Local Ecotypes of Native Plants and Appropriate Erosion-Control Seed Mixes—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-3:** Minimize Use of Pesticides—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-5:** Comply with All Pesticide Usage Requirements—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-9:** Limit Vehicle and Equipment Cleaning to Appropriate Locations—applicable to the construction, operation, and maintenance phase of all elements.
- **HM-10:** Ensure Proper Vehicle and Equipment Fueling and Maintenance—applicable to the construction, operation, and maintenance phase of all elements.

Implementing the above SCVWD BMPs would reduce impacts to special-status invertebrates by preventing their injury or mortality. However, impacts to foraging and breeding habitat, serpentine grassland, may occur if loss of occupied breeding habitat could not be avoided. Loss or removal of breeding habitat from Project activities may result in a substantial impact to local populations in which case the impact would be significant. When impacts to occupied habitat cannot be avoided the following mitigation measures would be implemented to reduce the impact to special-status invertebrates to a less-than-significant level.

Mitigation Measures

Mitigation Measure WILD-2e T: Minimize Nightwork Disruption to Wildlife.

Mitigation Measure WILD-5a T: Conduct Plant Surveys for Host Plants of Special-status Invertebrates.

Mitigation Measure WILD-5b T: Compensatory Mitigation for Impacts to Serpentine-associated Special-status Invertebrates.

The implementation of the above BMPs and Mitigation Measures WILD-2e, WILD-5a, and WILD-5b T would reduce impacts to less-than-significant levels.

WILD-6 BY—Potential for adverse effects on migratory mammals, including San Joaquin kit fox and American badger

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Vegetation removal and maintenance	LTSM	LTS
Channel modification (excavation and grading)	LTSM	LTS
Upland grading (access to maintenance roads/pedestrian paths)	LTSM	LTS
Construction of sediment detention basin and inlet weir – Reach 8	LTS	N/A
Construction of tunnel	LTS	N/A
Minor maintenance activities	N/A	LTS
Construction and Maintenance of the Lake Silveira element	LTSM	B
Construction and maintenance of maintenance access roads	LTSM	N/A
Sediment management	N/A	LTS
Bridge construction	LTSM	N/A
New Grade Control Structure at Reach 6	LTSM	LTS
Night work	LTSM	N/A

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Potential habitat occurs within the Project area that could provide suitable migratory corridors for common and special-status species, such as coyote, deer, bobcat, San Joaquin kit fox, and American badger. Wildlife could use the habitats within the Project area and habitat adjacent to the Project area for foraging, water, and as refugia. Features of the Reach 6 Bypass Alternative that could result in direct and/or indirect impacts to migratory mammals include greater channel widening in Reach 14, which would result in greater losses of potentially suitable migratory habitat. Construction activities associated with Reach 6 Bypass, including construction of maintenance roads on top of both sides of the bypass channel, could result in direct impacts to common mammals, such as deer, if construction activities primarily associated with the use of equipment kill, injury, or entrap an individual within the construction zone. Indirect impacts to migratory mammals could occur if construction activities modified the habitat such that habitat suitability for these species was reduced or destroyed (i.e., through the removal of suitable shelter locations or removal of prey items). Construction of hydraulic control structures at Reach 6 would have similar indirect impact to migratory mammals as construction activities of the Reach 6 Bypass.

Construction of three new bridges at Murphy Avenue, and U.S. 101 southbound and northbound would have an impact if construction and laydown yards associated with the construction activity, removed suitable foraging or breeding habitat for migratory mammals.

All other construction impacts to migratory mammals, including San Joaquin kit fox and American badger are similar to those described in Impact WILD-6 T.

Operations and Maintenance

Operation and maintenance impacts to migratory mammals, such as San Joaquin kit fox and American badger, are similar to those described in Impact WILD-6 T, except for the maintenance of hydraulic gates

to the bypass channel, maintenance of access roads to the bypass channel, and the maintenance of bridges built under the Reach 6 Bypass Alternative. Impacts from hydraulic gates and access roads at the bypass could occur if migratory mammals are disturbed, killed, or injured by maintenance activities. Impacts from bridge maintenance work would not likely occur, because these species would not utilize the structure. Maintenance of Reaches 5 and 6 downstream of the bypass would be carried out through the SCVWD SMP since these reaches are not improved in this alternative. All other maintenance related impacts to migratory mammals are similar to those described in Impact WILD-6 T and impacts would be reduced to less than significant levels with the implementation of BMPs.

Best Management Practices (BMPs)

The following SCVWD project BMPs would reduce impacts to migratory mammals, such as San Joaquin kit fox and American badger.

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-4:** Minimize Access Impacts—applicable to the construction, operation, and maintenance phase of all elements.

> **Bi-5:** Remove Temporary Fills as Appropriate—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-target Species—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-8:** Avoid Impacts to Nesting Migratory Birds—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-10:** Minimize Impacts to Vegetation from Clearing and Trimming**—**applicable to the construction, operation, and maintenance phase of all elements.

> **BI-11:** Minimize Root Impacts to Woody Vegetation—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-12:** Avoid Special Status Plant Species and Special Status Natural Communities—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-13:** Plant Local Ecotypes of Native Plants and Choose Appropriate Erosion-Control Seed Mixes—applicable to the construction, operation, and maintenance phase of all elements.

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the construction, operation, and maintenance phase of all elements.

> **HM-3:** Consult the Pest Control Advisor for Alternatives Evaluation & Approval of Pest Control—applicable to the construction, operation, and maintenance phase of all elements.

> **HM-5:** Comply with All Pesticide Usage Requirements—applicable to the construction, operation, and maintenance phase of all elements.

> **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas—applicable to the construction, operation, and maintenance phase of all elements.

> **HM-9:** Clean Vehicles and Equipment - applicable to the construction, operation, and maintenance phase of all elements.

> **HM-10:** Assure Proper Vehicle and Equipment Fueling—applicable to the construction, operation, and maintenance phase of all elements.

- **WQ-1:** Conduct Work from Top of Bank—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-4:** Handle Sediments so as to Minimize Water Quality Impacts—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-5:** Avoid Runoff from Soil Stockpiles—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-14:** Use Temporary Seeding for Erosion Control as Appropriate—applicable to the construction, operation, and maintenance phase of all elements.
- **WQ-18:** Maintain Clean Conditions at Work Sites—applicable to the construction, operation, and maintenance phase of all elements.
- **NO-1:** Minimize Noise Pollution—applicable to the construction, operation, and maintenance phase of all elements.

Implementing the above project BMPs would reduce impacts to common and special-status mammalian species, including San Joaquin kit fox and American badger, by preventing their injury or mortality. The following mitigation measures would be implemented to reduce the construction impact to migratory special-status mammalian species, including San Joaquin kit fox and American badger to a less-than-significant level with mitigation.

Mitigation Measures

Mitigation Measure WILD-2e T: Minimize Nightwork Disruption to Wildlife.

Mitigation Measure WILD-2f T: Special-status Species Environmental Awareness Training and Construction Avoidance Measures.

Mitigation Measure WILD-6 T: Implementation of USFWS Standardized Recommendations for Protection of the San Joaquin Kit Fox prior to or during Ground Disturbance.

With the implementation of above BMPs and Mitigation Measures WILD-2e, WILD-2f, and WILD-6 T, the impacts would be reduced to less-than-significant levels.

3.5.6 Summary of Impacts to Wildlife Resources

Table S-1 identifies the less-than-significant and significant impacts that would result from the Project activities, identified by area of environmental concern.

There are several sensitive wildlife resources identified as occurring or having the potential to occur within Project area and having the potential to be impacted from Project-related activities. These resources include common and special-status nesting birds, special-status reptiles and, special-status and common bats, San Francisco dusky-footed woodrats, special-status invertebrates, and migratory mammals (including special-status San Joaquin kit fox and American badger). With the implementation of BMPs and Mitigation Measures, the potential impacts to these sensitive wildlife resources can be reduced to levels less than significant.

3.6 Aquatic Resources

3.6.1 Introduction

This section describes the aquatic wildlife resources of the Project and discusses Project impacts to aquatic wildlife and habitats that occur within the Project area, including special-status species. In cases where potential impacts have been determined to be "significant", mitigation measures have been proposed to reduce these impacts to less-than-significant levels. Section 3.6.3, Regulatory Setting, describes the regulations and ordinances that would apply to aquatic wildlife resources.

Baseline information on aquatic wildlife resources in the Project area, including special-status species and their habitats, was compiled from existing published and unpublished literature describing aquatic resources in the region, environmental database searches, consultation with local wildlife professionals, and information provided by staff from the SCVWD. Primary data sources include the following:

> Casagrande, J. 2011. *Uvas Creek steelhead distribution, density, growth, and habitat use, 2010*. Prepared for the California Department of Fish and Game. 30 pp.

> Casagrande, J. 2012. *Uvas and Llagas Creek juvenile steelhead distribution and abundance, 2011*. Prepared for the California Department of Fish and Game. 49 pp.

> Smith, J. J. 2007. *Steelhead distribution and ecology in the upper Pajaro River system and mainstem Pajaro River (and stream descriptions, habitat quality ratings and limiting factors by reach for the Pajaro River and for the upper Pajaro River tributaries)*. Unpublished Report, Department of Biology, San José State University, 07 November 2007. 38 pp.

> U.S. Fish and Wildlife Service (USFWS). 2003. *Fish and Wildlife Coordination Act Report for the Llagas Creek Flood Control Project, Santa Clara County, California*. Prepared for U.S. Army Corps of Engineers, San Francisco District, 211 p.

3.6.2 Study Area

The study area for aquatic resources is any area that would be directly, permanently, or temporarily affected by the construction and maintenance activities associated with all the Project alternatives. The Project consists of the upper seven reaches (4, 5, 6, 7A, 7B, 8, and 14) of Llagas Creek, East Little Llagas Creek, and West Little Llagas Creek from just downstream of Buena Vista Avenue. The study area is approximately 13 miles long and includes 6.1 miles of the main branch of Llagas Creek, 2.8 miles along West Little Llagas Creek, 2.4 miles of East Little Llagas Creek (a tributary of Llagas Creek), and 1.3 miles of a new bypass that would be constructed along West Little Llagas Creek to Llagas Creek.

3.6.2.1 Environmental Setting

The environmental setting for aquatic resources includes all areas that could be affected by modifying the channel within the Project area, including reaches within the Project area, reaches immediately upstream and downstream of the Project area that could be affected by Project actions, and tributaries that enter within the Project area, and in upstream and downstream reaches. Channel modifications within the Project area include Llagas Creek from 1,000 feet downstream of Buena Vista Avenue to Monterey Highway, West Little Llagas Creek from Monterey Highway upstream through Llagas Road, and East Little Llagas Creek from the Llagas Creek confluence to just downstream of the Corralitos Creek confluence. Potentially affected areas upstream of the Project area include Llagas Creek upstream of Monterey Highway to Chesbro Reservoir and West little Llagas Creek upstream of Hillwood Lane; downstream areas include Llagas Creek downstream to the confluence with the Pajaro River.

The Llagas Creek watershed drains an area of 104 square miles before joining the Pajaro River, which drains into the Monterey Bay near Watsonville. Llagas Creek originates in the Santa Cruz Mountains,

near the Loma Prieta Mountain Range close to the border of Santa Clara and Santa Cruz counties, at an elevation of approximately 3,000 feet. The creek flows approximately 6 miles from its headwaters to Chesbro Reservoir, then 5 miles from Chesbro Reservoir to the Project area, which begins near the intersection with Monterey Highway. Llagas Creek then flows 5.7 miles through the Project area to the downstream boundary 1,000 feet downstream of Buena Vista Avenue (Figure 2.1-1) and, thereafter, 13 miles downstream to the confluence with the Pajaro River.

Several tributaries enter Llagas Creek within the Project area and just upstream of the Project area. From its headwaters, West Little Llagas Creek flows through Morgan Hill before turning, generally, southeast at Watsonville Road toward U.S. 101. It joins with East Little Llagas Creek near U.S. 101, just upstream of East Middle Avenue. East Little Llagas Creek within the Project area begins just upstream of East Middle Avenue and flows southeast within a channelized section to its confluence with Llagas Creek between Church Avenue and Masten Avenue. Tributaries entering West Little Llagas Creek upstream of the Project area include DeWitt and Edmundsen creeks. Other tributaries entering upstream of the Project area along Llagas Creek below Chesbro Reservoir include Paradise, Machado, Hayes creeks, and numerous ephemeral tributaries.

Aquatic Habitat

Reaches 4 and 5

Reach 4 is the downstream-most reach of Llagas Creek within the Project area. It is an earthen channel, extending approximately 2.4 miles from just downstream of Buena Vista Avenue in the south (downstream) to the East Little Llagas Creek/Llagas Creek confluence in the north (upstream; the intersection of Reaches 4, 5, and 14) (Figures 2.1-7 and 3.6-1). The channel is composed of cobbles, pebbles and sand with some silt/clay, and is largely unshaded with almost no overhanging riparian trees or shrubs. The reach typically dries in late spring and remains as such until early fall or the onset of precipitation. The reach is dry except during and just after significant rainfall (USFWS 2003). The relatively low-gradient reach (<0.3%) is sinuous, containing large bends near Masten and Buena Vista avenues.

Reach 5 is a relatively short (0.5 mile) earthen channel extending west (upstream) from the Llagas Creek/East Little Llagas Creek (Reach 14) confluence to 700 feet upstream of U.S. 101, where it connects with Reach 6 (Figures 2.1-6 and 3.6-2). Similar to Reach 4, Reach 5 is typically dry from late spring to early fall, and is largely unshaded by riparian trees or shrubs. The channel is made up of sand, gravel with some clay/silt, but has few bedforms or discernible aquatic habitat features (e.g., pools and riffles).

Smith (2007) evaluated portions of Reaches 4 and 5 (Llagas Creek from Highway 152 to Church Avenue, which encompasses Reaches 4 and 5) to describe potential steelhead habitat. He concluded that the most limiting factor to steelhead production was spring stream flows to allow smolt outmigration. Smith (2007) noted the presence of grade control structures with fish ladders between Highway 152 and Leavesley Avenue (downstream of the Project area), potentially improving access by reducing the amount of stream flow necessary to allow fish passage. He estimated that adults could, likely, migrate downstream at flows of 10 cubic feet per second (cfs) and smolts could probably emigrate downstream at flows of 3–5 cfs.

USFWS (2003) evaluated riparian and stream habitat within the Project area using a Habitat Evaluation Procedure to develop a Habitat Suitability Index (HSI) for habitat within each reach. The primary components of the stream habitat evaluated were overhead (riparian cover) (percent vegetation overhanging stream), instream cover (percent in-water cover features and type in-water cover), substrate type and condition (streambed particle size and percent embeddedness), and general stream habitat type and condition (sinuosity and number of pools/mile; refer to USFWS [2003] for a complete description of the procedure).



Figure 3.6-1 Reach 4 Looking Downstream from the Intersection of Reaches 5 and 14 (Picture taken January 15, 2013)



Figure 3.6-2 Reach 5 Looking Upstream from the Intersection of Reaches 4 and 14 (Picture taken January 15, 2013)

USFWS (2003) evaluated Reaches 4 and 5. In Reach 4, they found that the stream channel was poorly defined, wide, and shallow, with abundant cobble and gravel. They found relatively good overhead cover from mature trees and a moderate number of pools within the reach. The reach did not have significant spawning area and little potential for such in the future. Reach 5 had very little channel meander and sinuosity, as relatively straight with only two noticeable turns. The reach had a moderate amount of pools (14 observed; 34/mile), but they were not large or deep. They assumed that Reach 5 was not a significant spawning area for native fishes, such as steelhead, and had little potential for use in the future. They noted that in recent years, the upstream half of Reach 5 had intermittent and perennial flow. USFWS (2003) concluded that all components of stream habitat within Reaches 4 and 5 were of high value, with the exception of substrate, which was of medium-to-high value.

Reach 6

Reach 6 is an earthen channel made up of silt, sand, and gravel extending 3.2 miles from 700 feet upstream of U.S. 101 in the south (downstream) to Monterey Road in the north (upstream) (Figure 2.1-5). The upstream (northern) portion of the reach, from Monterey Road to San Martin Avenue (approximately 7,000 feet), is typically perennial, maintained by Chesbro Dam releases. The downstream (southern) portion, to the intersection with Reaches 4 and 5 (approximately 10,650 feet), is intermittent depending on flow conditions as substantial percolation occurs within the reach. Stream flow of 6–8 cfs at the upstream end of the reach can be reduced to <0.5 cfs at the downstream end (Smith 2007).

USFWS (2003) and Smith (2007) evaluated aquatic habitat in portions of Reach 6. USFWS (2003) found high habitat diversity, including pool density (>45/mile) and relatively high-stream substrate usability and condition. The gravel and cobble within the site could potentially provide present and future spawning opportunities. They concluded that all components of stream habitat within Reach 6 were of high value; the highest set of ratings for the entire Project area. Smith (2007) evaluated Llagas Creek from Church Avenue to Silveira Lake, roughly corresponding to Reach 6 to describe potential steelhead habitat. He observed infrequent riffles along the reach made up of fine and coarse gravel and other habitat types composed of silt, sand, and fine gravel. Potential spawning habitat and pools were also infrequent (contrary to USFWS 2003). Spawning patches were relatively sandy, while pools were less than 2-feet deep. Smith (2007) also observed high summer water temperatures within Reach 6 (68–79°F) and concluded that the factors most limiting steelhead were water temperature and fast-water feeding habitat for juvenile steelhead, which declined downstream with gradually, decreasing stream flows and channel gradient.

Reach 7A and 7B

Reach 7A extends approximately 1.55 miles upstream from Reach 6, just above the Monterey Road Bridge, to South La Crosse Drive. The majority of Reach 7A is currently agricultural fields (Figure 2.1-4); there is no existing channel here except for a short 0.3-mile length of trapezoidal shaped constructed channel at the upstream end of the reach. Each of the alternatives would excavate a proposed channel (either an earthen channel [with portions culverted] or a tunnel) approximately 1.25 miles long through Reach 7A to divert flows from West Little Llagas Creek upstream of Watsonville Road to Llagas Creek downstream of Lake Silveira at Monterey Road. Reach 7A does not currently support any fisheries resources, nor is there any CDFW record for threatened or endangered fish species (including South Central California Coast steelhead) (CDFW 2012).

Reach 7B is an earthen channel, approximately 1.4 miles long, containing West Little Llagas Creek in an urban, and residential suburban, area of Morgan Hill between South La Crosse Drive in the south, and West Dunne Avenue in the north (Figure 2.1-3). West Little Llagas Creek is ephemeral, fed in the summer by agricultural and urban runoff, and composed of gravel, sand, silt and clay. The stream channel flows through a suburban area with the channel in the southern half of the reach averaging 75 feet in width, and the northern half (north of Tennant Avenue) averaging 15 feet in width. In the northern portion, the stream channel is adjacent to small businesses and is in an underground culvert for the last 650 feet on the north

end. Similar to downstream reaches (Reaches 4 and 5), Reach 7B dries in late summer to early fall, unable to support steelhead rearing. There is no CDFW record for threatened or endangered fish species (including South Central California Coast steelhead) occurring within Reach 7B (CDFW 2012), nor is there any account within the literature reviewed for this EIR.

USFWS (2003) did not evaluate Reach 7A for stream habitat characteristics, but did evaluate Reach 7B and found a poorly defined streambed or stream channel, rather it was a series of swales, depressions, with perennially wet and seasonally moist areas. The upstream third of the Reach 7B more resembled a functioning stream system (albeit marginal) with a well-defined, but shallow streambed with low banks. They did not expect steelhead to use this reach after construction of Reach 7A connected Reach 7B to Reach 6. They found that most of the reach currently consisted of fine sediment, with no gravel or cobble substrates. USFWS (2003) concluded that all components of stream habitat within Reach 7B were of medium to high value.

Reach 8

Reach 8 is also a portion of West Little Llagas Creek, extending 1.1 miles upstream from Reach 7B through downtown Morgan Hill from West Dunne Avenue in the south (downstream) through Llagas Road in the north (upstream, Figure 2.1-2). The reach is a trapezoidal channel (Figure 3.6-3) for most of its length, with two 250-foot sections passing underground through concrete box culverts. Flow within the reach is intermittent and the channel is gravel, sand, silt, and clay, running through a heavily urbanized area with businesses, residential areas, and roads abutting many portions of the top of the channel bank. There is no CDFW record for threatened or endangered fish species (including South Central California Coast steelhead) occurring within Reach 8 (CDFW 2012), nor is there any account within the literature reviewed for this EIR.



Figure 3.6-3 Reach 8 Looking Upstream from Wright Avenue (Picture taken January 15, 2013)

USFWS (2003) found that Reach 8 was the most highly urbanized section of the Project area, more indicative of an engineered flood control channel than a functioning stream ecosystem. Still, the report noted the presence of five distinct, large pools, likely fed by urban runoff, occurring in the above-ground

portion of the reach that supported fish, including possibly some native minnows and related aquatic organisms. USFWS (2003) concluded that all components of stream habitat within Reach 8 were of medium-to-high value.

Reach 14

Reach 14 is a constructed channel that is a portion of East Little Llagas Creek, which runs parallel to U.S. 101. The reach extends 2.4 miles downstream from near Corralitos Creek to the confluence with Llagas Creek at the intersection of Reaches 4 and 5. The channel was straightened in the 1970s by California Department of Transportation (Caltrans), and several portions are maintained under the SCVWD's countywide SMP. The channel is made up of silt, sand, gravel, and cobble and the banks are lined with grass and some sections of rip-rap (Figure 3.6-4).



Figure 3.6-4 Reach 14 Looking Upstream from the Intersection of Reaches 4 and 5 (Picture taken January 15, 2013)

USFWS (2003) evaluated Reach 14 and found the downstream end from Church Avenue to the confluence Llagas Creek a barren landscape with little or no vegetation, no low-flow channel, and very low or non-existent stream habitat value. The area is an engineered channel with little or no aquatic ecosystem attributes or functioning. The streambed was fair to poor habitat, with few pools and low diversity of habitat types; but there were some sections with unembedded gravel and cobble. The upstream section of Reach 14 "began to look like a stream" with fair-to-good gravel with several pools. They observed 27–35 existing pools within the entire reach. USFWS (2003) concluded that all components of stream habitat within Reach 14 were of medium-to-high value.

The reach is hydrologically connected to West Little Llagas Creek and a portion of Reach 7B (Figure 2.1-8). Reach 7B terminates just south of La Crosse Drive, where West Little Llagas Creek flows generally southeast through urban and agricultural land before becoming East Little Llagas Creek on the east side of U.S. 101. As with downstream (Reaches 4 and 5) and adjacent (Reach 6) reaches, the channel is extremely porous and surface water generally percolates to an aquifer, leaving a dry channel

for much of the year. The reach does not currently support any fisheries resources, nor is there any CDFW record for threatened or endangered fish species (including South Central California Coast steelhead) (CDFW 2012).

Llagas Creek downstream of Chesbro Dam to Monterey Road

Habitat below Chesbro Dam is maintained by nearly year round by flow releases from the dam to provide groundwater recharge via percolation. Releases are left instream to percolate into the channel bed or are diverted to percolation ponds near Church Avenue. The percolation ponds are also operated and managed in conjunction with flow releases from Uvas Reservoir, which are transferred through a 2-mile-long pipeline to Llagas Creek near Santa Teresa Boulevard (USFWS 2003). A relatively small amount of water is transferred from Uvas Reservoir to Llagas Creek, most water from the reservoir is currently allocated to maintain flow for steelhead within Uvas Creek. The reach from Chesbro Dam to Monterey Road contains the highest quality remaining habitat for native fish within Project area, as it has the most suitable water temperatures, areas with cobble and gravel substrate, and likely supports occasional steelhead spawning and rearing. This section of Llagas Creek, with the exception of a small portion just upstream of Monterey Road, is upstream of the Project area; and the Project would not affect hydrology or habitat therein. It is included in the Environmental Setting as aquatic resources within this reach may be affected by Project activities occurring downstream (e.g., in Reach 6).

Lake Silveira

Llagas Creek continues upstream to Chesbro Reservoir from the upstream end of Reach 6 at the intersection of Reaches 6 and 7A. The most downstream end of this reach is occupied by Lake Silveira, which is an on-channel lake created in the 1980s when a landowner removed a berm between a former gravel quarry and Llagas Creek (Smith 2007). Llagas Creek currently flows through Silveira Lake, leaving the former channel as a dry, abandoned streambed, except during flood periods (Harvey and Stanley Associates 1988). Balance Hydrologics (2012) surveyed the bathymetry of Lake Silveira in 2012 and recorded a maximum depth of 10.4 feet and a total area of 8 acres at the surveyed water surface elevation of 304.1 feet (NAVD88). They found physical conditions broadly similar to USFWS (2003), who noted a relatively uniform depth with little nearshore aquatic emergent vegetation. Harvey and Stanley Associates (1988) noted that low dissolved oxygen (DO) concentrations (<3 mg/L) probably occur below 7 feet; and Moore (Balance Hydrologics et al. 2012) recorded 40–60 percent DO saturation within the lake below the hypolimnion, versus >80 percent upstream and downstream (see below for temperature monitoring results) in Lake Silveira. The DO levels within the lake did not meet water quality objectives established by the Regional Water Quality Control Board (Central Coast Region) Water Quality Control Plan (Basin Plan) for the Llagas Creek watershed (RWQCB 2011) that state “for waters not mentioned by a specific beneficial use, DO concentration shall not be reduced below 5.0 mg/L at any time. Median values should not fall below 85 percent saturation as a result of controllable water quality conditions. Harvey and Stanley Associates (1988) also noted that the lake contains sufficient nutrients to sustain phytoplankton blooms. Smith (2007) notes that factors limiting steelhead within Lake Silveira are water temperature, competition for food with warm water fishes, and potential predation of juveniles (De Haven [2003] also notes that sunfish and avian predators may threaten migrating steelhead), suggesting the presence of the lake, and slack water habitat, negatively affect steelhead populations.

USFWS (2003) proposed restoring 1,980-linear feet of Llagas Creek around Lake Silveira, and filling portions of the lake with borrow excavated from Reach 7A. The mitigation proposal called for planting emergent species to create a mosaic of cattails and bulrushes and shallow, open-water habitat. The mitigation would provide thermal benefits for steelhead rearing and migration by removing the lake, which increases surface water temperatures by 3–6°F through increased hydraulic residence time and insolation, and by providing a source of cool water to downstream reaches, (Reach 6), where rearing and downstream migration may occur in the Project area.

Llagas Creek from Chesbro Dam to Lake Silveira

From Chesbro Reservoir downstream to the Uvas pipeline, Llagas Creek is relatively steep and well shaded by riparian vegetation (willows, sycamores, and oaks), with a channel composed of cobble and gravel in riffles and silty sand and gravel within pools (Smith 2007). Smith (2007) examined habitat within this portion of Llagas Creek and found that, in general, spawning gravel is sparse, especially just downstream of the dam; although, it did occur in the middle of the reach, albeit containing substantial amounts of sand and silt. He observed frequent deep pools with substantial cover in the form of undercut banks and overhanging vegetation, and riffles, runs, and heads of pools (steelhead fast-water feeding habitat) made up 15 percent of the aquatic habitat. Smith (2007) also noted the presence of a concrete pad and culvert about 0.3-mile downstream of the dam as a passage barrier to adult steelhead at most stream flows. Steelhead limiting factors were summer streamflow and late summer water temperatures, food production, fast-water feeding habitat, and lack of spawning habitat near the dam.

Downstream of the Uvas Creek pipeline, flow can be substantially higher in Llagas Creek (Smith 2007). The reach is shaded by dense riparian vegetation (willows, sycamore) and is moderately entrenched with silty gravels and sand. Smith (2007) found that spawning gravel was sparse and usually intruded with sand and silt, and that pools >3 feet depth were frequent with substantial escape cover form overhanging vegetation (willows and blackberry). Riffles, runs, and pools made up less than 25 percent of the habitat and summer water temperatures were moderately warm, but dependent on the depth of Uvas Reservoir at the time of the release to Llagas Creek. He recorded mid-July and late-September water temperatures of 60–62 and 67–69°F above the pipeline and 60–64 and 64–73°F below. There are no significant tributaries to Llagas Creek downstream of Chesbro Dam that maintains perennial stream flow or supports steelhead or other fisheries (Smith 2007).

Temperature

In addition to channel drying, water temperature can influence the distribution of aquatic resources within the Project area. Systech Engineering, Inc. (2004) summarized temperature data collected in Reach 6, and upstream of the Project area in Llagas Creek downstream of Chesbro Reservoir. Results from 2000 and 2001 show daily average temperatures during the summer ranged from 70–75°F in Reach 6 above the Church Avenue percolation ponds; at San Martin Avenue and downstream of Llagas Avenue; and from 61–66°F below Santa Teresa Boulevard on Llagas Creek. Systech Engineering, Inc. (2004) used a model to estimate temperatures under high, medium, and low flow and different levels of shading (20% overhead riparian canopy and 0 percent overhead riparian canopy) in Reach 6. They compared the average annual temperature for each scenario and found that shading could potentially reduce average annual stream temperature by up to 5°F (from 68–63°F). Systech Engineering, Inc. (2004) did not simulate continuous summer-water temperatures or present an average seasonal temperature (i.e., an average temperature for spring, summer, fall, and winter). The report concluded that under conditions of higher flow, which reduced hydraulic residence time, and increased riparian canopy, which reduced insolation of the water surface, there could be lower water temperatures in Reach 6. Smith (2007) observed high summer-water temperatures within Reach 6 (68–79°F). He also recorded mid-July and late-September water temperatures of 60–62 and 67–69°F upstream of the Uvas Creek pipeline to Llagas Creek and 60–64 and 64–73°F downstream of the pipeline.

Moore (2012) examined temperature within Lake Silveira to assess the lake's impact and potential stress to the fluvial system. The study measured continuous water temperature upstream, within, and downstream of the lake, with probes measuring at 15-minute intervals during spring (May 24 to June 2, 2011), summer (August 1 to August 8, 2011), and winter (January 25 to February 1, 2012). Moore (2012) found that temperature was consistently higher downstream (ranging from 73–77°F), with the effect most pronounced in the summer, varying from 9–14°F greater than upstream (ranging from 63–68°F), in some cases exceeding water quality objectives established by the Regional Water Quality Control Board (Central Coast Region) Water Quality Control Plan (Basin Plan) for the Llagas Creek watershed

(RWQCB 2011) stating “at no time or place shall the temperature of any water be increased by more than 5°F above natural receiving temperature”. The study concluded that warming within Lake Silveira raises downstream temperatures above optimal temperature range for juvenile steelhead (59–65°F). Daily average temperatures in late August exceeded 75°F, which are stressful and potentially lethal to rearing juvenile steelhead.

Aquatic Species Known to Occur in the Llagas Creek Watershed

A mixture of native and non-native fish species are known to occur in the Project area and upstream of the Project area in Lake Silveira, Llagas Creek below Chesbro Reservoir, and Chesbro Reservoir. USFWS (2003) observed that fishes of Llagas Creek had not recently been inventoried, and besides steelhead (see below), the creek may contain species known to occur within Chesbro Reservoir or downstream in the Pajaro River. Fish known to occur downstream in the Pajaro River include Sacramento blackfish (*Orthodon microlepidotus*), Carp (*Cyprinus carpio*), goldfish, (*Carassius auratys*), mosquitofish (*Gambusia affinis*), Sacramento sucker (*Catostomus occidentalis*), hitch (*Lavinia exilicauda*), Sacramento pikeminnow (*Ptychocheilus grandis*), Golden shiner (*Notemigonus crysoleucas*), prickly sculpin (*Cottus asper*), and three-spine stickleback (*Gasterosteus aculeatus*) (USFWS 2003; Smith 2007). Casagrande (2012) sampled a section of Llagas Creek within Reach 6 downstream of Lake Silveira and Monterey Road in 2011 and found a mixture of native and non-native fish: Sacramento pikeminnow, Sacramento sucker, hitch, prickly sculpin, and common carp. USFWS (2003) recorded the presence of several pools in Reach 8 that supported fish, including possibly native minnows; although, this was a personal observation by the report author and not the result of sampling. The only native minnow reported within Llagas Creek below Chesbro Dam is California roach, but Smith (2007) reported that these fish were extirpated during the 1977 drought and have not recolonized; although, they are abundant upstream of the dam. Moyle et al. (1995) concluded that recent losses of roach populations throughout California have occurred when drought eliminated isolated populations. As such, minnows may occur in some portions of Reach 8, but are likely a non-native, such as mosquitofish. No fish species have been reported to occur in Reaches 7A, 7B, and 14.

The fish population of Lake Silveira likely favors non-native sunfish species and catfish, which are both suited to lake environments (USFWS 2003). Harvey and Stanley Associates (1988) conducted limited gill net sampling of the lake and found hitch, Sacramento blackfish, Sacramento squawfish (*Ptychocheilus grandis*), goldfish, carp, and Sacramento sucker, and noted that Pacific lamprey (*Entosphenus tridentatus*) prickly sculpin, largemouth bass (*Micropterus salmoides*), bluegill (*Lepomis macrochirus*), and black crappie (*Pomoxis nigromaculatus*) were probably present. Smith (2007) also noted that large pikeminnows are common in the lake and could prey on migrating steelhead smolts. Moore (2012b) also found a native freshwater mussel, the California floater (*Anodonta californiensis*), at the inflow of Lake Silveira in 3 feet of water in April 2012.

Upstream of the Project area, Sacramento suckers are common throughout the reach below Chesbro Dam, as are Sacramento pikeminnow and hitch. These species likely occur primarily downstream of Watsonville Road (Smith 2007). Prickly sculpin are present, but scarce, primarily downstream of the pipeline from Uvas Reservoir and may come through the pipeline. Pacific lamprey have occasionally been found near Santa Teresa Boulevard.

Chesbro Reservoir likely supports most of the species seen downstream, plus western roach, catfish (bullhead), various sunfish species, largemouth bass, bluegill, and crappie (USFWS 2003). Surveys by Anderson (1976) and Hunter (1980) observed the following non-special-status fish species within Chesbro Reservoir: largemouth bass, bluegill, black crappie, brown bullhead catfish (*Ameiurus nebulosus*), white catfish (*Ameiurus catus*), channel catfish (*Ictalurus punctatus*), threadfin shad (*Dorosoma petenense*), carp, sucker (*Catostomus* spp.), hitch, sculpin (*Cottus* spp.), redear sunfish (*Lepomis microlophus*), green sunfish (*Lepomis cyanellus*), and golden shiner.

Special-Status Aquatic Species

A review of available studies (Hunter 1980; Smith 2007; Casagrande 2011, 2012; and Balance Hydrologics et al. 2012) and the California Natural Diversity Database (CDFW 2012) indicates the occurrence of one special-status species within the Project area (Table 3.6-1).

Table 3.6-1 Threatened or Endangered Fish Species, and Associated Critical Habitat, potentially occurring within the Project Area

Scientific Name	Common Name	Status [1]	Critical Habitat in or near Project Area?
Oncorhynchus mykiss	South-central California steelhead	FT	Yes

[1] FE= Federally Endangered, FT = Federally Threatened, SE=State of California Endangered, ST = State of California Threatened

South-Central California Coast Steelhead (S-CCC)

The South-Central California Coast Steelhead (S-CCC) ESU is federally listed as threatened (Federal Register 2006). Steelhead trout utilizing the Pajaro River system are considered to be the northern-most component within the S-CCC ESU, as designated by the NMFS (2004). Steelhead within the S-CCC ESU were listed by NMFS as “threatened” on August 18, 1997. The listing was reaffirmed on January 5, 2006. All steelhead within this ESU are considered “winter steelhead” (NMFS 2004) based on their migratory timing and behavior; ascending streams during the winter when winter rainfall results in suitable flow and temperature (Moyle 2002).

Steelhead are the anadromous form of rainbow trout that migrate to the ocean as juveniles and return to inland waters as adults to spawn. Steelhead in the Pajaro River and tributaries (including Llagas Creek) are considered winter (ocean maturing) steelhead, based on the timing of their return to freshwater and the fact that they tend to be sexually mature when reentering freshwater. Winter steelhead generally enter fresh water between November and April when flow and temperatures are suitable, and spawn soon after arriving at their spawning grounds (Moyle 2002). Migrating adults must have sufficient depths and suitable water velocities to facilitate their upstream migration to suitable spawning grounds. Pools with low velocities in association with instream and near stream cover, such as large woody debris (LWD), undercut banks, or submerged or overhanging vegetation, can provide desirable resting areas for migrating adult steelhead. After reaching their spawning areas, redds (nests) are excavated by adult females in suitable gravel substrate, and spawning occurs soon after. Steelhead are unique among Pacific salmonids in that they can be iteroparous; that is, given the right conditions, they may be able to return to the ocean and then spawn again in one or more subsequent years. Steelhead fry emergence from gravel redds occurs in late spring, and steelhead fry rear for 1 to 3 years in fresh water before migrating to the ocean (Moyle 2002). Steelhead generally spend 2 years in the ocean before returning to freshwater to spawn. However, some individuals might spend 1 to 4 years at sea before reaching sexual maturity (Barnhart 1986).

Like other salmonids, steelhead spawning generally occurs in swift, relatively shallow riffles, pool tailouts, or along the edges of fast runs where an abundance of loose gravel exists. Substrate composition is a critical factor determining the suitability of spawning habitat. They require clean, loose gravel that will remain stable during incubation and emergence. Substrate composition must be low in sand and fines, so that water can flow through the gravel, carrying oxygen to the eggs, and carrying waste products away from the eggs. This process allows successful incubation and emergence of the juveniles (Bjornn and Reiser 1991). Eggs are adversely affected if fine sediments fill the interstitial spaces in the gravel. Accumulation of fine sediments or coarse sand can also cause fry to have difficulty emerging from the redd.

After emergence, steelhead fry tend to select shallow water habitat, such as glides and riffles for rearing, usually near some form of cover. Large rocks, root wads, woody debris, and undercut banks can provide

suitable cover. Densities of juvenile steelhead in streams are greatest where instream cover and their invertebrate food source are diverse and abundant. The distribution and abundance of rearing juveniles is influenced by food availability, predation and competition, and the quantity and quality of suitable habitat (Bjornn and Reiser 1991). As fish grow, they move into faster, deeper habitats. During the winter, when water temperatures cool and the metabolic rate of the fish decrease, fish move into pools with ample cover. Temperature is also an important factor for juvenile rearing conditions. In general, water temperatures less than 59°F are suitable for summer rearing of juvenile steelhead, while temperatures greater than 77°F are potentially lethal, and temperatures above 72°C may affect feeding and fitness (Bjornn and Reiser 1991; NMFS 2011).

After 1 to 3 years of rearing in freshwater, most juvenile steelhead begin the process of smoltification[1] and proceed to migrate downstream toward the ocean. Steelhead smolts may immigrate to the ocean from January through June on the receding limb of the winter hydrograph. These fish may reside in the ocean for between 2 and 4 years (Barnhart 1986; Moyle 2002) prior to returning to spawn.

Habitat needs in the Project area for emigrating steelhead (smolts) are similar to those for rearing juvenile steelhead. Migrating smolts are particularly vulnerable to predation, and physical structure and cover (refugia) are important for survival of this life stage. Similar to rearing juveniles, outmigrants rely on the presence of adequate food and suitable resting pools. Lagoons and estuaries at the river mouth are often very important for the rearing of larger juveniles and may provide essential feeding opportunities for smolts prior to entering the ocean (Smith 2002).

Returning adult steelhead are likely to enter the Pajaro River watershed from December through March (Moyle 2002), based on freshwater outflow and temperature. To reach the spawning areas in the upper watershed, adults must enter the Pajaro River/lagoon after the seasonal sandbar has been breached. During periods of low stream flows or droughts, the onset of the steelhead spawning migration can be delayed until breaching of the lagoon sandbar occurs.

Critical habitat[2] for South-Central California Coast steelhead is present in the Project area from Reach 4 (Llagas Creek at Buena Vista Avenue) through Reach 6 (Llagas Creek at Monterey Road), and upstream (Llagas Creek from Monterey Road to Chesbro Dam) and downstream of the Project area (Llagas Creek from Monterey Road to the Pajaro River and stream reaches of the Pajaro River basin to, but not including, the Santa Maria River (NMFS 2005a). Llagas Creek is part of the Pajaro River Subbasin Hydrologic Unit (HU) 3305 and within the South Santa Clara Valley Hydrologic Subarea (HSA) 330530 (NMFS 2005b). CDFW (2013) shows that the segment of Llagas Creek from Monterey Road to Southside Drive, which encompasses Reaches 4, 5, and 6, contains fair spawning habitat, no rearing habitat, and poor migration habitat. The primary constituent elements of South-Central California Coast steelhead critical habitat are: (1) spawning habitat, including spawning substrate and adequate water quantity and quality; (2) freshwater rearing habitat including floodplain connectivity and natural escape and velocity cover; (3) freshwater migration corridors free of obstructions, with water quantity and quality conditions that allow movement; (4) estuarine areas with adequate water quality and quantity to supporting juvenile and adult physiological transitions between fresh and salt water; (5) Nearshore marine areas free of obstruction with water quality and quantity conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation; and (6) offshore marine areas with water quality conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation (NMFS 2005a).

[1] A process whereby physiological and behavioral changes prepare the juvenile steelhead for the marine environment.

[2] Section 3 of the ESA (16 U.S.C. 1532(5)) defines critical habitat as ‘‘(i) the specific areas within the geographical area occupied by the species, at the time it is listed on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed

Steelhead or possibly rainbow trout have been observed just upstream of the Project area in Llagas Creek between Monterey Road and Chesbro Dam. Smith (2007) sampled four sites along this reach in 1997 and found seven juvenile steelhead at the Llagas Road Bridge, just downstream of Chesbro Dam. In 2005, eight juvenile steelhead were found along the same reach. Casagrande (2012) sampled five sites in November 2011 and found a total of ten juvenile steelhead captured at two sites. Seven were captured at near the Llagas Road Bridge, the greatest amount observed since 2005. The remaining steelhead were found near Paradise Land and Bowden Court (upstream of Watsonville Road). All were captured in fast-water habitats (runs and heads of pools). All steelhead observed at the Llagas Road site in 2011 by Casagrande (2012) were young of the year (YOY), ranging in size from 4 to 6 inches (standard length). Yearling steelhead were captured near Bowden Court and were near 9 inches (standard length); and scale samples indicated substantial growth between their first and second years. Casagrande (2011) also observed five YOY near the Llagas Avenue Bridge (Reach 6) in 2010. The Llagas Avenue Bridge site has the best observed habitat conditions (substrate quality, abundance of riffles, runs, and heads of pools), and scale samples indicated substantial growth for YOY. Moore (2012b) captured a YOY steelhead in a shallow riffle in Llagas Creek just upstream of the inflow to Lake Silveira in May of 2012.

It is uncertain whether steelhead captured in Llagas Creek near Chesbro Dam were progeny of anadromous steelhead or rainbow trout. Smith (2007) notes the presence of a concrete pad and culvert about 0.3 mile downstream of the dam as a passage barrier to adult steelhead at most stream flows. Genetic analyses conducted on individuals captured in 1997 (described in Smith [2007]) showed low genetic variation, suggesting samples came from a single spawning pair. Smith (2007) concludes that the present steelhead run in Llagas Creek is likely only a few adult fish, possibly strays that only occur in wetter years. Further, it is possible that fish found in Llagas Creek below Chesbro Dam are also resident trout replenished from Chesbro Reservoir. Hunter (1980) noted that Llagas Creek historically sustained steelhead trout, although construction of Chesbro Dam and channelization of lower stream reaches, restricted steelhead spawning and rearing to the 5-mile reach from Chesbro Dam downstream to Santa Teresa Boulevard. As a consequence of the cumulative adverse impacts of channel modifications, streamflow regulation and the severe 1976–1977 drought, spawning had not occurred since 1975 (observation made in 1980). Hunter (1980) further noted that the 1974-year class was the last successful production in Llagas Creek and that summer sampling through 1980 failed to reveal the presence of juvenile steelhead. These observations led to the conclusion the steelhead population in Llagas Creek is greatly diminished and may not be self-sustaining.

3.6.3 Regulatory Environment

The following federal, state, regional, and local requirements for the Project are described below.

3.6.3.1 Federal

Endangered Species Act

Section 7 of the federal ESA of 1973, as amended (16 USC 1531), requires federal agencies to consult with the Secretary of the Interior through the USFWS and the Secretary of Commerce (NMFS) to ensure that agency actions do not jeopardize the continued existence of endangered or threatened species or adversely modify critical habitat that supports such species. The federally listed as threatened S-CCC ESU steelhead, is listed under the federal ESA and is known to occur within the Project area.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) establishes a management system for national marine and estuarine fishery resources. This legislation requires all federal agencies to consult with NMFS regarding all actions or proposed actions permitted, funded, or undertaken that might adversely affect EFH. EFH is defined as “waters and substrate necessary to fish for

spawning, breeding, feeding, or growth to maturity". The legislation states that migratory routes to and from anadromous fish spawning grounds should also be considered EFH. The phrase "adversely affect" refers to the creation of any impact that reduces the quality or quantity of EFH. Federal activities that occur outside an EFH; but that might, nonetheless, have an impact on EFH waters and substrate, must also be considered in the consultation process. Under the Magnuson-Stevens Act, effects on habitat managed under the Pacific Salmon Fishery Management Plan must also be considered.

The Magnuson-Stevens Act states that consultation regarding EFH should be consolidated, where appropriate, with the interagency consultation, coordination, and environmental review procedures required by other federal statutes, such as NEPA, the FWCA, the federal CWA, and ESA. In most cases, the environmental compliance required for federal activities will satisfy consultation requirements under the Magnuson-Stevens Act. EFH consultation requirements can be satisfied through concurrent environmental compliance requirements if the lead agency provides NMFS with timely notification of actions that might adversely affect EFH and if the notification meets requirements for EFH assessments.

Fish and Wildlife Coordination Act

The FWCA (16 USC 661 et seq.), amended 1946, 1958, 1978, and 1995, requires federal agencies to consult with the USFWS or, in some instances, with NMFS and with state fish and wildlife resource agencies before undertaking or approving water projects that control or modify surface water. The purpose of this consultation is to ensure that wildlife resources held in public trust receive appropriate consideration and be coordinated with the features of these water resource development projects. Federal agencies undertaking water projects are required to fully consider recommendations made by the USFWS, NMFS, and state fish and wildlife resource agencies in Project reports, such as documents prepared to comply with NEPA and CEQA and to include measures to reduce impacts on wildlife in Project plans.

3.6.3.2 State

California Fish and Wildlife Code (Section 1602 Lake or Streambed Alteration Agreement)

The CDFW regulates work that will substantially affect resources associated with rivers, streams, and lakes in California, pursuant to California Fish and Wildlife Code Sections 1600–1607. Under Fish and Wildlife Code Section 1601, any state or local governmental agency or public utility must notify CDFW if it proposes to (1) divert, obstruct, or change the natural flow or bed, channel, or bank of any river, stream, or lake designated by the CDFW in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit; (2) use materials from the streambeds designated by CDFW; or (3) dispose or deposit debris, waste, or other materials containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake designated by CDFW. Any person, governmental agency, or public utility proposing any activity that will divert or obstruct the natural flow or change the bed, channel, or bank of any river, stream, or lake or proposing to use any material from a streambed must first notify CDFW of such proposed activity.

California Endangered Species Act

The CESA of 1974, as amended, is part of the California Fish and Game Code. As a guide to state agencies, Section 2053 states that, "it is the policy of the state that state agencies should not approve projects as proposed which would jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives consistent with conserving the species or its habitat which would prevent jeopardy". CESA prohibits take of species listed or proposed for listing as endangered or threatened. Under CESA Section 2081, the CDFW may

authorize take of state-listed species that is incidental to otherwise lawful activities. Consultation with CDFW under CESA is also required for species designated as "fully protected" under state law.

3.6.3.3 Local

Santa Clara Valley Water District (SCVWD)

The SCVWD developed a Flood Protection and Stream Stewardship Master Plan (SCVWD 2010a). Master Plan goals and objectives relevant to the Project are:

> *Goal 4.1:* Healthy Creek and Bay Ecosystems.
  - *Objective 4.1.2*. Improve watersheds, streams, and natural resources.
    - Balance the protection and restoration of sensitive fisheries and aquatic species, such as steelhead trout, with a reliable water supply.
    - Identify and mitigate capital projects' and operations' impacts to watersheds, streams and natural resources.
    - Identify and implement potential mitigation banking opportunities in order to streamline future mitigation requirements.
    - Provide information on stormwater management and design of floodplains and channels.
  - *Objective 4.1.1.* Balance water supply, natural flood protection and water resources stewardship functions.
    - Implement stream stewardship opportunities, including environmental enhancements and seek to achieve the physical stability and ecological health.
    - Engage in habitat conservation planning.
    - Protect groundwater recharge areas in creeks and riparian corridors.
    - Protect, enhance and restore riparian vegetation and instream and tidal habitat conditions conducive to healthy ecology, including diked historical bayland wetlands, or former salt ponds.
    - Protect, enhance and restore populations of key species indicative of watershed health.
  - *Objective 4.1.3*. Promote awareness of creek and bay ecosystem functions.
    - Provide technical expertise for applying ecosystems functions knowledge.
    - Promote the awareness of sensitive groundwater recharge areas.
    - Advocate for protection, preservation and enhancement of creek and bay ecosystems functions.
    - Promote the preservation of ecological buffers.

The SCVWD also developed a Flood Protection and Stream Stewardship Program with the following goals:

> *Goal 1.* Natural flood protection for residents, businesses, and visitors.

> *Goal 2.* Reduced potential for flood damages.

> *Goal 3.* Healthy creek and bay ecosystems.

> *Goal 4.* Clean, safe water in our creeks and bays.

> *Goal 5.* Improved quality of life in Santa Clara County through trails, open space and water resource management.

Santa Clara County General Plan

According to the Santa Clara County General Plan, 1995–2010 (1994), habitat and biodiversity for Santa Clara County can be maintained and enhanced through the following set of strategies:

> *Strategy #1.* Improve Current Knowledge and Awareness of Habitats and Natural Areas

> *Strategy #2.* Protect the Biological Integrity of Critical Habitat Areas

> *Strategy #3.* Encourage Habitat Restoration

> *Strategy #4.* Evaluate Effectiveness of Environmental Mitigations

Policies applying to riparian and freshwater habitats are listed below:

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

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

- setback of development from the top of the bank;
- regulation of tree and vegetation removal;
- reducing or eliminating use of herbicides, pesticides, and fertilizers by public agencies;
- control and design of grading, road construction, and bridges to minimize environmental impacts and avoid alteration of the streambed and stream banks (freespan bridges and arch culverts, for example); and
- protection of endemic, native vegetation

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

> *R-RC 34.* In flood plains which are not already developed, land uses shall be restricted to avoid the need for major flood control projects which would alter stream flows and vegetation.

> *R-RC 35.* Flood control modifications to be made in streams that have substantial existing natural areas should employ flood control designs which enhance riparian resources and avoid to the maximum extent possible significant alteration of the stream, its hydrology, and its environs.

> *R-RC 36.* In cluster residential developments or other projects where open space dedication is required, the stream, riparian areas, and freshwater marshes should be included within the restricted open space area of the project or protected by other enforceable mechanisms, such as deed restrictions or conservation easements.

> *R-RC 37.* Lands near creeks, streams, and freshwater marshes shall be considered to be in a protected buffer area, consisting of the following:

- *1.* 150 feet from the top bank on both sides where the creek or stream is predominantly in its natural state;
- *2.* 100 feet from the top bank on both sides of the waterway where the creek or stream has had major alterations; and
- *3.* In the case that neither (1) nor (2) are applicable, an area sufficient to protect the stream environment from adverse impacts of adjacent development, including impacts upon habitat, from sedimentation, biochemical, thermal and aesthetic impacts.

> *R-RC 38.* Within the aforementioned buffer areas, the following restrictions and requirements shall apply to public projects, residential subdivisions, and other private non-residential development:
  - *a.* No building, structure or parking lots are allowed, exceptions being those minor structures required as part of flood control projects.
  - *b.* No despoiling or polluting actions shall be allowed, including grubbing, clearing, unrestricted grazing, tree cutting, grading, or debris or organic waste disposal, except for actions such as those necessary for fire suppression, maintenance of flood control channels, or removal of dead or diseased vegetation, so long as it will not adversely impact habitat value.
  - *c.* Endangered plant and animal species shall be protected within the area.
> *R-RC 39.* Within areas immediately adjacent to the stream buffer area, new development should minimize environmental impacts on the protected buffer area, and screening of obtrusive or unsightly aspects of a project should be considered as a means of preserving the scenic value of riparian areas.
> *R-RC 40.* Where new roads, clustered residential development, or subdivisions are proposed in proximity of streams and riparian areas, they should be designed so that:
  - *a.* riparian vegetation is retained;
  - *b.* creeks and streams remain open and unfenced;
  - *c.* there is adequate separation of new roads and building sites from the stream environment.
> *R-RC 41.* Where trails and other recreational uses are proposed by adopted plans to be located in the vicinity of streams and riparian areas or reservoirs, trail alignments and other facilities should be placed on the fringe of the riparian buffer area or at an appropriate distance to avoid disturbance of the stream or vegetation.
  - *1.* Environmental impacts from development or use of the facility shall be effectively mitigated.
  - *2.* Fencing should not restrict access by wildlife to the stream environment.

City of Morgan Hill General Plan

Goals, objectives, and policies regarding aquatic resources are found in City of Morgan Hill General Plan (City of Morgan Hill 2010a). The following goals and policies are relevant to the Project.

> *Goal 5.* Preservation and reclamation of streams and riparian areas as open space.
  - *Policy 5a.* Encourage reclamation of degraded streams and riparian areas.
  - *Policy 5b.* Maintain riparian systems, stream banks and floodways in open space or related open space uses such as wildlife habitat, recreation or agriculture. (South County Joint Action Plan [SCJAP] 16.10)
  - *Policy 5c.* A proposed streamside park along West Little Llagas Creek should be actively implemented and connected to the county trail system. (SCJAP 16.10 & 16.12)
  - *Policy 5d.* Retain natural streamside and riparian areas in their natural state in order to preserve their value as percolation and recharge areas, natural habitat, scenic resources, recreation corridors and for bank stabilization. (SCJAP 15.08)
  - *Policy 5e.* Where flood control projects are needed to protect existing development, minimize disruption of streams and riparian systems, maintaining slow flow and stable banks through design and other appropriate mitigation measures.(SCJAP 15.08)

- *Action 5.1.* Develop Design Guidelines provisions for preserving, reclaiming and incorporating riparian features into development.
- *Action 5.2.* Develop programs for the preservation and reclamation of degraded riparian areas.

> *Goal 6.* Protection of native plants and animals.

- *Policy 6a.* Preserve all fish and wildlife habitats in their natural state whenever possible. Consider development impacts upon wildlife and utilize actions to mitigate those environmental impacts.
- *Policy 6b.* Minimize impacts upon wildlife when considering extending annexations, urban service areas, and other governmental actions that permit urban development of previously undeveloped property.
- *Policy 6c.* Preserve outstanding natural features, such as the skyline of a prominent hill, rock outcroppings, and native and/or historically significant trees.
- *Policy 6d.* Development shall be designed to conserve soil and avoid erosion. (SCJAP 13.06)
- *Policy 6e.* Identify and protect wildlife, rare and endangered plants and animals and heritage resources from loss and destruction. (SCJAP 15.09)
- *Policy 6f.* Access to creeks should be of sufficient width to accommodate trails, flood control access, and protection of riparian habitat. (SCJAP 16.11)
- *Policy 6g.* Encourage use of native plants, especially drought-resistant species, in landscaping to the extent possible.
- *Action 6.1.* Develop Design Guidelines provisions requiring construction activities to avoid disturbance to natural features to the extent feasible.
- *Action 6.2.* Minimize development impacts upon wildlife within hillside areas through regulations of the Hillside Ordinance.
- *Action 6.3.* Consider development impacts upon wildlife in riparian areas and utilize actions to mitigate those environmental impacts.
- *Action 6.4.* Utilize a land modification matrix to evaluate all land modification and environmental impacts upon wildlife.

3.6.4 Impact Analysis

3.6.4.1 Significance Criteria

The following criteria were used to evaluate the significance of effects on fish and fish habitat. Criteria for determining the significance of effects on fish are based on the CEQA Guidelines. Construction, maintenance, and operation activities would result in a significant effect on fish and fish habitat if any of the following were to occur:

> Cause a substantial adverse effect, either directly or through habitat modifications, on any fish species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by CDFW, USFWS, or NMFS.

> Cause substantial adverse effect, either directly or through habitat modification, on a fish species of economic or social value to the region.

> Interfere substantially with the movement of any native resident or migratory fish or impede the use of native fish nursery sites.

> Conflict with the adopted long-term conservation goals of affected parks, wildlife refuges, or approved habitat conservation plans.

This assessment assumes that a substantial reduction in fish habitat or interference with migratory behavior would directly reduce fish population abundance and alter fish communities, resulting in an adverse impact. In regards to migratory behavior, this assessment distinguishes upstream adult migration and downstream outmigration by juveniles. In regards to reduction in fish habitat, this assessment distinguishes potential for effects on spawning and rearing habitat. Temperature impacts were determined by comparing published tolerance values (e.g., lethal temperatures for steelhead >77°F) to potential future conditions.

Potential to conflict with an adopted conservation plan (including, but not limited to, habitat conservation plans and natural community conservation plans) is usually also identified as a significant impact under CEQA. However, as a flood-protection undertaking subject to stringent mitigation and with the SCVWD BMP requirements, the Proposed Project would not result in any such conflicts even through the Santa Clara Valley HCP encompasses the entire Project area; and this issue is not addressed further. In addition, the USFWS Coordination Act Report will be used for mitigation guidelines for this Project and the Santa Clara Valley HCP does not cover aquatic species.

Each impact discussion includes a summary table identifying the level of impact associated each Project activity, followed by text analysis.

3.6.4.2 Approach to Analysis

Impacts on aquatic biological resources were qualitatively evaluated using an approach that links Project activities to direct and indirect effects on special-status aquatic species and their habitats. Effects on aquatic biological resources can be direct, as in the mortality of individual specimens (i.e., during construction), and indirect, as in effects that do not cause the immediate mortality of an individual, but that may reduce the habitat or eliminate the species over time.

3.6.5 Impacts and Mitigation Measures

3.6.5.1 No Project Alternative

Under the No Project Alternative, the Project would not be built, and no new land purchases or construction activities would occur. Flooding in the residential areas of Morgan Hill and San Martin would continue. The bypass channel in Reach 7A would not be constructed under the No Project Alternative. Under the No Project Alternative there would be no fish habitat improvement features installed.

Maintenance activities in the channel would be carried out according to SCVWD SMP. The SMP established procedures for routine maintenance of stream channels involving ongoing sediment removal, vegetation management, bank protection, and associated minor activities. The SMP incorporated a wetland and riparian mitigation program, a series of resource protection policies, and BMPs to reduce environmental impacts from the aforementioned maintenance activities. Maintenance of the Upper Llagas Creek facilities would be conducted in accordance with the guidelines established in the SMP Update.

AQUA-1 NP—Potential for adverse effects on upstream migration of adult S-CCC steelhead

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sediment removal at Reaches 4, 5, 6, 7A, 7B, 8, and 14 features would be the same as under existing conditions	N/A	LTS
Vegetation management at Reaches 4, 5, 6, 7A, 7B, 8, and 14 features would be the same as under existing conditions	N/A	LTS
Minor maintenance activities at Reaches 4, 5, 6, 7A, 7B, 8, and 14 features would be the same as under existing conditions	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No channel modification or improvements would be constructed. Structures (grade control structures and culverts) that could affect upstream migration of adult steelhead would not be installed within the Project area. As such, no impacts to upstream migrating adult steelhead due to construction-related activities would occur in the Project area.

Operations and Maintenance

Maintenance activities in the channel would be carried out according to SCVWD SMP (see description in Section 2.4.5). The environmental impacts for the SCVWD SMP were analyzed in a Final EIR, which was certified in January 2012. The SMP would continue under the No Project Alternative similar to the past 10 years. The SMP incorporates a wetland and riparian mitigation program, a series of resource protection policies, and BMPs to reduce environmental impacts from the aforementioned maintenance activities. Impacts to steelhead upstream migration, resulting from maintenance of channels (as described in Chapter 2), would be minimized by BMPs implemented as part of the SCVWD SMP. SMP BMP GEN-1 specifies the work window (June 15 to October 15) and conditions (no significant rainfall) under which in-channel work may occur. SMP BMP GEN-15 describes on-site monitoring and relocation procedures for native aquatic vertebrates. SMP BMP GEN-33 describes how work sites may be dewatered to conduct sediment maintenance, including recommendations by a qualified biologist to protect native fishes. SMP BMP SED-3 would restore channel features to emulate pre-Project conditions and facilitate fish passage. No new operation or maintenance activities would occur that are not already covered under the SMP and implementation of SMP BMPs would reduce impacts to upstream migrating adult steelhead to less than significant.

Best Management Practices (BMPs) (from SCVWD SMP)

The following summarizes SCVWD SMP BMPs that avoid and minimize impacts on adult S-CCC steelhead migration under the No Project Alternative:

> **GEN-1:** In-channel Work Window Bank—applicable to the operations and maintenance phase of all elements.

> **GEN-15:** Salvage Aquatic Invertebrates from Dewatered Channels—applicable to the operations and maintenance phase of all elements.

> **GEN-33:** De-watering for Non-tidal Sites—applicable to the operations and maintenance phase of all elements.

> **SED-3:** Restore Channel Features—applicable to the operations and maintenance phase of all elements.

Implementation of BMPs would reduce impacts to less than significant.

AQUA-2 NP—Potential for adverse effects on S-CCC steelhead spawning habitat usage and quality

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sediment removal at Reaches 4, 5, 6, 7A, 7B, 8, and 14 features would be the same as under existing conditions	N/A	LTS
Vegetation management at Reaches 4, 5, 6, 7A, 7B, 8, and 14 features would be the same as under existing conditions	N/A	LTS
Minor maintenance activities at Reaches 4, 5, 6, 7A, 7B, 8, and 14 features would be the same as under existing conditions	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No channel modification or improvements would be constructed. As such, no construction impacts to steelhead spawning habitat usage and quality due to construction would occur in the Project area.

Operations and Maintenance

Maintenance activities in the channel would be carried out according to SCVWD SMP (see description in Section 2.4.5), which was analyzed in a Final EIR certified in January 2012, and would continue under the No Project Alternative similar to the past 10 years. The SMP incorporates a wetland and riparian mitigation program, a series of resource protection policies, and BMPs to reduce environmental impacts from the aforementioned maintenance activities. Effects of stream maintenance activities to steelhead spawning habitat usage and quality under the SMP would be minimized by SMP-specific BMPs. SMP BMP GEN-16 specifies that work activities would be conducted from the top of the bank, which will minimize in-stream impacts. SMP BMP GEN-17 would require training for staff to identify special-status species habitat, including potential spawning habitat, SMP BMP GEN-22 would prevent the release of sediment laden water back into waterways after removal from the stream channel, which could potentially affect spawning gravel quality. SMP BMP SED-2 would prevent scour downstream of sediment removal sites through grading to prevent the formation of channel features that may propagate erosion. No new operation or maintenance activities would occur that are not already covered under the SMP and implementation of SMP BMPs would reduce impacts to steelhead spawning habitat usage and quality to less than significant.

Best Management Practices (BMPs) (from SCVWD SMP)

The following summarizes SCVWD SMP BMPs that avoid and minimize impacts on adult S-CCC steelhead migration under the No Project Alternative:

> **GEN-16:** In-channel Minor Activities—applicable to the operations and maintenance phase of all elements.

> **GEN-17:** Employee/Contractor Training—applicable to the operations and maintenance phase of all elements.

> **GEN-22:** Sediment Transport—applicable to the operations and maintenance phase of all elements.

> **SED-2:** Prevent Scour Downstream of Sediment Removal—applicable to the operations and operations phase of all elements.

Impacts would be reduced to less-than-significant levels with implementation of BMPs.

AQUA-3 NP—Potential for adverse effects on S-CCC steelhead rearing habitat

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sediment removal at Reaches 4, 5, 6, 7A, 7B, 8, and 14 features would be the same as under existing conditions	N/A	S
Vegetation management at Reaches 4, 5, 6, 7A, 7B, 8, and 14 features would be the same as under existing conditions	N/A	S
Minor maintenance activities at Reaches 4, 5, 6, 7A, 7B, 8, and 14 features would be the same as under existing conditions	N/A	S

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No channel modification or improvements would be constructed. As such, no construction impacts to steelhead rearing habitat due to construction would occur in the Project area.

Operations and Maintenance

Maintenance activities in the channel would be carried out according to SCVWD SMP (see description in Section 2.4.5), which was analyzed in a Final EIR certified in January 2012 and would continue under the No Project Alternative similar to the past 10 years. The SMP incorporates a wetland and riparian mitigation program, a series of resource protection policies, and BMPs to reduce environmental impacts from the aforementioned maintenance activities. Effects of stream maintenance activities to steelhead rearing under the SMP would be minimized by SMP-specific BMPs. SMP BMP GEN-1 specifies the work window (June 15 to October 15) and conditions (no significant rainfall) under which in-channel work may occur. SMP BMP GEN-15 describes on-site monitoring and relocation procedures for native aquatic vertebrates. SMP BMP GEN-33 describes how work sites may be dewatered to conduct sediment maintenance, including recommendations by a qualified biologist to protect native fishes. No new operation or maintenance activities would occur that are not already covered under the SMP and implementation of SMP BMPs would reduce impacts to steelhead rearing to less than significant.

As discussed in Section 3.6.2.1, DO levels within Lake Silveira do not meet water quality objectives established by the Regional Water Quality Control Board (Central Coast Region) Water Quality Control Plan (Basin Plan) for the Llagas Creek watershed (RWQCB 2011) that state “for waters not mentioned by a specific beneficial use, DO concentration shall not be reduced below 5.0 mg/L at any time. Median values should not fall below 85 percent saturation as a result of controllable water quality conditions. Additionally, outflow from Lake Silveira causes higher water temperatures downstream in Reach 6, varying from 9–14°F greater than upstream of the lake in summer, in some cases exceeding water quality objectives established in the Basin Plan (RWQCB 2011) which states “at no time or place shall the temperature of any water be increased by more than 5°F above natural receiving temperature”. Warming within Lake Silveira raises downstream temperatures above optimal temperature range for juvenile steelhead (59–65°F). Daily average temperatures in late August exceeded 75°F, which are stressful and

potentially lethal to rearing juvenile steelhead. The DO and temperature water quality effects under existing conditions are significant ongoing impacts to steelhead rearing.

Best Management Practices (BMPs) (from SCVWD SMP)

The following summarizes SCVWD SMP BMPs that avoid and minimize impacts on adult S-CCC steelhead migration under the No Project Alternative:

> **GEN-1:** In-channel Work Window Bank—applicable to the operations and maintenance phase of all elements.

> **GEN-15:** Salvage Aquatic Invertebrates from Dewatered Channels—applicable to the operations and maintenance phase of all elements.

> **GEN-33:** De-watering for Non-tidal Sites—applicable to the operations and maintenance phase of all elements.

Impacts of maintenance activities would remain significant with implementation of BMPs.

AQUA-4 NP—Potential for adverse effects on downstream migration of juvenile S-CCC steelhead

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sediment removal at Reaches 4, 5, 6, 7A, 7B, 8, and 14 features would be the same as under existing conditions	N/A	LTS
Vegetation management at Reaches 4, 5, 6, 7A, 7B, 8, and 14 features would be the same as under existing conditions	N/A	LTS
Minor maintenance activities at Reaches 4, 5, 6, 7A, 7B, 8, and 14 features would be the same as under existing conditions	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No channel modification or improvements would be constructed. Structures (grade control structures and culverts) that could affect upstream migration of adult steelhead would not be installed within the Project area. As such, no construction impacts to steelhead downstream migration due to construction would occur in the Project area.

Operations and Maintenance

Maintenance activities in the channel would be carried out according to SCVWD SMP (see description in Section 2.4.5), which was analyzed and recently certified in a Final EIR, and would continue under the No Project alternative similar to the past 10 years. The SMP incorporates a wetland and riparian mitigation program, a series of resource protection policies, and BMPs to reduce environmental impacts from the aforementioned maintenance activities. Effects of stream maintenance activities to downstream migrating juvenile steelhead under the SMP would be minimized by SMP-specific BMPs: SMP BMPs GEN-1, GEN-15, GEN-33, and SED-3. No new operation or maintenance activities would occur that are not already covered under the SMP and implementation of SMP BMPs would reduce impacts to downstream migrating juvenile steelhead to less than significant.

Best Management Practices (BMPs) (from SCVWD SMP)

The following summarizes SCVWD SMP BMPs that avoid and minimize impacts on adult S-CCC steelhead migration under the No Project Alternative:

> **GEN-1:** In-channel Work Window Bank—applicable to the operations and maintenance phase of all elements.

> **GEN-15:** Salvage Aquatic Invertebrates from Dewatered Channels—applicable to the operations and maintenance phase of all elements.

> **GEN-33:** De-watering for Non-tidal Sites—applicable to the operations and maintenance phase of all elements.

> **SED-3:** Restore Channel Features—applicable to the operations and maintenance phase of all elements.

Implementation of BMPs would reduce impacts to less than significant.

AQUA-5 NP—Potential for adverse effects to aquatic species from construction and maintenance within and outside the active channel

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sediment removal at Reaches 4, 5, 6, 7A, 7B, 8, and 14 features would be the same as under existing conditions	N/A	LTS
Vegetation management at Reaches 4, 5, 6, 7A, 7B, 8, and 14 features would be the same as under existing conditions	N/A	LTS
Minor maintenance activities at Reaches 4, 5, 6, 7A, 7B, 8, and 14 features would be the same as under existing conditions	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No channel modification or improvements would be constructed. As such, no construction impacts to aquatic species due to construction would occur in the Project area.

Operations and Maintenance

SMP activities within the active channel (see description in Section 2.4.5), which have been recently renewed, would continue under the No Project Alternative similar to the past 10 years. As such, no new operation or maintenance activities would occur. The SMP incorporates a wetland and riparian mitigation program, a series of resource protection policies, and BMPs to reduce environmental impacts from the aforementioned maintenance activities. SMP BMPs would minimize impacts to aquatic species within the active channel: SMP BMPs GEN-1, GEN-15, GEN-16, GEN-17, GEN-18, GEN 19, GEN-22, GEN-23, GEN-24, GEN-25, GEN-26, GEN-31, GEN-32, GEN-33, GEN-35, SED-1, SED-2, SED-3, SED-4, VEG-1, VEG-3, and BANK-1. With implementation of SMP BMPs, this impact would be less than significant.

Outside of the active channel, maintenance of access roads and the top of bank would occur as part of vegetation and sediment maintenance. On the maintenance roads, vegetation would be cleared as needed for access and to reduce fire hazard. Top of bank areas in all reaches would be maintained annually to facilitate access and observation and to reduce fire hazard. SMP BMPs would minimize

impacts to aquatic species (Appendix B): SMP BMPs GEN-17, GEN-18, GEN 19, GEN-22, GEN-23, GEN-24, GEN-25, GEN-26, GEN-31, GEN-32, and BANK-1. With implementation of SMP BMPs, this impact would be less than significant.

Best Management Practices (BMPs) (from SCVWD)

The following summarizes SCVWD SMP BMPs that avoid and minimize impacts on aquatic species from operations and management within and outside the active channel under the No Project Alternative:

> **GEN-1:** In-channel Work Window Bank—applicable to the operations and maintenance phase of all elements.

> **GEN-15:** Salvage Aquatic Invertebrates from Dewatered Channels—applicable to the operations and maintenance phase of all elements.

> **GEN-16:** In-channel Minor Activities—applicable to the operations and maintenance phase of all elements.

> **GEN-17:** Employee/Contractor Training—applicable to the operations and maintenance phase of all elements.

> **GEN-18:** Paperwork Required on Site—applicable to the operations and maintenance phase of all elements.

> **GEN-19:** Work Site Housekeeping—applicable to the operations and maintenance phase of all elements.

> **GEN-22:** Sediment Transport—applicable to the operations and maintenance phase of all elements.

> **GEN-23:** Stream Access—applicable to the operations and maintenance phase of all elements.

> **GEN-24:** On-site Hazardous Materials Management Access—applicable to the operations and maintenance phase of all elements.

> **GEN-25:** Existing Hazardous Materials Access—applicable to the operations and maintenance phase of all elements.

> **GEN-26:** Spill Prevention and Response—applicable to the operations and maintenance phase of all elements,

> **GEN-31:** Vehicle Cleaning—applicable to the operations and maintenance phase of all elements,

> **GEN-32:** Vehicle and Equipment Fueling—applicable to the operations and maintenance phase of all elements,

> **GEN-33:** De-watering for Non-tidal Sites—applicable to the operations and maintenance phase of all elements.

> **GEN-35:** Pump/Generator Operations and Maintenance—applicable to the operations and maintenance phase of all elements.

> **SED-1:** Groundwater Management—applicable to the operations and maintenance phase of all elements.

> **SED-2:** Prevent Scour Downstream of Sediment Removal—applicable to the operations and maintenance phase of all elements.

> **SED-3:** Restore Channel Features—applicable to the operations and maintenance phase of all elements.

> **SED-4:** Berm Bypass—applicable to the operations and maintenance phase of all elements.

> **VEG-1:** Minimize Local Erosion from In-channel Sediment Removal—applicable to the operations and maintenance phase of all elements.

> **VEG-3:** Use Appropriate Equipment for Instream Removal—applicable to the operations and maintenance phase of all elements.

> **BANK-1:** Bank Stabilization Design to prevent Erosion Downstream—applicable to the operations and maintenance phase of all elements.

Implementation of BMPs would reduce impacts to less than significant.

3.6.5.2 Tunnel Alternative (Preferred Alternative)

The Preferred Alternative would provide an increased level of flood protection for urban areas, specifically: a 1-percent flood in Morgan Hill (Reaches 8, 7A, and 7B); 10 percent flood management for the semi-urban area around East Little Llagas Creek (Reach 14); and, avoid induced flooding elsewhere on Llagas Creek (Reaches 6, 5, and 4) due to upstream improvements. The components of the alternative include: Project wide channel improvements including deepening and widening, some limited planform re-alignment, excavation and construction of a diversion channel for flows from West Little Llagas Creek to Llagas Creek which would divert flows from entering East Little Llagas Creek, construction of permanent access roads on both banks within permanent easements for construction and maintenance access, construction of reinforced concrete boxes (culverts) and in-stream aquatic habitat enhancements to provide cover and rearing for fish in Reaches 4, 5, 6, and 7A; Reach 8 hydraulic structures including a 250-foot-long sediment trap and an inlet weir (diversion) structure, replacement of 2,400 feet of earthen channel with a 48-inch-diameter low flow RCP culvert, a 2,100-foot-long tunnel under Nob Hill and Nob Hill Terrace, and two 2,750-foot-long high flow bypass culverts conveying flow to the tunnel; Reach 7B hydraulic structures including two high flow bypass culverts conveying flow from the tunnel exit to West Little Llagas Creek; restoration of the remnant Llagas Creek channel and creation of a new wetland and riparian woodlands at Lake Silveira; and stream operation and maintenance activities. A detailed description of the construction features and activities, and maintenance activities are provided in Sections 2.4 and 2.6.

AQUA-1 T—Potential for adverse effects on upstream migration of adult S-CCC steelhead

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sinuous channel, shallow pools and benches	LTS	LTS
Grade control structures	LTS	LTSM
New concrete box culverts and culvert replacements	LTS	LTSM
New mid-channel bar at the downstream end of Reach 5	LTS	LTSM
Instream flow structures for aquatic habitat	LTS	B
Tunnel in Reach 8	NI	NI
Lake Silveira project element	LTS	LTSM
Vegetation management, sediment removal, and minor maintenance	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction activities, described in Section 2.6, including channel deepening and widening, installation of grade control structures, installation of box culverts/culvert replacements, a new mid-channel bar at the downstream end of Reach 5, installation of instream flow structures for aquatic habitat, and restoration of the remnant Llagas Creek channel and creation of a new wetland and riparian woodlands at Lake Silveira could potentially affect upstream migration of adult steelhead through all Project reaches, and the Lake Silveira mitigation element if activities occur during their migration period. Steelhead could potentially migrate upstream from the Pacific Ocean through the Pajaro River from December to March during storms large enough to create hydrologic connectivity from the Pajaro River through Reaches 4, 5, and 6, and the Lake Silveira project element to spawning habitat in Llagas Creek upstream of Monterey Road to Chesbro Dam, or to spawning habitat within any of the Project reaches (Reaches 4 to 6) and within the Lake Silveira mitigation element. Construction would take place year round, but would occur to the extent feasible during the dry season, typically between May 1 and October 15, during which time adult steelhead are unlikely to be migrating upstream. During wet years, steelhead may migrate upstream either earlier than October 15 or later than May1, during which times construction activities could impede upstream migration. The construction activities would take place in the channel, even if the channel is not dry, by dewatering reaches. Dewatering would be limited to the areas of active construction and would ensure fish passage.

SCVWD BMPs would minimize impacts to adult steelhead upstream migration (Appendix C). BMP BI-2 includes provisions to conduct preconstruction surveys by a qualified biologist to determine the potential for presence of aquatic species prior to the start of construction. BMP BI-3 includes provisions to avoid and minimize impacts to salmonids, by avoiding routine use of vehicles and equipment in live salmonid streams between January 1 and June 15. These BMPs would reduce direct construction impacts on migrating adult steelhead to less than significant.

Operations and Maintenance

Channel modification would occur in all Project reaches. Modification to Reaches 4, 5, 6, and 14 would consist of widening and deepening the channel, resulting in a cross-section with a defined low flow channel, bankfull channel, and benches, and engineered banks at 3H: 1V slope. The channel excavated in Reach 7A would be similar to Reaches 4, 5, 6, and 14. The channel in Reach 8 would be widened and deepened from the Llagas Road Bridge at the upstream end of the Project boundary, downstream to the inlet weir of the sediment detention basin near Hillwood Lane. Downstream of the inlet weir the 2,400-foot-long earthen channel between Write Avenue and West Main Avenue would be replaced with a 48-inch-diameter RCP culvert to maintain low flows on West Little Llagas Creek through the downtown area. Paralleling this 2,400 section in Reach 8, two high flow bypass culverts would be constructed, conveying high flows from the weir structure 2,750 feet into a 2,100-foot-long tunnel under Nob Hill. At the tunnel exit, double box culverts would be constructed at the upstream end of Reach 7B from West Dunne Ave downstream to Ciolino Avenue conveying high flows back into West Little Llages Creek. Channel modifications to the section of Reach 7B downstream of Ciolino Avenue would consist of widening and deepening similar to Reaches 4, 5, 6 and 14. Reaches 7A, 7B, 8, and 14 do not currently support upstream migration of adult S-CCC steelhead or contain upstream migration critical habitat for adult S-CCC steelhead (NMFS 2005b; CDFW 2013). Channel modifications in these reaches are not anticipated to create or allow upstream migration.

The channel configurations in Reaches 4, 5, and 6, which contain critical migration habitat for adult S-CCC steelhead, could impede fish passage if the low-flow channel is too shallow for passage of adults; or if the low flow channel is too narrow, thereby increasing water velocity above a critical threshold for migration. Under the Preferred Alternative, Reaches 4, 5, and 6 would be receiving winter flows from Reaches 7A, 7B, and 8 that under existing conditions would either flow into East Little Llagas Creek and eventually into Reach 14 or cause flooding adjacent to Reaches 7B and 8. Under the Preferred

Alternative, the winter flows would be contained within Reaches 7A, 7B, and 8, then routed through Reaches 4, 5, and 6, potentially increasing water velocity within the channel. The channels in Reaches 4, 5, and 6 would be properly sized for sediment transport and to allow for unimpeded fish passage, but increased flow may increase water velocity above a critical threshold that prevents steelhead adult migration. In general, adult steelhead require minimum depths of approximately 7 inches and maximum velocities of 8 feet per second to enable upstream migration (Bjornn and Reiser 1991). A low-flow channel, approximately 8 inches deep conveying approximately 2 cfs, would meander along the channel bottom within the bankfull channel, potentially deep enough for adult upstream migration. BMP BI-15 would restore pool and riffle configurations to emulate the Project design conditions, taking into account morphological features (slope) that may affect riffle/pool sequence. Still, a channel design that creates velocities above 8 feet per second during adult migration could create a migration barrier and could be a significant impact to migration. This impact would be significant. Mitigation Measure AQUA-1a T would reduce this impact to less than significant.

Flood conveyance channels would be managed to provide adequate capacity for the design flow. The channels would be regularly inspected for the build-up and removal of trash (non-living material) or other obstruction to flow. Impacts to steelhead upstream migration resulting from minor maintenance of channels (as described in Chapter 2) would be minimized by conducting sediment and vegetation management operations between June 15 and October 15, as outlined in Section 2.4.5, operations and maintenance, and SCVWD BMPs. BMP BI-2 includes provisions to conduct preconstruction surveys by a qualified biologist to determine the potential for presence of aquatic species prior to the start of construction. BMPs BI-14 and BI-15 would restore channel features to emulate pre-Project conditions and facilitate fish passage. BMP WQ-12 describes how work sites may be dewatered to conduct sediment maintenance. If naturally occurring in-channel features used by upstream migrating steelhead, as hydraulic refuge, are removed (e.g., pieces of LWD), it could negatively affect migration success. This impact would be significant. Mitigation Measure AQUA-1b T would reduce this impact to less than significant.

Several types of hydraulic structures would be installed within the Project area that could affect upstream migration of adult steelhead. Grade control structures would be installed in all reaches (two in Reach 4; two in Reach 5; 26 in Reach 6; seven in Reach 7A; four in Reach 7B; 1 in Reach 8 ; 21 in Reach 14, and one below Lake Silveira), culverts added or replaced in Reach 7B (two culverts added to existing triple culverts), and Reach 8 (replace one existing with larger designs). Llagas Creek from the Pajaro River to Chesbro Dam is identified as S-CCC steelhead critical habitat by NMFS (2006). Construction of grade control structures could limit access to critical habitat within (Reaches 4 through 6) and upstream (to Chesbro Dam) of the Project area. The existing fish ladder just downstream of Buena Vista Avenue would be removed. With implementation of Mitigation Measure AQUA-1a T, grade control structures would be designed following the fish passage criteria detailed in Anadromous Salmonid Passage Facility Design (NMFS 2008). With Mitigation Measure AQUA-1a T, impacts from grade control structures and fish ladder removal on adult S-CCC steelhead upstream migration would be reduced to less than significant.

A new mid-channel bar would be constructed within Reach 5 at the confluence with Reaches 4 and 14. The bar would split the flow, with the main channel flowing north of the bar and a smaller channel with less flow following the current channel configuration (to the south). The design would potentially create a migration pathway through the main channel that is longer than the current path. The smaller channel would accumulate sediment or debris that would be naturally removed or removed as part of maintenance activities under the Project. Impacts to steelhead upstream migration resulting from regular maintenance would be minimized by conducting sediment and vegetation management operations between June 15 and October 15, as outlined in Section 2.4.5 and SCVWD BMPs BI-2, BI-14, BI-15, and WQ-12. As with channel modifications described above, the channel configuration around the bar could impede fish passage if the low flow channel is too shallow (<7 inches) for passage of adults; or if it is too narrow,

thereby increasing water velocity above a critical threshold (8 feet per second) for migration. This impact would be significant. Mitigation Measure AQUA-1a T would reduce this impact to less than significant.

Instream complexity features would be installed and maintained in Reaches 4, 5, 6, and 7A, and as part of the Lake Silveira project element. The complexity features are intended to assist with migration of anadromous fish during moderate to high flows by providing hydraulic cover. Further, the structures would provide escape cover for upstream migrating steelhead. The following structures would be installed and maintained in the Project area: clusters of log-root wad structures, stream boulders, triangular boulder clusters, and divide logs, wing deflectors, and groupings of large woody debris. Refer to Section 2.4 for the number and types of instream structures proposed for each reach (examples of all types of habitat structures are shown in Appendix D), These features would be maintained by the SCVWD to insure they continue to provide their designed environmental benefits. The greatest concentration of complexity features would be installed in Reach 6, as this is currently a perennial stream reach (down to San Martin Avenue) and likely contains the highest quality steelhead habitat in the Project area. The structures would provide resting places for upstream migrating adult steelhead where no resting places currently exist, improving migration success within the Project and through the Project area to potential spawning habitat in Llagas Creek below Chesbro Dam. These structures would provide a benefit to upstream migrating adult steelhead.

The Lake Silveira element, which is called out as mitigation for all of the action alternatives (see description in Section 2.4.6), would create approximately 3.5 acres of wetlands and 1.3 acres of riparian woodland by filling part of Lake Silveira, restoring flows to the abandoned channel, and by replanting and reseeding. An open channel flow split structure on Llagas Creek would apportion flows to the newly restored wetland and open water section and the rewatered Llagas Creek channel. A proposed short section of excavated pilot channel at the flow split structure would help establish a stable channel segment at the split leading into the rewatered abandoned channel segment. A new v-notch outlet would be installed at the lake outlet to tie the restored wetland and open water section of the lake back into Llagas Creek. Channel modifications as part of the Lake Silveira mitigation element, would maintain adult S-CCC steelhead upstream migration through Lake Silveira, but with the added opportunity of migrating through the original channel. However, both the split structure and v-notch outlet structure could limit access to habitat upstream and could be a significant impact. Mitigation Measure AQUA-1a T would ensure that these hydraulic features are designed to allow fish passage following the fish passage criteria detailed in Anadromous Salmonid Passage Facility Design (NMFS 2008). As such, impacts from operation of the channel modifications and hydraulic features as part of the Lake Silveira project element on adult S-CCC steelhead upstream migration would be less than significant with mitigation.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that avoid and minimize impacts on adult S-CCC steelhead migration under the Preferred Alternative:

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction and operations phases of all elements.

> **BI-3:** Minimize Impacts to Steelhead Vertebrates—applicable to the construction phase of all elements.

> **BI-**14: Maintain Low-Flow Fish Passage—applicable to the operations phase of all elements.

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the operations phase of all elements.

> **WQ-12:** Divert/ Bypass Water at Non-tidal Sites—applicable to the operations phase of all elements.

Mitigation Measures

Mitigation Measure AQUA-1a T: Steelhead Passage: Channel and Structure Design. To mitigate the potential passage impediment through the Project area, final channel design will incorporate criteria from Anadromous Salmonid Passage Facility Design (NMFS 2008). Detailed within this document are criteria, rationale, and guidelines for designing proper fish passage. Designing instream structures to allow fish passage requires site-specific analysis of each type of structure in addition to analysis of hydrology information and river morphology trends, as well as biological information including life stage, run size, and period of migration. Passage for adult salmonid through different types of instream structures would be obtained by following type specific criteria and guidelines, and analyzing site-specific attributes to maintain water velocities of less than 3 to 4 meters per second, fall heights of less than 3 meters, and depth of pools below the falls at least 1.25 times the fall height (Bjornn and Reiser 1991).

Implementation of Mitigation Measure AQUA-1a T would reduce impacts related to the operation of reconfigured channels, grade control structures, fish ladder removal in Reach 4, and newly installed and replaced culverts on adult steelhead upstream migration to less than significant.

Mitigation Measure AQUA-1b T: Steelhead Passage: Inspection of In-channel of Large Woody Debris prior to Removal for Management of Flood Conveyance Channels. To mitigate the potential removal and loss of in-channel LWD that may be used as hydraulic refuge for upstream migrating adult salmonids, size criteria will be developed whereby in-channel LWD above the size criteria would be inspected prior to removal for flood conveyance. Pieces of wood below the size criteria would not require inspection prior to removal. LWD above the size criteria will be inspected to determine if it poses an erosion hazard of flood threat, and a biologist will assess if it is ecologically important to the channel. If determined not to be a threat, the LWD will remain in the channel but may be modified to prevent debris capture, bank scour, or aggradation. If determined to be a threat, the LWD will be removed and replaced, removed from the channel permanently, or moved to a nearby instream location that reduces flood hazard and maintains ecological function.

Implementation of BMPs and Mitigation Measure AQUA-1b T would reduce impacts related to the maintenance of flood conveyance channels on adult steelhead upstream migration to less than significant.

AQUA-2 T—Potential for adverse effects on S-CCC steelhead spawning habitat usage and quality

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sinuous channel, shallow pools and benches	LTSM	LTS
Grade control structures	LTSM	LTS
New concrete box culverts and culvert replacements	LTSM	LTS
New mid-channel bar at the downstream end of Reach 5`	LTSM	LTS
Instream flow structures for aquatic habitat	LTSM	B
Tunnel in Reach 8	LTSM	B
Lake Silveira project element	LTS	B
Vegetation Management, Sediment Removal and minor maintenance	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction activities described in Section 2.6, including channel deepening and widening, installation of grade control structures, installation of box culverts/culvert replacements, a new channel bar at the downstream end of Reach 5, installation of instream flow structures for aquatic habitat, and construction of a 2,100-foot-long tunnel, a sediment retention basin and inlet weir, a 2,400 foot reinforced concrete pipe culvert for low flows to existing creek, and restoration of the remnant Llagas Creek channel and creation of a new wetland and riparian woodlands at Lake Silveira) could potentially affect steelhead spawning if these activities occur during their during their spawning period. Steelhead could potentially spawn within the Project area from December to March during storms large enough to create adequate flow to support spawning conditions. Construction would take place year round, but would occur to the extent feasible during the dry season, typically between May 1 and October 15, during which time adult steelhead are unlikely to be spawning. Still, as noted in Impact AQUA-1 T, during wet years, steelhead may migrate upstream either earlier than October 15 or later than May 1 and, thus, may spawn earlier or later within the Project area, as well, during which times construction activities could affect spawning, either from preventing access to spawning habitat or affecting pre-existing redds. The construction activities may still take place in the channel, even if the channel is not dry, by dewatering reaches. Dewatering would be limited to the areas of active construction and would ensure fish passage through Reach 6 and Lake Silveira on Llagas Creek, but could still prevent spawning if steelhead are diverted away from potential spawning habitat or damage or destroy pre-existing redds.

SCVWD BMPs would minimize impacts to steelhead spawning (Appendix D). BMP BI-2 includes provisions to conduct preconstruction surveys by a qualified biologist to determine the potential for presence of aquatic species prior to the start of construction. BMP BI-3 includes provisions to avoid and minimize impacts to salmonids by avoiding routine use of vehicles and equipment in live salmonid streams between January 1 and June 15, while BMP BI-3 would limit the potential interaction between construction activities and spawning steelhead and minimize potential impacts. If migrating steelhead reach spawning habitat within the Project area prior to January 1 (such as during unusually wet years), BMP BI-2 may not reduce direct construction impacts on spawning habitat usage to less than significant. BMP BI-2 includes provisions to conduct preconstruction surveys by a qualified biologist to determine the presence of aquatic species prior to the start of construction and may require the relocation of sensitive species in the event they occur in the work area. If spawning is occurring within the area, relocation could possibly remove steelhead from more suitable to less suitable (or unusable) spawning habitat. If spawning has recently occurred, dewatering and construction could destroy pre-existing redds. BMP BI-2 does not include a provision to delay work, or work in an alternative area if spawning is occurring, or spawning has recently occurred (as indicated by the presence of a redd); thus, impacts to steelhead spawning habitat usage could still occur. Implementation of Mitigation Measures AQUA-2a and AQUA-2b T would reduce impacts related to the construction of flood conveyance channels on adult S-CCC steelhead spawning habitat and usage to less than significant.

Construction activities could also potentially affect steelhead spawning if these activities result in the increase of fine sediment within potential spawning habitat. Greater volumes of fine sediment within spawning gravel will likely reduce eventual spawning success (Kondolf 2000). Survival to emergence of steelhead fry from redds begins to decrease at 20 percent embeddedness of the redd by fine sediment, and is completely restricted at 80 percent embeddedness (Bjornn and Reiser 1991; Kondolf 2000). As such, if construction activities cause an increase in fine sediment within potential spawning gravel, it could impact spawning habitat quality. SCVWD BMPs would minimize impacts to steelhead spawning habitat (Appendix C): BMPs BI-4, WQ-1, WQ-4, WQ-9, and WQ-40. With implementation of BMPs, this impact would be less than significant.

Channel modifications in Reaches 5 and 6 could result in the excavation of up to 455,000 CY of material (Section 2.4). Reach 5 is dry most of the year, and contains little usable spawning habitat, while Reach 6 is perennial down to San Martin Avenue, fed by flows from Chesbro and Uvas Dams and contains the

highest quality spawning habitat within the Project area. The excavation of gravel and cobble would be offset by returning the material to the channel. This impact would be less than significant.

Operations and Maintenance

Channel modification would occur in all Project reaches. Modification to Reaches 4, 5, 6, and 14 would consist of widening and deepening the channel, resulting in a cross-section with a defined low flow channel, bankfull channel, and benches, and engineered banks at 3H: 1V slope. The channel excavated in Reach 7A would be similar to Reaches 4, 5, 6, and 14. The channel in Reach 8 would be widened and deepened from the Llagas Road Bridge at the upstream end of the project boundary, downstream to the inlet weir of the sediment detention basin near Hillwood Lane. Downstream of the inlet weir the 2,400-foot-long earthen channel between Write Avenue and West Main Avenue would be replaced with a 48-inch-diameter RCP culvert to maintain low flows on West Little Llagas Creek through the downtown area. Paralleling this 2,400 section in Reach 8, two high flow bypass culverts would be constructed, conveying high flows from the weir structure 2,750 feet into a 2,100-foot-long tunnel under Nob Hill. At the tunnel exit, double box culverts would be constructed at the upstream end of Reach 7B from West Dunne Avenue downstream to Ciolino Avenue conveying high flows back into West Little Llages Creek. Channel modifications to the section of Reach 7B downstream of Ciolino Avenue would consist of widening and deepening similar to Reaches 4, 5, 6 and 14. Reaches 7A, 7B, 8, and 14 do not currently support S-CCC steelhead spawning or contain critical spawning habitat for S-CCC steelhead (NMFS 2005b; CDFW 2013). Channel modifications in these reaches are not expected to create spawning habitat, which is currently absent. Within Reaches 4, 5, and 6, which contain critical spawning habitat for S-CCC steelhead, channel modifications could affect spawning habitat if they replace existing suitable habitat with inferior habitat, such as habitat with hydraulic conditions that reduce flow and delivery of dissolved oxygen to developing embryos. SCVWD BMPs would minimize impacts to steelhead spawning habitat (Appendix C). SCVWD BI-15 would restore pool and riffle configurations to emulate pre-Project instream conditions, taking into account morphological features (slope) that may affect riffle/pool sequence. With implementation of BMPs, this impact would be less than significant to spawning habitat in Reaches 4, 5, and 6.

Several types of hydraulic structures would be installed within the Project area that could affect upstream migration of adult steelhead. Grade control structures would be installed and culverts added or replaced. High flow bypass box culverts would be installed. An inlet weir, sediment detention basin, low flow reinforced concrete pipe and 2,100-foot-long tunnel would be installed in Reach 8. Reaches 7A, 7B, 8, and 14 do not currently support S-CCC steelhead spawning or contain critical spawning habitat for S-CCC steelhead (NMFS 2005b; CDFW 2013), thus grade control structures, culverts, and other hydraulic features installed in these reaches would not affect spawning habitat. Within Reaches 4, 5, and 6, and Llagas Creek near Lake Silveira, which contain critical spawning habitat for S-CCC steelhead, hydraulic structures could affect spawning habitat if they cause scour that erodes spawning habitat or deposition that degrades spawning habitat. However, under the Preferred Alternative, channels would be designed to create a stable channel form (i.e., not aggrading or degrading) that would prevent scour and deposition. The impact of hydraulic structures on S-CCC spawning habitat and usage would be less than significant.

A new mid-channel bar would be constructed within Reach 5 at the confluence with Reaches 4 and 14. The bar would split the flow, with the main channel flowing north of the bar and a smaller channel with less flow following the current channel configuration (to the south). The design could potentially affect spawning substrate through increased scour or deposition, which would reduce quantity or quality of spawning habitat. As noted in Chapter 2, channels would be designed to create a stable channel form (i.e., not aggrading or degrading) that would prevent scour and deposition, including through Reach 5 and the new mid-channel bar. The impact of the new mid-channel bar on S-CCC spawning habitat and usage would be less than significant.

Instream complexity features would be installed and maintained in Reaches 4, 5, 6, and 7A, and as part of the Lake Silveira project element. Refer to Section 2.4 for the number and types of instream structures proposed for each reach (examples of all types of habitat structures are shown in Appendix D). The complexity features are intended to assist with migration of anadromous fish during moderate to high flows by providing hydraulic cover. Further, the structures would provide escape cover for upstream migrating steelhead. These features would be maintained by the SCVWD to maintain their designed environmental benefits. The greatest concentration of complexity features would be installed in Reach 6, as this is currently a perennial stream reach (down to San Martin Avenue) and contains the highest quality steelhead habitat in the Project area. The structures are intended to provide resting places for upstream migrating adult steelhead, but could cause localized scour and deposition that creates spawning sites for S-CCC steelhead where none currently exist, likely improving spawning success within the Project. These structures would provide a benefit to S-CCC steelhead spawning habitat and usage.

The Lake Silveira mitigation element on Llagas Creek, upstream of Reach 6 and Reach 7A, could contain suitable spawning habitat; but is likely limited to Llagas Creek upstream and downstream of the lake. See Section 2.4.6 for a description of all the features related to the Lake Silveira element. The Lake Silveira mitigation element would likely provide suitable spawning and rearing habitat for S-CCC steelhead in the rewatered historic channel segment around the lake. However, there has been no quantification of habitat types available in the abandoned channel. Field observations of the inlet channel to the lake indicate that there are spawning sized gravels carried by Llagas Creek. As such, there is likely some spawning habitat in the existing Llagas Creek inlet channel to the lake, and potentially some limited spawning habitat in the outlet channel, as well as downstream of the lake, particularly through the perennially watered section of Reach 6. However, the natural transport and coarse sediment delivery to Reach 6 downstream of the current Lake Silveira, including spawning sized gravels, would have been substantially reduced since Lake Silveira was created in the 1980s. The lake probably captures nearly all gravels in transport from upstream. Consequently Lake Silveira would have effectively prevented the recruitment of new gravels and other coarse sediment supplies to the channel immediately downstream from the lake. The reestablishment of the abandoned channel would promote more natural gravel transport, around Lake Silveira, and could benefit S-CCC spawning habitat quality downstream.

Adult S-CCC steelhead do not spawn in Lake Silveira, so converting 4.8 acres of open water to wetland and riparian habitat would have no impact on spawning habitat usability and quality in the lake. The reestablishment rewatering of 1,980 feet of abandoned Llagas Creek channel would be allowed to form by scouring and natural formation of a stable channel. Long-term operation of the rewatered channel would potentially increase S-CCC steelhead spawning and rearing habitat availability and usage in Llagas Creek, as no spawning currently occurs in the dry abandoned channel. This would be a Project benefit. Short-term operation of the initial rewatering of the abandoned channel could potentially mobilize old fine sediments and organic material that may increase deposition of fine sediments deposit downstream (Reaches 4, 5, and 6), as the pilot channel naturally scours and with the transport of any fine sediments that have accumulated in the abandoned channel. This potential increase in deposition of fine sediments would likely last only as a first flush, so it would be temporary and would be flushed out of spawning and rearing areas during with the first high flow events. Given that the Llagas Creek channel downstream in Reach 6 would be disturbed (in Phase 2 construction after the Lake Silveira element is completed), for purposes of channel widening and deepening and that high flows will likely occur well before utilization of spawning and rearing areas by S-CCC steelhead, there would be no impact to spawning area habitat quality and usage downstream in Reaches 4, 5, and 6. There has been no quantification of potentially suitable spawning habitat in the abandoned channel, and there is no planned construction of spawning habitat as part of the Preferred Alternative and the Lake Silveira element. The Lake Silveira element would have no short-term impact on S -CCC steelhead spawning habitat usage and quality.

Sediment removal would be done in a manner that is sensitive to protection of aquatic resources. As vegetation develops within Project area channels, and woody debris and other fish habitat enhancements are installed, there is potential for sediments to locally deposit reducing flood conveyance capacity. At the

confluence of Reaches 14, 4, and 5 the design includes a mid-channel bar that bifurcates the channel flow. This confluence site is designed for sediment accumulation to help reduce the need for sediment removal in downstream locations. It is anticipated that sediment removal at the confluence site would be less frequent than once every 10 years. Sediment management could be needed anywhere along the Project footprint to clear culverts and restore capacity of earthen channel segments. Sediment maintenance would be performed in an adaptive manner, identifying depositional patterns and tendencies and updating management techniques accordingly. Heavier sedimentation may occur after episodic events, such as wild fires and large flows. After such an event, the Project should be inspected to identify and address large deposits that may impact channel capacity. Impacts to steelhead spawning habitat resulting from minor maintenance of channels (as described in Chapter 2) would be minimized by conducting sediment and vegetation management operations between June 15 and October 15, as outlined in Section 2.4.5 and SCVWD BMPs. BMP WQ-1 specifies that minor work activities would be conducted from the top of the bank. BMP WQ-4 would prevent the release of sediment laden water back into waterways after removal from the stream channel, which could potentially affect spawning gravel quality. BMP WQ-17 would prevent scour downstream of sediment removal sites through grading to prevent the formation of channel features that may propagate erosion. However, sediment removal could still affect the presence of steelhead spawning habitat within maintained reaches if accumulated sediment is usable spawning gravel. Reach 6 likely contains the highest quality spawning habitat within the Project area, excavation of gravel from this reach could remove usable spawning gravel The excavation of gravel and cobble would be offset by returning the material to the channel. This impact would be less than significant.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that avoid and minimize impacts on adult S-CCC steelhead spawning habitat usage and quality under the Preferred Alternative:

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction phase of all elements.

> **BI-3:** Minimize Impacts to Steelhead Vertebrates—applicable to the construction phase of all elements.

> **BI-4:** Minimize Access Impacts—applicable to the construction and operations phases of all elements.

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the operations phase of all elements.

> **WQ-1:** Conduct Work from Top of Bank—applicable to the construction and operations phases of all elements.

> **WQ-4:** Limit Impacts of Sediments on Water Quality—applicable to the construction and operations phases of all elements.

> **WQ-9:** Minimize Erosion from Removal of In-channel Vegetation—applicable to the construction and operations phases of all elements.

> **WQ-17:** Prevent Scour Downstream of Sediment Removal—applicable to the operations phase of all elements.

> **WQ-40:** Prevent Water Pollution—applicable to the construction phase of all elements.

Mitigation Measures

Mitigation Measure AQUA-2a T: Preconstruction Surveys prior to In-water Construction. Perform preconstruction surveys in areas where in-water construction would be required during steelhead

spawning periods prior to January 1. Preconstruction surveys will be performed by a qualified biologist to determine if steelhead are present or have recently spawned (as indicated by the presence of redds) in the construction area. Steelhead surveys will consist of visual surveys. If present and not spawning, steelhead will be captured and relocated to areas of suitable habitat that will not be affected by the construction activity. If the steelhead are spawning or a redd is detected in the proposed work area; work would cease until such time that work would not impact the redd.

Mitigation Measure AQUA-2b T: Biological Monitor for Dewatering Activities. During the isolation of the work area, after preconstruction surveys have been conducted, an on-site biological monitor will be present during all working hours from prior to the time activities to isolate the site begin until the site is dewatered and completely isolated. The monitor will inspect the work area to determine if any spawning steelhead or redds are present during the dewatering. If either are detected, all construction activity will cease, except as directed by the monitor, until the individual can be captured and relocated or until such time that work would not impact the redd.

Implementation of BMPs and Mitigation Measures AQUA-2a and AQUA-2b T would reduce impacts related to the construction of flood conveyance channels on adult S-CCC steelhead spawning habitat and usage to less than significant.

AQUA-3 T—Potential for adverse effects on S-CCC steelhead rearing habitat

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sinuous channel, shallow pools and benches	LTS	LTSM
Operation of wider channel and excavated Reach 7A channel	NI	LTSM
Grade control structures	LTS	LTS
New concrete box culverts and culvert replacements	LTS	LTS
New mid-channel bar at the downstream end of Reach 5	LTS	LTS
Instream flow structures for aquatic habitat	LTS	B
Tunnel in Reach 8	NI	NI
Lake Silveira project element	LTS	B
Vegetation Management, Sediment Removal, and minor maintenance	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction activities (for channel modification, installation of grade control structures, installation of box culverts/culvert replacements, a new mid-channel bar at the downstream end of Reach 5,installation of instream flow structures for aquatic habitat, construction of a sediment detention basin and inlet weir, installation of a low flow reinforced concrete pipe, and construction of a 2,100-foot-long tunnel) could potentially affect steelhead rearing if these activities occur during their during their rearing period. Steelhead could potentially rear within the Project area just after emerging from spawning gravel in late spring/early summer through the summer and the following fall and winter, as adequate conditions persist. Construction would take place year round, but would occur to the extent feasible during the dry season, typically between May 1 and October 15. The construction activities would take place in the channel, even if the channel is not dry, by dewatering reaches. Dewatering would be limited to the areas

of active construction, but would not ensure fish passage through Reach 6 on Llagas Creek and could affect rearing if steelhead are diverted away from or are prevented from distributing to potential rearing habitat. SCVWD BMPs would minimize impacts to steelhead rearing (Appendix C). BMPs BI-2 includes provisions to conduct preconstruction surveys by a qualified biologist to determine the potential for presence of aquatic species prior to the start of construction and includes provisions for the relocation of sensitive species in the event they occur in the work area. If the decision is made to relocate the native aquatic species, then the operation would be based on the SCVWD's Fish Relocation Guidelines. BMP BI-3 includes provisions to avoid and minimize impacts to salmonids by avoiding routine use of vehicles and equipment in live salmonid streams between January 1 and June 15. With implementation of BMPs, this impact would be less than significant.

Channel modifications in Reaches 5 and 6 would include excavation of up to 455,000 CY of material (Section 2.4). Reach 5 is dry most of the year and likely contains little usable rearing habitat, while Reach 6 is perennial down to San Martin Avenue, fed by flows from Chesbro and Uvas dams and likely contains the highest quality rearing habitat within the Project area. The removal of cover elements and loss of potential rearing habitat would be offset by the placement of instream flow structures for aquatic habitat. This impact would be less than significant.

Operations and Maintenance

Channel modification would occur in all Project reaches. Modification to Reaches 4, 5, 6, 7B, and 14 would consist of widening and deepening the channel, resulting in a cross-section with a defined low flow channel, bankfull channel, benches, and engineered banks at 3H:1V slope. The channel excavated in Reach 7A would be similar to Reaches 4, 5, 6, 7B, and 14; but with a smaller set of dimensions. The channel in Reach 8 would be widened and deepened from the Llagas Road Bridge at the upstream end of the Project boundary, downstream to the inlet weir of the sediment detention basin near Hillwood Lane. Downstream of the inlet weir, the 2,400-foot-long earthen channel between Write Avenue and West Main Avenue would be replaced with a 48-inch-diameter RCP culvert to maintain low flows on West Little Llagas Creek through the downtown area. Paralleling this 2,400 section in Reach 8, two high flow bypass culverts would be constructed, conveying high flows from the weir structure 2,750 feet into a 2,100-foot-long tunnel under Nob Hill. At the tunnel exit, double box culverts would be constructed at the upstream end of Reach 7B from West Dunne Avenue downstream to Ciolino Avenue conveying high flows back into West Little Llages Creek. SCVWD BMPs would minimize impacts to steelhead rearing habitat (Appendix C). SCVWD BMP BI-15 would restore pool and riffle configurations to emulate pre-Project instream conditions, taking into account morphological features (slope) that may affect riffle/pool sequence. With implementation of BMPs, this impact would be less than significant.

These channel modifications could affect potential rearing habitat, especially in Reaches 4, 5, and 6, if they replace existing suitable habitat with inferior habitat, such as a channel with little escape cover or a channel with reduced overhead riparian cover that increases summer water temperatures. Reaches 7A, 7B, 8, and 14 do not support steelhead rearing habitat and channel modifications are not expected to create steelhead rearing habitat. Channel widening for hydraulic improvement in Reaches 4, 5, and 6 would be limited to one bank, where possible, to preserve existing mature vegetation. The total top width of the modified channel would be approximately 125 feet, which is 30 to 60 feet wider than the existing channel. Channel depths would range up to approximately 14 feet, which is typically about 4 to 5 feet deeper than existing conditions. Vegetation maintenance in the flood conveyance channels would be performed to maintain the composite design roughness requirements (hydraulic roughness, or Manning's n-value). The existing composite hydraulic roughness in Reaches 4, 5, and 6 ranges from 0.055 (moderately dense stemmy grass, weeds, or tree seedlings; brushy moderately dense vegetation similar to 1 to 2-year-old willows in dormant season) to 0.070 (8 to 10-year-old willow or cottonwood trees inter-grown with weeds and brush) and would be maintained at or above 0.064 in all three reaches under the preferred alternative (Table 2.4-5). Each portion of the channel cross section will have an applied set of maintenance activities that will vary from reach to reach. On the bench, the bankfull bank (slope between

bench and channel bottom) and the channel bottom, woody vegetation would be cleared from Reaches 4 and 5, management in Reach 6 would be similar to Reaches 4 and 5 with the additional provision to prevent the spread of willows on the bankfull bank. The improved slopes of the channel would be revegetated, using native species, consistent with requirements for maintaining hydraulic capacity.

Decreases in riparian canopy related to channel widening could increase water temperatures (by up to 5°F) in Reach 6, especially during low flow (either during seasonal low flow or during dry years) (Systech Engineering, Inc. 2004). Water temperatures under existing conditions may already limit juvenile steelhead within Reach 6. Systech Engineering, Inc. (2004) reported daily average summer water temperatures of 70–75°F in Reach 6 in 2000 and 2001; and Smith (2007) reported summer water temperatures of 68–79°F. Temperatures above 72°F are potentially stressful to juvenile steelhead, while temperatures above 77°F are potentially lethal (Bjornn and Reiser 1991). Reaches 4, 5, and 6 would be maintained with a similar type and density as under existing conditions (Table 2.4-5); but increased channel width may increase insolation of the water surface, thereby increasing water temperature.

Reaches 7A, 7B, and 8 may also potentially bring warm water from upstream into Reach 6. These reaches would be maintained to design roughness values that are lower than Reach 6: 0.038-0.084 (Reach 7A moderately dense stemmy grass, weeds, or tree seedlings; brushy moderately dense vegetation similar to 1 to 2-year-old willows in dormant season), 0.038-0.069 (Reach 7B, dense growth of flexible turf grass or weeds where depth of flow is at least two times height of vegetation; supple tree seedlings such as willow, cottonwood where average depth of flow is three times height of vegetation), and 0.035 (Reach 8) (Table 2.4-5). Systech Engineering Inc. (2004) found that flow from Reach 7 could increase average annual temperatures at the upstream end of Reach 6 by up to 2°F, depending on flow (greater temperature increases with greater flow). The benches that are part of the channel design also provide opportunities for natural recruitment of riparian vegetation, and if appropriate, for active plantings, which may increase shade over the channel. Even with BMPs, temperatures could increase from stressful (>72°F) to lethal (>75°F) during the summer rearing period for juvenile steelhead. Construction of instream flow structures for aquatic habitat, and implementation of Mitigation Measures AQUA-1b, BOT-1b, and BOT-1c T would reduce impacts related to the maintenance of flood conveyance channels on juvenile steelhead rearing habitat to less than significant.

Flood conveyance channels would be managed to provide adequate capacity for the design flow. The channels would be regularly inspected for the build-up and removal of trash (non-living material) or other obstruction to flow. Impacts to steelhead rearing resulting from minor maintenance of channels (as described in Chapter 2) would be minimized by conducting sediment and vegetation management operations between June 15 and October 15, as outlined in Section 2.4.5 and SCVWD BMPs. BMP BI-3 specifies the exclusion of routine use of vehicles and equipment in the live stream (January1 and June 15). BMP BI-2 describes on-site evaluation criteria and relocation procedures for native aquatic vertebrates. BMP WQ-12 describes how work sites may be dewatered to conduct sediment maintenance, including recommendations by a qualified biologist to protect native fishes. If naturally occurring in-channel features used by juvenile steelhead for hydraulic or escape cover during rearing are removed (e.g., pieces of LWD), it could negatively affect rearing. Implementation of Mitigation Measures AQUA-1b, BOT-1b, and BOT-1c T would reduce impacts related to the maintenance of flood conveyance channels on juvenile steelhead rearing habitat to less than significant.

Hydraulic structures installed in the Project area and the mid-channel bar constructed in Reach 5 would not impact S-CCC steelhead rearing habitat. Reaches 7A, 7B, 8, and 14 do not support steelhead rearing habitat and activities in these reaches are not expected to create steelhead rearing habitat. Within Reaches 4, 5, and 6, which contain critical habitat for S-CCC steelhead, hydraulic structures could affect rearing habitat if they cause scour or deposition that degrades habitat. Under the Preferred Alternative, channels would be designed to create a stable channel form (i.e., not aggrading or degrading) that would prevent scour and deposition, including through Reach 5 and the new mid-channel bar. The impact of

hydraulic structures and the new mid-channel bar on S-CCC rearing habitat would be less than significant.

Instream complexity features would be installed and maintained in Reaches 4, 5, 6, and 7A, and as part of the Lake Silveira mitigation element. Refer to Section 2.4 for the number and types of instream structures proposed for each reach (examples of all types of habitat structures are shown in Appendix D). The complexity features are intended to improve rearing by providing cover and velocity breaks (see Impact AQUA 1-T for a list of proposed structures within each reach; examples of all types of habitat structures are shown in Appendix D). These features would be maintained by the SCVWD to insure they continue to provide their designed environmental benefits. The greatest concentration of complexity features would be installed in Reach 6, as this is currently a perennial stream reach (down to San Martin Avenue) and likely contains the highest quality steelhead habitat in the Project area. The structures would provide cover where none currently exists in the Project, likely rearing within the Project area and providing rearing habitat to juveniles originating from spawning sites upstream of the Project area on Llagas Creek below Chesbro Dam. These structures would provide a benefit to juvenile steelhead.

The Lake Silveira mitigation element on Llagas Creek, upstream of Reach 6 and Reach 7A, currently contains rearing habitat for Juvenile S-CCC steelhead of limited quality with depths being much deeper than preferred rearing habitat and predation of juvenile S-CCC in the lake by native and non-native fish species is likely quite high. Additionally, Lake Silveira currently exceeds water quality objectives for temperature and dissolved oxygen as established by the Regional Water Quality Control Board (Central Coast Region) Water Quality Control Plan (Basin Plan) for the Llagas Creek watershed (RWQCB 2011), (see Section 3.6.2.1). A description of all the features related to the Lake Silveira element is provided in Section 2.4.6. Channel modifications as part of the Lake Silveira habitat restoration and enhancement would provide more available juvenile steelhead rearing habitat with reduced depth and greater instream complexity within the lake, and with the reestablishment of the abandoned Llagas Creek channel. Instream habitat features installed in the lake would provide rearing steelhead with improved refuge from potential predators. The reduced volume of the lake and the passing of flows through the rewatered channel would reduce the amount of time water stays in the lake as compared to current conditions and decrease water temperatures downstream. Additionally, the rerouting of flow through the well shaded riparian habitat of the abandoned section of Llagas Creek would further reduce water temperatures over current conditions, and provide for more aeration providing more oxygen rich water downstream. Channel modifications as part of the Lake Silveira element would improve juvenile rearing habitat and reduce potential predation within Lake Silveira, provide increased rearing habitat in Llagas Creek, and improve water temperature and dissolved oxygen levels for rearing habitat downstream. Operation impacts from the Lake Silveira project element would benefit juvenile S-CCC rearing habitat.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that avoid and minimize impacts on juvenile S-CCC steelhead rearing habitat under the Preferred Alternative:

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction and operations phases of all elements.

> **BI-3:** Minimize Impacts to Steelhead—applicable to the construction and operations phases of all elements.

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the operations phase of all elements.

> **WQ-12:** Divert/ Bypass Water at Non-tidal Sites—applicable to the operations phase of all elements.

Mitigation Measures

Mitigation Measure AQUA-1b T: Steelhead Passage: Inspection of In-channel of Large Woody Debris prior to Removal for Management of Flood Conveyance Channels.

Mitigation Measure BOT-1b T: Prepare a Mitigation Plan for Special-status Plants.

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

Implementation of BMPs and Mitigation Measures AQUA-1b, BOT-1b, and BOT-1c T would reduce impacts related to the maintenance of flood conveyance channels on juvenile steelhead rearing habitat to less than significant.

AQUA-4 T—Potential for adverse effects on downstream migration of juvenile S-CCC steelhead

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sinuous channel, shallow pools and benches	LTS	LTSM
Grade control structures	LTS	LTSM
New concrete box culverts and culvert replacements	LTS	LTSM
New mid-channel bar at the downstream end of Reach 5	LTS	LTSM
Instream flow structures for aquatic habitat	LTS	B
Tunnel in Reach 8	NI	NI
Lake Silveira project element	LTS	LTSM
Vegetation Management and Sediment Removal	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction activities (for channel modification, installation of grade control, installation of box culverts/culvert replacements, a new mid-channel bar at the downstream end of Reach 5,installation of instream flow structures for aquatic habitat, construction of a sediment detention basin and inlet weir, installation of a low flow reinforced concrete pipe, construction of a 2,100-foot-long tunnel, and restoration of the remnant Llagas Creek channel and creation of a new wetland and riparian woodlands at Lake Silveira) could potentially affect downstream migration of juvenile steelhead throughout the Project foot print if activities occur during their migration period. Juvenile steelhead typically migrate downstream, as smolts in March through June after their first or second winter within their natal stream. Juvenile migration can be limited by channel drying and high water temperatures. Construction would take place year round, but would occur to the extent feasible during the dry season, typically between May 1 and October 15. The construction activities may still take place in the channel, even if the channel is not dry, by dewatering reaches. Dewatering would be limited to the areas of active construction and would ensure fish passage through Reach 6 on Llagas Creek and Silveira on Llagas. SCVWD BMPs would minimize impacts to juvenile steelhead downstream migration (Appendix C). BMP BI-2 includes provisions to conduct preconstruction surveys by a qualified biologist to determine the potential for presence of aquatic species prior to the start of construction and includes provisions for the relocation of sensitive species in the event they occur in the work area. If the decision is made to relocate the native aquatic species, then the operation would be based on the SCVWD's Fish Relocation Guidelines. BMP BI-3 includes provisions to avoid and minimize impacts to salmonids by avoiding routine use of vehicles and equipment in live salmonid streams between January 1 and June 15. With implementation of BMPs, this impact would be less than significant.

Operations and Maintenance

Channel modification would occur in all Project reaches. Modification to Reaches 4, 5, 6, 7B, and 14 would consist of widening and deepening the channel, resulting in a cross-section with a defined low flow channel, bankfull channel, and benches, and engineered banks at 3H: 1V slope. The channel excavated in Reach 7A would be similar to Reaches 4, 5, 6, 7B, and 14. The channel in Reach 8 would be widened and deepened from the Llagas Road Bridge at the upstream end of the project boundary, downstream to the inlet weir of the sediment detention basin near Hillwood Lane. Downstream of the inlet weir the 2,400-foot-long earthen channel between Write Avenue and West Main Avenue would be replaced with a 48-inch-diameter RCP culvert to maintain low flows on West Little Llagas Creek through the downtown area. Paralleling this 2,400 section in Reach 8, two high flow bypass culverts would be constructed, conveying high flows from the weir structure 2,750 feet into a 2,100-foot-long tunnel under Nob Hill. At the tunnel exit, double box culverts would be constructed at the upstream end of Reach 7B from West Dunne Avenue downstream to Ciolino Avenue conveying high flows back into West Little Llages Creek. Several types of hydraulic structures (grade control structures, and culverts) would also be installed throughout the Project area, and a new mid-channel bar would be constructed at the downstream end of Reach 5. The fish ladder in Reach 4 just downstream of Buena Vista Avenue would be removed. Reaches 7A, 7B, 8, and 14 do not support steelhead rearing habitat and channel modifications are not expected to create steelhead rearing habitat obviating the need for downstream passage of juvenile steelhead through these reaches.

The channel configurations and hydraulic structures in Reaches 4, 5, and 6, and the new mid-channel bar at the downstream end of Reach 5, could impede downstream fish passage if the low flow channel is too shallow during the downstream migration period. Smith (2007) noted that the low flow channel in the flood control channel in Llagas Creek downstream of the reservoir may allow smolt emigration at flows as low as 3 cfs, but is dry in most years by April. Smith (2007) also concluded that the biggest limiting factor for maintaining steelhead in Llagas Creek is regular emigration of smolts the dry reach below U.S. 101. BMP BI-15 would restore pool and riffle configurations to emulate pre-Project instream conditions, taking into account morphological features (slope) that may affect riffle/pool sequence. BMP BI-15 may minimize impacts to passage, but may not address critical depth or passage criteria for outmigrating smolts. Implementation of Mitigation Measure AQUA-1a T would reduce this impact to less than significant.

Flood conveyance channels would be managed to provide adequate capacity for the design flow. The channels would be regularly inspected for the build-up and removal of trash (non-living material) or other obstruction to flow would be minimized by conducting sediment and vegetation management operations between June 15 and October 15, as outlined in Section 2.4.5 and SCVWD BMPs BI-2, BI-14, BI-15, and WQ-12. With implementation of SCVWD BMPs, this impact would be reduced to less than significant.

Instream complexity features would be installed and maintained in Reaches 4, 5, 6, and 7A, and as part of the Lake Silveira project element. Refer to Section 2.4 for the number and types of instream structures proposed for each reach (examples of all types of habitat structures are shown in Appendix D). The complexity features are intended to assist with migration of anadromous fish during moderate to high flows by providing hydraulic cover. Further, the structures would provide escape cover for downstream migrating steelhead. These features would be maintained by the SCVWD to ensure they continue to provide their designed environmental benefits. The greatest concentration of complexity features would be installed in Reach 6 as this is currently a perennial stream reach (down to San Martin Avenue) and likely contains the highest quality steelhead habitat in the Project area. The structures would provide resting places for downstream migrating juvenile steelhead where no resting places currently exist, likely improving migration success through the Project area. These structures would provide a benefit to upstream migrating adult steelhead.

The Lake Silveira mitigation element on Llagas Creek, upstream of Reach 6 and Reach 7A, contains critical migration habitat for juvenile S-CCC steelhead. See Section 2.4.6 for a description of all the features related to the Lake Silveira element. Channel modifications as part of the Lake Silveira element,

would maintain downstream migration of Juvenile S-CCC steelhead through Lake Silveira and instream habitat features installed in the lake would provide downstream migrating juvenile steelhead with improved refuge from potential predators Additional downstream access for juvenile steelhead would be provided through the rewatered section of Llagas Creek once a stable, low flow channel forms and when flows are high enough to allow downstream passage in the channel. Potential predation would be significantly reduced if downstream migrating juvenile steelhead utilized the rewatered channel. However, the split structure constructed to divert some flow into the rewatered channel could limit downstream migration if a low flow channel isn't formed and could be a significant impact. Implementation of Mitigation Measure AQUA-1a T would reduce impacts from channel modifications and hydraulic features as part of the Lake Silveira mitigation element on downstream migration of juvenile S-CCC steelhead to less than significant.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that avoid and minimize impacts on downstream migration of juvenile S-CCC steelhead under the Preferred Alternative:

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction and operations phases of all elements.

> **BI-3:** Minimize Impacts to Steelhead Vertebrates—applicable to the construction phase of all elements.

> **BI-14:** Maintain Low-Flow Fish Passage—applicable to the operations phase of all elements.

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the operations phase of all elements.

> **WQ-12:** Divert/ Bypass Water at Non-tidal Sites—applicable to the operations phase of all elements.

Mitigation Measures

Mitigation Measure AQUA-1a T: Steelhead Passage: Channel and Structure Design.

Implementation of BMPs and Mitigation Measure AQUA-1a T would reduce impacts related to the operation of reconfigured channels, grade control structures, newly installed and replaced culverts, and grade control structures on adult steelhead downstream migration to less than significant.

AQUA-5 T—Potential for adverse effects to aquatic species from construction and maintenance within and outside the active channel

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Excavation of channel, shallow pools and benches	LTS	LTS
Upland grading (access to maintenance roads/pedestrian paths)	LTS	LTS
Tunnel in Reach 8	LTS	LTS
Lake Silveira project element	LTS	LTS
Vegetation Management and Sediment Removal	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction would take place year round, but would occur to the extent feasible during the dry season, typically between May 1 and October 15. The construction activities may still take place in the channel, even if the channel is not dry, by dewatering reaches. The Preferred Alternative would require construction activities in the active channel (for channel modification, installation of grade control, installation of culverts, the new channel bar at the downstream end of Reach 5, and installation of instream flow structures for aquatic habitat construction of a sediment detention basin and inlet weir, installation of a low flow reinforced concrete pipe, and the Lake Silveira project element). Construction activity in the active channel could result in adverse effects on aquatic species, including crushing, disturbance of organisms, release of sediment, and release of pollutants associated with equipment. SCVWD BMPs would minimize impacts to aquatic species (Appendix C): BMPs BI-2, BI-3, BI-4, HM-10, HM-11, HM-12, HM-13, HM-14, WQ-1, WQ-2, WQ-3, WQ-4, WQ-5, WQ-9, WQ-12, and WQ-40. With implementation of BMPs, this impact would be less than significant.

Construction activities that occur outside of the active channel are not expected to directly impact aquatic species, but may indirectly impact them through runoff of sediments or pollutants. Maintenance roads would be constructed along Reaches 4, 5, 6, and 7A, and the existing Reach 14 maintenance road would be relocated. Reach 7A would be constructed through agricultural fields. SCVWD BMPs would minimize impacts to aquatic species (Appendix C): BMPs BI-4, HM-10, HM-11, HM-12, HM-13, WQ-4, WQ-12, and WQ-40. With implementation of BMPs, this impact would be less than significant.

Operations and Maintenance

Flood conveyance channels would be managed to provide adequate capacity for the design flow. The active channel would be regularly inspected for the build-up and removal of trash (non-living material) or other obstruction to flow. Sediment removal and vegetation maintenance are the two main activities that are periodically needed to maintain design flow capacity. Sediment removal and vegetation management generally would be conducted between June 15 and October 15. However, if the fall season remained dry, work could continue until the first significant rainfall event occurred. A significant rainfall event is defined as local rainfall of 0.5 inch or greater within the watershed over a 24-hour period (SCVWD 2011).

Maintenance at the Lake Silveira project element is expected to be relatively minor once vegetation begins to be established. Maintenance work would include sediment removal at the inlet structure, minor vegetation clearing around the inlet and outlet structures, and along the inlet of the channel to keep the flow split structure functioning. No maintenance would be performed for purposes of flood management.

Vegetation maintenance in the flood conveyance channels shall be performed to maintain the composite design roughness requirements. Methods would include herbicide, hand pruning, hand removal, and mowing. The application of herbicide would occur instream and on bank bench areas, as well as on maintenance roads, along fence lines, and similar non-instream areas.

Sediment removal would be done in a manner that is sensitive to protection of aquatic resources. As vegetation develops within Project area channels, and woody debris and other fish habitat enhancements are installed, there is potential for sediments to locally deposit reducing flood conveyance capacity. At the confluence of Reaches 14, 4, and 5, the design includes a mid-channel bar that bifurcates the channel flow. This confluence site is designed for sediment accumulation to help reduce the need for sediment removal in downstream locations. It is anticipated that sediment removal at the confluence site would be less frequent than once every 10 years. Sediment management would be performed in an adaptive manner, identifying depositional patterns and tendencies and updating management techniques accordingly. Heavier sedimentation may occur after episodic events, such as wild fires and large flows. After such an event the Project should be inspected to identify and address large deposits that may impact channel capacity.

Each portion of the channel cross section will have an applied set of maintenance activities that will vary from reach to reach. On the bench, the bankfull bank (slope between bench and channel bottom) and the channel bottom, woody vegetation would be cleared and excess sediment removed from Reaches 4 and 5, management in Reaches 6, 7A, and 7B, and would be similar to Reaches 4 and 5 with the additional provision to prevent the spread of willows on the bankfull bank. Reach 14 in-channel maintenance (clearance of woody vegetation, removal of excess sediments) would only occur on the channel bottom. Sediment maintenance would likely occur every 10 years and vegetation management would likely occur every 5 years.

Impacts from maintenance and operation activities in the active channel would be minimized by conducting sediment, vegetation management, and bank protection operations, and associated minor activities between June 15 and October 15, as outlined in Section 2.4.5 and SCVWD BMPs. SCVWD BMPs that would minimize impacts to aquatic species within the active channel include BMPs BI-2, BI-4, BI-14, BI-15, HM-9, HM-10, HM-11, HM-12, HM-13, HM-14, WQ-1, WQ-2, WQ-3, WQ-4, WQ-9, WQ-12, WQ-15, WQ-17, and WQ-18. With implementation of these SCVWD BMPs, this impact would be less than significant.

Outside of the active channel, maintenance of access roads and the top of bank would occur as part of vegetation and sediment maintenance. On the maintenance roads, vegetation would be cleared as needed for access and to reduce fire hazard. Top of bank areas in all reaches would be maintained annually to facilitate access and observation and to reduce fire hazard. SCVWD BMPs that would minimize impacts to aquatic species include BMPs BI-4, HM-12, HM-13, HM-9, HM-10, HM-11, WQ-4, and WQ-18. With implementation of these SCVWD BMPs, this impact would be less than significant.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that avoid and minimize impacts on aquatic species from construction and management within and outside the active channel under the Preferred Alternative:

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction and operations phases of all elements

> **BI-3:** Minimize Impacts to Steelhead—applicable to the construction phase of all elements

> **BI-4:** Minimize Access Impacts—applicable to the construction and operations phases of all elements

> **BI-14:** Maintain Low-Flow Fish Passage—applicable to the construction and operations phases of all elements

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the construction and operations phases of all elements

> **HM-9:** Clean Vehicles and Equipment—applicable to the operations phases of all elements

> **HM-10:** Assure Proper Vehicle and Equipment Fueling—applicable to the construction and operations phases of all elements

> **HM-11:** Assure Proper Vehicle and Equipment Maintenance—applicable to the construction and operations phases of all elements

> **HM-12:** Assure Proper Hazardous Materials Management—applicable to the construction and operations phases of all elements

> **HM-13:** Prevent Spills—applicable to the construction and operations phases of all elements

> **HM-14:** Know the Location of the Spill Kit—applicable to the construction and operations phases of all elements

> **WQ-1:** Conduct Work from Top of Bank—applicable to the construction and operations phases of all elements

> **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms—applicable to the construction and operations phases of all elements

> **WQ-3:** Limit Impact of Pump and Generator Operation and Maintenance—applicable to the construction and operations phases of all elements

> **WQ-4:** Limit Impacts of Sediments on Water Quality—applicable to the construction and operations phases of all elements

> **WQ-5:** Limit Impacts From Staging and Stockpiling Materials—applicable to the construction phase of all elements

> **WQ-9:** Minimize Erosion from Removal of In-channel Vegetation—applicable to the construction and operations phases of all elements

> **WQ-12:** Isolate Work in Non-tidal Sites With Use of Diversion of Bypass—applicable to the construction and operations phases of all elements

> **WQ-15:** Manage Groundwater at Work Sites—applicable to the operations phase of all elements

> **WQ-17:** Prevent Scour Downstream of Sediment Removal—applicable to the operations phase of all elements

> **WQ-18:** Maintain Clean Conditions at Work Sites—applicable to the operations phase of all elements

> **WQ-40:** Prevent Water Pollution—applicable to the construction phase of all elements.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to aquatic species from construction and maintenance within and outside the active channel to less-than-significant levels.

3.6.5.3 Natural Resources Conservation Service (NRCS) Alternative

The NRCS Alternative would be similar to the Preferred Alternative with the notable exception that channel improvements would be made through Reach 8 instead of the construction of a tunnel and high flow conveyance structures as proposed under the Preferred Alternative. Other differences to Reach 8 and Reach 7B under the NRCS would include:

> Widen and deepen approximately 3,000 feet of channel between West Dunne Avenue and Main Avenue to form a trapezoidal vegetated channel, a channel with two vertical walls, or a hybrid section (Figures 2.4-3, 2.4-4, 2.4-5, respectively), as appropriate depending upon the ROW available.

> Replace approximately 2,200 feet of the existing creek between Main Avenue and Wright Avenue with two 10-foot wide by 7- to 8-foot deep reinforced concrete box culverts following the existing stream alignment, but under Hale Avenue. Replace culverts at West Main Avenue and Wright Avenue (Table 2.5-1).

> Replace five additional existing undersized culverts with new culverts, 10 feet wide by 9 feet deep, at the following locations: 5th Street, 4th Street/Monterey Highway, 3rd Street, 2nd Street/Del Monte Avenue, and Warren Avenue.

> The existing culvert from Ciolino Avenue to West Dunne Avenue would be replaced with a 674-foot long box culvert that is 8 feet wide and 8 feet deep.

Due to the similarities between the NRCS and the Preferred alternatives for Reaches 4, 5, 6, 7A, 7B, and 14, impacts and mitigation measures described above for AQUA-1 to AQUA-5 T would be the same for the NRCS Alternative, except as noted below for each impact.

AQUA-1 NRCS—Potential for adverse effects on upstream migration of adult S-CCC steelhead

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sinuous channel, shallow pools and benches	LTS	LTS
Grade control structures	LTS	LTSM
New concrete box culverts and culvert replacements	LTS	LTSM
New channel bar at the downstream end of Reach 5	LTS	LTSM
Instream flow structures for aquatic habitat	LTS	B
Lake Silveira element	LTS	LTSM
Vegetation Management and Sediment Removal	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Due to the similarities between the NRCS and Preferred alternatives for Reaches 4, 5, 6, 7A, 7B, and 14, and for the Lake Silveira mitigation element, construction impacts and mitigation measures described above for AQUA-1 T would be the same for AQUA-1 NRCS, except that channel improvements would be made through Reach 8 instead of the construction of a tunnel and high flow conveyance structures as proposed under the Preferred Alternative. Channel modifications in all other reaches (4, 5, 6, 7A, 7B, and 14) and as part of the Lake Silveira project element would be the same as under the Tunnel Alternative. The construction approach for the NRCS Alternative would be the same throughout all of the Project reaches as previously described for the Preferred Alternative, with the key differences in Reach 8 that 3,000 additional feet of channel would be widened and deepened with channel profiles appropriate for the ROW available and RCB culverts replacing the earthen channel of West Little Llagas Creek along Hale Avenue instead of a low flow RCP and high flow RCB culverts; and in Reach 7B that the existing culvert from Ciolino Avenue to West Dunne Avenue would be replaced along its existing alignment. Construction duration for the NRCS Alternative would be 5.5 years, with the construction lasting for about 36 months in Reach 8, which is the same as the time to construct Reach 8 of the Preferred Alternative (Tables 2.4-3 and 2.4-5). Construction activities would be the same as that described for the Preferred Alternative, except that in Reach 8 more channel widening and deepening would occur, more grade control structures would be installed and that the tunnel under the Nob Hill Terrace neighborhood, and a sediment detention basin and weir near Wright Avenue and Hale Avenue would not be constructed. The construction fill and disposal material volumes for the NRCS Alternative are virtually the same as for the Preferred Alternative, as shown in Table 2.4-4. As such, construction impacts to adult steelhead upstream migration in these reaches, BMPs, and mitigation measures would be the same as described under AQUA-1 T. S-CCC steelhead do not occur in and do not migrate into Reach 8 or adjacent Reaches 7A and 7B. Consequently, channel modifications and hydraulic structures in Reach 8 would have no impact on adult S-CCC steelhead upstream migration.

Operations and Maintenance

For the channel modifications proposed in Reach 8 under the NRCS Alternative, operation and maintenance impacts to upstream migrating adult steelhead, BMPs, and mitigation measures would be the same as described under AQUA-1 T, as channel modifications in all other reaches (Reaches 4, 5, 6, 7A, 7B, and 14) and as part of the Lake Silveira mitigation element would be the same as under the Preferred Alternative. Reach 8 or adjacent Reaches 7A and 7B do not currently support upstream migration of adult S-CCC steelhead or contain upstream migration critical habitat for adult S-CCC

steelhead (NMFS 2005b; CDFW 2013). The channel modifications and hydraulic structures within Reach 8 would not create or allow upstream S-CCC steelhead migration. The operations and maintenance of channel modifications and hydraulic structures in Reach 8 would have no impact on adult S-CCC steelhead upstream migration.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that avoid and minimize impacts on adult S-CCC steelhead migration under the NRCS Alternative:

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction and operations phases of all elements.

> **BI-3:** Minimize Impacts to Steelhead Vertebrates—applicable to the construction phase of all elements.

> **BI-14:** Maintain Low-Flow Fish Passage—applicable to the operations phase of all elements.

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the operations phase of all elements.

> **WQ-12:** Divert/ Bypass Water at Non-tidal Sites—applicable to the operations phase of all elements.

Mitigation Measures

Mitigation Measure AQUA-1a T: Steelhead Passage: Channel and Structure Design.

Implementation of BMPs and Mitigation Measure AQUA-1a T would reduce impacts related to the operation of reconfigured channels, grade control structures, newly installed and replaced culverts, grade control structures, and removal of the fish ladder on adult steelhead upstream migration to less than significant.

Mitigation Measure AQUA-1b T: Steelhead Passage: Inspection of In-channel of Large Woody Debris prior to Removal for Management of Flood Conveyance Channels.

Implementation of BMPs and Mitigation Measures AQUA-1b would reduce impacts related to the maintenance of flood conveyance channels on adult steelhead upstream migration to less than significant.

AQUA-2 NRCS—Potential for adverse effects on S-CCC steelhead spawning habitat usage and quality

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sinuous channel, shallow pools and benches	LTSM	LTS
Grade control structures	LTSM	LTS
New concrete box culverts and culvert replacements	LTSM	LTS
New mid-channel bar at the downstream end of Reach 5	LTSM	LTS
Instream flow structures for aquatic habitat	LTSM	B
Lake Silveira element	LTS	B
Sediment removal, vegetation maintenance and minor maintenance	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Due to the similarities between the NRCS and Preferred alternatives for Reaches 4, 5, 6, 7A, 7B, and 14, and for the Lake Silveira mitigation element, construction impacts and mitigation measures described above for AQUA-1 T would be the same for AQUA-1 NRCS, except that channel improvements would be made through Reach 8 instead of the construction of a tunnel and high flow conveyance structures as proposed under the Preferred Alternative. The construction approach for the NRCS Alternative would be the same throughout all of the Project reaches as previously described for the Preferred Alternative, with the key differences in Reach 8 that 3,000 additional feet of channel would be widened and deepened with channel profiles appropriate for the ROW available and two 2,000-foot-long, 10-foot-wide RCB culverts replacing the earthen channel of West Little Llagas Creek along Hale Avenue instead of a low flow RCP and high flow RCB culverts; and in Reach 7B that the existing culvert from Ciolino Avenue to West Dunne Avenue would be replaced a 8-feet-wide by 8-feet-deep RCB along its existing alignment. Construction duration for the NRCS Alternative would be 5.5 years, with the construction lasting for about 36 months in Reach 8, which is the same as the time to construct Reach 8 of the Preferred Alternative (Tables 2.4-3 and 2.4-5). Construction activities would be the same as that described for the Preferred Alternative, except that in Reach 8 more channel widening and deepening would occur, more grade control structures would be installed and that the tunnel under the Nob Hill Terrace neighborhood, and a sediment detention basin and weir near Wright Avenue and Hale Avenue would not be constructed. The construction fill and disposal material volumes for the NRCS Alternative are virtually the same as for the Preferred Alternative, as shown in Table 2.4-4. As such, construction impacts to adult steelhead spawning habitat and usage in these reaches, BMPs, and mitigation measures would be the same as described under AQUA-2 T. S-CCC steelhead do not occur in and do not migrate into Reach 8 or adjacent Reaches 7A and 7B. Consequently, channel modification and hydraulic features in Reach 8 would have no impact on S-CCC steelhead spawning habitat usage and quality.

Operations and Maintenance

For the channel modifications proposed in Reach 8 under the NRCS Alternative, operation and maintenance impacts to steelhead spawning habitat and usage, BMPs, and mitigation measures would be the same as described under AQUA-2 T, as channel modifications in all other reaches (Reaches 4, 5, 6, 7A, 7B, and 14) and as part of the Lake Silveira mitigation element would be the same as under the Preferred Alternative. Reach 8 (or adjacent Reaches 7A and 7B) do not currently support S-CCC steelhead spawning or contain critical spawning habitat for S-CCC steelhead (NMFS 2005b; CDFW 2013). The Channel modifications and hydraulic structures within Reach 8 are not anticipated to create spawning habitat within that reach. The operations and maintenance of channel modifications and hydraulic structures in Reach 8 would have no impact on adult S-CCC steelhead spawning habitat usage and quality.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that avoid and minimize impacts on adult S-CCC steelhead spawning habitat usage and quality under the NRCS Alternative:

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction phase of all elements.

> **BI-3:** Minimize Impacts to Steelhead Vertebrates—applicable to the construction phase of all elements.

> **BI-4:** Minimize Access Impacts—applicable to the construction and operations phases of all elements.

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the operations phase of all elements.

> **WQ-1:** Conduct Work from Top of Bank—applicable to the construction and operations phases of all elements.

> **WQ-4:** Limit Impacts of Sediments on Water Quality—applicable to the construction and operations phases of all elements.

> **WQ-9:** Minimize Erosion from Removal of In-channel Vegetation—applicable to the construction and operations phases of all elements.

> **WQ-17:** Prevent Scour Downstream of Sediment Removal—applicable to the operations phase of all elements.

> **WQ-40:** Prevent Water Pollution—applicable to the construction phase of all elements.

Mitigation Measures

Mitigation Measure AQUA-2a T: Preconstruction Surveys prior to In-water Construction.

Mitigation Measure AQUA-2b T: Biological Monitor for Dewatering Activities.

Implementation of Mitigation Measures BMPs and Mitigation Measures AQUA-2a and AQUA-2b T would reduce impacts related to the construction of flood conveyance channels on adult S-CCC steelhead spawning habitat and usage to less than significant.

AQUA-3 NRCS—Potential for adverse effects on S-CCC steelhead rearing habitat

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sinuous channel, shallow pools and benches	LTS	LTSM
Operation of wider channel and excavated Reach 7A channel	NI	LTSM
Grade control structures	LTS	LTS
New concrete box culverts and culvert replacements	LTS	LTS
New mid-channel bar at the downstream end of Reach 5	LTS	LTS
Instream flow structures for aquatic habitat	LTS	B
Lake Silveira element	LTS	B
Sediment removal, vegetation management and minor maintenance	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Due to the similarities between the NRCS and Preferred alternatives for Reaches 4, 5, 6, 7A, 7B, and 14, and for the Lake Silveira mitigation element, construction impacts, and mitigation measures described above for AQUA-3 T would be the same for AQUA-3 NRCS, except channel improvements would be made through Reach 8 instead of the construction of a tunnel and high flow conveyance structures as proposed under the Preferred Alternative. Channel modifications in all other reaches (Reaches 4, 5, 6, 7A, 7B, and 14) and the Lake Silveira element would be the same as under the Preferred Alternative. The construction approach for the NRCS Alternative would be the same throughout all of the Project reaches as previously described for the Preferred Alternative, with the key differences in Reach 8 that 3,000 additional feet of channel would be widened and deepened with channel profiles appropriate for the ROW

available and two 2,000-foot-long, 10-foot-wide RCB culverts replacing the earthen channel of West Little Llagas Creek along Hale Avenue instead of a low flow RCP and high flow RCB culverts; and in Reach 7B that the existing culvert from Ciolino Avenue to West Dunne Avenue would be replaced a 8-feet-wide by 8-feet-deep RCB along its existing alignment. Construction duration for the NRCS Alternative would be 5.5 years, with the construction lasting for about 36 months in Reach 8, which is the same as the time to construct Reach 8 of the Preferred Alternative (Tables 2.4-3 and 2.4-5).

Construction activities would be the same as that described for the Preferred Alternative, except that in Reach 8 more channel widening and deepening would occur, more grade control structures would be installed and that the tunnel under the Nob Hill Terrace neighborhood, and a sediment detention basin and weir near Wright Avenue and Hale Avenue would not be constructed. The construction fill and disposal material volumes for the NRCS Alternative are virtually the same as for the Preferred Alternative, as shown in Table 2.4-4. As such, construction impacts to steelhead rearing habitat in these reaches, BMPs, and mitigation measures would be the same as described under AQUA-3 T. S-CCC steelhead do not currently rear in Reach 8 or adjacent Reaches 7A and 7B. Consequently, channel modifications and hydraulic structures in Reach 8 would have no impact on adult S-CCC steelhead rearing.

Operations and Maintenance

For the channel modifications proposed in Reach 8 under the NRCS Alternative, operation and maintenance impacts to steelhead rearing, BMPs, and mitigation measures would be the same as described under AQUA-3 T, as channel modifications in all other reaches (Reaches 4, 5, 6, 7A, 7B, and 14) and as part of the Lake Silveira mitigation element would be the same as under the Preferred Alternative. Reach 8 or adjacent Reaches 7A and 7B do not currently support S-CCC steelhead rearing or contain upstream critical rearing habitat for S-CCC steelhead (NMFS 2005b; CDFW 2013). The channel modifications and hydraulic structures within Reach 8 would not create rearing habitat in that reach. The operations and maintenance of channel modifications and hydraulic structures in Reach 8 would have no impact on adult S-CCC steelhead rearing habitat.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that avoid and minimize impacts on juvenile S-CCC steelhead rearing habitat under the NRCS Alternative:

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction and operations phases of all elements.

> **BI-3:** Minimize Impacts to Steelhead—applicable to the construction and operations phases of all elements.

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the operations phase of all elements.

> **WQ-12:** Divert/ Bypass Water at Non-tidal Sites—applicable to the operations phase of all elements.

Mitigation Measures

Mitigation Measure AQUA-1b T: Steelhead Passage: Inspection of In-channel of Large Woody Debris prior to Removal for Management of Flood Conveyance Channels.

Mitigation Measure BOT-1b T: Prepare a Mitigation Plan for Special-status Plants.

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

Implementation of BMPs and Mitigation Measures AQUA-1b, BOT-1b, and BOT-1c T would reduce impacts related to the maintenance of flood conveyance channels on juvenile steelhead rearing habitat to less than significant.

AQUA-4 NRCS—Potential for adverse effects on downstream migration of juvenile S-CCC steelhead

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sinuous channel, shallow pools and benches	LTS	LTSM
Grade control structures	LTS	LTSM
New concrete box culverts and culvert replacements	LTS	LTSM
New mid-channel bar at the downstream end of Reach 5	LTS	LTSM
Instream flow structures for aquatic habitat	LTS	B
Lake Silveira project element	LTS	LTSM
Sediment removal, vegetation maintenance and minor maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Due to the similarities between the NRCS and Preferred alternatives for Reaches 4, 5, 6, 7A, 7B, and 14, and for the Lake Silveira mitigation element, construction impacts and mitigation measures described above for AQUA-4 T would be the same for AQUA-4 NRCS, except that channel improvements would be made through Reach 8 instead of the construction of a tunnel and high flow conveyance structures as proposed under the Preferred Alternative. Channel modifications in all other reaches (Reaches 4, 5, 6, 7A, 7B, and 14) and as part of the Lake Silveira element would be the same as under the Preferred Alternative. The construction approach for the NRCS Alternative would be the same throughout all of the Project reaches as previously described for the Preferred Alternative, with the key differences in Reach 8 that 3,000 additional feet of channel would be widened and deepened with channel profiles appropriate for the ROW available and two 2,000-foot-long, 10-foot-wide RCB culverts replacing the earthen channel of West Little Llagas Creek along Hale Avenue instead of a low flow RCP and high flow RCB culverts; and in Reach 7B that the existing culvert from Ciolino Avenue to West Dunne Avenue would be replaced a 8-feet-wide by 8-feet-deep RCB along its existing alignment. Construction duration for the NRCS Alternative would be 5.5 years, with the construction lasting for about 36 months in Reach 8, which is the same as the time to construct Reach 8 of the Preferred Alternative (Tables 2.4-3 and 2.4-5).

Construction activities would be the same as that described for the Preferred Alternative, except that in Reach 8 more channel widening and deepening would occur, more grade control structures would be installed and that the tunnel under the Nob Hill Terrace neighborhood, and a sediment detention basin and weir near Wright Avenue and Hale Avenue would not be constructed. The construction fill and disposal material volumes for the NRCS Alternative are virtually the same as for the Preferred Alternative, as shown in Table 2.4-4. As such, construction impacts to juvenile steelhead in these reaches, BMPs, and mitigation measures would be the same as described under AQUA-4 T. S-CCC steelhead do not currently spawn or rear in Reach 8 or adjacent Reaches 7A and 7B. Consequently, channel modifications and hydraulic structures in Reach 8 would have no impact on downstream migration of juvenile S-CCC steelhead.

Operations and Maintenance

For the channel modifications proposed in Reach 8 under the NRCS Alternative, operation and maintenance impacts to upstream migrating adult steelhead, BMPs, and mitigation measures would be the same as described under AQUA-4 T as channel modifications in all other reaches (Reaches 4, 5, 6,

7A, 7B, and 14) and as part of the Lake Silveira mitigation element would be the same as under the Preferred Alternative. Reach 8 (or adjacent Reaches 7A and 7B) do not currently support S-CCC steelhead spawning or rearing or contain upstream migration critical habitat for S-CCC steelhead (NMFS 2005b; CDFW 2013). The channel modifications and hydraulic structures within Reach 8 are not anticipated to create steelhead habitat within that reach. The channel modifications and hydraulic structures in Reach 8 would have no impact on downstream migration of juvenile S-CCC steelhead.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that avoid and minimize impacts on downstream migration of juvenile S-CCC steelhead under the NRCS Alternative:

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction and operations phases of all elements.

> **BI-3:** Minimize Impacts to Steelhead Vertebrates—applicable to the construction phase of all elements.

> **BI-14:** Maintain Low-Flow Fish Passage—applicable to the operations phase of all elements.

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the operations phase of all elements.

> **WQ-12:** Divert/ Bypass Water at Non-tidal Sites—applicable to the operations phase of all elements.

Mitigation Measure

Mitigation Measure AQUA-1a T: Steelhead Passage: Channel and Structure Design.

Implementation of BMPs and Mitigation Measure AQUA-1a T would reduce impacts related to the operation of reconfigured channels, grade control structures, newly installed and replaced culverts, grade control structures, and the fish ladder removal downstream of Buena Vista Avenue, on adult steelhead downstream migration to less than significant.

AQUA-5 NRCS—Potential for adverse effects to aquatic species from construction and maintenance within and outside the active channel

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Excavation of channel, shallow pools and benches	LTS	LTS
Upland grading (access to maintenance roads/pedestrian paths)	LTS	LTS
Lake Silveira element	LTS	LTS
Sediment removal, vegetation maintenance and minor maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Due to the similarities between the NRCS and Preferred alternatives for Reaches 4, 5, 6, 7A, 7B, and 14, and for the Lake Silveira mitigation element, construction impacts and mitigation measures described above for AQUA-5 T would be the same for AQUA-5 NRCS, except that channel improvements would be made through Reach 8 instead of the construction of a tunnel and high flow conveyance structures as

proposed under the Preferred Alternative. Channel modifications in all other reaches (Reaches 4, 5, 6, 7A, 7B, and 14) and as part of the Lake Silveira element would be the same as under the Preferred Alternative. The construction approach for the NRCS Alternative would be the same throughout all of the Project reaches as previously described for the Preferred Alternative, with the key differences in Reach 8 that 3,000 additional feet of channel would be widened and deepened with channel profiles appropriate for the ROW available and two 2,000-foot-long, 10-foot-wide RCB culverts replacing the earthen channel of West Little Llagas Creek along Hale Avenue instead of a low flow RCP and high flow RCB culverts; and in Reach 7B that the existing culvert from Ciolino Avenue to West Dunne Avenue would be replaced a 8-feet-wide by 8-feet-deep RCB along its existing alignment. Construction duration for the NRCS Alternative would be 5.5 years, with the construction lasting for about 36 months in Reach 8, which is the same as the time to construct Reach 8 of the Preferred Alternative (Tables 2.4-3 and 2.4-5).

Construction activities would be the same as that described for the Preferred Alternative, except that in Reach 8 more channel widening and deepening would occur, more grade control structures would be installed and that the tunnel under the Nob Hill Terrace neighborhood, and a sediment detention basin and weir near Wright Avenue and Hale Avenue would not be constructed. The construction fill and disposal material volumes for the NRCS Alternative are virtually the same as for the Preferred Alternative, as shown in Table 2.4-4. While S-CCC steelhead do not currently occur in Reach 8 or adjacent Reaches 7A and 7B, other aquatic species (e.g., mosquitofish) may be present; although, no special-status aquatic species occur under existing conditions. Construction impacts to aquatic species within and outside the active channel, BMPs, and mitigation measures would be the same as described under AQUA-5 T. Channel modification and hydraulic structures in Reach 8 would have a less-than-significant impact on aquatic species within and outside the active channel.

Operations and Maintenance

For the channel modifications proposed in Reach 8 under the NRCS Alternative, operation and maintenance impacts to upstream migrating adult steelhead, BMPs, and mitigation measures would be the same as described under AQUA-5 T as channel modifications in all other reaches (Reaches 4, 5, 6, 7A, 7B, and 14) and as part of the Lake Silveira project element would be the same as under the Preferred Alternative. While S-CCC steelhead do not currently occur in Reach 8 (or adjacent Reaches 7A and 7B) other aquatic species (e.g., mosquitofish) may be present; although, no special-status aquatic species occur under existing conditions. Within and outside the active channel, operation and maintenance impacts to aquatic species, BMPs, and mitigation measures would be the same as described under AQUA-5 T. The operations and maintenance of channel modifications and hydraulic structures in Reach 8 would have a less-than-significant impact on aquatic species within and outside the active channel.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that avoid and minimize impacts on aquatic species from construction and management within and outside the active channel under the NRCS Alternative:

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction and operations phases of all elements

> **BI-3:** Minimize Impacts to Steelhead—applicable to the construction phase of all elements

> **BI-4:** Minimize Access Impacts—applicable to the construction and operations phases of all elements

> **BI-14:** Maintain Low-Flow Fish Passage—applicable to the construction and operations phases of all elements

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the construction and operations phases of all elements

- **HM-9:** Clean Vehicles and Equipment—applicable to the operations phases of all elements
- **HM-10:** Assure Proper Vehicle and Equipment Fueling—applicable to the construction and operations phases of all elements
- **HM-11:** Assure Proper Vehicle and Equipment Maintenance—applicable to the construction and operations phases of all elements
- **HM-12:** Assure Proper Hazardous Materials Management—applicable to the construction and operations phases of all elements
- **HM-13:** Prevent Spills—applicable to the construction and operations phases of all elements
- **HM-14:** Know the Location of the Spill Kit—applicable to the construction and operations phases of all elements
- **WQ-1:** Conduct Work from Top of Bank—applicable to the construction and operations phases of all elements
- **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms—applicable to the construction and operations phases of all elements
- **WQ-3:** Limit Impact of Pump and Generator Operation and Maintenance—applicable to the construction and operations phases of all elements
- **WQ-4:** Limit Impacts of Sediments on Water Quality—applicable to the construction and operations phases of all elements
- **WQ-5:** Limit Impacts From Staging and Stockpiling Materials—applicable to the construction phase of all elements
- **WQ-9:** Minimize Erosion from Removal of In-channel Vegetation—applicable to the construction and operations phases of all elements
- **WQ-12:** Isolate Work in Non-tidal Sites With Use of Diversion of Bypass—applicable to the construction and operations phases of all elements
- **WQ-15:** Manage Groundwater at Work Sites—applicable to the operations phase of all elements
- **WQ-17:** Prevent Scour Downstream of Sediment Removal—applicable to the operations phase of all elements
- **WQ-18:** Maintain Clean Conditions at Work Sites—applicable to the operations phase of all elements
- **WQ-40:** Prevent Water Pollution—applicable to the construction phase of all elements.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to aquatic species from construction and maintenance within and outside the active channel less than significant.

3.6.5.4 Culvert/Channel Alternative

The Culvert/Channel Alternative would be similar to the Preferred Alternative with the notable exception that the tunnel and high flow conveyance structures as proposed under the Preferred Alternative would not be constructed in Reach 8. Channel Modifications in Reach 8 under the Culvert/Channel Alternative are most similar to those under the NRCS Alternative with the elimination of the need for channel deepening and widening through residential properties. Other modifications to Reach 8 would include:

> Realign an 800-foot segment of the double 10-foot-wide box culverts that, in the NRCS design, would be parallel to Hale Avenue through the Britton School athletic fields up to Del Monte Avenue;

> Continue the double box culvert under Del Monte Avenue approximately 900 feet to West 2nd Street; and

> From West 2nd Street to West Dunne Avenue, the same channel widening and deepening, along with culvert replacements at 2nd, 3rd, 4th, and 5th Streets as described for the NRCS Alternative would be performed in Reach 8. The upstream-most portion of the Culvert/Channel Alternative from Llagas Road to Wright Avenue would remain the same as the NRCS Alternative. All other reaches would have exactly the same design as previously described for the NRCS Alternative.

Due to the similarities between the Culvert/Channel and Preferred alternatives for Reaches 4, 5, 6, 7A, 7B, and 14, impacts and mitigation measures, described above for AQUA-1 to AQUA-5 T, would be the same for the Culvert/Channel Alternative. Due to the similarities between the Culvert/Channel and NRCS alternatives in Reach 8, impacts and mitigation measures described above for AQUA-1 to AQUA-5 NRCS would be the same for the Culvert/Channel Alternative, except as noted below for each impact.

AQUA-1 CC—Potential for adverse effects on upstream migration of adult S-CCC steelhead

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sinuous channel, shallow pools and benches	LTS	LTS
Grade control structures	LTS	LTSM
New concrete box culverts and culvert replacements	LTS	LTSM
New channel bar at the downstream end of Reach 5	LTS	LTSM
Instream flow structures for aquatic habitat	LTS	B
Culvert/Channel within Reach 8	NI	NI
Lake Silveira project element	LTS	LTSM
Sediment removal, vegetation maintenance and minor maintenance	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Due to the similarities between the Culvert/Channel and Preferred alternatives for Reaches 4, 5, 6, 7A, 7B, and 14, and for the Lake Silveira mitigation element, construction impacts and mitigation measures described above for AQUA-1 T would be the same for AQUA-1 CC. The construction impacts between the Culvert/Channel and the NRCS alternatives in Reach 8 are similar, except for realignment of an 800-foot segment of the double 10-foot-wide box culverts that, in the NRCS design, would be parallel to Hale Avenue through the Britton School athletic fields up to Del Monte Avenue and continuation of the double box culvert under Del Monte Avenue approximately 900 feet to West 2nd Street. From West 2nd Street to West Dunne Avenue, the same channel widening and deepening, along with culvert replacements at 2nd, 3rd, 4th, and 5th Streets as described for the NRCS Alternative, would be performed in Reach 8 under the Culvert/Channel Alternative. Channel modifications in all other reaches (4, 5, 6, 7A, 7B, and 14) and as part of the Lake Silveira element would be the same as under the Preferred Alternative. The construction approach for the Culvert/Channel Alternative would be the same throughout all of the Project reaches, as previously described for the Preferred Alternative; and construction duration would be

5.5 years, with the construction lasting for about 36 months in Reach 8, same as the Preferred Alternative.

Construction activities, equipment, and crew size would be the same as that described for the Preferred and NRCS alternatives (Table 2.4-5), except that in a segment of Reach 8, construction would occur through athletic fields and along Del Monte Road to West 2nd Street, rather than through a section of residential homes between West Main Avenue and West 2nd Street. The construction fill and disposal material volumes for the Culvert/Channel Alternative are virtually the same as for the Preferred Alternative, as shown in Table 2.4-4. As such, construction impacts to adult steelhead upstream migration in these reaches, BMPs, and mitigation measures would be the same as described under AQUA-1 T. S-CCC steelhead do not occur in and do not migrate into Reach 8 or adjacent Reaches 7A and 7B. Consequently, construction of the culvert in Reach 8 would have no impact on adult S-CCC steelhead upstream migration.

Operations and Maintenance

For the channel modifications proposed in Reach 8 under the Culvert/Channel Alternative, operation and maintenance impacts to upstream migrating adult steelhead, BMPs, and mitigation measures would be the same as described under AQUA-1 T, as channel modifications in all other reaches (Reaches 4, 5, 6, 7A, 7B, and 14) and as part of the Lake Silveira mitigation element would be the same as under the Preferred Alternative. Reach 8 (or adjacent Reaches 7A and 7B) do not currently support upstream migration of adult S-CCC steelhead or contain upstream migration critical habitat for adult S-CCC steelhead (NMFS 2005b; CDFW 2013). The construction of a culvert within Reach 8 would not to create or allow upstream S-CCC steelhead migration. The culvert/channel would have no impact on adult S-CCC steelhead upstream migration.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that avoid and minimize impacts on adult S-CCC steelhead migration under the Culvert/Channel Alternative:

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction and operations phases of all elements.

> **BI-3:** Minimize Impacts to Steelhead Vertebrates—applicable to the construction phase of all elements.

> **BI-**14: Maintain Low-Flow Fish Passage—applicable to the operations phase of all elements.

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the operations phase of all elements.

> **WQ-12:** Divert/ Bypass Water at Non-tidal Sites—applicable to the operations phase of all elements.

Mitigation Measures

Mitigation Measure AQUA-1a T: Steelhead Passage: Channel and Structure Design.

Implementation of BMPs and Mitigation Measure AQUA-1a T would reduce impacts related to the operation of reconfigured channels, grade control structures, newly installed and replaced culverts, and the fish ladder removal in Reach 4 downstream of Buena Vista Avenue, on adult steelhead upstream migration to less than significant.

Mitigation Measure AQUA-1b T: Steelhead Passage: Inspection of In-channel of Large Woody Debris prior to Removal for Management of Flood Conveyance Channels.

Implementation of BMPs and Mitigation Measure AQUA-1b T would reduce impacts related to the maintenance of flood conveyance channels on adult steelhead upstream migration to less than significant.

AQUA-2 CC—Potential for adverse effects on S-CCC steelhead spawning habitat usage and quality

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sinuous channel, shallow pools and benches	LTSM	LTS
Grade control structures	LTSM	LTS
New concrete box culverts and culvert replacements	LTSM	LTS
New mid-channel bar at the downstream end of Reach 5	LTSM	LTS
Instream flow structures for aquatic habitat	LTSM	B
The Lake Silveira project element	LTS	B
Culvert/Channel within Reach 8	NI	NI
Sediment Maintenance and Vegetation Removal	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Due to the similarities between the Culvert/Channel and the Preferred Alternative for Reaches 4, 5, 6, 7A, 7B, and 14, and for the Lake Silveira mitigation element, construction impacts and mitigation measures described above for AQUA-2 T would be the same for AQUA-2 CC. The construction impacts between the Culvert/Channel and the NRCS alternatives in Reach 8 are similar, except for realignment of an 800-foot segment of the double 10-foot-wide box culverts that, in the NRCS design, would be parallel to Hale Avenue through the Britton School athletic fields up to Del Monte Avenue and continuation of the double box culvert under Del Monte Avenue, approximately 900 feet to West 2nd Street. From West 2nd Street to West Dunne Avenue the same channel widening and deepening, along with culvert replacements at 2nd, 3rd, 4th, and 5th Streets as described for the NRCS Alternative, would be performed in Reach 8 under the Culvert/Channel Alternative. Channel modifications in all other reaches (4, 5, 6, 7A, 7B, and 14) and as part of the Lake Silveira element would be the same as under the Preferred Alternative. The construction approach for the Culvert/Channel Alternative would be the same throughout all of the Project reaches, as previously described for the Preferred Alternative; and construction duration would be 5.5 years, with the construction lasting for about 36 months in Reach 8, same as the Preferred Alternative.

Construction activities, equipment, and crew size would be the same as that described for the Preferred and NRCS alternatives (Table 2.4-5), except that in a segment of Reach 8, construction would occur through athletic fields and along Del Monte Road to West 2nd Street, rather than through a section of residential homes between West Main Avenue and West 2nd Street. The construction fill and disposal material volumes for the Culvert/Channel Alternative are virtually the same as for the Preferred Alternative, as shown in Table 2.4-4. As such, construction impacts to adult steelhead upstream migration in these reaches, BMPs, and mitigation measures would be the same as described under AQUA-2 T. S-CCC steelhead do not occur in and do not spawn in Reach 8 or adjacent Reaches 7A and 7B. Consequently, construction of the culvert in Reach 8 would have no impact on adult S-CCC steelhead spawning habitat usage and quality.

Operations and Maintenance

For the channel modifications proposed in Reach 8 under the Culvert/Channel Alternative, operation and maintenance impacts to upstream migrating adult steelhead, BMPs, and mitigation measures would be the same as described under AQUA-2 T, as channel modifications in all other reaches (4, 5, 6, 7A, 7B, and 14) and as part of the Lake Silveira mitigation element would be the same as under the Preferred Alternative. Reach 8 (or adjacent Reaches 7A and 7B) do not currently support S-CCC steelhead spawning or contain critical spawning habitat for S-CCC steelhead (NMFS 2005b; CDFW 2013). The construction of a culvert within Reach 8 would not to create S-CCC steelhead spawning habitat. The culvert and other potential infrastructure in Reach 8 would have no impact on adult S-CCC steelhead spawning habitat usage or quality.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that avoid and minimize impacts on adult S-CCC steelhead spawning habitat usage and quality under the Culvert/Channel Alternative:

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction phase of all elements.

> **BI-3:** Minimize Impacts to Steelhead Vertebrates—applicable to the construction phase of all elements.

> **BI-4:** Minimize Access Impacts—applicable to the construction and operations phases of all elements.

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the operations phase of all elements.

> **WQ-1:** Conduct Work from Top of Bank—applicable to the construction and operations phases of all elements.

> **WQ-4:** Limit Impacts of Sediments on Water Quality—applicable to the construction and operations phases of all elements.

> **WQ-9:** Minimize Erosion from Removal of In-channel Vegetation—applicable to the construction and operations phases of all elements.

> **WQ-17:** Prevent Scour Downstream of Sediment Removal—applicable to the operations phase of all elements.

> **WQ-40:** Prevent Water Pollution—applicable to the construction phase of all elements.

Mitigation Measures

Mitigation Measure AQUA-2a T: Preconstruction Surveys prior to In-water Construction.

Mitigation Measure AQUA-2b T: Biological Monitor for Dewatering Activities.

Implementation of BMPs and Mitigation Measures AQUA-2a and AQUA-2b T would reduce impacts related to the construction of flood conveyance channels on adult S-CCC steelhead spawning habitat and usage to less than significant.

AQUA-3 CC—Potential for adverse effects on S-CCC steelhead rearing habitat

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sinuous channel, shallow pools and benches	LTS	LTSM
Operation of wider channel and excavated Reach 7A channel	NI	LTSM
Grade control structures	LTS	LTS
New concrete box culverts and culvert replacements	LTS	LTS
New mid-channel bar at the downstream end of Reach 5	LTS	LTS
Instream flow structures for aquatic habitat	LTS	B
Lake Silveira project element	LTS	B
Culvert/Channel within Reach 8	NI	NI
Sediment removal, vegetation maintenance and minor maintenance	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Due to the similarities between the Culvert/Channel and the Preferred Alternative for Reaches 4, 5, 6, 7A, 7B, and 14, and for the Lake Silveira mitigation element, construction impacts and mitigation measures, described above for AQUA-3 T, would be the same for AQUA-3 CC. The construction impacts between the Culvert/Channel and the NRCS alternatives in Reach 8 are similar except for realignment of an 800-foot segment of the double 10-foot-wide box culverts that, in the NRCS design, would be parallel to Hale Avenue through the Britton School athletic fields up to Del Monte Avenue; and continuation of the double box culvert under Del Monte Avenue, approximately 900 feet to West 2nd Street. From West 2nd Street to West Dunne Avenue, the same channel widening and deepening, along with culvert replacements at 2nd, 3rd, 4th, and 5th Streets as described for the NRCS Alternative would be performed in Reach 8 under the Culver/Channel Alternative. Channel modifications in all other reaches (4, 5, 6, 7A, 7B, and 14) and as part of the Lake Silveira element would be the same as under the Preferred Alternative. The construction approach for the Culvert/Channel Alternative would be the same throughout all of the Project reaches, as previously described for the Preferred Alternative; and construction duration would be 5.5 years, with the construction lasting for about 36 months in Reach 8, same as the Preferred Alternative.

Construction activities, equipment, and crew size would be the same as that described for the Preferred and NRCS alternatives (Table 2.4-5), except that in a segment of Reach 8, construction would occur through athletic fields and along Del Monte Road to West 2nd Street, rather than through a section of residential homes between West Main Avenue and West 2nd Street. The construction fill and disposal material volumes for the Culvert/Channel Alternative are virtually the same as for the Preferred Alternative, as shown in Table 2.4-4. As such, construction impacts to steelhead rearing habitat in these reaches, BMPs, and mitigation measures would be the same as described under AQUA-3 T. S-CCC steelhead do not occur in and do not rear in Reach 8 or adjacent Reaches 7A and 7B. Consequently, construction of the culvert in Reach 8 would have no impact on S-CCC steelhead rearing habitat.

Operations and Maintenance

For the channel modifications proposed in Reach 8 under the Culvert/Channel Alternative, operation and maintenance impacts to upstream migrating adult steelhead, BMPs, and mitigation measures would be the same as described under AQUA-3 T, as channel modifications in all other reaches (Reaches 4, 5, 6, 7A, 7B, and 14) and as part of the Lake Silveira mitigation element would be the same as under the Preferred Alternative. Reach 8 (or adjacent Reaches 7A and 7B) do not currently support S-CCC steelhead rearing or contain critical rearing habitat for S-CCC steelhead (NMFS 2005b; CDFW 2013). The construction of a culvert within Reach 8 would not create S-CCC steelhead rearing habitat. The culvert and other potential infrastructure in Reach 8 would have no impact on S-CCC steelhead rearing habitat.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that avoid and minimize impacts on juvenile S-CCC steelhead rearing habitat under the Culvert/Channel Alternative:

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction and operations phases of all elements.

> **BI-3:** Minimize Impacts to Steelhead—applicable to the construction and operations phases of all elements.

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the operations phase of all elements.

> **WQ-12:** Divert/ Bypass Water at Non-tidal Sites—applicable to the operations phase of all elements.

Mitigation Measures

Mitigation Measure AQUA-1b T: Steelhead Passage: Inspection of In-channel of Large Woody Debris prior to Removal for Management of Flood Conveyance Channels.

Mitigation Measure BOT-1b T: Prepare a Mitigation Plan for Special-status Plants.

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

In addition to the above Mitigation Measures AQUA-3a and AQUA-3b T, implementation of Mitigation Measures AQUA-1b, AQUA-1c, BOT-1b, and BOT-1c T and BMPs would reduce impacts related to the maintenance of flood conveyance channels on juvenile steelhead rearing habitat.

AQUA-4 CC—Potential for adverse effects on downstream migration of juvenile S-CCC steelhead

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sinuous channel, shallow pools and benches	LTS	LTSM
Grade control structures	LTS	LTSM
New concrete box culverts and culvert replacements	LTS	LTSM
New mid-channel bar at the downstream end of Reach 5	LTS	LTSM
Instream flow structures for aquatic habitat	LTS	B
Lake Silveira element	LTS	LTSM
Culvert/Channel within Reach 8	NI	NI
Sediment removal, vegetation maintenance and minor maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Due to the similarities between the Culvert/Channel and the Preferred Alternative for Reaches 4, 5, 6, 7A, 7B, and 14, and for the Lake Silveira mitigation element, construction impacts and mitigation measures, described above for AQUA-4 T, would be the same for AQUA-4 CC. The construction impacts between the Culvert/Channel and the NRCS alternatives in Reach 8 are similar, except for realignment of an 800-foot segment of the double 10-foot-wide box culverts that, in the NRCS design, would be parallel to Hale Avenue through the Britton School athletic fields up to Del Monte Avenue; and continuation of the double box culvert under Del Monte Avenue approximately 900 feet to West 2nd Street. From West 2nd Street to West Dunne Avenue the same channel widening and deepening, along with culvert replacements at 2nd, 3rd, 4th, and 5th Streets as described for the NRCS Alternative, would be performed in Reach 8 under the Culvert/Channel Alternative. Channel modifications in all other reaches (4, 5, 6, 7A, 7B, and 14) and as part of the Lake Silveira element would be the same as under the Preferred Alternative. The construction approach for the Culvert/Channel Alternative would be the same throughout all Project reaches, as previously described for the Preferred Alternative; and construction duration would be 5.5 years, with the construction lasting for about 36 months in Reach 8, same as the Preferred Alternative.

Construction activities, equipment, and crew size would be the same as that described for the Preferred and NRCS alternatives (Table 2.4-5), except that in a segment of Reach 8, construction would occur through athletic fields and along Del Monte Road to West 2nd Street, rather than through a section of residential homes between West Main Avenue and West 2nd Street. The construction fill and disposal material volumes for the Culvert/Channel Alternative are virtually the same as for the Preferred Alternative, as shown in Table 2.4-4. As such, construction impacts to steelhead rearing habitat in these reaches, BMPs, and mitigation measures would be the same as described under AQUA-4 T. S-CCC steelhead do not occur in and do not rear in Reach 8 or adjacent Reaches 7A and 7B. Consequently, construction of the culvert in Reach 8 would have no impact on downstream migration of juvenile S-CCC steelhead.

Operations and Maintenance

For the channel modifications proposed in Reach 8 under the Culvert/Channel Alternative, operation and maintenance impacts to upstream migrating adult steelhead, BMPs, and mitigation measures would be

the same as described under AQUA-4 T, as channel modifications in all other reaches (4, 5, 6, 7A, 7B, and 14) and as part of the Lake Silveira mitigation element would be the same as under the Preferred Alternative. Reach 8 (or adjacent Reaches 7A and 7B) do not currently support S-CCC steelhead rearing or contain critical rearing habitat for S-CCC steelhead (NMFS 2005b; CDFW 2013). The construction of a culvert within Reach 8 would not to create S-CCC steelhead rearing habitat. The culvert and other potential infrastructure in Reach 8 would have no impact on downstream migration of juvenile S-CCC steelhead.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that avoid and minimize impacts on downstream migration of juvenile S-CCC steelhead under the Culvert/Channel Alternative:

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction and operations phases of all elements.

> **BI-3:** Minimize Impacts to Steelhead Vertebrates—applicable to the construction phase of all elements.

> **BI-14:** Maintain Low-Flow Fish Passage—applicable to the operations phase of all elements.

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the operations phase of all elements.

> **WQ-12:** Divert/ Bypass Water at Non-tidal Sites—applicable to the operations phase of all elements.

Mitigation Measure

Mitigation Measure AQUA-1a T: Steelhead Passage: Channel and Structure Design.

Implementation of BMPs and Mitigation Measure AQUA-1a T would reduce impacts related to the operation of reconfigured channels, grade control structures, newly installed and replaced culverts, and the fish ladder removal in Reach 4 on adult steelhead upstream migration to less than significant.

AQUA-5 CC—Potential for adverse effects to aquatic species from construction and maintenance within and outside the active channel

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Excavation of channel, shallow pools and benches	LTS	LTS
Upland grading (access to maintenance roads/pedestrian paths)	LTS	LTS
Lake Silveira element	LTS	LTS
Culvert/Channel within Reach 8	LTS	LTS
Sediment removal, vegetation maintenance and minor maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Due to the similarities between the Culvert/Channel and the Preferred Alternative for Reaches 4, 5, 6, 7A, 7B, and 14, and for the Lake Silveira mitigation element, construction impacts and mitigation measures, described above for AQUA-5 T, would be the same for AQUA-5 CC. The construction impacts between

the Culvert/Channel and the NRCS alternatives in Reach 8 are similar, except realignment of an 800-foot segment of the double 10-foot-wide box culverts that, in the NRCS design, would be parallel to Hale Avenue through the Britton School athletic fields up to Del Monte Avenue; and continuation of the double box culvert under Del Monte Avenue approximately 900 feet to West 2nd Street. From West 2nd Street to West Dunne Avenue the same channel widening and deepening, along with culvert replacements at 2nd, 3rd, 4th, and 5th streets as described for the NRCS Alternative would be performed in Reach 8 under the Culver/Channel Alternative. Channel modifications in all other reaches (4, 5, 6, 7A, 7B, and 14) and as part of the Lake Silveira element would be the same as under the Preferred Alternative. The construction approach for the Culvert/Channel Alternative would be the same throughout all of the Project reaches, as previously described for the Preferred Alternative; and construction duration would be 5.5 years, with the construction lasting for about 36 months in Reach 8, same as the Preferred Alternative.

Construction activities, equipment, and crew size would be the same as that described for the Preferred and NRCS alternatives (Table 2.4-5), except that in a segment of Reach 8, construction would occur through athletic fields and along Del Monte Road to West 2nd Street, rather than through a section of residential homes between West Main Avenue and West 2nd Street. The construction fill and disposal material volumes for the Culvert/Channel Alternative are virtually the same as for the Preferred Alternative, as shown in Table 2.4-4. While S-CCC steelhead do not currently occur in Reach 8 or adjacent Reaches 7A and 7B, other aquatic species (e.g., mosquitofish) may be present; although, no special-status aquatic species occur under existing conditions. Construction impacts within and outside the active channel to aquatic species, BMPs, and mitigation measures would be the same as described under AQUA-5 T. Construction of the culvert in Reach 8 would have a less-than-significant impact on aquatic species.

Operations and Maintenance

For the channel modifications proposed in Reach 8 under the Culvert/Channel Alternative, operation and maintenance impacts to aquatic species, BMPs, and mitigation measures would be the same as described under AQUA-5 T, as channel modifications in all other reaches (4, 5, 6, 7A, 7B, and 14) and as part of the Lake Silveira mitigation element would be the same as under the Preferred Alternative. While S-CCC steelhead do not currently occur in Reach 8 or adjacent Reaches 7A and 7B, other aquatic species (e.g., mosquitofish) may be present, although no special-status aquatic species occur under existing conditions. Within and outside the active channel, operation and maintenance impacts to aquatic species, BMPs, and mitigation measures would be the same as described under AQUA-5 T. The operations and maintenance of the culvert would have a less-than-significant impact on aquatic species.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that avoid and minimize impacts on aquatic species from construction and management within and outside the active channel under the Culvert/Channel Alternative:

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction and operations phases of all elements

> **BI-3:** Minimize Impacts to Steelhead—applicable to the construction phase of all elements

> **BI-4:** Minimize Access Impacts—applicable to the construction and operations phases of all elements

> **BI-14:** Maintain Low-Flow Fish Passage—applicable to the construction and operations phases of all elements

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the construction and operations phases of all elements

> **HM-9:** Clean Vehicles and Equipment—applicable to the operations phases of all elements

- **HM-10:** Assure Proper Vehicle and Equipment Fueling—applicable to the construction and operations phases of all elements
- **HM-11:** Assure Proper Vehicle and Equipment Maintenance—applicable to the construction and operations phases of all elements
- **HM-12:** Assure Proper Hazardous Materials Management—applicable to the construction and operations phases of all elements
- **HM-13:** Prevent Spills—applicable to the construction and operations phases of all elements
- **HM-14:** Know the Location of the Spill Kit—applicable to the construction and operations phases of all elements
- **WQ-1:** Conduct Work from Top of Bank—applicable to the construction and operations phases of all elements
- **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms—applicable to the construction and operations phases of all elements
- **WQ-3:** Limit Impact of Pump and Generator Operation and Maintenance—applicable to the construction and operations phases of all elements
- **WQ-4:** Limit Impacts of Sediments on Water Quality—applicable to the construction and operations phases of all elements
- **WQ-5:** Limit Impacts From Staging and Stockpiling Materials—applicable to the construction phase of all elements
- **WQ-9:** Minimize Erosion from Removal of In-channel Vegetation—applicable to the construction and operations phases of all elements
- **WQ-12:** Isolate Work in Non-tidal Sites With Use of Diversion of Bypass—applicable to the construction and operations phases of all elements
- **WQ-15:** Manage Groundwater at Work Sites—applicable to the operations phase of all elements
- **WQ-17:** Prevent Scour Downstream of Sediment Removal—applicable to the operations phase of all elements
- **WQ-18:** Maintain Clean Conditions at Work Sites—applicable to the operations phase of all elements
- **WQ-40:** Prevent Water Pollution—applicable to the construction phase of all elements.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to aquatic species from construction and maintenance within and outside the active channel to less than significant.

3.6.5.5 Reach 6 Bypass Alternative

The Reach 6 Bypass Alternative would be largely similar to the Preferred Alternative with the notable exception that a high flow bypass channel would be constructed between Reach 6 of Llagas Creek and Reach 14 of East Little Llagas Creek. The bypass would be designed so that no improvements would be needed along Reach 6 or Reach 5 of Llagas Creek downstream of the proposed bypass.

Reaches 8, 7A, 7B, and 4 would remain the same as that described for the Preferred Alternative. The bypass would convey the future extra flow (i.e., new capacity) from Reaches 8, 7A, and 7B, directly to Reach 14. East Little Llagas Creek downstream of the bypass (Reach 14), would be designed to carry the

extra flow from the upstream channel capacity. The existing flow capacity in Reaches 5 and 6 downstream from the bypass channel would continue to be maintained.

The proposed high flow bypass would start near the top of Reach 6, about 0.5 mile downstream of the confluence of the proposed West Little Llagas Diversion (Reach 7A) with Llagas Creek Reach 6 and include a hydraulic control structure to divert flows greater than a 10-percent exceedance flood event into the bypass. The hydraulic control structure would include a trapezoidal-shaped weir and five 6-foot by 6-foot-individual working sluice gates at the entrance of the high flow bypass channel. For the 10-percent exceedance flood event, the five sluice gates would be fully opened. The weir and five gates would be designed to divert 1,200 ft^3/sec from Reach 6 of Llagas Creek to Reach 14 of East Little Llagas Creek. Automatic control devices would be installed to operate gates to control the flow into the bypass channel and maintain existing flow condition in Reach 6.

Since Reach 5 and Reach 6 downstream of the Bypass would be maintained in its existing form, there would be no impacts to aquatic resources within these sections of Llagas Creek under the Reach 6 Bypass Alternative. Reach 6 upstream of the bypass would be modified as under the Preferred Alternative. As such, impacts and mitigation measures, described above for AQUA-1 to AQUA-5 T, would be the same for the Culvert/Channel Alternative in this portion or Llagas Creek. Due to the similarities between the Reach 6 Bypass and the Preferred Alternative for Reaches 4, 7A, 7B, and 8 impacts and mitigation measures described above for AQUA-1 to AQUA-5 T would be the same for the Reach 6 Bypass Alternative for these reaches, except as noted below for each impact.

AQUA-1 BY—Potential for adverse effects on upstream migration of adult S-CCC steelhead

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sinuous channel, shallow pools and benches	LTS	LTS
Grade control structures	LTS	LTSM
New concrete box culverts and culvert replacements	LTS	LTSM
New channel bar at the downstream end of Reach 5	LTS	LTSM
Instream flow structures for aquatic habitat in Reach 4 and Reach 6 upstream of the bypass	LTS	B
Lake Silveira project element	LTS	LTSM
Tunnel in Reach 8	NI	NI
Reach 6 Bypass Channel	LTS	LTSM
Sediment removal, vegetation maintenance and minor maintenance	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

A bypass channel from Reach 6 to Reach 14 to convey flows above the 10-year recurrence interval, construction of a hydraulic control structure to divert flow into the bypass channel and Reach 6, and a tunnel in Reach 8 would be constructed instead of channel modifications proposed in the NRCS Alternative. The construction approach for the Reach 6 Bypass Alternative for Reaches 7A, 7B, and 8 would be the same as previously described for the Preferred Alternative. Reach 14 construction would be similar to that in the other alternatives, but with a greater amount of channel widening and deepening. There would be no construction needed to widen the channel in Reach 6 below the bypass or in Reach 5.

Reach 4 flood conveyance improvements would be the same as described for the Preferred Alternative. Three new bridges and additional culverts would require construction. Construction duration for the Reach 6 Bypass Channel segment would be 24 months, and the entire Reach 6 Bypass Alternative would require 5.5 years to complete the Project construction.

Construction activities, equipment, and crew size is shown in Table 2.4-4, and is nearly the same as that described for the Preferred Alternative, except that the new bypass channel segment would require construction between Reach 6 to Reach 14 The construction fill and disposal material volumes for the Reach 6 Bypass Alternative are less than for the Preferred Alternative, as shown in Table 2.4-3. Reach 6 downstream of the bypass and Reach 5 would not be modified under the Reach 6 Bypass Alternative and would not be impacted by construction. Construction impacts to adult steelhead upstream migration, BMPs, and mitigation measures would be the same as described under AQUA-1 T for Reaches 4, 7A, 7B, 8, the portion of Reach 6 upstream of the bypass, and the Lake Silveira mitigation element. These BMPs and mitigation measures would reduce direct construction impacts on Adult Migrating Steelhead to less than significant.

Operations and Maintenance

For the bypass channel proposed in Reach 6 under the Reach 6 Bypass Alternative, operation and maintenance impacts to upstream migrating adult steelhead, BMPs, and mitigation measures would be the same as described under AQUA-1 NRCS for Reaches 4, 7A, 7B, 8, the portion of Reach 6 upstream of the bypass, and the Lake Silveira mitigation element. No instream complexity features would be added to Reach 5 or Reach 6 downstream of the Reach 6 Bypass. There would be no benefit to upstream migrating steelhead in these portions of Llagas Creek unlike other build alternatives.

Additionally, under the Reach 6 Bypass Alternative, upstream migrating adult steelhead could potentially be more likely to enter Reach 14 during their upstream migration because of enhanced flow provided by the bypass. The fish entering Reach 14 would be forced to migrate up the reach and through the bypass channel, which is a trapezoidal channel without low-flow, bankfull channel, or bench features added to other Project reaches under all other alternatives. A portion of Reach 14 would be a widened trapezoidal channel (also without low-flow, bankfull channel, or bench features added to other Project reaches), while the remaining portion would be similar to the design proposed in the Preferred Alternative. Modifications to Reach 14 under the Reach 6 Bypass Alternative and under the Preferred Alternative do not include instream flow structures that may provide hydraulic cover and velocity breaks for migrating steelhead. As such, upstream migrating adult steelhead entering the reach may be subject to high velocities that limit migration. Given that Llagas Creek downstream of Reach 6 may dry quickly due to percolation of surface water to the aquifer, the time period available for adults to reach spawning habitat is limited. Entering Reach 14 may impede migration, or cause delays in migration that causes adults to miss spawning opportunities. Implementation of Mitigation Measure AQUA-1 BY would prevent adult upstream migrating steelhead from entering Reach 14 and would reduce impacts of the Reach 6 Bypass on adult S-CCC steelhead upstream migration to less than significant.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that avoid and minimize impacts on adult S-CCC steelhead migration under the Reach 6 Bypass Alternative:

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction and operations phases of all elements.

> **BI-3:** Minimize Impacts to Steelhead Vertebrates—applicable to the construction phase of all elements.

> **BI-**14: Maintain Low-Flow Fish Passage—applicable to the operations phase of all elements.

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the operations phase of all elements.

> **WQ-12:** Divert/ Bypass Water at Non-tidal Sites—applicable to the operations phase of all elements.

Mitigation Measures

Mitigation Measure AQUA-1 BY: Construction of Fish Exclusion Barrier at the Downstream End of Reach 14. To mitigate the potential migration of adult steelhead into Reach 14, a fish exclusion barrier would be constructed at the downstream end of the reach. The exclusion barrier would be designed following the criteria and guidelines in Anadromous Salmonid Passage Facility Design (NMFS 2008) for exclusion barriers.

Mitigation Measure AQUA-1a T: Steelhead Passage: Channel and Structure Design.

Implementation of BMPs and Mitigation Measures AQUA-1 BY and AQUA-1a T would reduce impacts related to the Reach 6 Bypass Channel on adult steelhead upstream migration to less than significant.

Mitigation Measure AQUA-1b T: Steelhead Passage: Inspection of In-channel of Large Woody Debris prior to Removal for Management of Flood Conveyance Channels.

Implementation of BMPs and Mitigation Measures AQUA-1b T would reduce impacts related to the maintenance of flood conveyance channels on adult steelhead upstream migration to less than significant.

AQUA-2 BY—Potential for adverse effects on S-CCC steelhead spawning habitat usage and quality

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sinuous channel, shallow pools and benches	LTSM	LTS
Grade control structures	LTSM	LTS
New concrete box culverts and culvert replacements	LTSM	LTS
New mid-channel bar at the downstream end of Reach 5	LTSM	LTS
Instream flow structures for aquatic habitat in Reach 4 and Reach 6 upstream of the bypass	LTSM	B
Lake Silveira element	LTS	B
Tunnel in Reach 8	NI	LTSM
Reach 6 Bypass Channel	NI	NI
Sediment removal, vegetation maintenance and minor maintenance	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

A bypass channel from Reach 6 to Reach 14 to convey flows above the 10-year recurrence interval, and construction of a hydraulic control structure to divert flow into the bypass channel and Reach 6 would be constructed instead of channel modifications in Reach 5 and 6 proposed in the Preferred Alternative. The construction approach for the Reach 6 Bypass Alternative for Reaches 7A, 7B, and 8, and for the Lake Silveira mitigation element would be the same as previously described for the Preferred Alternative.

Reach 14 construction would be similar to that in the other alternatives, but with a greater amount of channel widening and deepening. There would be no construction needed to widen the channel in Reach 6 below the bypass or in Reach 5. Reach 4 flood conveyance modifications would be the same as described for the Preferred Alternative. Three new bridges and additional culverts would require construction. Construction duration for the Reach 6 Bypass Channel segment would be 24 months, and the entire Reach 6 Bypass Alternative would require 5.5 years to complete the Project construction.

Construction activities, equipment, and crew size is shown in Table 2.4-4, and is nearly the same as that described for the Preferred Alternative, except that the new bypass channel segment would require construction between Reach 6 to Reach 14. This would require temporary roads and traffic detour routing on Murphy Avenue and on both northbound and southbound lanes of U.S. 101. The construction fill and disposal material volumes for the Reach 6 Bypass Alternative are less than for the Preferred Alternative, as shown in Table 2.4-3. Reach 6 downstream of the bypass and Reach 5 would not be modified under the Reach 6 Bypass Alternative and would not be impacted by construction. S-CCC steelhead do not occur in and do not spawn in the Reach 6 Bypass Channel or Reach 14. Consequently, construction of the Reach 6 Bypass Channel and widening of Reach 14 would have no impact on S-CCC steelhead spawning habitat usage and quality. Construction impacts to S-CCC steelhead spawning habitat and usage, BMPs, and mitigation measures would be the same as described under AQUA-2 T for Reaches 4, 7A, 7B, 8, the portion of Reach 6 upstream of the bypass, and the Lake Silveira mitigation element. These BMPs and mitigation measures would reduce direct construction impacts on S-CCC steelhead spawning habitat usage and quality to less than significant.

Operations and Maintenance

For the bypass channel proposed in Reach 6 under the Reach 6 Bypass Alternative, operation and maintenance impacts to S-CCC steelhead spawning habitat and usage, BMPs, and mitigation measures would be the same as described under AQUA-2 T for Reaches 4, 7A, 7B, 8, the portion of Reach 6 upstream of the bypass, and the Lake Silveira mitigation element. No instream complexity features would be added to Reach 5 or Reach 6 downstream of the Reach 6 Bypass. There would be no benefit to steelhead spawning habitat in these portions of Llagas Creek, unlike other build alternatives. The Reach 6 Bypass Channel and Reach 14 do not currently support S-CCC steelhead spawning or contain critical spawning habitat for S-CCC steelhead (NMFS 2005b; CDFW 2013). The construction of the Reach 6 Bypass Channel and widening of Reach 14 would not to create S-CCC steelhead spawning habitat. The bypass and other potential infrastructure in Reach 6 would have no impact on S-CCC steelhead spawning habitat usage or quality.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that avoid and minimize impacts on adult S-CCC steelhead spawning habitat usage and quality under the Reach 6 Bypass Alternative:

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction phase of all elements.

> **BI-3:** Minimize Impacts to Steelhead Vertebrates—applicable to the construction phase of all elements.

> **BI-4:** Minimize Access Impacts—applicable to the construction and operations phases of all elements.

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the operations phase of all elements.

> **WQ-1:** Conduct Work from Top of Bank—applicable to the construction and operations phases of all elements.

> **WQ-4:** Limit Impacts of Sediments on Water Quality—applicable to the construction and operations phases of all elements.

> **WQ-9:** Minimize Erosion from Removal of In-channel Vegetation—applicable to the construction and operations phases of all elements.

> **WQ-17:** Prevent Scour Downstream of Sediment Removal—applicable to the operations phase of all elements.

> **WQ-40:** Prevent Water Pollution—applicable to the construction phase of all elements.

Mitigation Measures

Mitigation Measure AQUA-2a T: Preconstruction Surveys prior to In-water Construction.

Mitigation Measure AQUA-2b T: Biological Monitor for Dewatering Activities.

Implementation of BMPs and Mitigation Measures AQUA-2a and AQUA-2b NRCS would reduce impacts related to the construction of flood conveyance channels on adult S-CCC steelhead spawning habitat and usage to less than significant.

AQUA-3 BY—Potential for adverse effects on S-CCC steelhead rearing habitat

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sinuous channel, shallow pools and benches	LTS	LTSM
Operation of wider channel and excavated Reach 7A channel	NI	LTSM
Grade control structures	LTS	LTS
New concrete box culverts and culvert replacements	LTS	LTS
New mid-channel bar at the downstream end of Reach 5	LTS	LTS
Instream flow structures for aquatic habitat in Reach 4 and Reach 6 upstream of the bypass	LTS	B
Lake Silveira element	LTS	B
Tunnel in Reach 8	NI	NI
Reach 6 Bypass Channel	NI	NI
Sediment removal, vegetation maintenance and minor maintenance	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

A bypass channel from Reach 6 to Reach 14 to convey flows above the 10-year recurrence interval, and construction of a hydraulic control structure to divert flow into the bypass channel and Reach 6 would be constructed instead of channel modifications in Reach 5 and 6 proposed in the Preferred Alternative. The construction approach for the Reach 6 Bypass Alternative for Reaches 7A, 7B, and 8, and for the Lake Silveira mitigation element would be the same as previously described for the Preferred Alternative. Reach 14 construction would be similar to that in the other Alternatives but with a greater amount of channel widening and deepening. There would be no construction needed to widen the channel in Reach 6 below the bypass or in Reach 5. Reach 4 flood conveyance modifications would be the same as

described for the Preferred Alternative. Three new bridges and additional culverts would require construction. Construction duration for the Reach 6 Bypass Channel segment would be 24 months; and the entire Reach 6 Bypass Alternative would require 5.5 years to complete the Project construction.

Construction activities, equipment, and crew size is shown in Table 2.4-4, and is nearly the same as that described for the Preferred Alternative, except that the new bypass channel segment would require construction between Reach 6 to Reach 14. This would require temporary roads and traffic detour routing on Murphy Avenue and on both northbound and southbound lanes of U.S. 101. The construction fill and disposal material volumes for the Reach 6 Bypass Alternative are less than for the Preferred Alternative, as shown in Table 2.4-3. Reach 6 downstream of the bypass and Reach 5 would not be modified under the Reach 6 Bypass Alternative and would not be impacted by construction. S-CCC steelhead do not occur in the Reach 6 Bypass Channel or Reach 14. Consequently, construction of the Reach 6 Bypass Channel and widening of Reach 14 would have no impact on S-CCC steelhead rearing habitat. Construction impacts to S-CCC steelhead rearing habitat and usage, BMPs, and mitigation measures would be the same as described under AQUA-3 T for Reaches 4, 7A, 7B, 8, the portion of Reach 6 upstream of the bypass, and the Lake Silveira mitigation element. These BMPs and mitigation measures would reduce direct construction impacts on S-CCC steelhead rearing habitat to less than significant.

Operations and Maintenance

For the bypass channel proposed in Reach 6 under the Reach 6 Bypass Alternative, operation and maintenance impacts to S-CCC steelhead rearing habitat, BMPs, and mitigation measures would be the same as described under AQUA-3 T for Reaches 4, 7A, 7B, 8, the portion of Reach 6 upstream of the bypass, and the Lake Silveira mitigation element. No instream complexity features would be added to Reach 5 or Reach 6 downstream of the Reach 6 Bypass. There would be no benefit to steelhead rearing in these portions of Llagas Creek, unlike the Preferred Alternative. The Reach 6 Bypass Channel and Reach 14 do not currently support S-CCC steelhead rearing or contain critical rearing habitat for S-CCC steelhead (NMFS 2005b; CDFW 2013). The construction of the Reach 6 Bypass Channel and widening of Reach 14 would not to create S-CCC steelhead rearing habitat. The bypass and other potential infrastructure in Reach 6 would have no impact on S-CCC steelhead rearing habitat.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that avoid and minimize impacts on juvenile S-CCC steelhead rearing habitat under the Reach 6 Bypass Alternative:

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction and operations phases of all elements.

> **BI-3:** Minimize Impacts to Steelhead—applicable to the construction and operations phases of all elements.

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the operations phase of all elements.

> **WQ-12:** Divert/ Bypass Water at Non-tidal Sites—applicable to the operations phase of all elements.

Mitigation Measures

Mitigation Measure AQUA-1b T: Steelhead Passage: Inspection of In-channel of Large Woody Debris prior to Removal for Management of Flood Conveyance Channels.

Mitigation Measure BOT-1b T: Prepare a Mitigation Plan for Special-status Plants.

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

In addition to the above BMPs and Mitigation Measures AQUA-3a and AQUA-3b T, implementation of Mitigation Measures AQUA-1b, AQUA-1c T, BOT-1b, and BOT-1c T would reduce impacts related to the maintenance of flood conveyance channels on juvenile steelhead rearing habitat.

AQUA-4 BY—Potential for adverse effects on downstream migration of juvenile S-CCC steelhead

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sinuous channel, shallow pools and benches	LTS	LTSM
Grade control structures	LTS	LTSM
New concrete box culverts and culvert replacements	LTS	LTSM
New mid-channel bar at the downstream end of Reach 5	LTS	LTSM
Instream flow structures for aquatic habitat in Reach 4 and Reach 6 upstream of the bypass	LTS	B
Lake Silveira element	LTS	LTSM
Tunnel in Reach 8	NI	NI
Reach 6 Bypass Channel	LTS	LTSM
Sediment removal, vegetation maintenance and minor maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

A bypass channel from Reach 6 to Reach 14 to convey flows above the 10-year recurrence interval, and construction of a hydraulic control structure to divert flow into the bypass channel and Reach 6 would be constructed instead of channel modifications in Reaches 5 and 6 as proposed in the Preferred Alternative. The construction approach for the Reach 6 Bypass Alternative for Reaches 7A, 7B, and 8, and the Lake Silveira mitigation element would be the same as previously described for the Preferred Alternative. Reach 14 construction would be similar to that in the other alternatives, but with a greater amount of channel widening and deepening. There would be no construction needed to widen the channel in Reach 6 below the bypass or in Reach 5. Reach 4 flood conveyance improvements would be the same as described for the Preferred Alternative. Three new bridges and additional culverts would require construction. Construction duration for the Reach 6 Bypass Channel segment would be 24 months; and the entire Reach 6 Bypass Alternative would require 5.5 years to complete the Project construction.

Construction activities, equipment, and crew size is shown in Table 2.4-4, and is nearly the same as that described for the Preferred Alternative, except that the new bypass channel segment would require construction between Reach 6 to Reach 14. This would require temporary roads and traffic detour routing on Murphy Avenue and on both northbound and southbound lanes of U.S. 101. The construction fill and disposal material volumes for the Reach 6 Bypass Alternative are less than for the Preferred Alternative, as shown in Table 2.4-3. Reach 6 downstream of the bypass and Reach 5 would not be modified under the Reach 6 Bypass Alternative and would not be impacted by construction. S-CCC steelhead do not occur in the Reach 6 Bypass Channel or Reach 14. Consequently, construction of the Reach 6 Bypass Channel and widening of Reach 14 would have no impact on juvenile S-CCC downstream migration. Construction impacts to juvenile S-CCC steelhead downstream migration, BMPs, and mitigation measures would be the same as described under AQUA-4 Preferred for Reaches 4, 7A, 7B, 8, the portion

of Reach 6 upstream of the bypass, and the Lake Silveira element. These BMPs and mitigation measures would reduce direct construction impacts on Juvenile S-CCC steelhead downstream migration to less than significant.

Operations and Maintenance

For the bypass channel proposed in Reach 6 under the Reach 6 Bypass Alternative, operation and maintenance impacts to juvenile S-CCC steelhead downstream migration, BMPs, and mitigation measures would be the same as described under AQUA-4 T for Reaches 4, 7A,7B, 8, the portion of Reach 6 upstream of the bypass, and the Lake Silveira mitigation element. No instream complexity features would be added to Reach 5 or Reach 6 downstream of the Reach 6 Bypass. There would be no benefit to juvenile steelhead migration in these portions of Llagas Creek, unlike the other alternatives.

Additionally, downstream migrating juvenile steelhead could potentially enter the bypass channel through the hydraulic diversion structure, instead of migrating downstream through Reach 6. The bypass channel is a trapezoidal channel without low-flow, bankfull channel, or bench features added to other Project reaches under all the alternatives, and may not allow migration if flows recede too rapidly, or if the channel is too shallow. A portion of Reach 14 would be a widened trapezoidal channel (also without low-flow, bankfull channel, or bench features added to other Project reaches), while the remaining portion would be similar to the design proposed in the Preferred Alternative. Modifications to Reach 14 under the Reach 6 Bypass Alternative and under the Preferred Alternative do not include instream flow structures that may provide hydraulic cover and velocity breaks for migrating steelhead. As such, downstream migrating juvenile S-CCC steelhead entering the bypass and reach may be stranded within the reach. Implementation of Mitigation Measure AQUA-4 BY would prevent juvenile downstream migrating steelhead from entering the Bypass Channel, and Reach 14, and would reduce impacts of the Reach 6 Bypass on downstream migration of juvenile S-CCC steelhead to less than significant.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that avoid and minimize impacts on downstream migration of juvenile S-CCC steelhead under the Reach 6 Bypass Alternative:

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction and operations phases of all elements.

> **BI-3:** Minimize Impacts to Steelhead Vertebrates—applicable to the construction phase of all elements.

> **BI-14:** Maintain Low-Flow Fish Passage—applicable to the operations phase of all elements.

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the operations phase of all elements.

> **WQ-12:** Divert/ Bypass Water at Non-tidal Sites—applicable to the operations phase of all elements.

Mitigation Measures

Mitigation Measure AQUA-4 BY: Construction of Fish Screen and Fish Bypass Facility at the Upstream End of the Bypass Channel. To mitigate the potential migration of juvenile steelhead into the Bypass Channel and Reach 14, a fish screen and fish bypass facility would be constructed at the upstream end of the bypass channel to reroute these juveniles back into Reach 6 downstream of the Bypass Channel. The fish screen and fish bypass facility would be designed following Anadromous Salmonid Passage Facility Design (NMFS 2008). Detailed within this document are criteria, rational, and guidelines for designing each component for fish screens and fish bypass facilities.

Implementation of BMPs and Mitigation Measure AQUA-4 BY would reduce impacts related to the Reach 6 Bypass Channel and hydraulic control structure on juvenile steelhead downstream migration to less than significant.

Mitigation Measure AQUA-1a T: Steelhead Passage: Channel and Structure Design.

Implementation of BMPs and Mitigation Measure AQUA-1a T would reduce impacts related to the operation of reconfigured channels, grade control structures, newly installed and replaced culverts, and removal of the fish ladder in Reach 4 downstream of Buena Vista Avenue on adult steelhead downstream migration to less than significant.

AQUA-5 BY—Potential for adverse effects to aquatic species from construction and maintenance within and outside the active channel

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Excavation of channel, shallow pools and benches	LTS	LTS
Upland grading (access to maintenance roads/pedestrian paths)	LTS	LTS
Lake Silveira element	LTS	LTS
Tunnel in Reach 8	LTS	LTS
Reach 6 Bypass Channel	NI	LTS
Sediment removal, vegetation maintenance and minor maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

A bypass channel from Reach 6 to Reach 14 to convey flows above the 100-year recurrence interval, and construction of a hydraulic control structure to divert flow into the bypass channel and Reach 6 would be constructed instead of channel modifications in Reaches 5 and 6 as proposed in the Preferred Alternative. The construction approach for the Reach 6 Bypass Alternative for Reaches 7A,7B, and 8, and the Lake Silveira mitigation element would be the same as previously described for the Preferred Alternative. Reach 14 construction would be similar to that in the other alternatives, but with a greater amount of channel widening and deepening. There would be no construction needed to widen the channel in Reach 6 below the bypass or in Reach 5. Reach 4 flood conveyance modifications would be the same as described for the Preferred Alternative. Three new bridges and additional culverts would require construction. Construction duration for the Reach 6 Bypass Channel segment would be 24 months and the entire Reach 6 Bypass Alternative would require 5.5 years to complete the Project construction.

Construction activities, equipment, and crew size is shown in Table 2.4-4, and is nearly the same as that described for the Preferred Alternative, except that the new bypass channel segment would require construction between Reach 6 to Reach 14. This would require temporary roads and traffic detour routing on Murphy Avenue and on both northbound and southbound lanes of U.S. 101. The construction fill and disposal material volumes for the Reach 6 Bypass Alternative are less than for the Preferred Alternative, as shown in Table 2.4-3. Reach 6 downstream of the bypass and Reach 5 would not be modified under the Reach 6 Bypass Alternative and would not be impacted by construction. Aquatic species do not occur in the Reach 6 Bypass Channel or Reach 14 under existing conditions. Consequently, construction of the

Reach 6 Bypass Channel and widening of Reach 14 would have no impact on aquatic species. Construction impacts to aquatic species, BMPs, and mitigation measures would be the same as described under AQUA-5 T for Reaches 4, 7A, 7B, 8, the portion of Reach 6 upstream of the bypass, and the Lake Silveira element.

Operations and Maintenance

For the bypass channel proposed in Reach 6 under the Reach 6 Bypass Alternative, operation and maintenance impacts to aquatic species, BMPs, and mitigation measures would be the same as described under AQUA-5 T for Reaches 4, 7A, 7B, 8, the portion of Reach 6 upstream of the bypass, and the Lake Silveira mitigation element. No instream complexity features would be added to Reach 5 or Reach 6 downstream of the Reach 6 Bypass. There would be no benefit to aquatic species in these portions of Llagas Creek, unlike other build alternatives. The Reach 6 Bypass Channel and Reach 14 do not currently support aquatic species and the construction of the Reach 6 Bypass Channel and widening of Reach 14 would not to create high quality aquatic habitat. The bypass and other potential infrastructure in Reach 6 would have a less-than-significant impact on aquatic species.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that avoid and minimize impacts on aquatic species from construction and management within and outside the active channel under the Reach 6 Bypass Alternative:

> **BI-2:** Avoid and Minimize Impacts on Native Aquatic Vertebrates—applicable to the construction and operations phases of all elements.

> **BI-3:** Minimize Impacts to Steelhead—applicable to the construction phase of all elements.

> **BI-4:** Minimize Access Impacts—applicable to the construction and operations phases of all elements.

> **BI-14:** Maintain Low-Flow Fish Passage—applicable to the construction and operations phases of all elements.

> **BI-15:** Restore Riffle/Pool Configuration of Channel Bottom—applicable to the construction and operations phases of all elements.

> **HM-9:** Clean Vehicles and Equipment—applicable to the operations phases of all elements.

> **HM-10:** Assure Proper Vehicle and Equipment Fueling—applicable to the construction and operations phases of all elements.

> **HM-11:** Assure Proper Vehicle and Equipment Maintenance—applicable to the construction and operations phases of all elements.

> **HM-12:** Assure Proper Hazardous Materials Management—applicable to the construction and operations phases of all elements.

> **HM-13:** Prevent Spills—applicable to the construction and operations phases of all elements.

> **HM-14:** Know the Location of the Spill Kit—applicable to the construction and operations phases of all elements.

> **WQ-1:** Conduct Work from Top of Bank—applicable to the construction and operations phases of all elements.

> **WQ-2:** Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms—applicable to the construction and operations phases of all elements.

- **WQ-3:** Limit Impact of Pump and Generator Operation and Maintenance—applicable to the construction and operations phases of all elements.
- **WQ-4:** Limit Impacts of Sediments on Water Quality—applicable to the construction and operations phases of all elements.
- **WQ-5:** Limit Impacts From Staging and Stockpiling Materials—applicable to the construction phase of all elements.
- **WQ-9:** Minimize Erosion from Removal of In-channel Vegetation—applicable to the construction and operations phases of all elements.
- **WQ-12:** Isolate Work in Non-tidal Sites With Use of Diversion of Bypass—applicable to the construction and operations phases of all elements.
- **WQ-15:** Manage Groundwater at Work Sites—applicable to the operations phase of all elements.
- **WQ-17:** Prevent Scour Downstream of Sediment Removal—applicable to the operations phase of all elements.
- **WQ-18:** Maintain Clean Conditions at Work Sites—applicable to the operations phase of all elements.
- **WQ-40:** Prevent Water Pollution—applicable to the construction phase of all elements.

Mitigation Measures

None required

Implementation of BMPs would reduce the potential for impacts from construction and maintenance within and outside the active channel to less-than-significant levels.

3.6.6 Summary of Impacts to Aquatic Resources

South-Central California Coastal steelhead are the only sensitive aquatic resource that occurs within the Project area. Impacts from construction of all Project Alternatives would be reduced to less than significant with implementation of SCVWD BMPs. Implemented BMPs for the Project construction would be the same for all Project alternatives. Impacts from the operations and maintenance of all Project alternatives would be reduced to less than significant with implementation of SCVWD BMPs and mitigation measures. Implemented BMPs and mitigation measures for the Project operations and maintenance would be the same for the Preferred Alternative, the NRCS Alternative, and the Culvert Channel Alternative. Implemented BMPs and mitigation measures for the Project operations and maintenance of the Reach 6 Bypass Alternative would be the same as for all other Project Alternatives except with the implementation of two additional mitigation measures; AQUA-4 BY: Construction of Fish Screen and Fish Bypass Facility Upstream End of the Bypass Channel and AQUA-1 BY: Construction of Fish Exclusion Barrier at the Downstream End of Reach 14.

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3.7 Agricultural and Forest Resources

3.7.1 Introduction

The potential impact of the various alternatives, including the No Project Alternative, on agricultural and forest resources is considered in this section. The focus of this section is on agricultural lands as the study area is not forested and impacts to forest resources are not anticipated. There are no forestlands in the vicinity of the study area.

The major resource documents used to complete this section are listed here:

> California Department of Conservation. 2010. *Santa Clara County Important Farmland (Map)*. Sacramento, California.

> City of Gilroy. 2002. *City of Gilroy General Plan 2002 to 2020*. Adopted June 2010. Gilroy, California. Available online at: http://www.cityofgilroy.org/cityofgilroy/city_hall/community_development/planning/general_plan/default.aspx. Accessed on February 15, 2013.

> City of Morgan Hill. 2010a. *Morgan Hill General Plan – Revised 2010*. Morgan Hill, California. Available online at: http://www.morgan-hill.ca.gov/index.aspx?NID=75. Accessed on February 15, 2013.

> Santa Clara County. 1994. *Santa Clara County General Plan, 1995–2010*. Adopted December 20. County of Santa Clara, California. Available online at: http://www.sccgov.org/sites/planning/Plans%20-%20Programs/General%20Plan/Pages/General-Plan.aspx. Accessed on February 15, 2103.

> Santa Clara County, Division of Agriculture. 2012. *2011 Santa Clara Crop Report.* Santa Clara County, California.

3.7.2 Study Area

Countywide, the region had been in a near constant transition in the post-war period from an agricultural area to a region driven by technology and subsequent growth and suburbanization. Most of the agricultural land in the northern end of the Santa Clara Valley has already been converted due to urbanization. However, the southern end of the Valley (including areas in vicinity of the Project area) continues to have an active agricultural industry. Generally, the agricultural lands are along the southern portion of the Project along Reaches 7A, 6, 5, 4 and 14. Reaches 8 and 7B are within Morgan Hill and are, for the most part, urbanized.

3.7.2.1 Environmental Setting

Agricultural Resources

Countywide Agricultural Production Statistics

The County of Santa Clara, Division of Agriculture (2012), provides annual statistics on agricultural output countywide. In 2011, over 233,000 acres of land were harvested in the county; over 90 percent of the lands were in field crops. The top five crops by acreage are as follows:

1. hay-grain (3,508 acres);
2. wine grapes (1,546 acres);
3. bell peppers (1,466 acres);
4. lettuce (1,244 acres); and
5. corn (1,202 acres).

Countywide, total gross value produced in 2011 was $247,993,900. The top six crops in the county based on gross value rounded to the nearest million, are as followed:

1. nursery crops ($86 million);
2. mushrooms ($62 million);
3. bell peppers ($11 million);
4. fresh tomatoes ($9 million);
5. wine grapes ($7 million); and
6. wax and chili peppers ($7 million).

Important Farmlands and Williams Act Lands

The state's Farmland Mapping and Monitoring Program (FMMP) produces maps and statistics to assist in analyzing potential impacts to agricultural resources. Table 3.7-1 provides acreages and descriptions of the types of Important Farmlands in Santa Clara County and within the Project footprint. Figures 3.7-1a-c map series shows the location of Important Farmlands and Williamson Act Lands in the vicinity of the study area. The figures also show areas only within the Project footprint where growers reported planting crops in 2013 to the county. It should be noted that the Williamson Act Lands, shown in the figures, are from 2009. A new map was developed for 2012–2013; however, GIS files were not available at the time the figures were being finalized. Therefore, the 2009 data was georeferenced with the most recent data, and no differences within the Project footprint or within the flooding extents were found.

Table 3.7-1 Summary of Important Farmlands in Santa Clara County and Within Project Footprint (2010)

Classification	Description	Countywide Acreage [1,2]	Number of Acres within Project Footprint (% of Countywide Total) [3]	
			Permanent	Temporary
Prime Farmland	Best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the 4 years prior to the mapping date.	17,270	34 (0.2%)	17 (0.1%)
Farmland of Statewide Importance	Farmland of Statewide Importance is similar to Prime Farmland, but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the 4 years prior to the mapping date.	3,630	2 (0.1%)	1(<0.1%)
Unique Farmland	Unique Farmland consists of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include non-irrigated orchards or vineyards, as found in some climatic zones in California. Land must have been cropped at some time during the 4 years prior to the mapping date.	2,523	14 (0.6%)	1 (<0.1%)

Table 3.7-1 Summary of Important Farmlands in Santa Clara County and Within Project Footprint (2010)

Classification	Description	Countywide Acreage [1,2]	Number of Acres within Project Footprint (% of Countywide Total) [3]	
			Permanent	Temporary
Farmland of Local Importance	Small orchards and vineyards primarily in the foothill areas. Also, land cultivated as dry cropland for grains and hay.	4,328	Less than 0.5 acre (<0.1%)	0

[1] California Department of Conservation (2010) Santa Clara County Important Farmland GIS Data Layer.

[2] Grazing land, urban and built up land, other land, and water are not included in the table.

[3] Acreages were calculated by Cardno ENTRIX by overlaying Project footprint on Important Farmlands (California Department of Conservation 2010).

As of 2010, there were 17,270 acres of Prime Farmland, 3,630 acres of Farmland of Statewide Importance, and 2,523 acres of Unique Farmland in the county. The majority of these farmlands are in South Santa Clara County. The Project footprint includes areas subject to both permanent and temporary conversion. There are 34 acres of Prime Farmland, 2 acres of Farmland of Statewide Importance, and 14 acres of Unique Farmland subject to permanent conversion within the Project footprint. In general, there is less land subject to temporary conversion (during construction) compared to permanent. It should be noted that the amount of acreage subject to conversion does vary by alternative. Tables 3.7-2 and 3.7-3 show the Important Farmlands within the Project footprint subject to permanent and temporary conversion, respectively by reach. Reach 14 has the most Important Farmlands subject to permanent conversion and Reaches 7B and 8 have no lands designated as Important Farmlands.

Table 3.7-2 Important Farmlands Within Project Footprint by Reach [1,2]

Subject to Conversion		Reach (acres)							Total within Project Footprint
		4	5	6	7A	7B	8	14	
Permanent	Prime Farmland	8.0	2.8	1.6	7.7	--	--	13.8	**33.9**
	Farmland of Statewide Importance	--	--	--	0.5	--	--	1.4	**1.9**
	Unique Farmland	5.6	3.7	3.4	--	--	--	1.2	**13.9**
	Farmland of Local Importance	--	--	--	--	--	--	0.3	**0.3**
	Total By Reach	**13.6**	**6.5**	**5.0**	**8.2**	**--**	**--**	**16.7**	**50.0**
Temporary	Prime Farmland	6.3	--	1.6	4.4	--	--	4.4	**16.7**
	Farmland of Statewide Importance	--	--	--	--	--	--	--	**--**
	Unique Farmland	0.1	0.3	--	--	--	--	0.7	**1.1**
	Farmland of Local Importance	--	--	--	1.1	--	--	-	**1.1**
	Total By Reach	**6.5**	**0.3**	**1.6**	**5.5**	**--**	**--**	**5.1**	**19.0**

[1] Acreages were calculated by Cardno ENTRIX by overlaying Project footprint on Important Farmlands map (California Department of Conservation 2010).

[2] Totals may not match those in the row due to rounding.

Table 3.7-3 Williamson Act Lands Within Project Footprint by Reach [1,2]

Subject to Conversion	Reach (acres)							Total within Project Footprint
	4	5	6	7A	7B	8	14	
Permanent	2.2	2.6	10.8	1.0	--	--	0.2	**16.8**
Temporary	0.8	0.3	0.2	--	--	--	0.1	**1.4**
Total by Reach	**3.0**	**2.9**	**11.0**	**1.0**	**--**	**--**	**0.3**	**18.2**

[1] Acreages were calculated by Cardno ENTRIX by overlaying Project footprint on the Williamson Act GIS data layer.

[2] Totals may not match those in the row due to rounding.

Currently, over 360,000 acres of land in the county were covered under the Williamson Act (Santa Clara County 2013); these lands may also be for open space and not necessarily for agricultural purposes. There are 18.2 acres of Williamson Act Lands in the Project footprint and most (16.8 acres) of these are within the area subject to permanent conversion. Table 3.7-3 shows the amount of lands designated under the Williamson Act within the Project footprint (subject to both temporary and permanent conversion) by reach. For areas subject to permanent conversion, over half (10.8 acres) of the Williamson Act Lands are along Reach 6. Williamson Act Lands are not mutually exclusive from other Important Farmlands; about 5 acres of the Williamson Act Lands within the Project footprint are also classified as Important Farmlands. These include 3 acres also classified as Prime Farmland and about 2 acres classified as Unique Farmland. For example, Farmlands of Statewide Importance may also be enrolled in Williamson Act contracts. Zoning within the study area is discussed in greater detail in Section 3.8, Land Use and Planning; the City of Morgan Hill and the County of Santa Clara are responsible for zoning in the study area. Lands zoned specifically for agriculture are primarily along Reaches 4, 6, and 14. It should be noted that FFMP lands are also within lands zoned as Variable Density Rural Residential. Therefore, it should not be anticipated that the acres of land zoned, or designated specifically for agricultural use, would be equal to the FMMP lands.

Croplands within the Project Footprint

Growers in Santa Clara County, who apply pesticides, are required to obtain permits from the county to apply these to the croplands. The permits require growers to provide the crops that they are planning to cultivate in the treated areas. The data shown in Table 3.7-4 reflects crops expected to be grown within the portion of the Project footprint subject to permanent conversion. For 2013, the most reported land under cultivation was along Reach 6 (12.1 acres). The crops shown, as provided by the Santa Clara County Department of Agriculture (2013), do not include fallow fields that are not being treated with pesticides in 2013 and fields where organic crops are being grown, if any. The table includes only those plots were more than 0.25 acre are within the Project footprint It is common that some lands produce more than one harvest per year; therefore, the acreages associated with the individual crops are not reported, as they may be misleading.

Table 3.7-4 Summary of Crops Grown in Project Footprint Subject to Permanent Conversion (2013) [1]

Reach	Reported Land Under Cultivation in 2013	Crops [2]
4	12.1	Barley; Wheat; Oats; Dried Beans; Pumpkin; Corn; Tomatillo; Cucumber;
5	1.4	Flowering Plant; Celery; Broccoli; Chive; Pea; Chinese Greens
6	0.5	Bak Choy; Gai Choy; Gai Lon (Chinese Broccoli); Chrysanthemum; Flowering Plants; Napa Cabbage
7A	6.8	Dried Beans; Corn; Outdoor Flowers; Peppers
7B	0	No crops reported
8	0	No crops reported
14	<0.1	No crops were on an area within the footprint larger than 0.003 acre

[1] Calculated by Cardno ENTRIX by overlaying Santa Clara County Growers Data GIS Layer on the Project footprint. Organic crops, if any, and unreported uncultivated land are not included but the totals do include uncultivated areas reported to county.

[2] Listed in descending order based on size of field; some fields have multiple crops so acreages are not shown. Crops grown on fields with less than 0.25 acre within the Project footprint are not shown.

The County Department of Agriculture (2013) also provided grower information for the bypass, as proposed in the Reach 6 Bypass Alternative. There are currently, per county records, no crops being grown on any of the properties adjacent to the lands necessary to complete the bypass. However, there are some abandoned greenhouses and a business that ships flowers.

It is worth noting, that some of the Important Farmlands within the Project footprint do not appear to be actively farmed in 2013. In fact, about 27 acres of the Important Farmlands in the Project footprint (both lands subject to permanent and temporary conversion) are being cultivated; and about 42 acres do not include lands where growers reported crops in 2013. Although the exact acreage cannot be determined, some lands are possibly being farmed using organic practices or are being fallowed and not being treated with pesticides in 2013. Regardless, the results suggest the possibility that some of the designated Important Farmlands are not being farmed.

Forest Resources

There are no forest resources in the vicinity of the Project study area.

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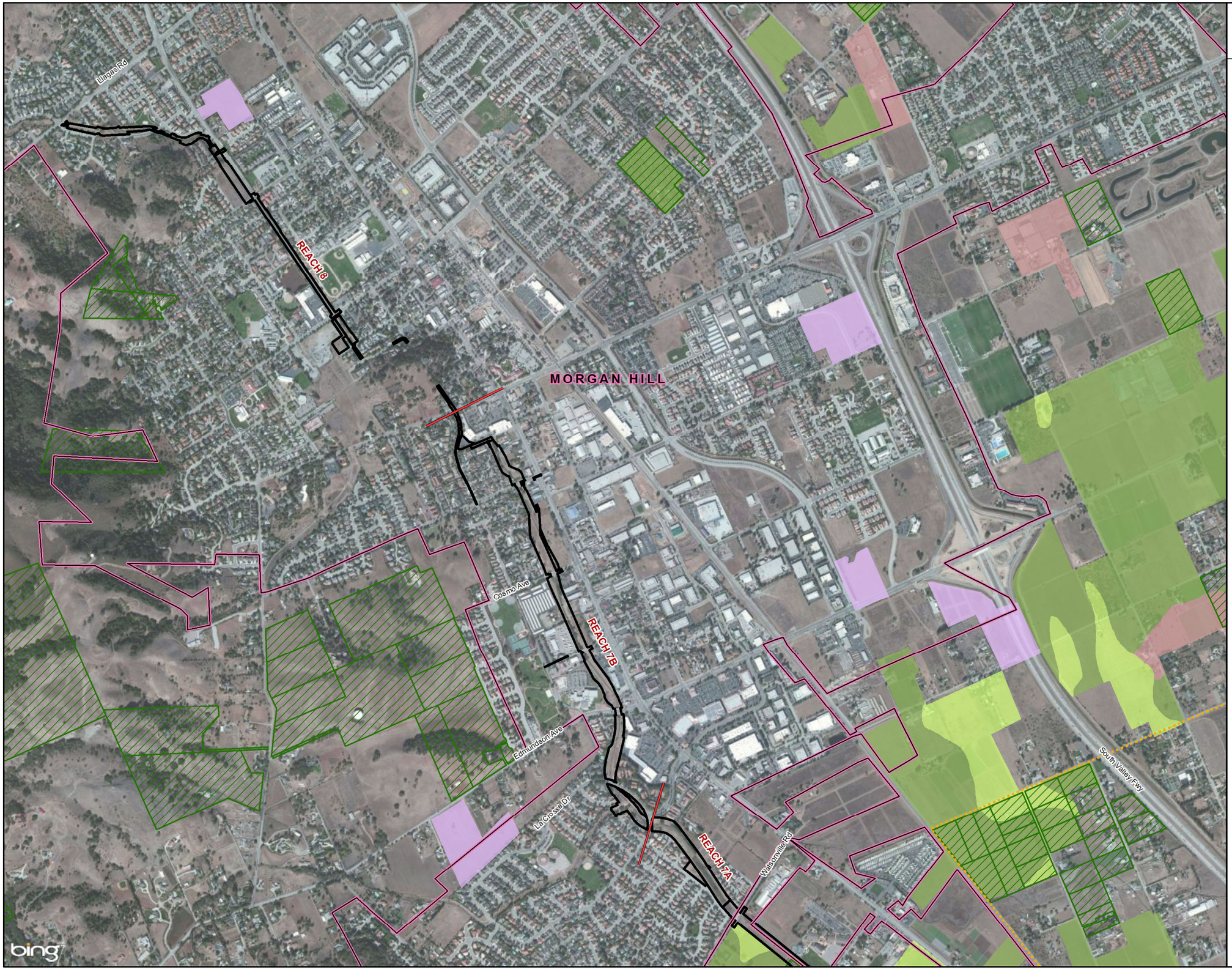
Cardno ENTRIX

Upper Llagas Creek Project EIR

FIGURE 3.7-1a

Agriculture in the Project Vicinity

Map 1 of 3



Legend

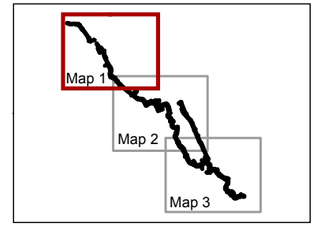
- Reach Breaks
- City of Gilroy
- City of Morgan Hill
- Sphere of Influence
- Project Area
- Active Croplands in Project Area
- Williamson Act Parcel
- Prime Farmland
- Farmland of Statewide Importance
- Unique Farmland
- Farmland of Local Importance

Source:
California Department of Conservation, Farmland Mapping and Monitoring Program, Santa Clara County, 2010
California Department of Conservation, Williamson Act, Santa Clara County, 2009

N

0 500 1,000 2,000

Scale in Feet



Upper Llagas Creek Project EIR

FIGURE 3.7-1b

Agriculture in the Project Vicinity

Map 2 of 3

REACH 7A
Watsonville Rd
Monterey Rd
Middle Ave
MORGAN HILL
California Ave
REACH 6
REACH 14
REACH 14
bing™

Legend

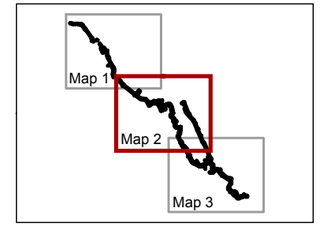
- Reach Breaks
- City of Gilroy
- City of Morgan Hill
- Sphere of Influence
- Project Area
- Active Croplands in Project Area
- Williamson Act Parcel
- Prime Farmland
- Farmland of Statewide Importance
- Unique Farmland
- Farmland of Local Importance

Source:
California Department of Conservation, Farmland Mapping and Monitoring Program, Santa Clara County, 2010
California Department of Conservation, Williamson Act, Santa Clara County, 2009

N

0 500 1,000 2,000

Scale in Feet



Cardno ENTRIX

Upper Llagas Creek Project EIR

FIGURE 3.7-1c

Agriculture in the Project Vicinity

Map 3 of 3

REACH 6

REACH 14

REACH 5

REACH 4

GILROY

bing

Legend

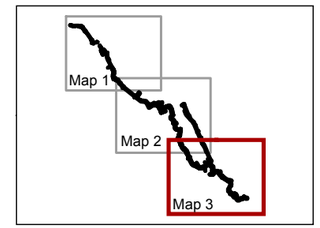
- Reach Breaks
- City of Gilroy
- City of Morgan Hill
- Sphere of Influence
- Project Area
- Active Croplands in Project Area
- Williamson Act Parcel
- Prime Farmland
- Farmland of Statewide Importance
- Unique Farmland
- Farmland of Local Importance

Source:
California Department of Conservation, Farmland Mapping and Monitoring Program, Santa Clara County, 2010
California Department of Conservation, Williamson Act, Santa Clara County, 2009

N

0 500 1,000 2,000

Scale in Feet



3.7.3 Regulatory Environment

The following federal, state, regional, and local requirements for the Project are described below.

3.7.3.1 Federal

There are no federal regulations applicable to this section.

3.7.3.2 State

California Environmental Quality Act

CEQA requires a review of a project's potential effects on agricultural and forest resources when the alternatives under review have the potential to impact the resource.

California Conservation Act of 1965 (Williamson Act)

The California Land Conservation Act of 1965 (Government Code Sections 51200–51297.4) enables local governments to enter into contracts with private landowners that restrict specific parcels of land to agricultural or related open-space use. In return, these landowners receive property tax assessments that are much lower than normal, because they are based upon farming and open-space uses rather than the property's full market value. The Act establishes principles of compatibility for uses allowed on lands under contract. Generally, uses are compatible if they will not significantly compromise the long-term productive agricultural capability, displace or impair current or reasonably foreseeable agricultural operations, or result in removal of adjacent contracted land from agricultural open-space uses.

3.7.3.3 Local

Santa Clara County General Plan

The Santa Clara County General Plan, 1995–2010 (1994) includes strategies and policies in the Resource Conservation chapter to address agricultural resource protection in the county. The following policies directly address agricultural issues:

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

> *C-RC 38.* General public awareness and understanding of the importance of agriculture and the goals of agricultural preservation should be encouraged countywide

> *C-RC 40.* Long term land use stability and dependability to preserve agriculture shall be maintained and enhanced by the following general means:
  - limiting the loss of valuable farmland from unnecessary and/or premature urban expansion and development;
  - regulating non-agricultural uses in agricultural areas, and their intensity and impacts on adjacent lands;
  - maintaining agriculturally-viable parcel sizes; and

- minimizing conflicts between adjacent agricultural and non-agricultural land uses, through such means as right-to-farm legislation and mediation of nuisance claims.

> *C-RC 42.* Interjurisdictional coordination and cooperation necessary to achieve agricultural preservation goals and strategies should be encouraged. These goals should include:

- preservation of remaining areas of large and medium scale agriculture in South County;
- encouragement of retention of agricultural lands in San Benito County adjoining South County agricultural areas and discouragement of Urban Service Area (USA) expansions into agricultural areas when the Local Agency Formation Commission (LAFCO) determines that a city's USA contains more land than is needed to accommodate 5 years of projected growth and development.

County of Santa Clara Williamson Act Program (2011)

Although the Williamson Act was passed at the state level, the County of Santa Clara administers a Williamson Act program for commercial agricultural use. To qualify for a Williamson Act contract, the program requires landowners to meet one of the following criteria, as cited in the 2011 policy document (the policy related to timberlands was removed):

> The property is at least 10 acres of Prime Land, at least 60 percent of the property is being used for commercial agriculture and the owner substantiates revenue from commercial agriculture on at least 60 percent of the property in 3 of the past 5 years using federal income tax documents filed in those years; or,

> The property is at least 40 acres of Non-prime Land, at least 60 percent of the property is being used for commercial agriculture and the owner substantiates revenue from commercial agriculture on at least 60 percent of the property in 3 of the past 5 years using federal income tax documents filed in those years; or,

> The property is less than 10 acres of Prime Land, at least 75 percent of the property is being used for commercial agriculture and the owner substantiates that the property generated at least $3,500 in annual revenue from commercial agriculture on at least 75 percent of the property in 3 of the past 5 years using federal income tax documents filed in those years; or,

> The property is less than 40 acres of Non-prime Land, at least 75 percent of the property is being used for commercial agriculture and the owner substantiates that the property generated at least $2,000 in annual revenue from commercial agriculture on at least 75 percent of the property in 3 of the past 5 years using federal income tax documents filed in those years; or,

> The property is Prime Land and generated annual revenue from sales of agricultural commodities in 3 of the past 5 years of at least $1,000 per acre or $10,000, whichever is greater; or,

> The property is Non-prime Land and generated annual revenue from sales of agricultural commodities in 3 of the past 5 years of at least $250 per acre or $10,000, whichever is greater.

The following exemption as cited in the policy document as a potential exemption for the first four criteria listed above: *"The Agricultural Commissioner shall consider exceptions to the land coverage…when there are natural land features present, such as streams or rock outcroppings, which the owner demonstrates are not conducive to the commercial agricultural uses appropriate for the property or where government-imposed restrictions prohibit use of portions of the land for agricultural purposes."*

The importance of these Williamson Act guidelines to this Project is even if an area as small as 1 or 2 acres may be directly impacted by a project, there is the potential for this to decrease the acreage of the parcel as to where the entire parcel would potentially no longer qualify.

City of Morgan Hill General Plan

The City of Morgan Hill's General Plan (revised 2010) provides a goal of maintaining a "viable agricultural industry". The following two actions from the Open Space and Conservation Element are applicable to the alternatives considered.

> *Action 3.1.* Use a variety of techniques to protect agricultural land, including land use regulation, urban development policy, conservation easements (with matching grant funds from appropriate agencies, where possible), and transfer or purchase of development rights.

> *Action 3.2*. When new development is proposed adjacent to an existing agricultural operation, require the appropriate buffer to be provided from land within the proposed development.

City of Gilroy Sphere of Influence

The study area is outside of the city limits of Gilroy, but within the SOI. Santa Clara LAFCO (2006) discusses the purposes of Gilroy's SOI and, generally, the city and the county share the goal of maintaining non-urban land uses in the area. Further, the Gilroy Agricultural Lands Area is just outside of the Project area, south of Buena Vista Avenue. Therefore, the City of Gilroy's policies towards agriculture and agricultural land use are not discussed. However, Important Farmlands and Williamson Act Lands within the City of Gilroy's SOI are considered in this assessment.

3.7.4 Impact Analysis

3.7.4.1 Significance Criteria

According to CEQA Guidelines Appendix A, a project could have a significant impact on agricultural resources if the project were to:

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

> Conflict with existing zoning for agricultural use, or a Williamson Act contract.

> Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use.

3.7.4.2 Approach to Analysis

The focus of this analysis is on how the various alternatives may affect agricultural lands in the vicinity of the study area. First, the impact of construction and the location of Project features on agricultural lands are assessed. Project features within the Project footprint may lead to conversion of agricultural lands. As such, an additional potential impact (location of Project features) is considered in this section, along with construction and operations and maintenance. Table 3.7-5 shows the approximate number of acres of Important Farmlands and Williamson Act Lands subject to permanent and temporary conversion by alternative. This calculation accounts for the overlap of Important Farmlands and Williamson Act Lands.

Table 3.7-5 Number of Acres of Williamson Act and Important Farmlands Subject to Conversion Under the Action Alternatives [1]

Classification	Alternative			
	Reach 6 Bypass [2]		All Other Action Alternatives [1]	
	Permanent	Temporary	Permanent	Temporary
Important Farmlands	39.6	17.3	50.0	19.0
Williamson Act Lands [2]	4.3	1.1	16.8	1.4
Lands Classified as Both Important Farmlands and Williamson Act Lands	0.4	0.2	5.1	0.4
Net Important Farmlands and Williamson Act Lands Subject to Conversion [3]	43.5	18.2	63.7	20.0

[1] Acreages were calculated by Cardno ENTRIX by overlaying Williamson Act and Important Farmlands Maps within the Project footprint

[2] Calculated by taking total from Project footprint and removing lands from Reach 5 and portions of Reach 6 from the total. It should be noted that the location of the actual bypass also lies with lands designated as Prime Farmland.

[3] Does not include active croplands in areas not designated as Important Farmland and/or Williamson Act parcels.

The alternatives have the potential to permanently convert agricultural lands to non-agricultural use. Lands classified as Important Farmlands, such as Prime Farmland, Unique Farmland, or Farmland of Local and Statewide Importance, along with agricultural lands under Williamson Act contracts, are of particular interest for this analysis. Next, the implications of flooding on agricultural lands under the various alternatives are compared with the No Project Alternative. Potential impacts from periodic flooding events on agricultural lands are considered temporary; and, thus, would not directly lead to conversion of non-agricultural use. Regardless, all action alternatives would reduce the amount of Important Farmlands subject to flooding under a 1-percent flood scenario. The number of acres of important agricultural and Williamson Act flooded lands under a 1-percent flood scenario for the various alternatives is provided in Table 3.7-6. As noted above, Williamson Act Lands and other important agricultural lands are not mutually exclusive (e.g., Farmlands of Statewide Importance may also be enrolled in Williamson Act contracts).

Table 3.7-6 Acres of Williamson Act and Important Agricultural Lands Flooded Under 1-Percent Flood Scenario by Alternative [1,2]

Classification	Number of Acres	
	No-Action Alternative	All Other Alternatives
Williamson Act Lands [3]	569	228
Prime Farmland	860	294
Farmland of Statewide Importance	21	7
Unique Farmland	127	69
Farmland of Local Importance	39	21

[1] Acreages were calculated by Cardno ENTRIX by overlaying flood scenario maps with Williamson Act and Important Farmlands Maps.

[2] Calculations include only those lands north of Buena Vista Avenue.

[3] Williamson Act Lands are not mutually exclusive from the Important Farmlands (Prime, Statewide Importance, Unique and Local Importance) classifications.

3.7.5 Impacts and Mitigation Measures

3.7.5.1 No Project Alternative

Under the No Project Alternative, Prime Farmland, Unique Farmland, and Farmland of Statewide Importance would not change. No farmland conversions would occur; therefore, there would be no impact. However, the benefits of reduced flooding on agricultural lands under a 1-percent flood scenario would not be realized, as compared to the action alternatives.

AG-1 NP—Convert Prime Farmland, Unique Farmland, or Farmland of Statewide or Local Importance

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All Project activities	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

There would be no construction associated with this alternative; therefore, this impact does not apply.

Operations and Maintenance

Maintenance and operational activities would continue under the SMP and would have no impact under this alternative.

Best Management Practices (BMPs)

None applicable

AG-2 NP—Conflict with existing zoning for agricultural use, or a Williamson Act contract

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All Project activities	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

The No Project Alternative would not conflict with existing zoning regulations and/or Williamson Act; therefore, there would be no impact.

Construction

There would be no construction associated with this alternative; therefore, this impact does not apply.

Operations and Maintenance

Maintenance and operational activities would continue under the SMP and would have no impact under this alternative.

Best Management Practices (BMPs)

None applicable

AG-3 NP—Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All Project activities	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

There would be no construction associated with this alternative; therefore, this impact does not apply.

Operations and Maintenance

Maintenance and operational activities would continue under the SMP and would have no impact under this alternative.

Best Management Practices (BMPs)

None applicable

3.7.5.2 Tunnel Alternative (Preferred Alternative)

The Preferred Alternative with the tunnel feature has the least land use conversion through the urban reach of the Project area. However, as discussed above in Section 3.7.2.1, lands zoned specifically for agriculture are primarily along Reaches 4, 6, and 14.

AG-1 T—Convert Prime Farmland, Unique Farmland, or Farmland of Statewide or Local Importance

Impact Determination: significant

Project Activity	Construction Impact Level	Location of Project Features	Operation/Maintenance Impact Level
All Project activities	LTSM	S	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

About 20 acres of important agricultural lands within the Project footprint would be used during construction for related activities, such as temporary construction easements for access, equipment and material staging, and work. Construction activities may compact soils and potentially lead to soil loss and erosion. This impact would not be limited to the Important Farmlands, but to active croplands in the area too. The SCVWD would remove all construction equipment and clean any spills or equipment leaks on these agricultural lands. This conversion of agricultural lands would be temporary, but still constitutes a significant impact that would be reduced to less than significant with the implementation of Mitigation Measure AG-1a T.

Location of Project Features

The Project footprint includes about 50 acres of Prime Farmland, Unique Farmland, or Farmland of Statewide and Local Importance; and these lands are subject to conversion to non-agricultural use under this alternative. These lands would be converted, as Project features described in Section 2.6.1 would replace these Important Farmlands.

This impact is significant, because agricultural lands being removed from production cannot be replaced. However, Mitigation Measure AG-1b T could decrease the impact of the Project.

Operations and Maintenance

Periodic maintenance and the operation would utilize the existing and proposed maintenance access roads constructed as part of the Project. No additional land would be required; therefore, the operations and maintenance of this alternative would not further convert farmland to non-agricultural use.

Best Management Practices (BMPs)

None applicable

Mitigation Measure

Mitigation Measure AG-1a T: Agricultural Soil Amendments and Treatments: For areas converted temporarily for construction, the SCVWD would rip and disk the ground after Project work is completed as to not leave the area in a compacted state after construction is complete. The landowner would be consulted as to the necessary depth of the sub-soiling. Additionally, soil amendments, such as compost, could be added to the lands to return the soil to its original or better texture and tilth.

With the implementation of Mitigation Measure AG-1a T, the temporary impact attributable to construction would be reduced to less than significant.

Mitigation Measure AG-1b T: Agricultural Conversion Offsets. For each acre of Prime Farmland, Unique Farmland, and Farmland of Statewide Importance that is permanently converted to nonagricultural use, the SCVWD will offset (at a 1:1 ratio) the conversion of these lands by either contributing to a fund that protects agricultural land at current market value or acquiring the land. SCVWD could collaborate with other local governmental agencies, including cities, the county, Santa Clara County Open Space Authority, and/or non-profits, including the Santa Clara County Farm Bureau, to identify lands suitable for mitigation. In the event that active agricultural lands currently designated as Important Farmlands are not available within the county, SCVWD could work with the aforementioned agencies and organizations to develop an alternative to compensate for the conversion of these Important Farmlands by the Project. For example, SCVWD could also consider contributing to local or regional land conservation banking program or organization. Additionally, SCVWD could purchase off-site conservation easements at the same 1:1 ratio.

Implementation of Mitigation Measure AG-1b T would reduce this impact on Prime Farmlands, Unique Farmlands, and Farmlands of Statewide Importance. However, the impact would remain significant and unavoidable, as the net result would be a reduction of Important Farmlands countywide.

AG-2 T—Conflict with existing zoning for agricultural use, or a Williamson Act contract

Impact Determination: significant

Project Activity	Construction Impact Level	Location of Project Features	Operation/Maintenance Impact Level
All Project activities	LTSM	S	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Some areas (about 1.4 acres) designated under the Williamson Act may be temporarily used for construction related activities. A small proportion (about 0.4 acre) of the Williamson Act parcels are also designated as Important Farmlands. Similar to Important Farmlands, these agricultural lands would be potentially impacted during construction due to soil compaction. These impacts would not just be limited to Williamson Act parcels, but also to other active croplands within the Project footprint. The conversion of these lands would be temporary and would be reduced to a less than significant with the incorporation of mitigation.

Location of Project Features

The Project footprint includes about 17 acres of lands designated under the Williamson Act subject to permanent conversion. It should be noted that 5 acres of the Williamson Act Lands in the Project footprint are the same as lands classified as Prime Farmland or Unique Farmland. Although there are only 17 acres within the Project footprint, there is also the possibility that the Project may decrease the acreage of existing Williamson Act Lands so as the lands no longer qualify; this would increase the number of acres subject to mitigation. The conversion of Williamson Act Lands and land zoned for agricultural use is a significant impact, because lands applied for agricultural use cannot be replaced.

Operations and Maintenance

Operations and maintenance do not have an impact on Williamson Act contracts or existing zoning, because these activities do not require the alteration or conversion of these lands.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure AG-1a T: Agricultural Soil Amendments and Treatments.

With the implementation of Mitigation Measure AG-1a T, the impact attributable to construction would be reduced to less than significant.

Mitigation Measure AG-2 T: Williamson Act Lands Conversion Offsets. For each acre of Williamson Act Lands that is converted as a part of this alternative, the SCVWD will offset (at a 1:1 ratio) the conversion of these lands by either contributing to a fund that protects agricultural land at current market value or acquiring the land. Lands that are classified both as FMMP and Williamson Act lands would not be subject to double mitigation. As such, SCVWD would only need to mitigate for these lands at a 1:1 ratio. SCVWD could work with existing growers in the county and the Farm Bureau along with local agencies, such as the Santa Clara County Department of Agriculture and the Santa Clara County Open Space Authority, to identify lands eligible for Williamson Act classification. SCVWD could work with these entities and landowner(s) to enter these lands under Williamson Act contracts to mitigate for the loss of these lands under this alternative. Given the partial overlap of Williamson Act Lands and other Important

Farmlands, this mitigation measure should be implemented in conjunction with Mitigation Measure AG-1b T.

Even with implementation of Mitigation Measure AG-2 T, this impact would remain significant, because the Project would permanently convert lands covered under the Williamson Act.

AG-3 T—Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use

Impact Determination: no impact

Project Activity	Construction Impact Level	Location of Project Features	Operation/Maintenance Impact Level
All Project activities	NI	NI	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

The Preferred Alternative would not be expected to lead to other changes that would result in further conversion of farmlands to non-agricultural use. This impact would occur if agricultural lands protected from flood by this alternative become attractive and available for future residential or commercial development. However, land use designation and changes to land use are not within the authority of SCVWD. Further, it is speculative to project the future, potential land-use changes based on a reduced flooding risk.

Construction

Construction under this alternative would not further convert farmland to non-agricultural use.

Location of Project Features

The location of the Project features would not further convert farmland to non-agricultural use.

Operations and Maintenance

The operations and maintenance of this alternative would not further convert farmland to non-agricultural use.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

3.7.5.3 Natural Resources Conservation Service (NRCS) Alternative

The primary feature of the NRCS Alternative is within Reach 8, which includes portions of Morgan Hill the channel would be deepened and widened. However, Reach 8 is generally urbanized and the impacts to agricultural resources in the reach are minimal. Impacts within the other Project reaches would be the same as the Preferred Alternative.

AG-1 NRCS—Convert Prime Farmland, Unique Farmland, or Farmland of Statewide or Local Importance

Impact Determination: significant

Project Activity	Construction Impact Level	Location of Project Features	Operation/Maintenance Impact Level
All Project activities	LTSM	S	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

About 20 acres of important agricultural lands within the Project footprint would be used during construction for related activities, such as temporary construction easements for access and work. Construction activities may compact soils and potentially lead to soil loss and erosion. This impact would not be limited to the Important Farmlands, but to other active croplands in the area too. The SCVWD would remove all construction equipment and clean any spills or leaks from equipment on these agricultural lands. This conversion of agricultural lands would be temporary, but still constitutes a significant impact. The impact can be reduced to less than significant with the implementation of Mitigation Measure AG-1a T.

Location of Project Features

The Project footprint includes about 50 acres of Prime Farmland, Unique Farmland, or Farmland of Statewide and Local Importance; and these lands are subject to conversion to non-agricultural use under this alternative. These lands would be converted, as Project features discussed in Section 2.5.1 would replace these Important Farmlands.

This impact is significant, because agricultural lands being removed from production cannot be replaced. However, Mitigation Measure AG-1b T could reduce the severity of the impact of the Project.

Operations and Maintenance

Periodic maintenance and the operation of the flood protection modifications would utilize the existing and proposed maintenance access roads; therefore, the operations and maintenance of this alternative would not further convert farmland to non-agricultural use.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure AG-1a T: Agricultural Soil Amendments and Treatments.

With the implementation of Mitigation Measure AG-1a T, the impact attributable to construction would be reduced to less than significant.

Mitigation Measure AG-1b T: Agricultural Conversion Offsets.

Implementation of Mitigation Measure AG-1b T would reduce this impact on Prime Farmlands, Unique Farmlands, and Farmlands of Statewide Importance. However, the impact would remain significant and unavoidable, as the net result would be a reduction of Important Farmlands countywide.

AG-2 NCRS—Conflict with existing zoning for agricultural use, or a Williamson Act contract

Impact Determination: significant

Project Activity	Construction Impact Level	Location of Project Features	Operation/Maintenance Impact Level
All Project activities	LTSM	S	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

About 1.4 acres, designated under the Williamson Act, may be temporarily used for construction related activities. Approximately 0.4 acre is also designated as other Important Farmlands. Similar to Important Farmlands, these agricultural lands would be potentially impacted during construction due to soil compaction. These impacts would not just be limited to Williamson Act parcels, but also to other active croplands within the Project footprint. The conversion of these lands would be temporary and would be reduced to less than significant with the incorporation of mitigation.

Location of Project Features

The Project footprint includes about 17 acres of lands designated under the Williamson Act subject to permanent conversion. It should be noted that 5 acres of the Williamson Act Lands in the Project footprint are the same as lands classified as Prime Farmland or Unique Farmland. Although there are only 17 acres within the Project footprint, there is also the possibility that the Project may decrease the acreage of existing Williamson Act Lands so as the lands no longer qualify under county provisions discussed above; this would increase the number of acres subject to mitigation. The conversion of Williamson Act Lands and land zoned for agricultural use is a significant impact, because lands applied for agricultural use cannot be replaced.

Operations and Maintenance

Operations and maintenance activities would not have an impact on Williamson Act contracts or existing zoning, because these activities do not require the alteration of these lands.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure AG-1a T: Agricultural Soil Amendments and Treatments.

With the implementation of Mitigation Measure AG-1a T, the impact attributable to construction would be reduced to less than significant.

Mitigation Measure AG-2 T: Williamson Act Lands Conversion Offsets.

Even with implementation of Mitigation Measure AG-2 T, this impact would remain significant, because the Project would permanently convert lands covered under the Williamson Act.

AG-3 NRCS—Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use

Impact Determination: no impact

Project Activity	Construction Impact Level	Location of Project Features	Operation/Maintenance Impact Level
All Project activities	NI	NI	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

The NRCS Alternative would not be expected to lead to other changes that would result in further conversion of farmlands to non-agricultural use. This impact would occur if agricultural lands, protected from flood by this alternative, become attractive or available for future residential or commercial development. However, land use designation and changes to land use are not within the authority of SCVWD. Further, it is speculative to project the future, potential land-use changes based on a reduced flooding risk.

Construction

Construction under this alternative is not anticipated to further convert farmland to non-agricultural use.

Location of Project Features

The location of the Project features would not further convert farmland to non-agricultural use.

Operations and Maintenance

The operations and maintenance of this alternative would not further convert farmland to non-agricultural use.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

3.7.5.4 Culvert/Channel Alternative

Potential impacts under the Culvert/Channel Alternative, AG-1 through AG-3 CC, are expected to be similar to the Preferred Alternative. The key features of this alternative include:

> Realign an 800-foot segment of the double 10-foot-wide box culverts that, in the NRCS design, would be parallel to Hale Avenue through the Britton School athletic fields up to Del Monte Avenue;

> Continue the double box culvert under Del Monte Avenue approximately 900 feet to West 2nd Street; and

> From West 2nd Street to West Dunne Avenue perform the same channel widening and deepening, along with culvert replacements at 2nd, 3rd, 4th, and 5th Streets as described for the NRCS Alternative for Reach 8.

AG-1 CC—Convert Prime Farmland, Unique Farmland, or Farmland of Statewide or Local Importance

Impact Determination: significant

Project Activity	Construction Impact Level	Location of Project Features	Operation/Maintenance Impact Level
All Project activities	LTSM	S	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Some important agricultural lands (about 20 acres) within the Project footprint would be used during construction for related activities, such as temporary construction easements for access and work. Construction activities may compact soils and potentially lead to soil loss and erosion. This impact would not be limited to the Important Farmlands, but to active croplands in the area too. The SCVWD would remove all construction equipment and clean any spills or equipment leaks on these agricultural lands. This conversion of agricultural lands would be temporary, but still constitutes a significant impact that would be reduced to less than significant with mitigation.

Location of Project Features

The Project footprint includes about 50 acres of Prime Farmland, Unique Farmland, or Farmland of Statewide and Local Importance; and these lands are subject to conversion to non-agricultural use under this alternative. These lands would be converted, as Project features discussed in Section 2.7.1 would replace these Important Farmlands.

This impact is significant, because agricultural lands being removed from production cannot be replaced. However, mitigation measures could decrease the impact of the Project.

Operations and Maintenance

Periodic maintenance and the operation of the flood protection modifications would utilize the existing and proposed maintenance access roads; therefore, the operations and maintenance of this alternative would not further convert farmland to non-agricultural use.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure AG-1a T: Agricultural Soil Amendments and Treatments.

With the implementation of Mitigation Measure AG-1a T, the impact attributable to construction would be reduced to less than significant.

Mitigation Measure AG-1b T: Agricultural Conversion Offsets.

Implementation of Mitigation Measure AG-1b T would reduce this impact on Prime Farmlands, Unique Farmlands, and Farmlands of Statewide Importance. However, the impact would remain significant and unavoidable, as the net result would be a reduction of Important Farmlands countywide.

AG-2 CC—Conflict with existing zoning for agricultural use, or a Williamson Act contract

Impact Determination: significant

Project Activity	Construction Impact Level	Location of Project Features	Operation/Maintenance Impact Level
All Project activities	LTSM	S	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Some areas (about 1.4 acres) designated under the Williamson Act may be temporarily used for construction related activities. A small proportion (about 0.4 acre) are also designated as other Important Farmlands. Similar to Important Farmlands, these agricultural lands would be potentially impacted during construction due to soil compaction. These impacts would not just be limited to Williamson Act parcels, but also to other active croplands within the Project footprint. The conversion of these lands would be temporary and would be reduced to a less than significant with the incorporation of mitigation.

Location of Project Features

The Project footprint includes about 17 acres of lands designated under the Williamson Act subject to permanent conversion. It should be noted that 5 acres of the Williamson Act Lands in the Project footprint are the same as lands classified as Prime Farmland or Unique Farmland. Although there are only 17 acres within the Project footprint, there is also the possibility that the Project may decrease the acreage of existing Williamson Act Lands so as the lands no longer qualify; this would increase the number of acres subject to mitigation. The conversion of Williamson Act Lands and land zoned for agricultural use is a significant impact, because lands applied for agricultural use cannot be replaced.

Operations and Maintenance

Operations and maintenance do not have an impact on Williamson Act contracts or existing zoning, because these activities do not require the alteration of these lands.

Best Management Practices (BMPs)

None applicable

Mitigation Measure

Mitigation Measure AG-1a T: Agricultural Soil Amendments and Treatments.

With the implementation of Mitigation Measure AG-1a T, the impact attributable to construction would be reduced to less than significant.

Mitigation Measure AG-2 T: Williamson Act Lands Conversion Offsets.

Even with implementation of Mitigation Measure AG-2 T, this impact would remain significant, because the Project would permanently convert lands covered under the Williamson Act.

AG-3 CC—Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use

Impact Determination: no impact

Project Activity	Construction Impact Level	Location of Project Features	Operation/Maintenance Impact Level
All Project activities	NI	NI	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Similar to the NRCS Alternative, it would not be expected to lead to other changes that would result in further conversion of farmlands to non-agricultural use. This impact would occur if agricultural lands protected from flood by this alternative become attractive and available for future residential or commercial development. However, land use designation and changes to land use are not within the authority of SCVWD. Further, it is speculative to project the future, potential land-use changes based on a reduced flooding risk.

Construction

Construction under this alternative would not further convert farmland to non-agricultural use.

Location of Project Features

The location of the Project features would not further convert farmland to non-agricultural use.

Operations and Maintenance

The operations and maintenance of this alternative would not further convert farmland to non-agricultural use.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

3.7.5.5 Reach 6 Bypass Alternative

The Reach 6 Bypass Alternative primary feature is the bypass at the upstream boundary of Reach 6 that would run east through open fields, continue under Murphy Avenue and U.S. 101, and connect to Reach 14.This alternative would not convert agricultural lands along Reach 5. The portion of Reach 6 within the Project footprint necessary to complete this alternative includes about 0.9 acre of Prime Farmland and no Williamson Act Lands. However, a substantial portion of the bypass west of U.S. 101is designated as Prime Farmland. In total, this results in a reduction in the conversion of designated agricultural lands compared to the other action alternatives.

AG-1 BY—Convert Prime Farmland, Unique Farmland, or Farmland of Statewide or Local Importance

Impact Determination: significant

Project Activity	Construction Impact Level	Location of Project Features	Operation/Maintenance Impact Level
All Project activities	LTSM	S	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Some important agricultural lands (about 17 acres) within the Project footprint would be used during construction related activities, such as temporary construction easements for access and work. This is about 2 acres less than the other action alternatives. Construction activities may compact soils and potentially lead to soil loss and erosion. This impact would not be limited to the Important Farmlands, but to active croplands in the area too. The SCVWD would remove all construction equipment and clean any spills or leaks on these agricultural lands. This conversion of agricultural lands would be temporary, but still constitutes a significant impact that would be reduced to less than significant with mitigation.

Flood Management Project Footprint

The Project footprint for the Reach 6 Bypass Alternative includes about 40 acres of Prime Farmland, Unique Farmland, or Farmland of Statewide or Local Importance within the Project footprint; and these lands are subject to conversion to non-agricultural use under this alternative. Additionally, the portion of the bypass, west of U.S. 101, lies in large part within areas designated as Prime Farmland. These lands would be converted, as Project features described in Section 2.8.1 would replace these Important Farmlands. This impact is significant because agricultural lands being removed from production cannot be replaced. However, mitigation measures could decrease the impact of the Project.

Operations and Maintenance

Periodic maintenance and the operation of the flood protection modifications would utilize the existing and proposed maintenance access roads; therefore, the operations and maintenance of this alternative would not further convert farmland to non-agricultural use.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure AG-1a T: Agricultural Soil Amendments and Treatments.

With the implementation of Mitigation Measure AG-1a T, the impact attributable to construction would be reduced to less than significant.

Mitigation Measure AG-1b T: Agricultural Conversion Offsets.

Implementation of Mitigation Measure AG-1b T would reduce this impact on Prime Farmlands, Unique Farmlands, and Farmlands of Statewide Importance. However, the impact would remain significant and unavoidable, as the net result would be a reduction of Important Farmlands countywide.

AG-2 BY—Conflict with existing zoning for agricultural use, or a Williamson Act contract

Impact Determination: significant

Project Activity	Construction Impact Level	Location of Project Features	Operation/Maintenance Impact Level
All Project activities	LTSM	S	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Some areas (about 1 acre) designated under the Williamson Act may be temporarily used for construction related activities. Similar to Important Farmlands, these agricultural lands would be potentially impacted during construction due to soil compaction. These impacts would not just be limited to Williamson Act parcels, but also to other active croplands within the Project footprint. The conversion of these lands would be temporary and would be reduced to a less than significant with the incorporation of mitigation.

Location of Project Features

The Project footprint for the Reach 6 Bypass Alternative includes about 4 acres of lands designated under the Williamson Act subject to permanent conversion. Although there are only 4 acres within the Project footprint, there is also the possibility that the Project may decrease the acreage of existing Williamson Act Lands so as the lands no longer qualify; this would increase the number of acres subject to mitigation. The conversion of Williamson Act Lands and land zoned for agricultural use is a significant impact, because lands applied for agricultural use cannot be replaced.

Operations and Maintenance

Operations and maintenance do not have an impact on Williamson Act contracts or existing zoning, because these activities do not require the alteration of these lands.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure AG-1a T: Agricultural Soil Amendments and Treatments.

With the implementation of Mitigation Measure AG-1a T, the impact attributable to construction would be reduced to less than significant.

Mitigation Measure AG-2 T: Williamson Act Lands Conversion Offsets.

Even with implementation of Mitigation Measure AG-2 T, this impact would remain significant, because the Project would permanently convert lands covered under the Williamson Act.

AG-3 BY—Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use

Impact Determination: no impact

Project Activity	Construction Impact Level	Location of Project Features	Operation/Maintenance Impact Level
All Project activities	NI	NI	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Similar to the other action alternatives, it would not be expected to lead to other changes that would result in further conversion of farmlands to non-agricultural use. This impact would occur if agricultural lands protected from flood by this alternative become attractive and available for future residential or commercial development. However, land use designation and changes to land use are not within the authority of SCVWD. Further, it is speculative to project the future, potential land-use changes based on a reduced flooding risk.

Construction

Construction under this alternative would not further convert farmland to non-agricultural use.

Location of Project Features

The location of the Project features would not further convert farmland to non-agricultural use.

Operations and Maintenance

The operations and maintenance of this alternative would not further convert farmland to non-agricultural use.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

3.7.6 Summary of Impacts to Agricultural and Forest Resources

In this section, impacts to agricultural and forest resources are considered. There are no forest resources in the study area and impacts to forest resources are not discussed. All of the action alternatives would lead to agricultural land conversion to non-agricultural use within the Project footprint. The Reach 6 Bypass Alternative would have the least amount of agricultural land conversion compared to the other alternatives because there would be no conversion of agricultural lands along Reach 5 and the amount of conversion along Reach 6 would be less.

3.8 Land Use and Planning

3.8.1 Introduction

In this section, existing land uses and zoning categories within the study area for the Project along with applicable planning regulations are provided and then reviewed for potential impacts or conflicts with aspects of the various alternatives.

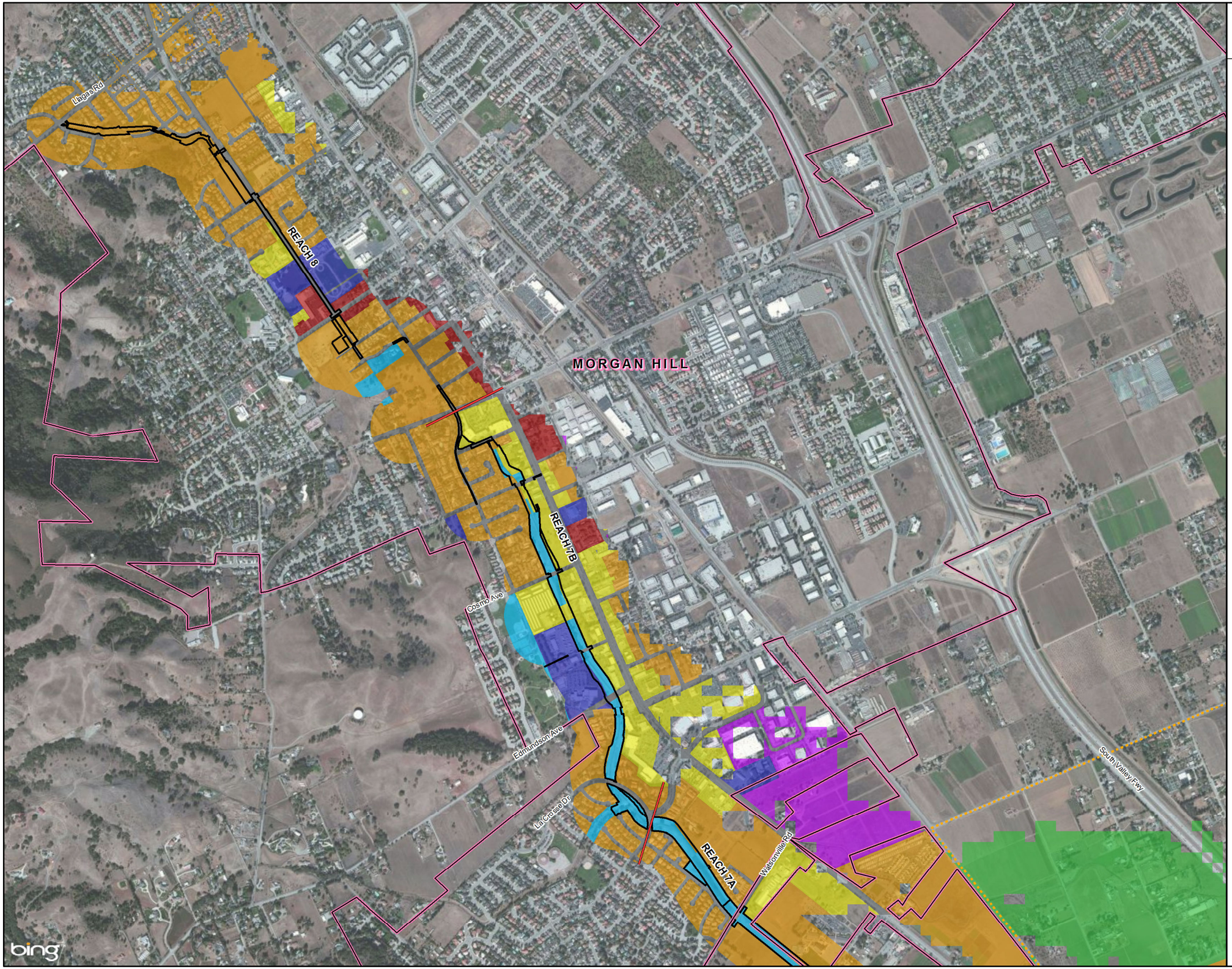
3.8.2 Study Area

Overall, the study area is roughly 20–25 miles southeast of San Jose in the southern end of Santa Clara County. The northern portion (Reaches 8, 7B, and portions of 7A) is within the City of Morgan Hill; a portion of Reach 7A is within unincorporated Santa Clara County, but within Morgan Hill's SOI. Reaches 6, 5, and 14 are within the San Martin planning area and a portion of Reach 4 (north of Masten Avenue) is also in the San Martin planning area. The southern portion of Reach 4 is within unincorporated Santa Clara County and within the City of Gilroy's SOI. In general, the study area has a wide range of land uses as it passes through urbanized areas within Morgan Hill and agricultural areas primarily in the southern reaches. Land uses within the Project area include open space and public facilities along with agricultural, residential, and commercial uses. In general, land uses within the Gilroy SOI are agricultural. The study area is also within the jurisdiction of the SCVWD, which is authorized to provide comprehensive water resource planning for beneficial use and protect Santa Clara County from flooding.

3.8.2.1 Environmental Setting

The Figures 3.8-1a–c show land uses in and around the Project footprint. The figures combine land use designations from both the City of Morgan Hill and Santa Clara County. Residential land uses were combined for the maps, as were the commercial categories. Figures 3.8-2a–c shows the zoning designations in and around the Project footprint. The Project footprint is divided into areas to be permanently and temporarily converted. One example of an area subject to temporary conversion would be a construction staging area to be used during the construction period, but not after the built features have been completed. Tables 3.8-1 and 3.8-2 show land uses subject to permanent and temporary conversion, respectively, under the various alternatives. Tables 3.8-3 and 3.8-4 show the zoning classifications for areas subject to permanent and temporary conversion respectively by acres within the Project footprint by reach. The area within the Project footprint subject to conversion varies by alternative. A wide range of land uses and zoning classifications exist within the Project footprint. In general, the northern portion of the study area is urbanized while the southern portion is more agricultural and rural. Potential impacts to agricultural resources are addressed in Section 3.7, Agricultural and Forest Resources. It should be noted that acreages attributed to agricultural use vary based on the source. Land uses and zoning are generated at the county and city level, while Important Farmlands were mapped by the California Department of Conservation. For example, Prime Farmland (as identified in Section 3.7) is present not only in areas with land use designated for agriculture, but also in areas designated as open space and residential. Therefore, it is not expected that the Important Farmlands totals would match either the land use totals for agriculture or areas zoned for agriculture.

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Cardno ENTRIX

Upper Llagas Creek Project EIR

FIGURE 3.8-1a

Land Use in the Project Vicinity

Map 1 of 3

Legend

- Reach Breaks
- City of Gilroy
- City of Morgan Hill
- Sphere of Influence
- Project Area

Land Use

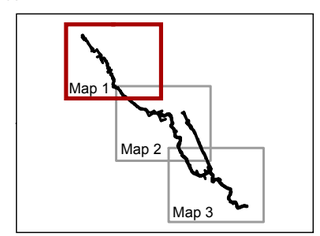
- Agriculture
- Commercial
- Industrial
- Major Gas and Electric Utilities
- Mixed Use
- Open Space
- Public Facilities
- Residential
- Roads

Source:
County of Santa Clara Planning Office, Land Use Plan, July 2011
City of Morgan Hill Community Development Department, General Plan Land Use Diagram, February 2012

N

0 500 1,000 2,000

Scale in Feet



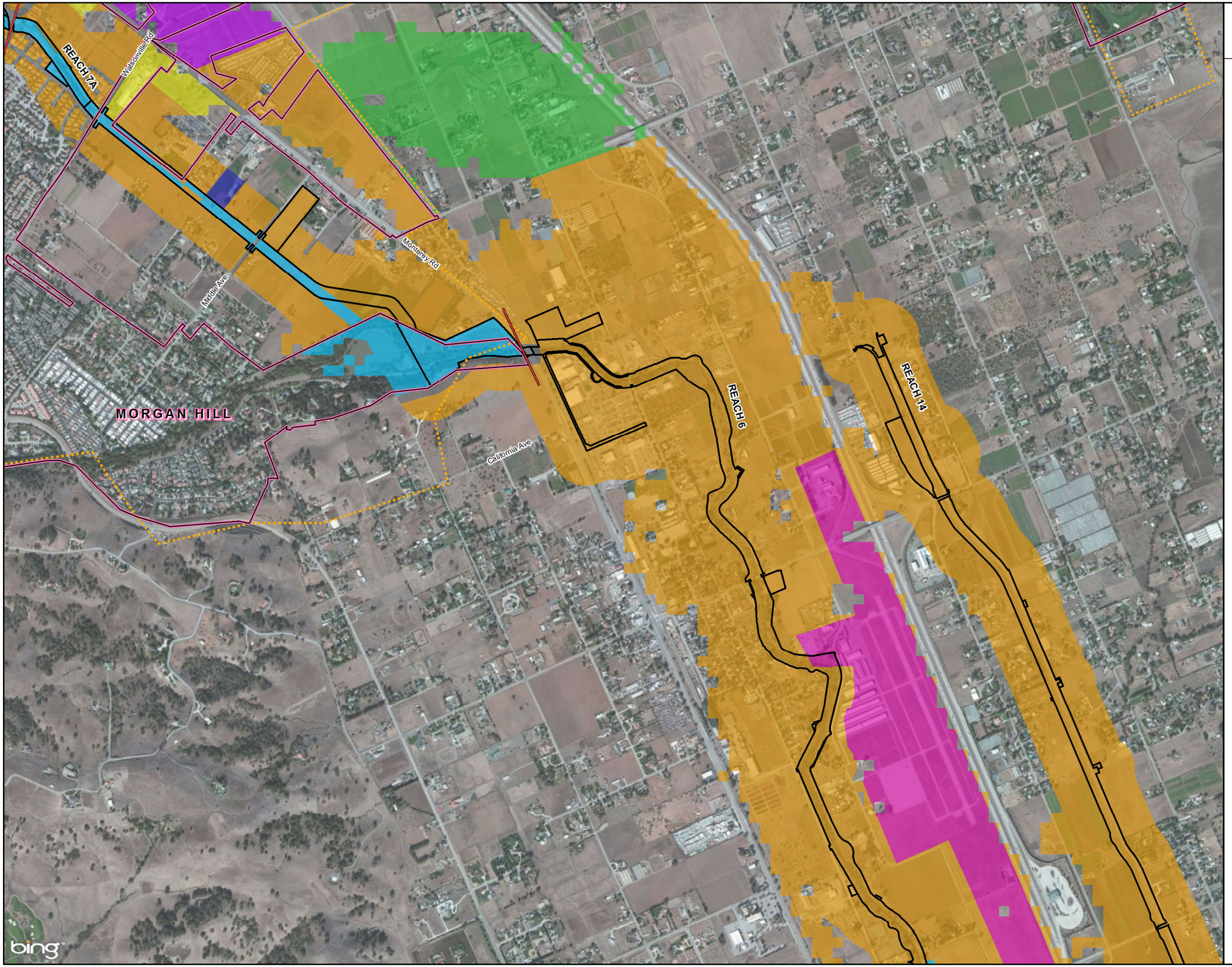
Cardno ENTRIX

Upper Llagas Creek Project EIR

FIGURE 3.8-1b

Land Use in the Project Vicinity

Map 2 of 3



Legend

- Reach Breaks
- City of Gilroy
- City of Morgan Hill
- Sphere of Influence
- Project Area

Land Use

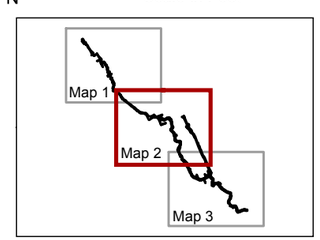
- Agriculture
- Commercial
- Industrial
- Major Gas and Electric Utilities
- Mixed Use
- Open Space
- Public Facilities
- Residential
- Roads

Source:
County of Santa Clara Planning Office, Land Use Plan, July 2011
City of Morgan Hill Community Development Department, General Plan Land Use Diagram, February 2012

N

0 500 1,000 2,000

Scale in Feet



Cardno ENTRIX

Upper Llagas Creek Project EIR

FIGURE 3.8-1c

Land Use in the Project Vicinity

Map 3 of 3

REACH 6
REACH 5
REACH 14
REACH 4
GILROY

Legend

- Reach Breaks
- City of Gilroy
- City of Morgan Hill
- Sphere of Influence
- Project Area

Land Use

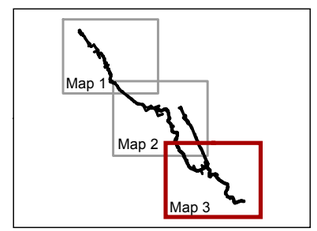
- Agriculture
- Commercial
- Industrial
- Major Gas and Electric Utilities
- Mixed Use
- Open Space
- Public Facilities
- Residential
- Roads

Source:
County of Santa Clara Planning Office, Land Use Plan, July 2011
City of Morgan Hill Community Development Department, General Plan Land Use Diagram, February 2012

N

0 500 1,000 2,000

Scale in Feet



bing

Cardno ENTRIX

Upper Llagas Creek Project EIR

FIGURE 3.8-2a

Zoning in the Project Vicinity

Map 1 of 3

MORGAN HILL

REACH 8

REACH 7B

REACH 7A

Cosmo Ave

Edmundson Ave

La Crosse Dr

Watsonville Rd

South Valley Fwy

Legend

- Reach Breaks
- City of Gilroy
- City of Morgan Hill
- Sphere of Influence
- Project Area
- Zoning Data Unavailable

Morgan Hill Zoning

- Administrative Office District
- Central Business District
- Central Commercial, Residential District
- Central Commercial, Residential District Residential Planned Development Overlay District
- Downtown Specific Plan Medium-Density Residential District
- General Commercial District
- General Commercial District (Conditional Zoning)
- Light Commercial Residential District
- Light Commercial Residential District Planned Unit Development District
- Medium-Density Residential District
- Medium-Density Residential District (Commercial Use Overlay)
- Medium-Density Residential District Residential Planned Development Overlay District
- Single Family District
- Single Family District Residential Planned Development Overlay District
- Open Space
- Planned Unit Development District
- Public Facilities District
- Residential Estate District
- Residential Planned Development Overlay District
- Service Commercial District

Santa Clara Zoning

- Exclusive Agricultural
- Residential and Agricultural
- Variable Density Rural Residential

Source:
County of Santa Clara, Planning Office, Zoning Atlas, July 2012
City of Morgan Hill Community Development Department, Zoning Map, February 2012

N

0 500 1,000 2,000

Scale in Feet

Map 1

Map 2

Map 3

bing

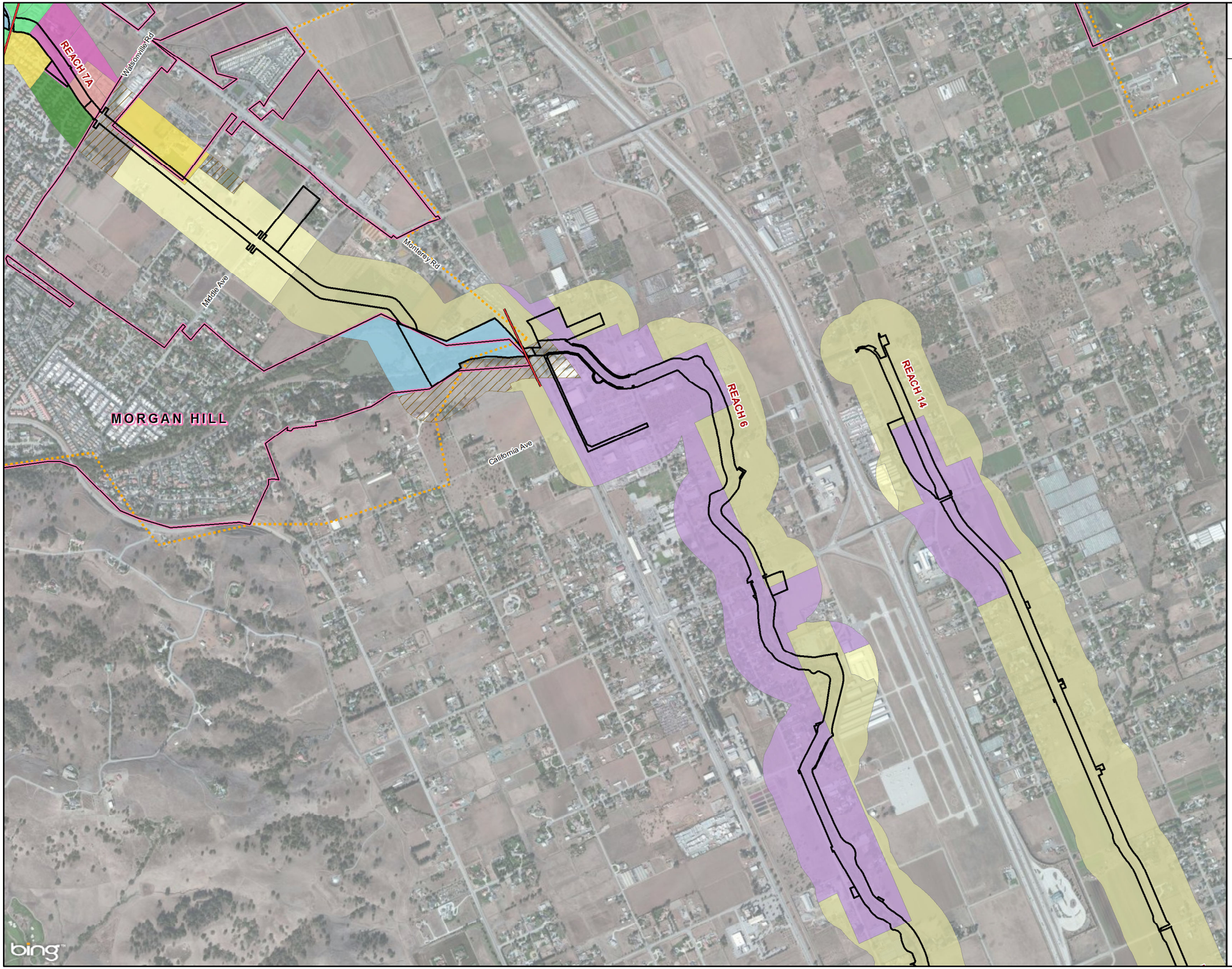
Cardno ENTRIX

Upper Llagas Creek Project EIR

FIGURE 3.8-2b

Zoning in the Project Vicinity

Map 2 of 3



Legend

- Reach Breaks
- City of Gilroy
- City of Morgan Hill
- Sphere of Influence
- Project Area
- Zoning Data Unavailable

Morgan Hill Zoning

- Administrative Office District
- Central Business District
- Central Commercial, Residential District
- Central Commercial, Residential District Residential Planned Development Overlay District
- Downtown Specific Plan Medium-Density Residential District
- General Commercial District
- General Commercial District (Conditional Zoning)
- Light Commercial Residential District
- Light Commercial Residential District Planned Unit Development District
- Medium-Density Residential District
- Medium-Density Residential District (Commercial Use Overlay)
- Medium-Density Residential District Residential Planned Development Overlay District
- Single Family District
- Single Family District Residential Planned Development Overlay District
- Open Space
- Planned Unit Development District
- Public Facilities District
- Residential Estate District
- Residential Planned Development Overlay District
- Service Commercial District

Santa Clara Zoning

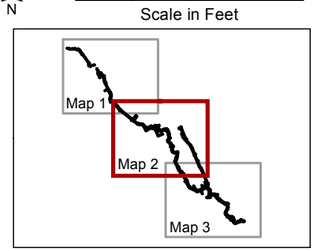
- Exclusive Agricultural
- Residential and Agricultural
- Variable Density Rural Residential

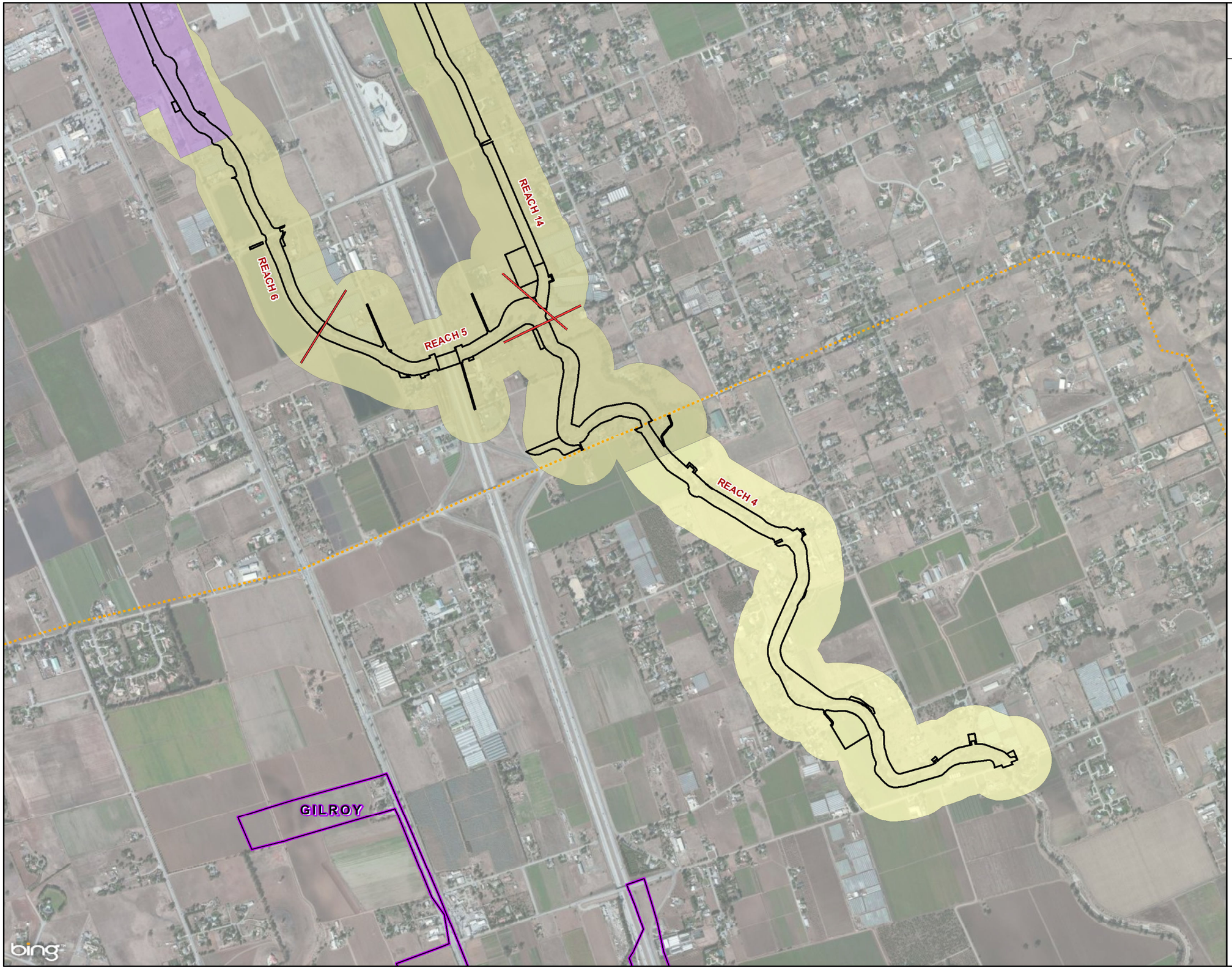
Source:
County of Santa Clara, Planning Office, Zoning Atlas, July 2012
City of Morgan Hill Community Development Department, Zoning Map, February 2012

N

0 500 1,000 2,000

Scale in Feet





Cardno ENTRIX

Upper Llagas Creek Project EIR

FIGURE 3.8-2c

Zoning in the Project Vicinity

Map 3 of 3

Legend

- Reach Breaks
- City of Gilroy
- City of Morgan Hill
- Sphere of Influence
- Project Area
- Zoning Data Unavailable

Morgan Hill Zoning

- Administrative Office District
- Central Business District
- Central Commercial, Residential District
- Central Commercial, Residential District Residential Planned Development Overlay District
- Downtown Specific Plan Medium-Density Residential District
- General Commercial District
- General Commercial District (Conditional Zoning)
- Light Commercial Residential District
- Light Commercial Residential District Planned Unit Development District
- Medium-Density Residential District
- Medium-Density Residential District (Commercial Use Overlay)
- Medium-Density Residential District Residential Planned Development Overlay District
- Single Family District
- Single Family District Residential Planned Development Overlay District
- Open Space
- Planned Unit Development District
- Public Facilities District
- Residential Estate District
- Residential Planned Development Overlay District
- Service Commercial District

Santa Clara Zoning

- Exclusive Agricultural
- Residential and Agricultural
- Variable Density Rural Residential

Source:
County of Santa Clara, Planning Office, Zoning Atlas, July 2012
City of Morgan Hill Community Development Department, Zoning Map, February 2012

N

0 500 1,000 2,000

Scale in Feet

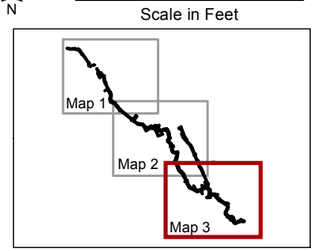


Table 3.8-1 Land Uses within Project Footprint Subject to Permanent Conversion by Reach in Acres [1,2,3]

Land Use	Reach							Total Within Project Footprint [5]
	4 [4]	5	6	7A	7B	8	14	
Agriculture	43.2	-	-	-	-	-	-	**43.2**
Residential [6]	14.6	14.1	58.3	13.3	1.7	5.9	41.9	**149.7**
Commercial [7]	--	--	--	-<0.1	4.9	--	--	**4.9**
Mixed Use	--	--	--	--	--	<0.1	--	**<0.1**
Open Space	--	3.2	9.9	54.0	23.5	--	--	**90.6**
Public Facilities	--	--		<0.1	0.6	--	--	**0.6**
Major Gas and Electric Utilities	--	--	1.6	--	--	--	--	**1.6**

[1] Calculated by Cardno ENTRIX by overlaying Project footprint on Santa Clara County and City of Morgan Hill land use maps; the totals do not include areas classified as roads under designated land uses or streets under the Project footprint designation (about 11 acres). The amount of land converted would vary by alternative.

[2] No lands were designated for industrial.

[3] Santa Clara County and City of Morgan Hill Land Use categories were combined.

[4] Most of the Agricultural lands along Reach 4 are within the Gilroy SOI.

[5] Totals may not match those in the row due to rounding.

[6] Includes Rural Residential, Multi and Single Family Low and Medium Density Residential, and Residential Estate.

[7] Includes Commercial and Non-retail Commercial.

Table 3.8-2 Land Uses within Project Footprint Subject to Temporary Conversion by Reach in Acres [1,2,3]

Land Use	Reach							Total Within Project Footprint [4]
	4	5	6	7A	7B	8	14	
Agriculture	5.7	--	--	--	--	--	--	**5.7**
Residential [5]	2.4	1.6	9.0	6.6	<0.1	4.8	12.7	**37.1**
Commercial [6]	--	--	--	--	1.2	--	--	**1.2**
Open Space	--	0.1	0.2	1.7	0.1	--	--	**2.0**

[1] Calculated by Cardno ENTRIX by overlaying Project footprint on Santa Clara County and City of Morgan Hill land use maps; the totals do not include roads (less than 0.25 acre).

[2] No lands were designated for industrial, mixed use, public facilities, or major gas and electric utilities.

[3] Santa Clara County and City of Morgan Hill Land Use categories were combined.

[4] Totals may not match those in the row due to rounding.

[5] Includes Rural Residential, Multi and Single Family Low and Medium Density Residential, and Residential Estate.

[6] Includes Commercial and Non-retail Commercial.

Table 3.8-3 Zoning within Project Footprint Subject to Permanent Conversion by Reach in Acres [1,2]

Zoning Classification	Reach							Total Within Project Footprint[4]
	4 [3]	5	6	7A	7B	8	14	
Santa Clara County								
Exclusive Agricultural	40.8	--	--	9.3	--	--	--	**50.1**
Residential and Agricultural	--	--	42.4	--	--	--	8.9	**51.2**
Variable Density Rural Residential	17.0	17.3	26.1	7.6	--	--	33.0	**100.1**
City of Morgan Hill								
Central Commercial, Residential District	--	--	--	--	-	0.2	--	**0.2**
General Commercial District	--	--	--	--	7.1	--	--	**7.1**
General Commercial District (Conditional Zoning)	--	--	--	--	0.3	--	--	**0.3**
Light Commercial Residential District	--	--	--	--	2.3	--	--	**2.3**
Medium Density Residential District	--	--	--	3.4	2.3	0.7	--	**6.4**
Medium Density Residential District, (Commercial Use Overlay)	--	--	--	--	0.5	--	--	**0.5**
Medium Density Residential District, Residential Planned Development Overlay District	--	--	--	2.1	0.2	2.4	--	**4.8**
Single Family District	--	--	--	1.2	2.5	--	--	**4.8**
Single Family District, Residential Planned Development Overlay District	--	--	--	<0.1	--	--	--	**<0.1**
Open Space	--	--	<0.1	18.1	5.6	--	--	**23.6**
Planned Unit Development District	--	--	--	1.3	<0.1	--	--	**1.3**
Public Facilities District	--	--	--	--	0.5	--	--	**0.5**

[1] Calculated by Cardno ENTRIX by overlaying Project footprint with Santa Clara County and City of Morgan Hill zoning maps. Roughly 4.5 acres of area classified as streets are not included in the totals.

[2] Unclassified areas within the Project footprint include 1.9 acres of Reach 6 and 2.5 acres of Reach 7A.

[3] The areas zoned for Exclusive Agriculture along Reach 4 are within the Gilroy SOI.

[4] Totals may not match those in the row due to rounding; also, total acreages may not match those from Land Use, because the Land Use tables do not include roads.

Table 3.8-4 Zoning within Project Footprint Subject to Temporary Conversion by Reach in Acres [1,2]

Zoning Classification	Reach							Total Within Project Footprint[4]
	4 [3]	5	6	7A	7B	8	14	
Santa Clara County								
Exclusive Agricultural	5.7	--	--	6.8	--	--	--	**12.5**
Residential and Agricultural	--	--	4.4	--	--	--	5.4	**9.7**
Variable Density Rural Residential	2.4	1.7	4.7	--	--	--	7.3	**16.1**
City of Morgan Hill								
Light Commercial Residential District	--	--	--	--	0.6	--	--	**0.6**
Medium Density Residential District	--	--	--	0.9	0.1	1.1	--	**2.0**
Medium Density Residential District, Residential Planned Development Overlay District	--	--	--	--	--	1.1	--	**1.1**
Single Family District	--	--	--	<0.1	<0.1	1.9	--	**1.9**
Single Family District, Residential Planned Development Overlay District	--	--	--	--	--	0.7	--	**0.7**
Planned Unit Development District	--	--	--	1.3	<0.1	--	--	**1.3**

[1] Calculated by Cardno ENTRIX by overlaying Project footprint with Santa Clara County and City of Morgan Hill zoning maps.

[2] Unclassified areas include 0.1 acre along Reach 6.

[3] The areas zoned for Exclusive Agriculture along Reach 4 are within the Gilroy SOI.

[4] Totals may not match those in the row due to rounding; also, total acreages may not match those from Land Use, because the Land Use tables do not include roads.

3.8.3 Regulatory Environment

The following federal, state, regional, and local requirements for the Project are described below.

3.8.3.1 Federal

Uniform Relocation Assistance and Real Property Acquisition Policies Act

Under federal law, governments, including state and local, have the right to use “eminent domain” to acquire private property for public use for the purposes of health, safety, and welfare.

3.8.3.2 State

California Environmental Quality Act (CEQA)

The CEQA requires a review of how various alternatives would affect land uses.

3.8.3.3 Local

Santa Clara County General Plan

The Santa Clara County General Plan, 1995–2010 (1994) defines land use planning issues within the county, explains relationships between various governmental entities, and describes planning policies within its jurisdiction. The plan also designates land uses for unincorporated portions of the county. The county defers to a local jurisdiction's (in this case, Morgan Hill's) General Plan for land use in incorporated areas. The following policies and implementation measures (both countywide and specific to rural unincorporated areas) have application to the various alternatives considered in this analysis. In some cases, the statements and measures are paraphrased; these are found in Book B of the county's General Plan (http://www.sccgov.org/sites/planning/PlansPrograms/GeneralPlan/Documents/GP_Book_B.pdf).

- *Health and Safety Policy C-HS 34.* Flood control measures should be considered part of an overall community improvement program and should advance the following goals, in addition to flood control: resource conservation, riparian vegetation and habitat preservation, recreation and scenic preservation of the county's streams and creeks.
- *Health and Safety Policy C-HS (i) 32.* Continue efforts by, and joint planning with, the SCVWD to design and construct flood control improvements that achieve a desirable balance of resource conservation, flood control, and recreational objectives.
- *Health and Safety Policy C-HS 30.* Local jurisdictions' urban development and land use policies should minimize the resident population within areas subject to high natural hazards. This is in order to reduce the overall risk to life and property and the cost to the general public of providing urban services and infrastructure to urban development.
- *Health and Safety Policy R-HS 8.* Areas of persistent flooding and areas of potential inundation from dam failure generally should be designated for agricultural land uses or other suitable open space use.

San Martin Planning Area

San Martin is an unincorporated community between Morgan Hill and Gilroy within Santa Clara County and is designated by the General Plan as a "special planning area". Countywide policies and those specific to unincorporated areas apply in the San Martin area. Policy R-LU 114 states "…*San Martin shall remain a rural community, predominately non-urban and residential in nature*". The following policies apply to flooding in the San Martin area:

- *R-LU 144.* Federal floodways and Special Flood Hazard Rate Zones are of "special environmental concern" for development activity.
- *R-LU 145.* In the areas of federal floodways and soils of high permeability, activities should not provide potential for contamination from runoff, require septic systems, or generate significant volumes of waste or nitrate to groundwater.
- *R-LU 147.* In the area designated a Special Flood Hazard in the National Flood Insurance Program, any development shall comply with special regulations regarding the construction and improvement of structures, mobile homes, water and sewer systems adopted by the County Board of Supervisors in order to minimize flood damage and potential contamination of surface waters.

City of Morgan Hill General Plan

The City of Morgan Hill General Plan (2010a) includes applicable policies from the Public Health and Safety Element, Open Space and Conservation Element, and Community Development Element that

pertain to lands under SCVWD's jurisdiction. The Morgan Hill General Plan incorporates policies from the Santa Clara Joint Area Plan (SCJAP), adopted in 1989. The plan was adopted by the county, along with the cities of Morgan Hill and Gilroy, to provide consistency related to community development and environmental management. These goals, policies, and actions include the following:

- *Public Health and Safety Goal # 4.* The least possible damage to persons and property from flooding. The following policies which are consistent to this goal are applicable to the alternatives:
  - *4b.* Prohibit development in floodways and regulate in floodplains to minimize flood damage and be consistent with the federal flood insurance program and Santa Clara Valley Water District regulations (SCJAP 15.05).
  - *4e.* Natural streamside and riparian areas should be left in their natural state in order to preserve their value as percolation and recharge areas, natural habitat, scenic resources, recreation corridors, and for bank stabilization.
  - *4f.* Minimize disruption of natural riparian areas by flood control projects needed to protect presently existing development by maintaining slow flow and stable banks through design and other appropriate mitigation measures (SCJAP 15.08).
  - *4g.* As flooding affects substantial areas of South County, and the flood control projects now being constructed are designed to protect only existing developed and currently planned urban areas, manage land development to mitigate flooding problems and minimize the need for local public funding for additional flood control and local drainage facilities (SCJAP 12.00).
  - *4h.* Areas which are developed or planned for development should be protected by the construction of flood control facilities. Development should be managed through advanced planning and design standards to minimize off-site flooding and drainage problems (SCJAP 12.00).
  - *4i.* Give highest priority for construction of flood protection facilities as follows: (1) areas of existing development subject to the highest potential flood damage; (2) undeveloped areas planned for urban development that would be subject to the highest potential of flood damage; (3) agricultural lands; and 4) other undeveloped areas (SCJAP 12.01).
- The General Plan provides the following actions in relation to planning for possible flooding:
  - *4.1.* Apply floodplain zoning to all flood prone areas to maximize life safety, reduce property loss, and preserve natural vegetation, wildlife, and scenic beauty.
  - *4.2.* Designate all floodways as open space, prohibiting construction except when consistent with state and federal regulations.
  - *4.3.* Develop, enact, and enforce regulations for all floodplains, with specific standards to minimize flooding of existing structures and surrounding properties.
  - *4.4.* Send all subdivisions and private and public project referrals where activity is located near to floodplain areas to Santa Clara Valley Water District for review prior to city approval.
  - *4.5.* Require dedication pursuant to the State Map Act sections 66475 and 66478.5 for access to and along all waterways.
  - *4.6.* Continue to require dedication of floodway and floodplain areas pursuant to the PL566 Drainage Program.
  - *4.7.* Establish an early warning protocol to alert persons within the dam failure inundation zone.

- *Open Space and Conservation Goal #5.* Preservation and reclamation of streams and riparian areas as open space. The following five policies apply to the alternatives considered in this analysis:
  - *5a.* Encourage reclamation of degraded streams and riparian areas (SCJAP).
  - *5b.* Maintain riparian systems, stream banks, and floodways in open space or related open space uses, such as wildlife habitat, recreation, or agriculture (SCJAP 16.10).
  - *5c.* A proposed streamside park along West Little Llagas Creek should be actively implemented and connected to the county trail system (SCJAP 16.10 & 16.12).
  - *5d.* Retain streamside and riparian areas in their natural state in order to preserve their value as percolation and recharge areas, natural habitat, scenic resources, recreation corridors and for bank stabilization (SCJAP 15.08).
  - *5e.* Where flood control projects are needed to protect existing development, minimize disruption of streams and riparian systems, maintaining slow flow and stable banks through design and other appropriate mitigation measures (SCJAP 15.08).
- The General Plan provides the following actions in relation to planning for open space and conservation:
  - *5.1.* Develop design guidelines provisions for preserving, reclaiming, and incorporating riparian features into development.
  - *5.2.* Develop programs for preserving and reclaiming degraded riparian areas.

City of Gilroy

The southern portion of Reach 4 (approximately 42 acres, roughly 14 percent of the Project footprint) lies within the City of Gilroy's SOI, and may eventually be within the city's jurisdiction. Santa Clara LAFCO does consider goals and applicable policies of the city within the SOI (2003 policy document). In 2006, Santa Clara LAFCO (2006) reviewed the City of Gilroy's public services along with the city's SOI. The report suggests that both the county and the city call for a continuation of non-urban uses in these areas. Also, the City of Gilroy adopted the SCJAP in 1989; therefore, the policies related to flood prevention are similar to those shown for the City of Morgan Hill. In addition, Gilroy has policies and regulations specific to flooding risks. However, for the purpose of this analysis, the Project footprint and the area expected to be flooded under the various alternatives lies outside the city's current jurisdictional area; therefore, the county land use designations, zoning and policies still apply to this area. Consequently, the City of Gilroy's policies and regulations are not provided in detail in this section.

3.8.4 Impact Analysis

3.8.4.1 Significance Criteria

Appendix G of the CEQA Guidelines provides guidance for evaluating whether a development project may result in significant impacts. Appendix G suggests that a development project could have a significant impact on land use and planning if the project would:

- Physically divide an established community.
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the General Plan, specific plan, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

3.8.4.2 Approach to Analysis

In order to assess whether an alternative is likely to divide a community, in addition to evaluating construction and the operation of the various alternatives, the Project footprint is compared to existing conditions to determine if any existing, currently undivided, communities would be separated as a result of an alternative. Applicable policies and designations that focus on avoidance or mitigation of environmental effects are reviewed to determine if the Project would conflict with these policies or designations. Other sections of this EIR also consider land use changes and implications. Land Use changes to parks and recreational resources are considered in Section 3.15, Recreational Resources. Section 3.4, Botanical Resources, addresses changes in the riparian zones. Land use changes on agricultural lands are addressed in Section 3.7, Agricultural and Forest Resources. Potential changes to public services attributable to the Project are considered in Section 3.14, Utilities and Public Services, while the potential for change in housing is addressed in Section 3.16, Population and Housing. Also, issues pertaining to habitat conservation, including the tiger salamander, are discussed in Section 3.5, Wildlife Resources. Additionally, regulations and potential impacts related to air quality (Section 3.11), and noise (Section 3.12) are discussed in other sections of the report. In addition to impacts attributable to construction and operations and maintenance, consideration for changes to land use, as a result of new Project features within the Project footprint, are evaluated. Project features to be included within the Project footprint are described in Sections 2.4., 2.5, 2.6, 2.7, and 2.8.

Land use types flooded under a 1-percent flood event for the various alternatives are shown in Table 3.8-3. The data presented includes only those inundated areas that are north of Buena Vista Avenue. In general, the alternatives, less the No-Action Alternative, would improve flood protection, particularly in urbanized areas. The reduction of flooding in lands currently designated for agricultural is about 19.4 percent.

Table 3.8-5 Land Use Designations Flooded Under the Various Alternatives (Acres) [1,2,3]

River Reach	No Project Alternative	All other Alternatives	% Reduction
Agriculture	681	549	19.4
Residential [4]	1582	637	59.7
Commercial [5]	89	0	100
Industrial	61	0	100
Mixed Use	17	0	100
Open Space	371	1	99.7
Public Facilities	21	0	100
Major Gas and Electric Utilities	175	167	4.8

[1] Calculated by Cardno ENTRIX by overlaying flood scenarios on Land Use map.

[2] Does not include roads.

[3] Includes only lands north of Buena Vista Ave.

[4] Includes Rural Residential, Multi and Single Family Low and Medium Density Residential, and Residential Estate.

[5] Includes Commercial and Non-Retail Commercial.

3.8.5 Impacts and Mitigation Measures

3.8.5.1 No Project Alternative

LAND-1 NP—Physically divide an established community

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All Project activities	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The No Project Alternative would not physically divide an established community, and there would be no construction of physical barriers that have the potential to divide portions of neighborhoods or communities.

Operations and Maintenance

Periodic maintenance and operational activities would continue; however, these would not separate established communities.

Best Management Practices (BMPs)

None applicable

LAND-2 NP—Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project adopted for the purpose of avoiding or mitigating an environmental effect

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All Project activities	N/A	S

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

There would be no construction activities associated with the No Project Alternative, therefore the construction impact is not applicable. Operations and Maintenance

Ongoing operations under the No Project Alternative conflicts with at least two county policies: *Health and Safety Policy C-HS 34* and *Health and Safety Policy C-HS (i) 32*; and a City of Morgan Hill policy (General Plan 4i), as cited above. To the extent that the Project would improve flood protection, the benefits of reduced flooding, under a 1-percent flood scenario, would not be realized; thus, the local agency goals and policies related to flood protection would not be realized. In contrast, the action alternatives are intended to address the goals of applicable flood protection policies. This impact is significant since it does not provide for flood protection which conflicts with local jurisdictions' policies designed to avoid an environmental effect.

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Best Management Practices (BMPs)

None applicable

3.8.5.2 Tunnel Alternative (Preferred Alternative)

The Preferred Alternative would be consistent with but does not necessarily implement all Santa Clara County General Plan policies regarding health and safety, San Martin Planning Area policies related to floodway development and protection, the City of Morgan Hill General Plan policies related to public health and safety, flooding and open space and conservation, and the City of Gilroy policies and regulations specific to flooding risks.

LAND-1 T—Physically divide an established community

Impact Determination: no impact

Project Activity	Construction Impact Level	Location of Project Features	Operation/Maintenance Impact Level
All Project activities	NI	NI	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

This alternative would not divide established communities, as the Project generally follows existing creek beds (which already naturally divide communities), or will be underground and the factors that currently connect the communities, such as roads, sidewalks, and bridges, will not be permanently affected by construction under this alternative.

Location of Project Features

The Project footprint generally follows existing creek beds and this will not result in existing communities being disconnected.

Operations and Maintenance

Periodic maintenance and long-term operations of the flood control improvements would utilize the existing and proposed maintenance access roads and channel improvements, which follow existing creek features; therefore, the operations and maintenance of this alternative would not divide established communities in the vicinity of the study area.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

The Preferred Alternative would not physically divide the established community and, therefore, there is no impact.

LAND-2 T—Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project adopted for the purpose of avoiding or mitigating an environmental effect

Impact Determination: less than significant

Project Activity	Construction Impact Level	Location of Project Features	Operation/Maintenance Impact Level
All Project activities	NI	LTS	NI
Operation and maintenance activities	N/A	N/A	B

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction-related activities would occur temporarily within the Project footprint and would be consistent with local health and safety and environmental regulations. Lands impacted by construction would be restored after construction is completed. These activities are outlined in Sections 2.4.3 and 2.6.2 in the Project Description. Therefore, construction would result in no impact.

Location of Project Features

This alternative would affect lands designated and zoned for residential, commercial, and agricultural uses, among others, as indicated in Tables 3.8-1 and 3.8-3. As such, these areas would be permanently converted for the purposes of flood prevention. The conversion of these lands for this purpose is consistent with local health and safety and environmental regulations and policies listed in Section 3.8.3. The impact is less than significant.

Operations and Maintenance

The maintenance of the Preferred Alternative would not conflict with existing policies and regulations. On the contrary, the flood protection provided by this plan would substantially reduce the number of acres of land subject to a 1-percent flooding event and, thus, the Project would be consistent with land use policies related to flood protection and public safety. The operations and maintenance of this alternative would be generally beneficial or no impact under CEQA..

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

Permanent conversion of zoned lands for flood prevention would result in a beneficial impact or no impact under CEQA.

3.8.5.3 Natural Resources Conservation Service (NRCS) Alternative

The NRCS Alternative would be consistent with, but does not necessarily implement, all Santa Clara County General Plan policies regarding health and safety, San Martin Planning Area policies related to floodway development and protection, the City of Morgan Hill General Plan policies related to public health and safety, flooding and open space and conservation, and the City of Gilroy policies and regulations specific to flooding risks. Potential impacts under the NRCS Alternative would be the same as the Preferred Alternative; although, the Project footprint within Reach 8 is larger for this alternative.

LAND-1 NRCS—Physically divide an established community

Impact Determination: no impact

Project Activity	Construction Impact Level	Location of Project Features	Operation/Maintenance Impact Level
All Project activities	NI	NI	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction of the NRCS Alternative would not divide established communities, as the Project generally follows existing creek beds (which already naturally divide communities), or will be underground and the factors that currently connect the communities such as roads, sidewalks, and bridges, will not be permanently affected by construction under this alternative.

Location of Project Features

The Project footprint generally follows existing creek beds and this would not result in existing communities being disconnected.

Operations and Maintenance

Periodic maintenance and long-term operations of the flood control improvements would utilize the existing and proposed maintenance access roads and channel improvements, which follow existing creek features; therefore, the operations and maintenance of this alternative would not divide established communities in the vicinity of the study area.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

This alternative would not physically divide the established community; therefore, there is no impact.

LAND-2 NRCS—Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project adopted for the purpose of avoiding or mitigating an environmental effect

Impact Determination: less than significant

Project Activity	Construction Impact Level	Location of Project Features	Operation/Maintenance Impact Level
All Project activities.	NI	LTS	NI
Operation and maintenance activities	N/A	N/A	B

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction-related activities would occur temporarily within the Project footprint and would be completed consistent with local health and safety and environmental regulations. Areas impacted by

construction would be restored after construction is completed. These activities are outlined in Sections 2.4.3 and 2.5.2 in the Project Description. Therefore, construction would result in no impact.

Location of Project Features

This alternative would affect lands designated and zoned for residential, commercial, and agricultural uses, among others, as indicated in Tables 3.8-1 and 3.8-3. As such, these areas would be permanently converted for the purposes of flood prevention. The conversion of these lands for this purpose is consistent with local health and safety and environmental regulations and policies listed in Section 3.8.3. The impact is less than significant.

Operations and Maintenance

The maintenance of the NRCS Alternative would not conflict with existing policies and regulations. On the contrary, the flood protection provided by this plan would substantially reduce the number of acres of land subject to a 1-percent flooding event and, thus, the Project would be consistent with land use policies related to flood protection and public safety. The operations and maintenance of this alternative would be beneficial or no impact under CEQA .

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

Permanent conversion of zoned lands for flood prevention would result in a less-than-significant impact. .

3.8.5.4 Culvert/Channel Alternative

The Culver/Channel Alternative would be consistent with, but does not necessarily implement, all Santa Clara County General Plan policies regarding health and safety, San Martin Planning Area policies related to floodway development and protection, the City of Morgan Hill General Plan policies related to public health and safety, flooding and open space and conservation, and the City of Gilroy policies and regulations specific to flooding risks. Potential impacts under the Culvert/Channel Alternative would be similar to the NRCS Alternative. However, the amount of lands subject to land use change would be reduced under this alternative for areas along Reach 8 compared to the NRCS Alternative but greater than the Preferred Alternative, because there would be more land required for this alternative in Reach 8.

LAND-1 CC—Physically divide an established community

Impact Determination: no impact

Project Activity	Construction Impact Level	Location of Project Features	Operation/Maintenance Impact Level
All Project activities	NI	NI	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The Culvert/Channel Alternative would not divide established communities, as the Project generally follows existing creek beds (which already naturally divide communities), or will be underground and the factors that currently connect the communities, such as roads, sidewalks and bridges will not be permanently affected by construction under this alternative.

Location of Project Features

The Project footprint generally follows existing creek beds and this will not result in existing communities being disconnected.

Operations and Maintenance

Periodic maintenance and long-term operations of the flood control improvements would utilize the existing and proposed maintenance access roads and channel improvements, which follow existing creek features; therefore, the operations and maintenance of this alternative would not divide established communities in the vicinity of the study area.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

This alternative would not physically divide the established community; therefore, there is no impact.

LAND-2 CC—Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project adopted for the purpose of avoiding or mitigating an environmental effect

Impact Determination: less than significant

Project Activity	Construction Impact Level	Location of Project Features	Operation/Maintenance Impact Level
All Project activities	NI	LTS	NI
Operation and maintenance activities	N/A	N/A	B

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction-related activities would occur temporarily within the project footprint and would be completed consistent with local health and safety and environmental regulations. Areas impacted by construction would be restored after construction is completed. These activities are outlined in Sections 2.4.3 and 2.6.2 in the Project Description. Therefore, construction would result in no impact.

Location of Project Features

This alternative would affect lands designated and zoned for residential, commercial, and agricultural uses, among others, as indicated in Tables 3.8-1, and 3.8-3. As such, these areas would be permanently converted for the purposes of flood prevention. The conversion of these lands for this purpose is consistent with local health and safety and environmental regulations and policies listed in Section 3.8.3. The impact is less than significant.

Operations and Maintenance

The maintenance of the Culvert/Channel Alternative would not conflict with existing policies and regulations. On the contrary, the flood protection provided by this plan would substantially reduce the number of acres of land subject to a 1-percent flooding event and, thus, the Project would be consistent with land use policies related to flood protection and public safety. The operations and maintenance of this alternative would be beneficial.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

Permanent conversion of zoned lands for flood prevention would result in a less-than-significant impact.

3.8.5.5 Reach 6 Bypass Alternative

The Reach 6 Bypass Alternative is consistent with, but does not necessarily implement, all Santa Clara County General Plan policies regarding health and safety, San Martin Planning Area policies related to floodway development and protection, the City of Morgan Hill General Plan policies related to public health and safety, flooding and open space and conservation, and the City of Gilroy policies and regulations specific to flooding risks. Potential impacts under the Reach 6 Bypass Alternative would be similar as the Preferred Alternative. However, there will be no construction along Reaches 5 or 6 under this alternative; therefore, land use changes along these reaches would be reduced compared to other alternatives even when accounting for the lands that would need to be converted to build the Bypass from Reach 6 to Reach 14.

LAND-1 BY—Physically divide an established community

Impact Determination: no impact

Project Activity	Construction Impact Level	Location of Project Features	Operation/Maintenance Impact Level
All Project activities	NI	NI	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Similar to the Preferred Alternative, this alternative would not divide established communities, as the Project generally follows existing creek beds (which already naturally divide communities), or would be underground and the factors that currently connect the communities, such as roads, sidewalks, and bridges, would not be permanently affected by construction under this alternative.

Location of Project Features

The Project footprint generally follows existing creek beds and this would not result in existing communities being disconnected. In fact, the area impacted by this alternative is reduced, because construction is not necessary along Reaches 5 and 6. A short, high-flow bypass would be constructed between Reach 6 to Reach 14 under Highway 101; however, this Project element would not divide an established community.

Operations and Maintenance

Periodic maintenance and long-term operations of the flood protection modifications would utilize the existing and proposed maintenance access roads and channel improvements, which follow existing creek features; therefore, the operations and maintenance of this alternative would not divide established communities in the vicinity of the study area.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

This alternative would not physically divide the established community; therefore, there is no impact.

LAND-2 BY—Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project adopted for the purpose of avoiding or mitigating an environmental effect

Impact Determination: less than significant

Project Activity	Construction Impact Level	Location of Project Features	Operation/Maintenance Impact Level
All Project activities	NI	LTS	NI
Operation and maintenance activities	N/A	N/A	B

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction-related activities would occur temporarily within the Project footprint and would be completed consistent with local health and safety and environmental regulations. Areas impacted by construction would be restored after construction is completed. These activities are outlined in Sections 2.4.3 and 2.7.2 in the Project Description. Therefore, construction would result in no impact.

Location of Project Features

This alternative would affect lands designated and zoned for residential, commercial, and agricultural uses, among others, as indicated in Tables 3.8-1 and 3.8-3. As such, these areas would be permanently converted for the purposes of flood prevention. However, land use changes would not be necessary along Reaches 5 and 6, as Project construction along these reaches is not required under this alternative. Likely, the total conversion of lands would be less, as is shown in the table. The conversion of these lands for this purpose would be consistent with local health and safety and environmental regulations and policies listed in Section 3.8.3. The impact is less than significant.

Operations and Maintenance

The maintenance of the Reach 6 Bypass Alternative would not conflict with existing policies and regulations. On the contrary, the flood protection provided by this plan would substantially reduce the number of acres of land subject to a 1-percent flooding event and, thus, the Project would be consistent with land use policies related to flood protection and public safety. The operations and maintenance of this alternative would be beneficial.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

Permanent conversion of zoned lands for flood prevention would result in a beneficial impact or no impact under CEQA.

3.8.6 Summary of Impacts to Land Use and Planning

Table S-1 summarizes impact determinations related to land use and planning criteria used in this analysis. Although the action alternatives would require a conversion of land uses for the purposes of flood management, no significant impacts are identified and no mitigation is necessary. The least amount of land conversion would occur under the Reach 6 Bypass Alternative because of the tunnel in Reach 8 and the lack of improvements in Reaches 5 and 6 downstream of the bypass. A significant impact was identified under the No Project Alternative (LAND-2 NP); the impact relates to local policies regarding flood management.

3.9 Cultural Resources

3.9.1 Introduction

This section describes the existing regulatory and environmental conditions and the consequences of implementing the Project on cultural resources. Where impacts are identified, mitigation measures are proposed to reduce those impacts to less-than significant levels.

Cultural resources are defined as buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, or scientific importance. The California Office of Historic Preservation (OHP) defines a cultural resource as "*any physical evidence of human activities over 45 years old*…" (1995: 2).

"Cultural resources" also embodies the National Historic Preservation Act's (NHPA) "historic property" and the CEQA historic and unique archaeological resources (see Section 3.9.3.2, State, for definition of historic and archaeological resource).

The information presented below is drawn from the following report:

> Upper Llagas Creek Cultural Resources Inventory Report—Cardno ENTRIX Inc. February 2012, prepared for the Santa Clara Valley Water District.

3.9.2 Study Area

The study area for the cultural resources analysis encompasses about 13.1 miles (500 feet on center channel) along Llagas Creek, West Little Llagas Creek and the East Little Llagas Creek, a tributary of Llagas Creek. On the north, the physical limits of the Project area at the creek's intersection with Llagas Road on West Little Llagas Creek in Morgan Hill; and in the south, 1,000 feet downstream of Buena Vista Avenue in Gilroy. See Chapter 2, Description of Alternatives, for greater detail on the Project.

3.9.2.1 Environmental Setting

Prehistory

Scant archaeological work was conducted in the Santa Clara Valley until relatively recently. Past research tended to overlook interior areas in favor of coastal areas, such as Monterey Bay, where large shellmounds were relatively easily identified on the landscape. Archaeological research in the Monterey Bay is relevant to the prehistory of the Santa Clara Valley and is discussed in further detail below to provide context to understanding the prehistoric and environmental setting of the Project area.

Archaeological research in the vicinity of Monterey Bay dates back to 1875, when scientist, W.E. Saxe, tested the Sand Hill Bluff site, CA-SCR-7, just north of Santa Cruz (Saxe 1875). Early research was continued by Kroeber (1915), who recorded nine sites near Monterey Bay and by Golomshtok (1922), Hill (1929), and Wood (1930) all of whom conducted surveys near Elkhorn Slough. Following this early work, virtually no archaeological research was conducted in the area again until the late 1940s and 1950s. Research during this period is highlighted by the work of: Pilling (1948), who identified numerous archaeological sites in Monterey County and, specifically, Elkhorn Slough; Greengo (1951), who sampled shellmounds near Elkhorn Slough; and Broadbent (1951a, 1951b), who tested the Berwick Park site, CA-MNT-107.

Recent archaeological work in the Monterey Bay involved the development of regional chronologies and models of culture change for the Bay and its immediate environs. Significant contributions in this regard have been presented by: Breschini (1983); Breschini et al. (1983); Breschini and Haversat (1992); Cartier (1993); Dietz (1985); Dietz et al. (1988); Dietz and Jackson (1981); Hildebrandt and Mikkelsen (1993); Jones and Hylkema (1988); Jones (1993); Jones et al. (1992); Jones and Jones (1992); and Patch and

Jones (1984). Relatively recent archaeological investigations in the Santa Clara Valley have also generated models of regional chronology and culture change (cf., King and Hickman 1973b; Bergthold 1982; Elsasser 1986; and Hidlebrandt and Mikkelsen 1993).

The Paleo-Indian and Milling Stone periods are identified as local expressions of the Paleo-Coastal Tradition (Jones et al. 1996). The Early Period is best represented at CA-MNT-391, and is characterized by Class L Olivella beads (thick and rectangular), contracting stem Rossi Square-stemmed projectile points, mortars and pestles, and handstones and milling slabs (Cartier 1993). The Middle Period is represented at CA-SCR-9, and is characterized by Class G2 Olivella beads, Año Nuevo Long-stemmed and contracting stem Rossi Square-stemmed projectile points, mortars and pestles, and handstones and milling slabs (Hylkema 1991). The Late Period has been difficult to define in the Monterey Bay area. Sites CA-MNT-1485/H and -1486/H, however, represent this period and are characterized by Class E, K, and M Olivella beads, Desert Side-notched projectile points, bedrock mortars, and pestles (Breschini and Haversat 1992).

Hildebrandt and Mikkelsen (1993) investigated the relationship between coastal and inland sites in the southern Santa Clara Valley and present a settlement/subsistence model for the area. They suggest that Early Period (3,000 B.C.-500 B.C.) sites in the valley are characterized by hunting, minimal use of wetland resources, and exploitation of marine resources, which implies that regular trips were made to the coast; Middle Period (500 B.C.-A.D. 1150) sites in the valley highlight occupation of the area by less mobile populations and a reduction in the use marine resources from the coast; and Late Period (A.D. 1150-1769) sites in the valley that highlight a further reduction in the mobility of local populations, an abandonment of marine resources, and increased exploitation of lacustrine resources (e.g., waterfowl, turtles, fresh water mussel, and fish). This model suggests that the Santa Clara Valley was inhabited at an early date by populations that split time between the interior and the coast, and that these populations eventually abandoned use of the coast, concentrating on lacustrine resources in the valley.

Ethnography

At the time of Euroamerican contact (ca. 1769) Native American groups of the Costanoan language family occupied the area from San Francisco Bay to southern Monterey Bay and the lower Salinas River. The Costanoan language family consists of eight separate and distinct languages, and approximately 50 tribelets (Levy 1978). The Santa Clara Valley and surrounding area was primarily occupied by speakers of three different Costanoan languages: Awaswas speakers occupied northern Monterey Bay near Aptos; Mutsun speakers occupied the Pajaro River drainage; and Tamyen speakers occupied the south end of San Francisco Bay and the Santa Clara Valley. The tribelets of Matalan, Pitac, and Chitactac occupied the Santa Clara Valley and the area around the City of Morgan Hill (City of Morgan Hill General Plan EIR 2010a). Unfortunately, Costanoan culture was dramatically affected by missionization, and information (e.g., mission records and travelers logs) regarding its pre-contact organization is incomplete and inconsistent. In fact, Costanoan languages were probably extinct by 1935; and in 1971, the remaining Costanoan descendants united as a corporate entity identified as the Ohlone Indian Tribe (Levy 1978).

Costanoans lived in an area extending from San Francisco Bay to Monterey Bay. This large area was subdivided among several individual tribelets occupying specific territories. Each tribelet consisted of approximately 200 individuals, who were grouped into clans and moieties, usually controlled by a headman (Harrington 1933, 1942; Levy 1978). The position of headman was passed patrilineally, usually from father to son, with succession being subject to approval by the community. If no suitable male heir was available, a woman could also assume the role of headman. Tribelet political organization also included a council of elders, official speakers, and shamans (Levy 1978).

A wide variety of ecological zones, including foothills, valleys, sloughs, and coastal areas, were exploited by Costanoans to obtain subsistence resources. These resources included various seeds, nuts (e.g., acorn, buckeye, laurel, and hazelnuts), berries, grasses, corms, roots, insects, birds (e.g., geese, mallard,

and coot), fish (e.g., steelhead, salmon, and sturgeon), shellfish (e.g., abalone, mussel and clam), and both marine and terrestrial mammals (e.g., sea otter, sea lion, harbor seal, deer, elk, grizzly bear, rabbits, antelope, raccoon, and squirrels) (Levy 1978).

History

The conquistador Sebastian Vizcaino's landing at present day Monterey in 1602 is the earliest documented contact with Native Americans in the area. Following Vizcaino's landing, other Spanish ships may have stopped at Monterey, but contact was minimal until the initial overland exploration of the area by Spanish soldier Gaspar de Portolá in 1769 (Hoover et al. 1990). Portolá's expedition followed the coast, while subsequent exploration of the region by soldier and explorer Pedro Fages in 1770 and 1772, soldier Fernando Javier de Rivera in 1774, and soldier and statesman Juan Bautista de Anza in 1776 traveled on the east side of the Santa Cruz Mountains through the Santa Clara Valley, and along a route that became known as El Camino Real (Beck and Haase 1974).

The Mexican Period (ca. 1821-1848) in California is an outgrowth of the Mexican Revolution, and its accompanying social and political views affected the mission system. In 1833, the missions were secularized and their lands divided among the Californios as land grants called ranchos. These ranchos facilitated the growth of a semi-aristocratic group that controlled the larger ranchos. Owners of ranchos used local populations, including Native Americans, essentially as forced labor to accomplish work on their large tracts of land. Consequently, Costanoans, and other Native American groups across California, were forced into a marginalized existence as peons or vaqueros on the large ranchos. Ranchos in the general Project area include: San Francisco de las Llagas, de Laguna Seca, San Ysidro, Ojo de Agua de la Coche, and Las Animas (Beck and Haase 1974).

The latter half of the 19th century witnessed an ongoing and growing immigration of Euroamericans into the area, which was also accompanied by regional cultural and economic changes. Euroamerican culture expanded at the expense of Hispanic culture. Dispersed farmsteads slowly replaced the immense Mexican ranchos, and the farming of various crops slowly replaced cattle ranching as the primary economic activity in the region. The advent of the railroad in the area in the late 1800s, and the mechanization of farming with steam-driven machinery, once again, altered the economy of the region. For example, larger and larger tracts of land were opened for farming. Some of this land consisted of areas reclaimed from sloughs and lowlands, but corporations specializing in crops grown for export soon purchased many of these farms. These agricultural developments demanded a large labor force and sparked a new wave of immigration into the region. Groups of Chinese were the first new immigrants in the area and were followed by Japanese, Filipino, and Mexican laborers.

History of the Project Area-Morgan Hill and Surrounding Areas

The Spanish established settlements at San Jose and Monterey by the late 1700s. The road that connected these two settlements passed through the Santa Clara Valley and was identified as Monterey Road. The road is still identified today as Monterey Road in the City of Morgan Hill. The earliest settlements in the Santa Clara Valley were established along Monterey Road and included Madrone. Madrone was located in vicinity of the current intersection of Peebles Avenue and Monterey Road in Morgan Hill. The growth of Madrone, and the Santa Clara Valley in general, was accelerated by the construction of a railroad line between San Jose and Gilroy in 1868–1869 (City of Morgan Hill General Plan, EIR 2010a). The founding and growth of Morgan Hill typify the development of the area.

Rancho Ojo de Agua de la Coche, one of the original Mexican land grants in the area, was purchased by Martin Murphy, Sr. in 1835. In the 1880s, Murphy's granddaughter, Diana Murphy, married Hiram Morgan Hill, and the couple took up residence on the rancho. The rancho soon became known as Morgan Hill Ranch, and Hiram and Diana built a home, "Villa Mira Monte" on the ranch in 1884. Trains passing through Santa Clara Valley would stop at the ranch to let off visitors and soon a depot and town were

established near the Morgan Hill Ranch. The train stop was identified as Morgan Hill, and as a town grew around the depot, it retained the name of Morgan Hill.

The town of Morgan Hill expanded rapidly in the late 1800s and was incorporated as a city in 1906, with a population of approximately 600 (City of Morgan Hill General Plan, EIR 2010a). Development of the area peaked in the early 1900s and remained relatively stagnant until the 1970s–1980s when U.S. 101 was opened, linking the area to San Jose. At this time, there was a dramatic increase in the population and development of the City of Morgan Hill and the surrounding area. The population and economic development in the City of Morgan Hill and the surrounding area has continued to the present; and it is changing from agricultural area to a suburban residential area.

3.9.3 Regulatory Environment

The following federal, state, regional, and local requirements for the Project are described below.

3.9.3.1 Federal

Section 106 of the National Historic Preservation Act

Federal regulations for cultural resources are governed primarily by NHPA Section 106 of the NHPA of 1966, and as amended. Section 106 requires federal agencies to take into account the effects of their undertakings on historic properties and, if appropriate, afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on such undertakings. The council's implementing regulations, "Protection of Historic Properties" can be found in 36 Code of Federal Regulations (CFR) Part 800. The goal of the Section 106 review process is to offer a measure of protection to sites, which are determined eligible for listing or listed in the National Register of Historic Properties (NRHP). The criteria for determining NRHP eligibility are found in 36 CFR Part 60. Recent amendments to the NHPA (1986 and 1992), and subsequent revisions to the implementation regulations have strengthened the provisions for Native American consultation and participation in the Section 106 review process.

The criteria at 36 CFR Part 60.4 [a–d] for determining the significance and eligibility of prehistoric and historic sites for inclusion in the NRHP are listed as follows:

- The quality of significance in American history, architecture, archaeology, culture, and engineering is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:
  - that are associated with events that have made a significant contribution to the broad patterns of our history;
  - that are associated with the lives of persons significant in our past;
  - that embody the distinct characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
  - that have yielded, or may be likely to yield, information important in prehistory or history.

  The Section 106 process includes identifying cultural resources, determining any impacts to cultural resources, and determining the eligibility of cultural resources for inclusion in the NRHP. The Section 106 process also includes completing a Memorandum of Agreement (MOA), if any Project actions would have an adverse effect on cultural resources listed in or eligible for the NRHP (i.e., historic properties). The MOA would identify measures to resolve any adverse effects to historic properties.

American Indian Religious Freedom Act

The American Religious Freedom Act (42 USC §1996) states that *"it will be the policy of the United States to protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise the traditional religions of the American Indian, Eskimo, Aleut, and Native Hawaiians, including but not limited to access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites*".

Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act 25 USC §3001 presents a systematic process for determining the rights of lineal descendants and Indian tribes and Native Hawaiian organizations to certain Native American human remains, funerary objects, sacred objects, or objects of cultural patrimony with which they are affiliated.

Archeological and Historic Preservation Act of 1974

If a project will affect historic properties that have archeological value, the Archeological and Historic Preservation Act may impose additional requirements on an agency.

Executive Order (EO) 11593 (1971), Protection and Enhancement of the Cultural Environment

Under EO 11593, the federal government will provide leadership in preserving, restoring, and maintaining the Nation's historic and cultural environment. This EO addresses the NRHP and provides guidance to those involved with federal properties that should be inventoried and nominated for listing on the NRHP.

Executive Order 13007

Pursuant to EO 13007, agencies must consider the effects of their actions on the physical integrity of sacred sites, and access to and ceremonial use of such sites, by Indian religious practitioners.

Executive Order 13084

Pursuant to EO 13084, the United States has a unique legal relationship with Indian tribal governments, as set forth in the U.S. Constitution, treaties, statutes, EOs, and court decisions. Since the formation of the Union, the United States has recognized Indian tribes as domestic dependent nations under its protection. In treaties, our Nation has guaranteed the right of Indian tribes to self-government. As domestic dependent nations, Indian tribes exercise inherent sovereign powers over their members and territory. The United States continues to work with Indian tribes on a government-to-government basis to address issues concerning Indian tribal self-government, trust resources, and Indian tribal treaty and other rights.

3.9.3.2 State

California Environmental Quality Act (CEQA)

Under CEQA, public agencies must consider the effects of their actions on both "historical resources" and "unique archaeological resources." As stated in PRC Section 21084.1, a *"project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment." PRC Section 21083.2 requires agencies to determine whether proposed projects would have effects on "unique archaeological resources."*

"Historical resource" is a term with a defined statutory meaning (PRC Section 21084.1 and California Code of Regulations [CCR] Section 15064.5 [a]). The term embraces any resource listed in or determined to be eligible for listing in the California Register of Historical Resources (CRHR). The CRHR includes

resources listed in or formally determined eligible for listing in the NRHP, as well as some California State Landmarks and Points of Historical Interest.

Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts) or that have been identified in a local historical resources inventory may be eligible for listing in the CRHR and are presumed to be "historical resources" for purposes of CEQA (PRC Section 5024.1 and CCR, Title 14, Section 4850). Unless a resource listed in a survey has been demolished, lost substantial integrity, or a preponderance of evidence indicates that it is otherwise not eligible for listing, a lead agency should consider the resource to be potentially eligible for the CRHR.

In addition to assessing whether historical resources potentially impacted by a proposed project are listed or have been identified in a survey process (PRC 5024.1 [g]), lead agencies have a responsibility to evaluate them against the CRHR criteria prior to making a finding as to a proposed project's impacts to historical resources (PRC Section 21084.1 and CCR Section 15064.5 [a][3]). Following CCR Section 15064.5 (a) a historical resource is defined as any object, building, structure, site, area, place, record, or manuscript that:

- Is historically or archeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political or cultural annals of California; and
- Meets any of the following criteria:
  - Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
  - Is associated with the lives of persons important in our past;
  - Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
  - Has yielded, or may be likely to yield, information important in prehistory or history.

PRC 5024 also requires consultation with the OHP when a project may impact historical resources located on state-owned land.

For historic structures, CCR Section 15064.5 (b)(3) states that a project that follows the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings, or the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (1995) will mitigate impacts to a less-than-significant level. Potential eligibility also rests upon the integrity of the resource. Integrity is defined as the retention of the resource's physical identity that existed during its period of significance. Integrity is determined through considering the setting, design, workmanship, materials, location, feeling, and association of the resource.

As noted above, CEQA also requires lead agencies to consider whether projects will impact "unique archaeological resources". PRC Section 21083.2 (g) states that a "unique archaeological resource" means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, a high probability exists that it meets any of the following criteria:

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

Treatment options under PRC Section 21083.2 include activities that preserve such resources in place in an undisturbed state. Other acceptable methods of mitigation under PRC Section 21083.2 include excavation and curation or study in place without excavation and curation (if the study finds that the artifacts would not meet one or more of the criteria for defining a "unique archaeological resource").

Advice on procedures to identify cultural resources, evaluate their importance, and estimate potential effects is given in several agency publications, such as the series produced by the Governor's Office of Planning and Research. The technical advice series produced by this office strongly recommends that Native American concerns and the concerns of other interested persons and corporate entities, including, but not limited to, museums, historical commissions, associations and societies, be solicited as part of the process of cultural resources inventory. In addition, California law protects Native American burials, skeletal remains, and associated grave goods regardless of their antiquity and provides for the sensitive treatment and disposition of those remains.

California Health and Safety Code Section 7050.5(b) specify protocols when human remains are discovered as follows:

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

CCR Section 15064.5 (e) requires that excavation activities be stopped whenever human remains are uncovered and that the County Coroner be called in to assess the remains. If the County Coroner determines that the remains are those of Native Americans, the Native American Heritage Commission (NAHC) must be contacted within 24 hours. At that time, the lead agency must consult with the appropriate Native Americans, if any, as timely identified by the NAHC. PRC Section 15064.5 directs the lead agency (or applicant), under certain circumstances, to develop an agreement with the Native Americans for the treatment and disposition of the remains.

In addition to the mitigation provisions pertaining to accidental discovery of human remains, the PRC also requires a lead agency to make provisions for the accidental discovery of historical or archaeological resources. Pursuant to PRC Section 15064.5 (f), these provisions should include "*an immediate evaluation of the find by a qualified archaeologist. If the find is determined to be an historical or unique archaeological resource, contingency funding and a time allotment sufficient to allow for implementation of avoidance measures or appropriate mitigation should be available. Work could continue on other parts of the building site while historical or unique archaeological resource mitigation takes place*". PRC 5024 requires consultation with the OHP when a project may impact historical resources located on state-owned land.

Paleontological resources are classified as nonrenewable scientific resources and are protected by state statute (PRC Chapter 1.7, Section 5097.5, Archeological, Paleontological, and Historical Sites and Appendix G). No state or local agencies have specific jurisdiction over paleontological resources. No state or local agency requires a paleontological collecting permit to allow for the recovery of fossil remains discovered as a result of construction-related earth moving on state or private land in a project site.

3.9.3.3 Local

Santa Clara County General Plan

The Santa Clara General Plan, 1995–2010 (1994) presents goals, policies, and actions for the identification and protection of heritage resources in Part 2, Books A and B, of the Plan. The approach is broken down into the following strategies and policies designed to implement those strategies:

Book A

- *C-RC 49.* Cultural heritage resources within Santa Clara County should be preserved, restored wherever possible, and commemorated as appropriate for their scientific, cultural, historic, and place values.
- *C-RC 50.* Countywide, the general approach to heritage resources protection should include the following strategies:
  - Inventory and evaluate heritage resources.
  - Prevent or minimize adverse impacts on heritage resources.
  - Restore, enhance, and commemorate resources as appropriate.
- *C-RC 51.* Inventories of heritage resources should be maintained as the basis for local decision making regarding such resources.

Implementation Recommendations

- *C-RC(i)24.* Update inventories and evaluations of heritage resources. Resources would be surveyed as necessary to augment existing inventories.
- *C-RC 52.* Prevention of unnecessary losses to heritage resources should be ensured as much as possible through adequate ordinances, regulations, and standard review procedures. Mitigation efforts, such as relocation of the resource, should be employed where feasible when projects will have significant adverse impact upon heritage resources.
- *C-RC 53.* Cities should balance plans for urban redevelopment with the objectives of heritage resource preservation in such cases where potential conflicting interest may arise. Care should be taken to integrate heritage resources with new development wherever possible.
- *C-RC(i) 25.* Review administrative procedures and enforcement for effectiveness.
- *C-RC(i) 26.* Explore designation of historic districts to preserve character of area rich in heritage resources.
- *C-RC 54.* Heritage resources should be restored, enhanced, and commemorated as appropriate to the value and significance of the resource.
- *C-RC 55.* Public awareness and appreciation of existing heritage resources and their significance should be enhanced through community organizations, neighborhood associations, the educational systems, and government programs.
- *C-RC 56.* Heritage resource acquisition, preservation, restoration, and interpretation projects eligible for funding with County Parks Charter Funds are identified in the “Santa Clara County Heritage Resources Inventory” adopted by the Board of Supervisors.
- *C-RC(i) 27.* Publicize financial resources from Intermodal Surface Transportation Efficiency Act (ISTEA) and federal income tax credits for restoration of designated resources.
- *C-RC(i) 28.* Publish inventories of heritage resources.

- *C-RC(i) 29.* Organize community organizations and constituencies for heritage resource preservation.

Book B

- *R-RC 81.* Heritage resources within the rural unincorporated areas of Santa Clara County should be preserved, restored wherever possible, and commemorated as appropriate for their scientific, cultural, historic, and place values.
- *R-RC 82.* The following strategies should provide overall direction to efforts to preserve heritage resources.
  - Inventory and evaluate heritage resources.
  - Prevent or minimize adverse impacts on heritage resources.
  - Restore, enhance, and commemorate resources as appropriate.
- *R-RC 83.* The county's Heritage Resources data base shall be maintained and used to review private development projects and guide the design of public projects.
- *R-RC 84.* Heritage resource acquisition, preservation, restoration, and interpretation projects eligible for funding with County Parks Charter Funds are identified in the "Santa Clara County Heritage Resources Inventory" adopted by the Board of Supervisors.

Implementation Recommendations

- *R-RC(i) 32.* Update the listings of heritage trees in the Heritage resources Inventory.
- *R-RC 85.* No heritage resource shall knowingly be allowed to be destroyed or lost through a discretionary action (zoning, subdivision site approval, grading permit, building permit, etc.) of the County of Santa Clara unless:
  - The site or resource has been reviewed by experts and the County Historic Heritage Commission and has been found to be of insignificant value; or
  - There is an overriding public benefit from the project and compensating mitigation to offset, and the loss is made part of the project.
- *R-RC 86.* Projects in areas found to have heritage resources shall be conditioned and designed to avoid loss or degradation of the resources. Where conflict with the resource is unavoidable, mitigation measures that offset the impact may be imposed.
- *R-RC 87.* Land divisions in areas with heritage resources shall be encouraged to cluster building sites in locations which will minimize the impacts to heritage resources.
- *R-RC 88.* For projects receiving environmental assessment, expert opinions and field reconnaissance may be required if needed at the applicant's expense to determine the presence, extent, and condition of suspected heritage resources and the likely impact of the project upon the resources.
- *R-RC 89.* Demolition permits proposed for designated heritage resources shall be referred to the Historic Heritage Commission for review and recommendation to the Board of Supervisors.
- *R-RC 90.* Heritage and old growth trees, particularly redwoods, should not be cut, except in instances where public safety is jeopardized.
- *R-RC 91.* The application of historic district zoning to areas containing historic structures shall be encouraged.

- *R-RC 92.* The participation of concerned citizens and professionals dealing with heritage resources in the identification of sites and the review and conditioning of projects by its boards and commissions shall be encouraged by the county.
- *R-RC 93.* Heritage resources should be restored, enhanced and commemorated as appropriate to the value and significance of the resource. All historic rehabilitation activities should comply with the Secretary of Interior's Standards for Rehabilitation.
- *R-RC 94.* Public awareness and appreciation of existing heritage resources and their significance should be enhanced through community organizations, neighborhood associations, the educational system, and government programs.
- *R-RC(i) 33.* Utilize all financial resources available, including those from federal ISTEA and income tax credits for rehabilitation of designated resources.
- *R-RC(i) 34.* Encourage and support efforts by local historians, educational institutions and others interested in recording oral histories and documenting lives of the people of Santa Clara County who also make up an important but often overlooked part of the county's heritage.

City of Morgan Hill General Plan

The City of Morgan Hill has set for the following policies and accompanying actions for the protection of historic resources:

- *Policy 8a.* Encourage the preservation and rehabilitation of the city's historic structures.
- *Action 8.1.* Review and update the inventory of historic resources, as appropriate.
- *Action 8.2.* Identify and protect heritage resources from loss and destruction (SCJAP 15.09).
- *Action 8.3.* Prior to approving demolition of historically significant buildings, evaluate alternatives, including structural preservation, relocation or other mitigation, and demonstrate that financing has been secured for replacement use.
- *Action 8.4.* Designate historically significant structures or sites as cultural resources, and offer said properties rehabilitation loans or grants.

3.9.4 Impact Analysis

3.9.4.1 Significance Criteria

Following 36 CFR Part 800.16(i), CCR Section 15064.5, PRC Sections 21083.2 and 21084.1, and CEQA Guidelines Appendix G, cultural resource impacts are considered to be significant if implementation of a project would result in any of the following:

- Cause a substantial adverse change in the significance of an archaeological resource or an historical resource as defined in 36 CFR Part 800.16(i);
- Cause a substantial adverse change in the significance of an archaeological resource or an historical resource as defined in PRC Section 21083.2 and CCR 15064.5, respectively;
- Directly or indirectly destroy a unique paleontological resource or site or unique geological feature; or
- Disturb any human remains, including those interred outside of formal cemeteries.

36 CFR Part 800.16(i) define effect as "*alteration to the characteristics of a historic property qualifying it for inclusion or eligibility for the National Register*". CCR Section 15064.5 (b) defines "*substantial adverse*

change" as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource is materially impaired.

In addition to significance criteria under CEQA above, a project would have a significant impact if it were to:

> Cause a substantial adverse change in the significance of a historical resource as defined in §Section 15064.5

3.9.4.2 Approach to Analysis

Cultural Resources in the Project APE (Area of Potential Effect)

Cardno ENTRIX conducted a records search and intuitive pedestrian survey of the Project to identify cultural resources for the Project (Cardno ENTRIX 2012). The survey was performed by an archaeologist and an architectural historian. Areas not inventoried as part of this effort included two staging areas that were inaccessible at the time of the fieldwork, one staging area which was only partially accessible, and areas previously surveyed as part of earlier projects in the Llagas Creek watershed. The investigations resulted in the identification of four previously identified prehistoric archaeological resources, which were identified during the records search: three located in Reach 4 and one located in Reach 14. Cardno ENTRIX was not able to relocate artifacts or other indications of human use or habitation at the four previously recorded prehistoric sites. DPR 523A Series form Continuation Sheet updates were completed for all four sites indicating observations made and areas visited during the relocation effort. Additionally, a bridge, constructed in 1925, resides in Reach 6 where Llagas Avenue crosses Llagas Creek. Bridge 37C0550 was found not eligible for the NRHP or the CRHR and is not listed as a historic or heritage resource under the City of Morgan Hill and Santa Clara County's General Plans.

Paleontological Resources

Paleontology is defined as the science dealing with the life of past geological periods as known from fossil remains. Paleontological resources include fossil remains, as well as fossil localities and formations that have produced fossil material. Such locations and specimens are important nonrenewable resources. CEQA offers protection for these sensitive resources and requires that they be addressed during the EIR process.

A search of the University of California Museum of Paleontology collections database did not identify any paleontological resources within the Project APE. The database search did identify paleontological resources in Santa Clara County, which indicates that the area may be sensitive for the presence of paleontological resources.

3.9.5 Impacts and Mitigation Measures

All of the action alternatives provide flood management for a 1-percent flood in Morgan Hill (Reaches 8, 7A, and 7B), 10-percent flood management for the semi-urban area around East Little Llagas Creek (Reach 14), and avoid induced flooding elsewhere on Llagas Creek (Reaches 6, 5, and 4) due to upstream modifications.

Most of the differences between all of the action alternatives are focused on the Project alignment for flood routing and the type of flood management features used in Reach 8. All of the action alternatives depend on a newly constructed 1.25 mile long channel segment in Reach 7A that would bypass flow from West Little Llagas Creek at Watsonville Road to Llagas Creek just downstream from Lake Silveira. Most of the flood management features that would be implemented in Reaches 7A, 7B, 4, 5, 6, and 14 are the same in each of the alternatives, except for Reach 5 and Reach 6 of the Reach 6 Bypass Alternative, which would not require any channel widening, deepening, or any other capacity improvements listed below. The common flood management features to all of the action alternatives include:

- Widening (generally by constructing against one bank where possible) and deepening the channel in all reaches;
- Construct sinuous low-flow channel, with benches at bankfull elevation (all except Reach 8);
- Permanent access roads at top of both banks in all reaches (except for most of Reach 8);
- Aquatic habitat enhancements Reaches 4, 5, and 6 (except in Reaches 5 and 6 in the Reach 6 Bypass Alternative);
- Grade control structures constructed of natural boulders, all reaches;
- Culvertize two tributary drainages in Reach 6 and 3 drainages in Reach 14 for maintenance access;
- 1.25 mile-long bypass channel on West Little Llagas Creek, Reach 7A;
- Exhume buried bridge crossings in Reach 7A at Watsonville Road and West Middle Avenue; and
- Replacing and/or modifying culverts at four road crossing locations in Reach 7B.

In addition to the common flood conveyance features listed above, all of the action alternatives would require the same type and extent of vegetation, sediment, and streambank maintenance activities, as well as maintenance of other features, such as roads, culverts, and grade-control structures.

3.9.5.1 No Project Alternative

CU-1 NP—Potential for impacts to unidentified cultural and paleontological resources caused by ground disturbing activities

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All ground-disturbing activities in all Project reaches	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The No Project Alternative would have no construction and, therefore, construction related impacts on cultural resources within the Project APE are not applicable.

Operations and Maintenance

The No Project Alternative would have no impacts on cultural resources within the Project APE. However, continued flooding and degradation of the creek could expose previously unidentified cultural resources. Existing maintenance practices include standard BMPs for the discovery of previously unknown cultural resources.

Best Management Practices (BMPs)

- **CU-1:** Stop Work and Report Archeological Finds: (This BMP would also pertain to paleontological resources).
- **CU-2:** Stop Work and Report Burial Finds.

CU-2 NP—Construction impacts to known cultural resources

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All ground-disturbing activities in all Project reaches	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The No Project Alternative would have no construction and, therefore, no impacts on known cultural resources within the Project APE.

Operations and Maintenance

There are no known cultural resources in areas that are currently maintained by the SCVWD for operations and maintenance activities. The No Project Alternative would have no impacts on known cultural resources within the Project APE; however, there is the potential to impact previously unidentified cultural resources in these areas during additional flooding, which may occur in the future under this alterative. Although flooding may occur, no cultural resources were observed on or near the banks of the creek. Therefore, any effect of flooding could result a less-than-significant impact to cultural resources known in the vicinity.

Best Management Practices (BMPs)

None applicable

3.9.5.2 Tunnel Alternative (Preferred Alternative)

The Preferred Alternative in Reach 8 would include construction of a tunnel an area with no known cultural resources. Operations and maintenance under the Preferred Alternative in Reach 8 would include a sediment detention basin that would require periodic sediment cleanout. In addition, road maintenance would need to occur along the access route, providing ingress and egress to the sediment detention basin.

CU-1 T—Potential for impacts to unidentified cultural and paleontological resources caused by ground disturbing activities

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All ground-disturbing activities in all Project reaches	LTS	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Any ground disturbing activities associated with the Project have the potential to impact archeological resources, paleontological resources, and human remains. A cultural resources inventory of the entire Project APE has not been completed. Known cultural resource sites in the portions of the Project APE inventoried are presented in Table 3.9-1.

Table 3.9-1 Cultural Resources within the Project APE

Site Number	Site Type	Reach	NRHP/CRHR Eligibility
CA-SCL-400	Prehistoric-Lithic scatter, fire cracked rock	4	Not Determined
CA-SCL-401	Prehistoric-Lithic scatter, fire cracked rock	4	Not Determined
CA-SCL-403	Prehistoric-Lithic scatter, fire cracked rock	4	Not Determined
CA-SCL-452	Prehistoric-Habitation, possible midden soil, multiple artifact classes	14	Not Determined
Llagas Creek Bridge (Bridge 37C0550)	Historic-Transportation/Bridge	6	Category 4 Bridge (Bridge 37C0550) determined ineligible for the NRHP through the Historic Bridges Inventory; Not eligible for the CRHR

Construction

Construction of access roads, diversion channels, and utilities relocation for flood management could impact undiscovered cultural or paleontological resources or human remains. The SCVWD implements standard BMPs in the event that resources are uncovered during construction, which ensures that the Project would not result in a significant impact to cultural resources. Flood management would be beneficial to the preservation of unknown cultural resources by preventing future erosion.

Operations and Maintenance

Operations and maintenance activities common to all alternatives and specific to the Preferred Alternative are outlined in Chapter 2, Sections 2.4.5 and 2.6.5, respectively. Activities involving ground disturbance of native soils carry the highest potential for encountering unidentified cultural resources. Operation and maintenance activities that could result in ground disturbance include sediment removal and bank repair; however, neither of these activities generally occur in native soil. Following standard BMPs for the discovery of unknown cultural resource would reduce the potential for impact to a less-than-significant level.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that would reduce potential Project impacts.

- **CU-1:** Stop Work and Report Archeological Finds: (This BMP would also pertain to paleontological resources).
- **CU-2:** Stop Work and Report Burial Finds.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

CU-2 T—Construction impacts to known cultural resources

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All ground-disturbing activities in all Project reaches	LTSM	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction activities near known cultural resources could result in an unintentional damage to these resources if not adequately protected, which is a potentially significant impact. Mitigation Measure CU-2 T requires that known resources be marked in the field and an archaeologist be on site during activities adjacent to these resources. Implementation of this measure would reduce the potential impact to a less than significant level.

Operations and Maintenance

Operation and maintenance activities common to all alternatives and specific to the Preferred Alternative are outlined in Chapter 2, Sections 2.4.5 and 2.6.5, respectively. Operation and maintenance activities that could result in ground disturbance include sediment removal and bank repair; however, neither of these activities generally occur in native soil. Maintenance activities that may occur near known cultural resources would be required to comply with Mitigation Measure CU-2 T to reduce potential impacts to a less-than-significant level.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure CU-2 T: Avoid Known Cultural Resources during Implementation. A qualified archeologist will mark site boundaries of known cultural resources prior to the start of construction to avoid these resources. A qualified archaeologist shall be on call through the duration of the Project and shall be on site during activities occurring within 100 feet of known cultural resources. The archaeologist shall have the authority to stop work if Project construction impacts cultural resources.

Implementation of Mitigation Measure CU-2 T would reduce impacts on known archeological resources to less than significant.

3.9.5.3 Natural Resources Conservation Service (NRCS) Alternative

This alternative would widen and deepen the creek along Reach 8, resulting in increased possibility for encounters with unanticipated cultural resources.

CU-1 NRCS—Potential for impacts to unidentified cultural and paleontological resources caused by ground disturbing activities

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All ground-disturbing activities in all Project reaches	LTS	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Any ground disturbing activities associated with the Project have the potential to impact archeological resources, paleontological resources, and human remains. A cultural resources inventory of the entire Project APE has not been completed. Known cultural resource sites in the Project APE are presented in Table 3.9-1 under CU-1 T.

Construction

Construction of access roads, diversion channels, and utilities relocation for flood management could impact undiscovered cultural or paleontological resources or human remains. The SCVWD implements standard BMPs in the event that resources are uncovered during construction, which ensures that the Project would not result in a significant impact to cultural resources. Flood management would be beneficial to the preservation of unknown cultural resources by preventing future erosion.

Operations and Maintenance

Operation and maintenance activities common to all alternatives and specific to the NRCS Alternative are outlined in Chapter 2, Sections 2.4.5 and 2.5.5, respectively. Activities involving ground disturbance of native soils carry the highest potential for encountering unidentified cultural resources. Operation and maintenance activities that could result in ground disturbance include sediment removal and bank repair; however, neither of these activities generally occur in native soils. Following standard BMPs for the discovery of unknown cultural resource would reduce the potential for impact to a less-than-significant level.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that would reduce potential Project impacts.

- **CU-1:** Stop Work and Report Archeological Finds: (This BMP would also pertain to paleontological resources).
- **CU-2:** Stop Work and Report Burial Finds.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts caused by ground disturbing activities to less than significant.

CU-2 NRCS—Construction impacts to known cultural resources

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All ground-disturbing activities in all Project reaches	LTSM	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction activities near known cultural resources could result in an unintentional damage to these resources if not adequately protected, which is a potentially significant impact. Mitigation Measure CU-2 T requires that known resources be marked in the field and an archaeologist be on site during activities adjacent to these resources. Implementation of this measure would reduce the potential impact to a less-than-significant level.

Operations and Maintenance

Operation and maintenance activities common to all alternatives and specific to the NRCS Alternative are outlined in Chapter 2, Sections 2.4.5 and 2.5.5, respectively. Operation and maintenance activities that could result in ground disturbance include sediment removal and bank repair; however, neither of these activities generally occur in native soil. Maintenance activities that may occur near known cultural resources would be required to comply with Mitigation Measure CU-2 T to reduce potential impacts to a less-than-significant level.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure CU-2 T: Avoid Known Cultural Resources during Implementation.

Implementation of Mitigation Measure CU-2 T would reduce impacts on known archeological resources to less than significant.

3.9.5.4 Culvert/Channel Alternative

This alternative would require a smaller ROW in Reach 8, reducing the amount of vegetation to be removed along the existing West Little Llagas channel and would allow easier maintenance access, relative to the Preferred Alternative. Impact determinations for CU-1 and CU-2 are the same as for the Preferred Alternative.

CU-1 CC—Potential for impacts to unidentified cultural resources caused by ground disturbing activities

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All ground-disturbing activities in all Project reaches	LTS	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Any ground disturbing activities associated with the Project have the potential to impact archeological resources, paleontological resources, and human remains. A cultural resources inventory of the entire Project APE has not been completed. Known cultural resource sites in the Project APE are presented in Table 3.9-1.

Construction

Construction of access roads, diversion channels, and utilities relocation for flood management could impact undiscovered cultural or paleontological resources or human remains. The SCVWD implements standard BMPs in the event that resources are uncovered during construction, which ensures that the Project would not result in a significant impact to cultural resources. Flood management would be beneficial to the preservation of unknown cultural resources by preventing future erosion.

Operations and Maintenance

Operation and maintenance activities common to all alternatives and specific to the Culver/Channel Alternative are outlined in Chapter 2, Sections 2.4.5 and 2.7.5, respectively. Activities involving ground disturbance of native soils carry the highest potential for encountering unidentified cultural resources. Operation and maintenance activities that could result in ground disturbance include sediment removal and bank repair; however, neither of these activities generally occur in native soil. Following standard BMPs for the discovery of unknown cultural resource would reduce the potential for impact to a less-than-significant level.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that would reduce impacts to a less-than-significant level. No mitigation is required for impacts related to unidentified cultural resources caused by ground disturbing activities under the NRCS Alternative.

- **CU-1:** Stop Work and Report Archeological Finds: (This BMP would also pertain to paleontological resources).
- **CU-2:** Stop Work and Report Burial Finds.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts caused by ground disturbing activities to less than significant.

CU-2 CC—Construction impacts to known cultural resources

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All ground-disturbing activities in all Project reaches	LTSM	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction activities near known cultural resources could result in an unintentional damage to these resources if not adequately protected, which is a potentially significant impact. Mitigation Measure CU-2 T requires that known resources be marked in the field and an archaeologist be present on site during activities adjacent to these resources. Implementation of this measure will reduce the potential impact to a less-than-significant level.

Operations and Maintenance

Operation and maintenance activities common to all alternatives and specific to the Culvert/Channel Alternative are outlined in Chapter 2, Sections 2.4.5 and 2.7.5, respectively. Operation and maintenance activities that could result in ground disturbance include sediment removal and bank repair; however, neither of these activities generally occur in native soil. Maintenance activities that may occur near known cultural resources would be required to comply with Mitigation Measure CU-2 T to reduce potential impacts to a less-than-significant level.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure CU-2 T: Avoid Known Cultural Resources during Implementation.

Implementation of this measure would reduce the potential impact to a less-than-significant level.

3.9.5.5 Reach 6 Bypass Alternative

The Reach 6 Bypass Alternative would construct a high-flow bypass channel between Reach 6 of Llagas Creek and Reach 14 of East Little Llagas Creek. The bypass would be designed so that no flood capacity improvements would be needed along Reach 5 or Reach 6 of Llagas Creek downstream of the proposed bypass. Flood conveyance improvements for the upstream Project Reaches 8, 7A, and 7B, and for the downstream Reach 4 would remain the same as that described for the Preferred Alternative. Operations and maintenance would be nearly the same as described for the Preferred Alternative, with the exception of maintenance for the bypass channel hydraulic control structure in Reach 6.

CU-1 BY—Potential for impacts to unidentified cultural and paleontological resources caused by ground disturbing activities

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All ground-disturbing activities in all Project reaches	LTS	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Any ground disturbing activities associated with the Project have the potential to impact archeological resources, paleontological resources, and human remains. A cultural resources inventory of the entire Project APE has not been completed. Known cultural resource sites in the Project APE are presented in Table 3.9-1, above.

Construction

Construction of access roads, diversion channels, and utilities relocation for flood management could impact undiscovered cultural or paleontological resources or human remains. The SCVWD implements standard BMPs in the event that resources are uncovered during construction, which ensures that the Project would not result in a significant impact to these resources. Flood management would be beneficial to the preservation of unknown cultural resources by preventing future erosion.

Operations and Maintenance

Operation and maintenance activities common to all alternatives and specific to the Reach 6 Bypass Alternative are outlined in Chapter 2, Sections 2.4.5 and 2.8.5, respectively. Activities involving ground disturbance of native soils carry the highest potential for encountering unidentified cultural resources. Operation and maintenance activities that could result in ground disturbance include sediment removal and bank repair; however, neither of these activities generally occur in native soil. Following standard BMPs for the discovery of unknown cultural resource would reduce the potential for impact to a less-than-significant level.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that would reduce potential Project impacts.

- **CU-1:** Stop Work and Report Archeological Finds: (This BMP would also pertain to paleontological resources).
- **CU-2:** Stop Work and Report Burial Finds.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts caused by ground disturbing activities to less than significant.

CU-2 BY—Construction impacts to known cultural resources

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All ground-disturbing activities in all Project reaches	LTSM	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction activities near known cultural resources could result in an unintentional damage to these resources if not adequately protected, which is a potentially significant impact. Mitigation Measure CU-2 T requires that known resources be marked in the field and an archaeologist be on site during activities adjacent to these resources. Implementation of this measure would reduce the potential impact to a less-than-significant level.

Operations and Maintenance

Operation and maintenance activities common to all alternatives and specific to the Reach 6 Bypass Alternative are outlined in Chapter 2, Sections 2.4.5 and 2.8.5, respectively. Operation and maintenance activities that could result in ground disturbance including sediment removal and bank repair; however, neither of these activities generally occur in native soil. Maintenance activities that may occur near known cultural resources would be required to comply with Mitigation Measure CU-2 T to reduce potential impacts to a less-than-significant level.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure CU-2 T: Avoid Known Cultural Resources during Implementation.

Implementation of Mitigation Measure CU-2 T would reduce impacts on known archeological resources to less than significant.

3.9.6 Summary of Impacts to Cultural Resources

All impacts to cultural resources can be reduced to less than significant by implementing Mitigation Measure CU-2 T and the BMPs. The Preferred Alternative and Reach 6 Bypass Alternative have less ground disturbance in Reach 8, thus are less likely to impact unknown cultural resources in that area of the Proposed Project compared to the NRCS and Culvert/Channel alternatives.

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3.10 Traffic and Circulation

3.10.1 Introduction

This section presents an analysis of transportation conditions on roads, transit routes, and bicycle and pedestrian facilities in the Project area that would be modified by the Project or used by construction traffic. The analysis of traffic conditions is focused primarily on construction-related effects, such as road closures, detours, deterioration of road conditions related to construction and hauling, and interruptions in transit service. Operations and maintenance related traffic effects after construction is completed are also discussed and addressed.

3.10.2 Study Area

The Preferred Alternative and other action alternatives (Project) are located in southern Santa Clara County, approximately 25 miles southeast of San Jose, in the communities of Morgan Hill, San Martin, and Gilroy. The Project consists of the upper seven reaches (4, 5, 6, 7A, 7B, 8, and 14) of Llagas Creek, East Little Llagas Creek, and West Little Llagas Creek above Buena Vista Avenue (see Figures 2.1-1 through 2.1-8).

The total length of the Project area, which includes all action alternatives, is approximately 13.1 miles; 6.1 miles of which are along the main branch of Llagas Creek, 3.3 miles along West Little Llagas Creek; and 2.4 miles along a tributary of Llagas Creek, known as East Little Llagas Creek. An additional 1.3 miles of new bypass channel would also be constructed along West Little Llagas Creek to Llagas Creek. To the north, the physical limits of the Project are at the intersection of Llagas Creek Drive and Llagas Road on West Little Llagas Creek in Morgan Hill, and the southern limit is 1,000 feet downstream of Buena Vista Avenue in Gilroy.

3.10.2.1 Environmental Setting

Roadways

The following major roadways are potentially affected by construction or construction traffic related to all Project alternatives, which are described by reach from south to north. The major preferred haul routes during construction of the Project are depicted in Figure 3.10-1.

All Reaches

> U.S. 101 runs generally parallel to the Project through all the reaches and crosses Reach 5. It is the major north-south freeway through the Project area. On- and off-ramps for U.S. 101 are located at E. Dunne Avenue, Tennant Avenue, San Martin Avenue, and Masten Avenue. U.S. 101 has three lanes in each direction in the Project area and widens to four lanes in each direction north of Cochrane Road in Morgan Hill.

> Cochrane Road is located north of the Project area and will be a primary haul route for excavated soils from most reaches. It runs generally south to north from Monterey Road under U.S. 101 and then bends east-west to Anderson Dam. Cochrane Road is a four-lane road that runs under U.S. 101 and then turns into a two-lane road at the intersection of Mission View Drive.

Reach 4

> Masten Avenue intersects Reach 4 and is a two-lane rural roadway with unpaved shoulders. It extends between Monterey Road and Center Avenue in unincorporated Santa Clara County. The speed limit is 45 miles per hour (mph), and adjacent land uses are agricultural. Masten Avenue provides access onto U.S. 101.

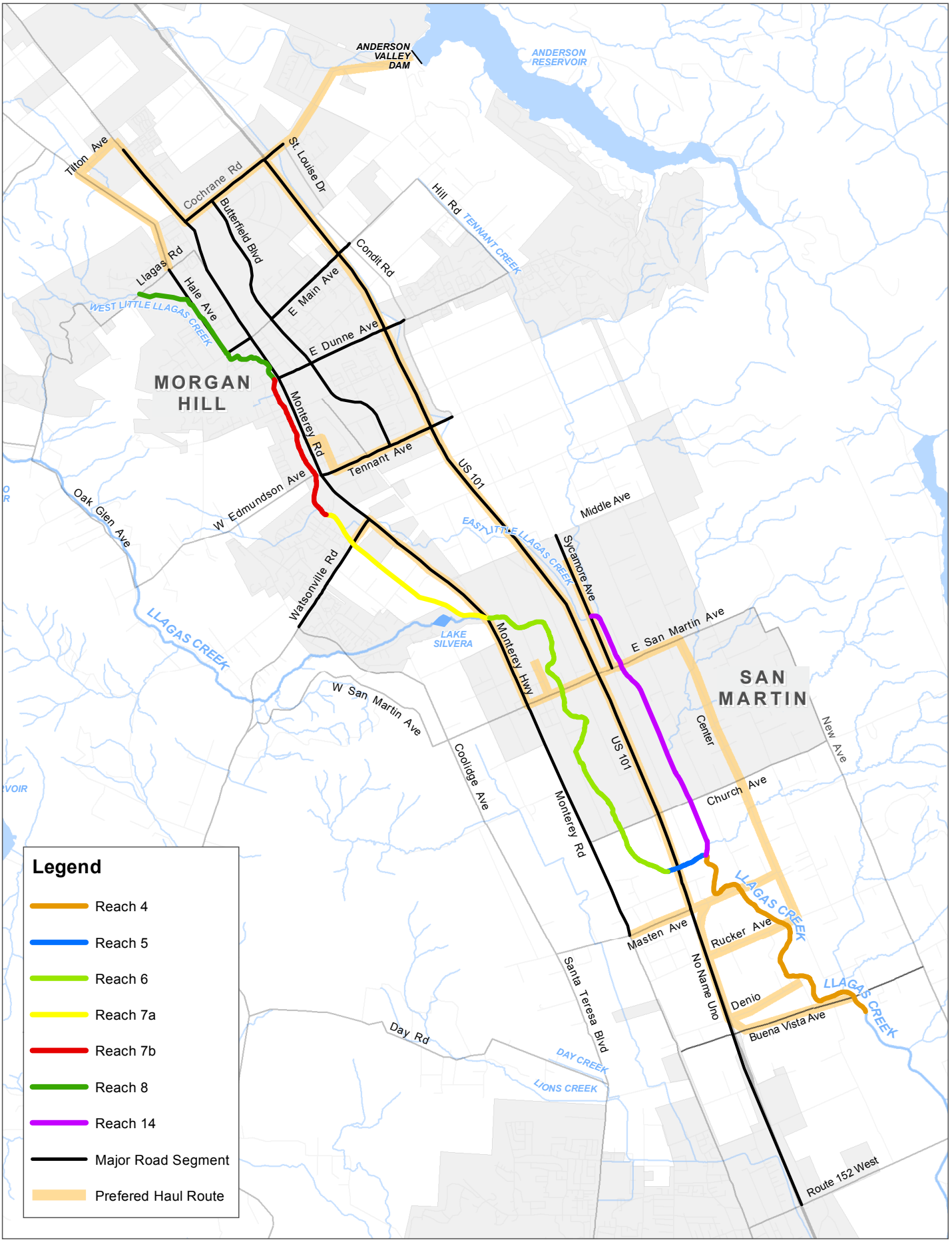
- Rucker Avenue will be used as a primary haul route in Reach 4 and runs east to west in the Project area and intersects Reach 4 at approximately its half way mark. It is a two-lane road that runs from Monterey Road at its western terminus to New Avenue east of Reach 4 at its eastern terminus.
- Denio Avenue will be used as a primary haul route in Reach 4 and runs east to west in the southern Project area and intersects Reach 4 towards its southern end. It is a two-lane road that runs from No Name Uno at its western terminus and ends at an agricultural field southwest of Reach 4 at its eastern terminus.
- No Name Uno will be used as a primary haul route in Reach 4 and is located in the southern Project area and runs parallel as a frontage road to U.S. 101 in Reach 4. It runs from Las Animas Road and ends at Lena Avenue to the North. It is a two-lane road, which intersects with Masten Avenue at its northern end.
- Buena Vista Avenue is located at the southern end of Reach 4. It is a two-lane rural roadway with unpaved shoulders and a posted speed limit of 35 mph. It extends between Monterey Road and New Avenue in unincorporated Santa Clara County just north of Gilroy. Buena Vista Avenue crosses, but does not provide access, onto U.S. 101.

Reach 6

- San Martin Avenue intersects Reach 6 and is a two-lane rural roadway with unpaved shoulders. The speed limit is 35 mph. San Martin Avenue provides access to U.S. 101 and extends through the unincorporated community of San Martin, connecting Monterey Road and Santa Teresa Boulevard. It reaches east to New Avenue outside of San Martin. Outside of the San Martin community, land uses along San Martin Avenue are primarily agricultural.
- Llagas Avenue runs along mostly the west side of Reach 6 and is a two-lane north-south roadway. The speed limit on Llagas Avenue is 25 mph in the residential area and 35 mph in other areas. Large garbage trucks use this roadway to access a waste disposal site to the north.
- The interface with Monterey Road begins at Reach 6 and runs generally north-south along Reach 6 and intersects at the north end of Reach 6 and Reach 7A and then continues to run alongside Reaches 7A, 7B, and 8. Monterey Road is the major north-south arterial road between Gilroy and Morgan Hill and is the designated U.S. 101 Business Route. Monterey Road generally has two lanes in each direction with a center turning lane. The speed limit is 35 mph within Morgan Hill city limits, and 45 mph south of Morgan Hill. Land uses along the developed portions of Monterey Road are primarily commercial/shopping centers. South of Morgan Hill, Monterey Road extends along undeveloped and agricultural lands.
- The character of Monterey Road changes as it extends through downtown Morgan Hill between Dunne Avenue (described in Reach 8) and Main Street. Along this segment, Monterey Road is fronted on both sides by downtown commercial uses. The roadway has two lanes in each direction with a landscaped center median. Parallel parking pockets are present on both sides of the roadway.

Reach 7A

- Watsonville Road intersects Reach 7A, which extends west off Monterey Road and connects south to Hecker Pass Highway (State Route 152) outside of Gilroy. Watsonville Road has one through lane in each direction, with an intermittent left-turn lane and bike lanes on the portion between Santa Teresa Boulevard and Monterey Road. Watsonville Road serves as a north-south alternate to U.S. 101 for residents west of the Santa Teresa corridor. Within Morgan Hill, Watsonville Road serves a large residential area west of Monterey Road.



Upper Llagas Creek Project EIS

FIGURE 3.10-1

Upper Llagas Creek Major Road Segments

Cardno ENTRIX

Reach 7B

> Tennant Avenue intersects Reach 7B and is an east-west arterial in the southern part of Morgan Hill, with a 40 mph speed limit. West of U.S. 101, Tennant Avenue has two lanes in each direction with a center turn lane. East of U.S. 101, Tennant Avenue is a two-lane rural roadway and has bike lanes. Adjacent land uses are primarily commercial (shopping centers). Tennant Avenue becomes Edmundson Avenue west of Monterey Road.

> West of Monterey Road, Tennant Avenue becomes Edmundson Avenue. Edmundson Avenue extends west of the City of Morgan Hill into unincorporated Santa Clara County as a mostly two-lane rural roadway. Edmundson Avenue is a four-lane divided roadway near Monterey Road, and transitions to a two-lane undivided roadway west of Olympic Drive with a posted speed limit of 35 mph.

> Butterfield Boulevard is located east of Reaches 7B and 8 and is a four-lane north-south roadway parallel to Monterey Road. Butterfield Boulevard is located just east of the railroad. Commercial and residential uses are served by Butterfield Boulevard. The speed limit on Butterfield Boulevard is 45 mph and is under the jurisdiction of the City of Morgan Hill.

Reach 8

> At Dunne Avenue, Reach 7B ends, and Reach 8 begins. Dunne Avenue provides access between U.S. 101 and downtown Morgan Hill. East of Monterey Road, Dunne Avenue has a speed limit of 35 mph and two lanes in each direction with a center median. Bike lanes are present on this segment of Dunne Avenue.

> Main Street intersects Reach 8 and is a two-lane east-west roadway within the City of Morgan Hill. The speed limit on Main Street is 30 mph. A Valley Transportation Authority (VTA) transit center is located near the intersection of Main Street and Hale Avenue.

> Hale Avenue is located in Reach 8 and is a two-lane north-south roadway with a paved shoulder. Residential uses are located along the west side of Hale Avenue. Llagas Creek runs in an open channel along the east side of Hale between Wright Avenue and Main Street. The speed limit on Hale Avenue is 40 mph north of Wright Avenue and 35 mph south of Wright Avenue. Hale Avenue is under the jurisdiction of Morgan Hill and Santa Clara County south of the city boundary.

Reach 14

> Center Avenue is a preferred haul route, which is located to the east of Reach 14 and the northern end of Reach 4. Center Avenue runs north to south and is a two-lane road in the Project area.

> Sycamore Avenue is a preferred haul route, which is located to the west of Reach 14 and the northern end of Reach 4. Sycamore Avenue is a two-lane road in the Project area and runs north to south and parallels U.S. 101.

> San Martin Avenue (described under Reach 6) also intersects Reach 14 on the east side of U.S. 101.

Traffic Volumes

Existing average daily traffic (ADT) volumes are summarized in Table 3.10-1 for major roadways within the Project alternatives area.

Table 3.10-1 Existing Daily Traffic Volumes on Project Area Roadways

Roadway	Segment	Number of Lanes	Average Daily Traffic Volume	Reach
Monterey Rd	Burnett Ave to Cochrane Rd	4	16,410	8
Monterey Rd	Cochrane Rd to Old Monterey Rd	3	15,560	8
Monterey Rd	Old Monterey Rd to Main Ave	4	15,880	8
Monterey Rd	Main Ave to Dunne Ave	4	17,780	8
Monterey Rd	Dunne Ave to Tennant Ave	4	21,900	7B
Monterey Rd	Tennant Ave to Watsonville Rd	4	23,430	7A, 7B
Monterey Rd	Watsonville Rd to San Martin Ave	4	15,270	6, 7A
Monterey Rd	San Martin Ave to Masten Ave	4	10,600	6
Butterfield Blvd	Cochrane Rd to Main Ave	4	13,270	8
Butterfield Blvd	Main Ave to Dunne Ave	4	13,210	8
Butterfield Blvd	Dunne Ave to Tennant Ave	4	7,970	7B
Cochrane Rd	Monterey Rd to Madrone Parkway	4	16,040	8 (haul route to Anderson Dam)
Cochrane Rd	Madrone Parkway to U.S. 101	5	32,150	8 (haul route to Anderson Dam)
Cochrane Rd	U.S. 101 to St. Louise Dr	4	12,180	8 (haul route to Anderson Dam)
Dunne Ave	Monterey Rd to Peak Ave	2	6,580	West of reaches at beginning of Reach 8 and end of Reach 7B
Dunne Ave	Monterey Rd to Butterfield Blvd	4	17,170	East of reaches at beginning of Reach 8 and end of Reach 7B
Dunne Ave	Butterfield Blvd to U.S. 101	4	27,510	Farther East of reaches at beginning of Reach 8 and end of Reach 7B
Dunne Ave	U.S. 101 to Condit Rd	5	22,080	East of U.S. 101, at beginning of Reach 8 and end of Reach 7B
Tennant Ave	Monterey Rd to Butterfield Blvd	4	29,010	East of Reach 7B
Tennant Ave	Butterfield Blvd to U.S. 101	4	27,340	Farther east of Reach 7B
Tennant Ave	U.S. 101 to Condit Rd	4	10,450	Farther east of Reach 7B, east of U.S. 101
Main Ave	Hale Ave to Monterey Rd	2	8,940	From slightly west to east of Reach 8
Main Ave	Butterfield Blvd to Condit Rd	2	6,130	Farther east of Reach 8, to east of U.S. 101
Hale Ave	Llagas Rd to Main St	2	6,210	Parallel to Reach 8
Sycamore Ave	Middle Ave to San Martin Ave	2	970	Northern Reach 14

Table 3.10-1 Existing Daily Traffic Volumes on Project Area Roadways

Roadway	Segment	Number of Lanes	Average Daily Traffic Volume	Reach
Watsonville Rd	Sunnyside Ave to Monterey Rd	2	9,900	Intersecting Reach 7A from the west to the east
U.S. 101	Cochrane Rd to Dunne Ave	6	125,000	Reach 8
	Dunne Ave to Tennant Ave	6	118,000	Reach 7B
	Tennant Ave to San Martin Ave	6	112,000	Reaches 7B, 7A, and 14
	San Martin Ave to Masten Ave	6	109,000	Reaches 6 and 14
U.S. 101	Masten Ave to State Route 152 West	6	98,000	Reach 4

Source: Alta Planning and Design (2013)

Sidewalks

Sidewalks are present along most of the streets within portions of the Project area located in the City of Morgan Hill. Generally, the rural roads within the unincorporated portions of the Project area lack sidewalks and paved shoulders, but have unpaved shoulder areas. The sidewalks in the Project area vary in width from 4 to 6 feet.

Bicycle Facilities

Class I bicycle facilities, or off-street shared-use pathways, are present in the following locations within the Project area, listed from south to north:

> Along West Little Llagas Creek in Reach 7B, west embankment between Spring Avenue and La Crosse Drive (south);

> Along both embankments of West Little Llagas Creek from La Crosse Drive (south) to Watsonville Road in Reach 7A. This multi-use path segment is directly adjacent to construction activities planned as part of the Project, which will be widened to accommodate maintenance vehicles for the Project;

> Among the neighborhoods surrounding Paradise Park and Morgan Hill Community Park near Reach 7B; and

> Near Reach 8, along the northbound side of Butterfield Boulevard between Central Avenue and San Pedro Avenue.

Signed and striped bike lanes (i.e., Class II facilities) are present on the following roadways within the Project area listed from south to north:

> Sunnyside Avenue between Watsonville Road and Via Del Castille (Reach 7A);

> Watsonville Road between Calle Enrique and Sunnyside Avenue (Reach 7A);

> Monterey Road between Tilton Avenue and Main Avenue in the northern portion of the Project area, and between Dunne Avenue and Middle Avenue in the southern portion of the Project area (Reaches 7A, 7B, and 8);

> Vineyard Boulevard between Monterey Road and Tennant Avenue (Reach 7B);

> Edmundson Avenue between Piazza Way and Monterey Road (Reach 7B);

> Tennant Avenue between Monterey Road and U.S. 101 (Reach 7B);

- Olympic Drive between Denali Drive and Edmundson Avenue (Reach 7B);
- Butterfield Boulevard between Cochrane Road and Tennant Avenue (Reaches 7B and 8);
- An 1,100-foot portion of Walnut Grove Drive north of San Pedro Avenue behind the Home Depot (Reach 7B);
- Along Dunne Avenue between Monterey Road and Gallop Drive, which intersects the beginning of Reach 8 and the end of Reach 7B (Reach 7B);
- Main Avenue between De Witt Avenue and Butterfield Boulevard in the west, and between Laurel Road and Live Oak High School in the east, and Vineyard Boulevard between Monterey Road and Tennant Avenue (Reach 8);
- Peak Avenue between Wright Avenue and Main Avenue (Reach 8);
- Hill Road (southbound side only) between Dunne Avenue and Diana Avenue (Reach 8);
- Sutter Boulevard between Butterfield Boulevard and Cochrane Road (Reach 8);
- Cochrane Road between Monterey Road and San Rafael Street (Reach 8).

Additionally, bicyclists are permitted to ride on all roadways within the Project area with the exception of U.S. 101.

Parking Conditions

On-street parking is permitted on a number of the major urbanized roadways within the Project area, including Monterey Road, E. Dunne Avenue, Tennant Avenue, Wright Avenue, Main Street, Hale Avenue, and on the local residential streets.

On the rural roads within unincorporated Santa Clara County, on-street parking is generally not available, as the roads are two lanes with narrow or unpaved shoulders. Some informal parking was observed in the unpaved shoulder areas where sufficient width was available to pull completely off the road.

Transit Service

Transit service in the Project area is provided by the VTA. VTA routes that utilize roadways within the Project area include the following, listed by the number that correlates with local to express service:

- *Route 16.* Categorized by VTA as Community Bus Service, the Morgan Hill Civic Center – Burnett Avenue line. Within the Project area, Route 16 utilizes Main Street.
- *Route 68.* Categorized by VTA as Regular Bus Service, the Gilroy Transit Center-San Jose Caltrain at Diridon Transit Center line. Within the Project area, Route 68 utilizes Monterey Road, Main Street, and Hale Street.
- *Route 121.* Categorized by VTA as Express Bus Service, the Gilroy Transit Center – Lockheed Martin Transit Center/Moffett Industrial Park line. Within the Project area, Route 121 Express utilizes Monterey Road and E. Dunne Avenue.
- *Route 168.* Categorized by VTA as Express Bus Service, the Gilroy Transit Center – San Jose Diridon Transit Center line. Within the Project area, Route 168 Express utilizes Monterey Road, E. Dunne Avenue, Butterfield Boulevard, and Cochrane Avenue.
- *Caltrain commuter rail serves Morgan Hill and San Martin.* The San Martin Caltrain Station is located on Monterey Road at San Martin Avenue. The station is served by VTA bus routes 68, 121, and 168. The Morgan Hill station is located on Depot Street at E. 3rd Street. The Morgan Hill station is served by VTA Bus Routes 121 and 168.

VTA offers paratransit service to persons who are unable to independently use the bus or light rail services due to a physical or cognitive disability. A brokerage contractor, Outreach and Escort Inc., manages the paratransit service through agreements with sedan, accessible van, and taxi providers.

Airports

South County Airport is the closest airport within the Project area. South County Airport is adjacent to Reach 6 and is located between U.S. 101 and Reach 6. Reach 14 also runs parallel to the airport on the east side of U.S. 101. At the nearest point, Reach 6 is 0.10 mile from South County Airport. South County Airport is a public airport located at 13030 Murphy Avenue in San Martin (AirNav 2013) and is also referred to as South County Airport of Santa Clara County.

3.10.3 Regulatory Environment

The following section describes federal, state, and local requirements for the Project area.

3.10.3.1 Federal

No federal regulations are applicable to this section.

3.10.3.2 State

California Department of Transportation (Caltrans)

The operation of U.S. 101 is governed by the California Department of Transportation (Caltrans) in the Project vicinity and affects traffic operations on the local roadway system when congestion occurs on the freeway. Traffic operations for U.S. 101 will be evaluated during construction, since Project operations trips are expected to be minimal. Project construction activities affecting and in the vicinity of U.S. 101 will require preparation and approval of a Caltrans Encroachment Permit.

3.10.3.3 Local

Santa Clara County

The Santa Clara General Plan, 1995–2010, was adopted in 1994 and contains goals, strategies, and policies for the rural unincorporated areas outside city limits. The Transportation Element of the Santa Clara County General Plan intends to ensure a transportation system that is balanced among several modes of transportation, well-integrated with land uses, and adequate to meet current and future mobility needs. The document does not have any specific policies related to construction vehicle traffic on county roadways. The standard level of service (LOS) identified in the Santa Clara County General Plan is LOS D[1] at peak travel periods on city streets, county roads, expressways, and state highways. However, in certain instances, a lower LOS may be acceptable when LOS D cannot practically be achieved.

As part of early South County expressway planning efforts, Santa Clara County adopted Official Plan Lines in 1964 for the Hale Avenue corridor that call for an ultimate 110-foot ROW and a continuous connection to Santa Teresa Boulevard. These adopted plan lines do not reflect the current planning for Hale Avenue or the Santa Teresa Corridor of either the City of Morgan Hill or Santa Clara County. In March 2003, Santa Clara County released a "South County Working Paper" as part of its Comprehensive Expressway Planning Study. The study noted that the "*current consensus is that there will not be an expressway along the entire length of South County*", and that the City of Morgan Hill's plans "*do not support having expressways in Morgan Hill*". The Morgan Hill General Plan calls for the widening of Hale Avenue to two lanes (with adequate ROW for a four-lane roadway) within the Project area, but does not

[1] LOS D represents high-density, but stable flow, whereas LOS E represents operating conditions at or near capacity level and LOS F represents forced or breakdown flow (Transportation Research Board, 2000).

call for this roadway to be an expressway. The South County Working Paper (Santa Clara County 2003) noted that Morgan Hill's preferred north-south arterial corridor, west of U.S. 101, is Butterfield Boulevard.

Santa Clara Valley Transportation Authority

The Santa Clara VTA has established the Congestion Management Program (CMP) to a transportation improvement program to reduce traffic congestion and improve land use decision-making and air quality. The CMP designates a network of transportation facilities for periodic monitoring for congestion. The nearest CMP facilities to the Proposed Project are U.S. 101 and State Route 152.

City of Morgan Hill General Plan

The City of Morgan Hill General Plan was adopted in July 2001, and updated through February 2010. The Circulation Element of the General Plan contains goals, policies, and actions related to the city's transportation network. These are aimed at making the existing road network more efficient and user-friendly, solving existing traffic and parking problems, and expanding transit and non-motorized travel opportunities. The Circulation Element identifies Monterey Road, Dunne Avenue, and Tennant Avenue as major arterial roadways and notes that much of the peak hour traffic on these roadways is related to regional trips to access or bypass U.S. 101. Although no specific policies related to construction vehicle traffic on local roadways are identified, maintaining traffic flows on the city's major local and regional traffic serving arterials is a key goal.

The Circulation Element of the General Plan includes a goal to provide emphasis on transportation improvements in the Butterfield, Hale/Santa Teresa, and Monterey corridors. The Circulation Element of the General Plan notes that the Santa Teresa Corridor, including Hale Avenue, is envisioned as a single continuous route. New segments and improvements within Morgan Hill are planned as two-lane multi-modal arterials, with sufficient ROW to enable a future four-lane configuration, if needed.

City of Gilroy General Plan

The City of Gilroy General Plan was adopted in June 2002, and updates to the 20-Year Boundary on the Land Use Plan Map were made in September 2007. The areas included within the Land Use Plan Map, nearest the Project, are west of U.S. 101 and south of Masten Avenue near Reach 4. The Transportation and Circulation Element of the City of Gilroy General Plan contains goals, policies, and actions related to Gilroy's transportation network. A policy identified within the General Plan provides design recommendations to maximize safety and traffic-carrying capacity on Santa Teresa Boulevard and Hecker Pass Highway. Additionally, the City of Gilroy General Plan designates Masten Avenue and Buena Vista Avenue in the vicinity of U.S. 101 as expressway roadways in the Circulation Plan Map. The standard LOS identified in the General Plan is LOS C or better at Gilroy intersections and roadways, allowing some commercial and industrial areas to operate at LOS D or better.

3.10.4 Impact Analysis

3.10.4.1 Significance Criteria

Potential Project impacts to the transportation system are evaluated utilizing thresholds of significance. Guidelines for evaluating significance thresholds are based on the CEQA Environmental Checklist (CEQA Guidelines, Appendix G). According to these guidelines, the Project would have a significant traffic impact if it would result in any of the following:

> Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio, or congestion at intersections);

> Exceed, either individually or cumulatively, an LOS standard established by the county congestion management agency for designated roads or highways;

> Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;

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

> Result in inadequate emergency access;

> Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts or bicycle racks);

> Fail to provide safe access, obstruct access to nearby uses including due to the loss of parking facilities, or fail to provide for future street ROW; and

> Cause potential damage to local roadways due to construction-generated traffic.

Project activities from all action alternatives discussed below as they relate to construction and operations and maintenance, would not interfere with air traffic patterns that would increase traffic levels or result in substantial safety risks. The nearest airport is the South County Airport, which is located between Reach 6 and Reach 14. No channel modifications would be constructed near the airport and there would be no operations or maintenance activities near the airport; therefore the Project alternatives would not interfere with air traffic patterns in any manner. Consequently, the significance criteria related to effects on air traffic patterns is not considered further in this impact analysis. The Project action alternatives would not change or otherwise affect the design of any roadways and therefore would not increase traffic hazards due to either construction activities or operations and maintenance. Therefore, the impact criteria associated with increasing traffic hazards due to a design feature is not considered further in this impact analysis.

3.10.4.2 Approach to Analysis

The Preferred Alternative and other action alternatives discussed below are not expected to cause a permanent increase in traffic, as they do not include any traffic-generating land uses. Maintenance operations would be widely dispersed and sporadic in nature, would not be regularly occurring, and maintenance would take place almost entirely from off-roadway maintenance roads that would be specifically built for access to the channel. Likewise, the action alternatives would not result in a permanent increase in parking demand. Traffic resulting from operations of the Project alternatives is estimated to be nominal, and no traffic-related impacts are forecasted to occur. Therefore, this traffic analysis evaluates potential impacts of temporary construction traffic resulting from the implementation of Project alternatives on the local circulation network, access, and safety.

The traffic and circulation analysis included examination of the following information:

> Transportation Study for the Llagas Creek Flood Control Improvements Project prepared by Alta Planning, May 9, 2013

> 65% Design Plans (SCVWD 2013)

For the action alternatives discussed below, this analysis assumes an excavation truck capacity of 12 cubic yards (CY).

The traffic analysis relies on construction vehicle trip estimates, as described in Table 3.10-2. Table 3.10-2 provides a summary of the approximate number of truck trips per day during construction in an associated reach as it relates to disposal of excavated materials, which makes up the vast majority of

the truck trips[2], as well as excavation crew and support/materials trips per day for all action alternatives, except the Reach 6 Bypass Alternative. The table below shows quantities for the Preferred Alternative. Excavation quantities for the NRCS, Preferred, and Culvert/Channel alternatives are very similar; therefore, the Preferred Alternative is used as a comparative benchmark in the tables below and encompasses approximate quantities for the NRCS, Tunnel, and Culvert/Channel action alternatives. For the NRCS and Culvert/Channel alternatives, excavation quantities and truck trips are the same in all reaches, with the exception of Reach 8. Refer to Table 2.4-3 for more detail on estimates of earthwork quantities for all action alternatives.

As shown in Table 3.10-2, the number of daily construction-related trips by reach ranges between a daily average of 42 and 258 trips per day.

Table 3.10-2 Preferred Alternative Total Average Daily Construction-Related Trips

Reach	Average Excavation Truck Trips per Day	Excavation Crew per Day	Excavation Crew Trips per Day	Support Crew/ Materials Deliveries per Day	Support Crew/ Materials Deliveries Trips per Day	Total Construction Trips per Day
4	120	2	4	5	10	134
5 and 6	90	3	6	15	30	126
7A	242	3	6	5	10	258
7B	40	2	4	10	20	64
8	18	2	4	10	20	42
14	56	2	4	5	10	70

Source: Alta Planning and Design (2013)

Table 3.10-3 Reach 6 Bypass Alternative Total Average Daily Construction-Related Trips

Reach	Average Excavation Truck Trips per Day	Excavation Crew per Day	Excavation Crew Trips per Day	Support Crew/ Materials Deliveries per Day	Support Crew/ Materials Deliveries Trips per Day	Total Construction Trips per Day
4	120	2	4	5	10	134
6	8	2	4	15	30	42
7A	242	3	6	5	10	258
7B	40	2	4	10	20	64
8	18	2	4	10	20	42
14	94	2	4	5	10	108

Source: Alta Planning and Design (2013)

Table 3.10-3 above provides a summary of the approximate number of truck trips per day during construction for the Reach 6 Bypass Alternative. As shown in Table 3.10-3, the number of construction-related trips would be approximately 42 trips per day in Reach 6 to construct the bypass channel segment. There are no construction-related trips in Reach 5, because there is no construction in this

[2] For purposes of this report, a "truck trip" is always identified and calculated numerically as two trips. There is one trip out from the Project site with a load of excavated material plus an additional, second return trip back to the Project site. As such, disposal of one dump truck load of material is reported here as two truck trips.

reach. This would result in an overall reduction in truck trips for the Reach 6 Bypass Alternative in comparison to the other action alternatives.

Table 3.10-4 provides a summary of the average daily truck trips by construction year associated with disposal of excavated earth materials and with the additional labor crew and materials delivery trips for the Preferred Alternative (and by extension the NRCS and Culvert/Channel alternatives). The average daily truck trips related to excavation disposal is broken down by year to determine the average number of daily truck trips needed to dispose of the excavated earth materials. Average daily truck trips are calculated based on the forecast soil disposal volume by reach, the duration of the construction period, and the anticipated year of construction by reach. For purposes of this analysis, it is assumed that a 12-CY dump truck capacity is used.

Table 3.10-4 Average Daily Truck Trips by Year – Preferred Alternative

Reach	Construction Year					
	1	2	3	4	5	6
4	134	134	134			
5 and 6		126	126	126	126	126
7A	258	258				
7B			64	64		
8		42	42	42	42	
14		70	70			
Total	**392**	**630**	**436**	**232**	**168**	**126**

It is important to note the differences between Tables 3.10-2 and 3.10-4,which shows all the construction related truck trips that would occur in a given reach in a given year. Work does not happen in all reaches in all years, as the construction work is phased. Table 3.10-2 does not distinguish in which year work happens in each reach; rather it shows the calculation for the average daily truck trips whenever construction occurs in any particular reach.

As shown in Table 3.10-4, the daily trips by year range between 126 and 630 trips per day (see last row of table) for the Preferred Alternative and, by extension, the NRCS and Culvert/Channel alternatives. The majority of the truck trips shown in Table 3.10-4 are forecasted to travel to Anderson Dam through an established haul route along Cochrane Road (discussed below); however, a portion of the total truck trips would not travel to Anderson Dam. Approximately 275,000 CY of material to be excavated from Reach 7A will be used for filling in Lake Silveira for purposes of wetland and riparian habitat mitigation, as discussed in Section 2.4.6. This 275,000 CY represents approximately 22,900 truckloads (using 12-CY truck capacity) or 45,800 truck trips (22,900 truckloads x 2 trips per load = 45,800). Over the 290-day duration of the Reach 7A construction period, between Years 1 and 2, this represents an average of about 158 truck trips per day that will be routed to Lake Silveira rather than to Anderson Dam. The total number of truck trips to Anderson Dam over the 6-year construction period would be 223,866.

Table 3.10-5 provides a summary of the excavation truck trips for the Reach 6 Bypass Alternative by year to determine the average daily number of trips.

Table 3.10-5 Average Daily Truck Trips by Year – Reach 6 Bypass Alternative

Reach	Construction Year					
	1	2	3	4	5	6
4	134	134	134			
6		42	42	42	42	
7A	258	258				
7B			64	64		
8		42	42	42	42	
14		108	108			
Total	**392**	**584**	**390**	**148**	**84**	

As shown in Table 3.10-5, the daily trips by year ranges between 84 and 584 trips per day (excluding that there will be no trips in Year 6) for the Reach 6 Bypass Alternative. The majority of these trips are forecast to travel to Anderson Dam, through the established haul route along Cochrane Road. As discussed above, approximately 158 trips per day between construction Years 1 and 2 would not travel to Anderson Dam from Reach 7A, but would instead travel to Lake Silveira to be used for purposes of developing wetland and riparian habitat, as discussed in Section 2.4.6.

Traffic Control Plan

In order to minimize impacts of construction-related traffic and staging on existing daily vehicle traffic and area road use, a construction Traffic Control Plan will be prepared as part of the Project to address construction traffic routes, construction equipment staging, construction vehicle parking, lane closures and blockages, detours, maintenance of access to residences and businesses, transit access, public notification, and maintenance of emergency vehicle access during construction. This plan will be reviewed and approved by Caltrans, the City of Morgan Hill Public Works Department, and County of Santa Clara Roads and Airports Department prior to any construction- or site-preparation activities. Elements of the Traffic Control Plan would include, but not be limited to, the following:

> *Full and Partial Street Closure Advance Notice.* Advance notice shall be given to the local agency public works department staff to coordinate planned full and partial closures of roadways. Closures notices will be provided with 2 weeks' notice, and planned detour routes will be established in advance of the notice. The notification should be consistent with BMP TR-1 as included in the SCVWD, Best Management Practices Handbook, Revision A, May 22, 2008.

> *Designated Access Routes.* Appropriate construction vehicle routes from each Project reach to U.S. 101 have been identified and discussed. Vehicle and haul routes will be confirmed with local agencies prior to the start of excavation. All traffic traveling from the highway would use the major arterial roadways.

> *Maximum Speed Limits.* Maximum speed limits will be identified for trucks and heavy equipment traveling to Project reach segments located within residential neighborhoods.

> *Weekend Construction.* Within Morgan Hill city limits, construction activities shall be limited to the hours of 7:00 a.m. to 8:00 p.m. Monday through Friday, 9:00 a.m. to 6:00 p.m. on Saturday, and prohibited on Sundays and holidays (per local ordinance). Construction may occur in the evenings during some circumstances

- *Limited Travel during Commute Times.* Construction vehicles will avoid, to the extent feasible, the peak commute hours of 7:00 to 9:00 a.m. and 3:00 to 6:00 p.m.
- *Pedestrian and Bicycle Access.* Bicycle and pedestrian access along all roadways affected by Project construction shall be maintained during construction to the maximum extent feasible.
- *Fencing and Barricades.* Construction areas will be blocked off from vehicle, pedestrian, and bicycle traffic by such measures as temporary barriers or fencing.
- *Lane Closure/Blockage Timing.* Lane closures will be limited to non-commute times, to the extent feasible, such as the peak commute hours of 7:00 to 9:00 a.m. and 3:00 to 6:00 p.m.
- *Lane Closure/Blockage Monitor.* Determine locations where a public safety monitor or flagperson is needed during lane closures/blockages to regulate vehicle, pedestrian, and bicycle traffic through the construction zone.
- *Signage.* Warning signage will be visible during construction to alert motorists of potential lane closures/blockages and detours and to alert pedestrians and bicyclists of any safety hazards along the road.
- *Lane Closure Detour Plans.* For construction activities that will result in full or partial lane closures, the SCVWD contractor shall submit a detailed detour plan to the local agency for review and approval. The local agency public works department will be responsible for approving detour routes, time periods, and locations of signage (such as changeable message signs). Detour plans will be developed where roadways must be completely closed to motor vehicle traffic. Detour plans shall include alternate routes for motorists, transit vehicles, emergency vehicles, bicyclists, and pedestrians.
- *Agency Traffic-Related Permits.* Permits will be obtained from local agencies and Caltrans for traffic detours required for construction activities.
- *Local Business Access.* Full pedestrian access to businesses along Monterey Road will be maintained at all times during construction. Signage should direct patrons to alternate parking locations on side streets.
- *Crew Parking.* For construction within downtown Morgan Hill, policies will be developed for parking construction crew vehicles offsite, such as at a local shopping center and carpooling to the Project area, to limit vehicles parked within the staging area.
- *Phone Number for Complaints.* The SCVWD, or appropriate designee, shall post at least one sign during active construction that includes the name and telephone number of the staff person the public may contact to register complaints about construction traffic or access. The SCVWD shall ensure that a written record of all such complaints is kept and that the problems registered by the public are investigated and resolved within 1 week of receiving the complaints.
- *Transit Access.* VTA bus access shall be provided along Project area roadways at all times during construction. VTA will be notified of the time and duration of planned lane closures at least 1 week in advance of such closures. A public safety monitor will be present during all lane closures to ensure bus access through the area.
- *Emergency Vehicle Access.* Emergency vehicle access shall be provided along Project area roadways at all times during construction. The local fire and police departments (Morgan Hill Police Department and Santa Clara County Fire Department) will be notified of the time and duration of planned lane closures, at least 1 week in advance, of such closures. A public safety monitor will be present during all lane closures to ensure emergency vehicle access through the area.

Caltrans requires preparation of a Transportation Management Plan (TMP) whenever closures are planned on freeway facilities to minimize motorist delay and provide public notification regarding closures and impacts. The Traffic Control Plan would be prepared to be compliant with Caltrans TMP requirements if impacts to U.S. 101 are anticipated. The TMP identifies times allowed for closure and details regarding notification of the public, including a public awareness campaign.

3.10.5 Impacts and Mitigation Measures

3.10.5.1 No Project Alternative

Under the No Project Alternative, the Project would not be built, and no new land purchases or construction activities would occur. Flooding in the residential areas of Morgan Hill and San Martin would continue. Storm runoff would continue through the West Little Llagas Creek, East Little Llagas Creek, and Llagas Creek channel reaches. The bypass channel in Reach 7A would not be constructed under the No Project Alternative, and channel bank erosion and widening would likely continue. Maintenance of the Upper Llagas Creek facilities would be conducted in accordance with the guidelines established in the SMP Update 2012–2022 (SCVWD 2011).

TRAFFIC-1 NP—Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	N/A	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No channel modification or improvements would be constructed; therefore, no impacts would occur as a result of construction.

Operations and Maintenance

Existing maintenance activities established by the SCVWD include a SMP. The SMP established procedures for routine maintenance of stream channels involving sediment removal, vegetation management, bank protection, and associated minor activities.

Instream sediment removal and bank protection work is carried out from June 15 to October 30, or the first significant rainfall (0.5 inch of rain in a 24-hour period) after October 15, whichever occurs first.

Sediment removal, bank stabilization, vegetation management, and minor maintenance and repairs are typical SMP activities that require the use of maintenance equipment. In the past, sediment maintenance has occurred only in Reach 14 and near the Church Pond inlet in Reach 6; although, sediment maintenance could occur in other locations in the future. Maintenance equipment is transported to and from maintenance sites and moved once projects are completed. Equipment is not stored permanently at maintenance sites. Nearly all maintenance occurs along existing SCVWD maintenance roads located at the top of channel banks or through planned access roads down the banks to the channel bottom. Maintenance activities rarely occur from public roadways and, therefore, would not interfere with traffic patterns. Mobilization and demobilization of equipment from public roadways to SCVWD maintenance roads may briefly interfere with access to residences and businesses; however, SMP activities are

temporary and intermittent and would not affect traffic loads on the local street system. Impacts are less than significant.

Best Management Practices (BMPs)

The SCVWD performs routine maintenance activities within the Project area, conducted in accordance with the SCVWD's established BMPs under the SMP (2011). BMPs are implemented to reduce the impacts to levels less than significant and include the following:

> **GEN-21:** Staging and Stockpiling of Materials.

> **GEN-37:** Implement Public Safety Measures.

> **GEN-39:** Planning for Pedestrians, Traffic Flow, and Safety Measures.

Implementation of BMPs would reduce impacts to less than significant.

TRAFFIC-2 NP—Exceed, either individually or cumulatively, an LOS standard established by the County Congestion Management Agency for designated roads or highways

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	N/A	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The nearest CMP facilities to the Project area are U.S. 101 and State Route 152. No channel modification or improvements would be constructed under the No Project Alternative; therefore, no construction-related impacts to CMP facilities would occur.

Operations and Maintenance

Existing maintenance activities established by the SCVWD include the SMP, which established procedures for routine maintenance of stream channels involving sediment removal, vegetation management, bank protection, and associated minor activities. As mentioned above, the nearest CMP facilities to the Proposed Project are U.S. 101 and State Route 152. Most of the Project area runs parallel to U.S. 101. Maintenance vehicles may use U.S. 101 to travel to access maintenance sites; however, maintenance work would be intermittent and for short durations.

Instream sediment removal and bank protection work is carried out from June 15 to October 30, or the first significant rainfall (0.5 inch of rain in a 24-hour period) after October 15, whichever occurs first. Sediment removal, bank stabilization, vegetation management, minor maintenance, and repairs are typical SMP activities that require the use of maintenance equipment. In the past, sediment maintenance has occurred only in Reach 14 and near the Church Pond inlet in Reach 6; although, sediment maintenance could occur in other locations in the future. Maintenance equipment is transported to and from maintenance sites and moved once projects are completed. Equipment is not stored permanently at maintenance sites. Nearly all maintenance occurs along existing SCVWD maintenance roads located at the top of channel banks or through planned access roads down the banks to the channel bottom. Maintenance activities rarely occur from public roadways and, therefore, would not interfere with traffic patterns. Mobilization and demobilization of equipment from public roadways to SCVWD maintenance

roads may briefly interfere with access to residences and businesses; however, SMP activities are temporary and intermittent and would not affect traffic loads on the local street system. Impacts are less than significant.

Best Management Practices (BMPs)

The SCVWD performs routine maintenance activities within the Project area, conducted in accordance with the SCVWD's established BMPs under the SMP (2011). BMPs are implemented to reduce the impacts to levels less than significant and include the following:

> **GEN-37:** Implement Public Safety Measures.

> **GEN-39:** Planning for Pedestrians, Traffic Flow, and Safety Measures.

Implementation of BMPs would reduce impacts to less than significant.

TRAFFIC-3 NP—Result in inadequate emergency access

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	N/A	N/A
Operations and Maintenance Activities	N/A	S

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No channel modification or improvements would be constructed; therefore, no impacts related to inadequate emergency access would occur as a result of construction.

Operations and Maintenance

Existing maintenance activities established by the SCVWD include the SMP procedures involving sediment removal, vegetation management, bank protection, and minor maintenance activities. The SMP is implemented to maintain the structural and functional integrity of SCVWD facilities and to maintain existing flow capacity. During the dry season, when SMP activities are implemented, maintenance vehicles and construction equipment are needed to conduct the maintenance work. Maintenance work typically occurs only a few days each year in a given area, and the trucks and equipment primarily use existing maintenance roads that are off of the public roadways to access the channel. Consequently, maintenance activities do not create substantial traffic on public roads that would interfere with emergency vehicle access.

Under the No Project Alternative, the current magnitude and frequency of flooding would still occur, which would periodically increase the potential need for emergency vehicles and which can result in interference and inadequate emergency access during flooding events. Therefore, impacts to emergency vehicle access would be significant.

Best Management Practices (BMPs)

The SCVWD performs routine maintenance activities within the Project area, conducted in accordance with the SCVWD's established BMPs under the SMP (2011). BMPs are implemented to reduce the impacts to levels less than significant and include the following:

> **GEN-21:** Staging and Stockpiling of Materials.

> **GEN-37:** Implement Public Safety Measures.

> **GEN-39:** Planning for Pedestrians, Traffic Flow, and Safety Measures.

During flood events, impacts to emergency access would be significant, and is identified as such for TRAFFIC-3 NP in the table above.

TRAFFIC-4 NP—Conflict with adopted policies, plans, or programs supporting alternative transportation

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	N/A	N/A
Operations and Maintenance Activities	N/A	S

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No channel modification or improvements would be constructed under the No Project Alternative; therefore, no impacts related to interference with alternative transportation policies and plans would occur as a result of construction.

Operations and Maintenance

Existing maintenance activities established by the SCVWD include the SMP procedures for sediment removal, vegetation management, bank protection, and minor maintenance activities. The SMP is implemented to maintain the structural and functional integrity of SCVWD facilities and to maintain existing flow capacity in Upper Llagas Creek. As such, maintenance activities do not conflict with policies and adopted plans or programs supporting alternative transportation.

However, under the No Project Alternative, the current magnitude and frequency of flooding would still occur during storm events, which may result in interference with public transit, bicycle, and pedestrian facilities in the Project area; therefore, impacts would be significant.

Best Management Practices (BMPs)

The SCVWD performs routine maintenance activities within the Project area, conducted in accordance with the SCVWD's established BMPs under the SMP (2011). BMPs are implemented to reduce the impacts to levels less than significant and include the following:

> **GEN-21:** Staging and Stockpiling of Materials.

> **GEN-37:** Implement Public Safety Measures.

> **GEN-39:** Planning for Pedestrians, Traffic Flow, and Safety Measures.

During flood events, interference with public transit, bicycle, and pedestrian facilities in the Project area would be significant and are identified as such under the TRAFFIC-4 NP table above.

TRAFFIC-5 NP—Fail to provide safe access; obstruct access to nearby uses, including due to the loss of parking facilities; or fail to provide for future street right-of-way

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	N/A	N/A
Operations and Maintenance Activities	N/A	S

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No channel modifications or improvements would be constructed under the No Project Alternative; therefore, no traffic related impacts would occur as a result of construction.

Operations and Maintenance

Sediment removal, bank stabilization, vegetation management, and minor maintenance and repairs are typical SMP activities that require the use of maintenance equipment. In the past, sediment maintenance has occurred only in Reach 14 and near the Church Pond inlet in Reach 6; although, sediment maintenance could occur in other locations in the future. Maintenance equipment is transported to and from maintenance sites and moved once projects are completed. Equipment is not stored permanently at maintenance sites. Nearly all maintenance occurs along existing SCVWD maintenance roads located at the top of channel banks or through planned access roads down the banks to the channel bottom. Maintenance activities rarely occur from public roadways and, therefore, would not interfere with traffic patterns. Mobilization and demobilization of equipment from public roadways to SCVWD maintenance roads may briefly interfere with access to residences and businesses; however, SMP activities are temporary and intermittent and would not affect traffic loads on the local street system.

Flooding would still occur under the No Project Alternative, which may impede access to local residences and businesses on a temporary basis during the flood event; therefore, impacts would be temporary and significant.

Best Management Practices (BMPs)

The SCVWD performs routine maintenance activities within the Project area, conducted in accordance with the SCVWD's established BMPs under the SMP (2011). BMPs are implemented to reduce the impacts to levels less than significant and include the following:

> **GEN-21:** Staging and Stockpiling of Materials.

> **GEN-37:** Implement Public Safety Measures.

> **GEN-39:** Planning for Pedestrians, Traffic Flow, and Safety Measures.

During flood events, access to local residences and businesses could be disrupted and the impact would be significant.

TRAFFIC-6 NP—Potential damage to roads due to construction-generated traffic

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	N/A	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No channel modifications or improvements would be constructed under the No Project Alternative; therefore, no roadway related impacts would occur as a result of construction.

Operations and Maintenance

Existing maintenance activities established by the SCVWD include the SMP. The SMP established procedures for routine maintenance of stream channels involving sediment removal, vegetation management, bank protection, and associated minor activities.

Instream sediment removal and bank protection work is carried out from June 15 to October 30, or the first significant rainfall (0.5 inch of rain in a 24-hour period) after October 15, whichever occurs first. Sediment removal, bank stabilization, vegetation management, and minor maintenance and repairs are typical SMP activities that require the use of maintenance equipment. Maintenance equipment is transported to and from maintenance sites and moved once projects are completed. Equipment is not stored permanently at maintenance sites. Nearly all maintenance occurs along existing SCVWD maintenance roads located at the top of channel banks or through planned access roads down the banks to the channel bottom. Maintenance activities rarely occur from public roadways and, therefore, would not involve major deterioration of roadways.

Best Management Practices (BMPs)

None applicable

Impacts related to damage to roads would be less than significant because there would be no construction in this alternative.

3.10.5.2 Tunnel Alternative (Preferred Alternative)

The key feature of the Preferred Alternative is to use an underground concrete tunnel instead of channel widening and deepening proposed through Reach 8 in downtown Morgan Hill. The tunnel would be constructed under the Nob Hill Terrace neighborhood, and a sediment detention basin would be constructed in the 600 feet of channel between Wright Avenue and Hillwood Lane with an 18-foot-wide maintenance/access road for maintenance access to the sediment detention basin.

Construction duration for the Preferred Alternative would be 6 years, with construction lasting for about 36 months in Reach 8. Under the Preferred Alternative, a total of 1,618,200 CY of soil would be excavated and disposed, with 1,343,200 CY hauled offsite (after accounting for 275,000 CY to be used at Lake Silveira for mitigation purposes) for storage and later use at Anderson Dam. Construction of the Preferred Alternative would require loading approximately 111,933 trucks for a roundtrip to Anderson Dam over the 6-year life of the Project. Since a truck trip actually requires a roundtrip, one outbound to the dam and one return trip to the Project site to obtain another load, this is considered two trips for each load or 111,933 x 2 = 223,866 truck trips (with a 12 CY truck capacity).

The tunnel would be excavated toward the south from the Hale Avenue Portal work area toward Del Monte Avenue near Dunne Avenue. The Project would use conventional mining equipment and methods to excavate the tunnel, namely roadheaders, excavators, and controlled detonations. Portions of the tunnel would have a small amount of cover between the top of the tunnel and the street. At these locations, it would be necessary to inject grout into the loose soil to bind the soil together, which would allow the tunnel to be excavated without causing surface settlement. The three areas to be pre-grouted are Hale Avenue southeast of Warren Avenue (250 feet), the intersection of Nob Hill Terrace and Del Monte Avenue (180 feet on Nob Hill Terrace and 70 feet on Warren Avenue), and Del Monte Avenue (approximately 150 feet north of Dunne Avenue for a length of 70 feet). The equipment used for pre-grouting is a drill rig truck and a grouting truck.

TRAFFIC-1 T—Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Overall, the Preferred Alternative would not result in any permanent traffic impacts, as no existing roadways will be altered, no new public roadways will be developed, and there is no additional traffic added to local roadways, since this is a flood-management Project.

However, construction activities are anticipated to interfere with local traffic patterns in the Project area. Construction activities in all reaches that are anticipated to interfere with local traffic patterns include temporary road closures, traffic delays due to construction vehicle access, temporary loss of parking, and construction activities, including material hauling and disposing. Construction activities will take place Monday through Friday from 7:00 a.m. to 8:00 p.m. and Saturdays from 9:00 a.m. to 6:00 p.m. Temporary road closures and construction related impacts for the Preferred Project are discussed below by reach.

Temporary Road Closures

Construction of specific segments of the Preferred Project would take place on public roadways, which could require temporary closures of roadway lanes. Construction may require complete street closure, or partial closure of some lanes. Below is description of temporary road closures that would occur for the Preferred Alternative by reach:

> Roadways with temporary closures due to Reach 4 construction may include Masten Avenue, Rucker Avenue, and Buena Vista Avenue.

> Reach 5 construction activities are expected to occur without closing local roadways, as Reach 5 does not intersect roadways, with the exception of U.S. 101. The U.S. 101 bridges that pass over Reach 5 are not expected to be impacted during construction activities.

> Roadways with temporary closures due to Reach 6 construction may include Llagas Avenue, San Martin Avenue, and Church Avenue.

> Roadways with temporary closures due to Reach 7A construction may include La Crosse Drive, Watsonville Road, and Middle Avenue.

> Roadways with temporary closures due to Reach 7B construction may include Dunne Avenue, Ciolino Avenue, Spring Avenue, Cosmo Avenue, Edes Avenue, Del Monte Avenue, Edmundson Avenue, and La Crosse Drive.

> Roadways with temporary closures due to Reach 8 construction may include Hale Avenue, Wright Avenue, Main Avenue and Warren Avenue.

> Roadways with temporary closures due to Reach 14 construction may include San Martin Avenue and Church Avenue.

Closure of travel lanes along local roadways for construction activities would have the potential to disrupt local business and residential access and would represent a temporary, significant impact to local traffic and circulation during construction. With implementation of the Traffic Control Plan as part of the Project and with implementation of Mitigation Measure TRAFFIC-1 T, which involves maintaining access to local residences and business, impacts would be reduced to less than significant with mitigation.

Construction Vehicle Access

Several types of vehicles would be involved in construction activities along Llagas Creek that could interfere with local traffic patterns. These include the following:

> Excavation trucks are those used to transport excavated materials out of a particular reach. Excavation trucks will collect material for distribution to Anderson Dam where the earth materials will be stored for later reuse in another project. The northern reaches for the Proposed Project will be able to access Anderson Dam using the Cochrane Road overpass without accessing U.S. 101; excavation in other reaches would need to utilize U.S. 101. Approximately 80 percent of soil excavated from Reach 7A is scheduled for disposal at Lake Silveira, located near southern end of Reach 7A just west of Monterey Road.

> Construction and hauling support trips are primarily local trips by road ready vehicles and trips for hauling of heavy equipment to the site. The local trips are ordinarily within a particular reach, or at most, to an adjacent reach. The equipment hauling trips typically originate from two sources: northern Santa Clara County or from nearby rental businesses within south Santa Clara County.

> Crew trucks are vehicles needed to transport workers to and from the work site on a daily basis. Construction crews may travel to and from multiple locations; but, likely, will come from urbanized communities to the north or south of the work site. Parking for construction workers would be provided within SCVWD ROW and approved staging areas only.

Access and use of the local street system by construction vehicles, described above, will also result in traffic impacts. A description of traffic impacts from the Preferred Alternative to the existing traffic load and local street system is broken down by reach from south to north, as discussed below.

Reach 4

Construction of Reach 4 involves widening and deepening of the existing channel, resulting in a cross section with a low-flow channel, bankfull channel, benches, and engineered banks. All-weather maintenance/access roads would be provided along Reach 4 on both sides of the creek. The road surface would be located at the top of bank for winter flood management, maintenance, and inspection activities. Access to the maintenance roads would be at Masten Avenue, Rucker Avenue, Buena Vista Avenue, and Denio Avenue. Approximately 2.3 acres of vacant land along Masten Avenue and No Name Uno near the U.S. 101 interchange on the south side of the channel, as well as 4.6 acres in an agricultural field at the end of Denio Avenue just north of Buena Vista Avenue on the south side of the channel, would be used as staging areas during Reach 4 construction.

As shown in Table 3.10-2, Reach 4 construction-related trips total to 134 daily trips per day during construction, which would be dispersed over multiple area roadways. Construction staff trips would occur during the early morning and early afternoon, before peak traffic periods, while excavation, materials delivery, and support staff trips would occur periodically throughout the workday. The ADT volumes for U.S. 101 from Masten Avenue to State Route 152 are 98,000 ADT (Table 3.10-1). The addition of an average of 134 daily trips for construction Years 1, 2, and 3, as shown in Table 3.10-4, is a very small additional percentage of traffic and is not expected to affect local traffic patterns. Therefore, the addition of Reach 4 construction-related trips to the local roadway network would be considered less than significant.

The preferred haul route between U.S. 101 and Reach 4 is provided via Masten Avenue to the U.S. 101 ramps. Alternate haul routes, which require local approval, include use of Rucker Avenue, Buena Vista Avenue, a portion of Masten Avenue between Columbet Avenue and Center Avenue, and No Name Uno (frontage just east of U.S. 101). If all the forecast construction-related daily trips for each reach were added to U.S. 101, the percent change would be less than 1 percent. This nominal addition to existing traffic along U.S. 101 would occur throughout the day; and conservatively assumes construction of all reaches occurs concurrently (which is not the case as construction occurs in phases) and that all trips travel in the same direction. If distribution to the north, south, or west were included, along with timing of reach construction, then the percent change on U.S. 101 would be lower. Therefore, the addition of Reach 4 construction-related trips to the regional roadway network (U.S. 101) would be considered less than significant.

Reach 5 and Reach 6

Construction of Reach 5 involves widening and deepening the existing channel, resulting in a cross section with a sinuous low-flow channel, bankfull channel, benches, and engineered banks. All-weather maintenance/access roads would be provided along Reach 5 on both sides of the creek. The road surface would be located at the top of bank for winter flood management, maintenance, and inspection activities. Access to the maintenance roads would be at Kannely Lane and Lena Avenue. Reach 5 construction activities are not planned to affect local or regional roadways, as no local roadways cross Reach 5 and U.S. 101 crosses Reach 5 with existing bridge structures. Permits may be required from Caltrans for construction activities below the U.S. 101 bridges serving northbound and southbound traffic.

Construction of Reach 6 is similar to that of Reach 5. Access to the maintenance roads would be at Llagas Avenue, Kimble Court, East San Martin Avenue, Church Avenue, and Murphy Avenue.

As shown in Table 3.10-2, Reaches 5 and 6 construction-related trips total to 126 daily trips, which are expected to be dispersed over multiple area roadways. Construction staff trips would occur during the early morning and early afternoon prior to peak traffic periods, while excavation, materials delivery, and support staff trips would occur periodically throughout the workday.

The preferred haul route between U.S. 101 and Reaches 5 and 6 is provided via Masten Avenue and Llagas Avenue to San Martin Avenue to the U.S. 101 ramps. ADT volumes for this portion of U.S. 101 are 109,000 ADT (Table 3.10-1). The addition of approximately 126 daily trips for construction Years 2 through 6, as shown in Table 3.10-4, is a very small increase and would not affect local traffic patterns. This is a nominal addition to local roadways and to the regional U.S. 101 road network. The additional traffic to U.S. 101 conservatively assumes that all trips travel in the same direction. If distribution to the north, south, or west were included, and if timing of reach construction were included, then the percent change on U.S. 101 would be lower. Therefore, the addition of Reaches 5 and 6 forecast construction-related trips to the regional roadway network (U.S. 101) would be less than significant.

On the west side of the channel, 0.13 acre of SCVWD-owned lands at the Church Avenue percolation ponds on the west side of the channel; 1.4 acres in an agricultural field at the southeast corner of San Martin Avenue and Kimble Court on the east side of the channel; and 7.0 acres in an agricultural field

between Llagas Avenue and the Union Pacific railroad tracks at Monterey Road, on the north side of the channel, opposite the Nature Quality Inc., food-processing facility with 0.38 acre for an access road from an adjoining parcel will all be used as staging areas for Reaches 5 and 6. No traffic related impacted are anticipated from the use the staging areas for Reach 5 and Reach 6, because the use of staging areas are temporary in nature and construction vehicles and equipment would be moved to and from staging areas as needed intermittently.

Reach 7A

Reach 7A is a proposed new channel to divert flows from West Little Llagas Creek. Reach 7A involves construction of a newly excavated channel and widening and deepening the existing diversion channel just upstream of Watsonville Road. The Reach 7A channel would have features similar to Reaches 4, 5, and 6. Existing roads would provide shared access for maintenance, where possible. Access to the maintenance roads would be at Middle Avenue, Watsonville Road, La Via Azul Court, and La Crosse Drive. Seven acres along Middle Avenue, south of Monterey Road, would be used as a staging area during construction for Reach 7A.

Approximately 80 percent of soil excavated from Reach 7A is scheduled for disposal at Lake Silveira, located near southern end of Reach 7A just west of Monterey Road. The remaining 20 percent of excavated soil would be disposed of at Anderson Dam. The preferred haul route between U.S. 101 and Reach 7A is provided via Watsonville Road to Monterey Road to San Martin Avenue to the U.S. 101 ramps.

As shown in Table 3.10-2, Reach 7A construction-related trips total to 258 daily trips that would be dispersed over multiple area roadways. Reach 7A construction is anticipated to take place in construction Years 1 and 2, as shown in Table 3.10-4 and would add approximately 258 daily trips over each of those 2 years; and is, therefore, not expected to affect local traffic patterns. Construction staff trips would occur during the early morning and early afternoon, prior to peak traffic periods, while excavation, materials delivery, and support staff trips would occur periodically throughout the workday. The ADT volumes for local roadways range from 112,000 along U.S. 101 to 9,900 on Watsonville Road (Table 3.10-1).

If all of the forecast construction-related daily trips for each reach were added to U.S. 101, the percent change would be nominal (between 0.2 to 2 percent depending on the roadway). This forecast of nominal addition to U.S. 101 would occur throughout the day; and conservatively assumes that construction of all reaches would occur concurrently and that all trips would travel in the same direction. If distribution to the north, south, or west were included, and if timing of reach construction were included, then the percent change on U.S. 101 would be lower. Therefore, the addition of Reach 7A forecast construction-related trips to the regional roadway network (U.S. 101) would be less than significant.

Reach 7B

Construction activities and features for Reach 7B are similar to those described for Reaches 4, 5, and 6.

One acre of vacant land along La Jolla Drive at Via Navoana, upstream from Watsonville Road on the south side of the channel, would be used as a staging area during construction for Reach 7B.

Temporary closure of Ciolino Avenue is planned for construction activities related to Reach 7B. Ciolino Avenue is a two-lane undivided roadway approximately 950 feet in length (between Del Monte Avenue and Monterey Road). Ciolino Avenue serves commercial and residential properties and is a low traffic-volume roadway. However, the temporary detour of Ciolino Avenue traffic, due to construction activity from Reach 7B, would be considered a temporary significant impact. With implementation of the Traffic Control Plan and Mitigation Measure TRAFFIC-1 T, which involves maintaining access to local residences and businesses, impacts would be reduced to less than significant with mitigation.

In Reach 7B, the Preferred Project construction would avoid the downtown Morgan Hill area, reducing the need for road closures near businesses. Temporary road closures in Reach 8 would be reduced in the Preferred Alternative and would likely only include Hale Avenue, Wright Avenue, Main Avenue, and Warren Avenue.

As shown in Table 3.10-2, Reach 7B forecast construction-related trips total to 64 daily trips, which would be dispersed over multiple area roadways. Reach 7B construction is anticipated to take place in construction Years 3 and 4, as shown in Table 3.10-4, and would add approximately 64 daily trips over each of those 2 years and is, therefore, not expected to affect local traffic patterns. Construction staff trips would occur during the early morning and early afternoon avoiding peak traffic, while excavation, materials delivery, and support staff trips would occur periodically throughout the workday. ADT volumes for local roadways range from 112,000 along U.S. 101 to 6,580 along Dunne Avenue. Therefore, the addition of Reach 7B forecast construction-related trips to the local roadway network would be less than significant.

The preferred haul route between U.S. 101 and Reach 7B is provided via Cosmo Avenue to Monterey Road to Tennant Avenue Road to the U.S. 101 ramps. If all the forecast construction-related daily trips for each reach were added to U.S. 101, the percent change would be less than 1 percent. This forecast of nominal addition to U.S. 101 would occur throughout the day; and conservatively assumes that construction of all reaches would occur concurrently and that all trips would travel in the same direction. If distribution to the north, south, or west were included, and if timing of reach construction were included, then the percent change on U.S. 101 would be lower. Therefore, the addition of Reach 7B forecast construction-related trips to the regional roadway network (U.S. 101) would be less than significant.

Reach 8

Approximately 1.4 acres of vacant land at the site of the PG&E substation, on the southwest of the intersection of Hale Avenue and East Main Avenue on the west side of the channel, would be used as a staging area during construction for Reach 8. This staging site would be the main location for equipment and materials needed to construct the portal inlet and tunnel for the Preferred Alternative.

As shown in Table 3.10-2, Reach 8 construction-related trips total to 42 daily trips, which would be dispersed over multiple area roadways. Construction staff trips would occur during the early morning and early afternoon while excavation, materials delivery, and support staff trips would occur periodically throughout the workday. Reach 8 construction is anticipated to take place in construction Years 2 through 5, as shown in Table 3.10-4, and would add approximately 42 daily trips over each of those 4 years and is therefore, not expected to affect local traffic patterns. Hale Avenue is a two-lane undivided roadway serving residential and institutional land uses in the vicinity of Reach 8. Hale Avenue in the Project vicinity currently accommodates approximately 6,200 vehicles per day, as identified in the City of Morgan Hill General Plan Circulation Update (2009). ADT volumes along Reach 8 where a tunnel would replace channel widening and deepening from the NRCS Alternative range between 6,130 ADT along Main Avenue and 125,000 ADT along U.S. 101. Therefore, the addition of Reach 8 forecast construction-related trips to the regional roadway network would be less than significant.

Temporary closures of Hale Avenue, Wright Avenue, Main Avenue, and Warren Avenue are planned for construction activities related to Reach 8. Since closures would be temporary and intermittent during construction activities, the traffic operations on the roadway would be affected, causing a substantial impact to traffic load and capacity on the road. Therefore, the temporary detour of Hale Avenue traffic due to Reach 8 construction activity is a temporary, significant impact on the local roadway network. With implementation of the Traffic Control Plan and Mitigation Measure TRAFFIC-1 T, access would be maintained to the extent possible and public noticing and safety measures, as well as detours would be required to be posted and impacts would be reduced to less than significant.

Temporary lane closures along Hale Avenue and Main Avenue for construction activities could also affect local transit service provided by VTA for fixed route Bus Line 68. Fixed route Bus Line 68 operates at roughly 15-minute headways during peak morning and afternoon times. While at least one travel lane would be open in each direction, traffic congestion would cause delays along segments where lane closures are in effect. This would be a temporary, significant impact. Implementation of the Traffic Control Plan includes provisions for maintaining transit access during construction. VTA would be notified of the time and duration of planned lane closures in advance of such closures. A public safety monitor would be present during all lane closures to ensure bus access through the area. Impacts would be less than significant.

The preferred haul route between U.S. 101 and Reach 8 is provided via Hale Avenue to Tilton Avenue, to Monterey Road to Cochrane Road. If all of the forecast construction-related daily trips for each reach were added to U.S. 101, the percent change would be less than 1 percent. This forecast of nominal addition to U.S. 101 would occur throughout the day, and conservatively assumes construction of all reaches would occur concurrently, and all trips would travel in the same direction. If distribution to the north, south, or west were included, and if timing of reach construction were included, then the percent change on U.S. 101 would be lower. Therefore, the addition of Reach 8 forecast construction-related trips to the regional roadway network (U.S. 101) would be less than significant.

Reach 14

Reach 14 construction features and activities are similar to Reaches 4, 5, 6, and 7B. Access to the maintenance roads would be at Sycamore Avenue, East San Martin Avenue, and Church Avenue. Approximately 3.3 acres of vacant SCVWD-owned land, east of the southern end of Kannely Lane on the west side of the channel and 5.9 acres of vacant land at the northern intersection of Sycamore Avenue and San Martin Avenue, would be used as staging areas during construction for Reach 14.

As shown in Table 3.10-2, Reach 14 forecast construction-related trips total to 70 daily trips, which would be dispersed over multiple area roadways. Construction of Reach 14 is anticipated to take place in construction Years 2 and 3, as shown in Table 3.10-4, and would add approximately 70 daily trips on average over those 2 years; and is, therefore, not expected to affect local traffic patterns. Construction staff trips would occur during the early morning and early afternoon while excavation, materials delivery, and support staff trips would occur periodically throughout the workday. ADT volumes are 109,000 ADT along U.S. 101 and 970 ADT along Sycamore Avenue in the northern portion of Reach 14. Therefore, the addition of Reach 14 forecast construction-related trips to the local roadway network would be less than significant.

The preferred haul route between U.S. 101 and Reach 14 is provided via Sycamore Avenue to Center Avenue to Foothill Avenue to San Martin Avenue to the U.S. 101 ramps. If all the forecast construction-related daily trips for each reach were added to U.S. 101, the percent change would be less than 1 percent. This forecast of nominal addition to U.S. 101 would occur throughout the day; and conservatively assumes construction of all reaches would occur concurrently and all trips would travel in the same direction. If distribution to the north, south, or west were included, and if timing of reach construction were included, then the percent change on U.S. 101 would be lower. Therefore, the addition of Reach 14 forecast construction-related trips to the regional roadway network (U.S. 101) would be less than significant.

Cochrane Road

Cochrane Road would be used primarily for access to Anderson Dam where excavation materials would be disposed.

The U.S. 101/Cochrane Road interchange is constructed with a partial cloverleaf configuration. Traffic signals accommodate traffic volumes at the interchange ramp junction with Cochrane Road. Cochrane

Road is a four-lane divided roadway (with raised median) just east of U.S. 101, and narrows to a two-lane divided roadway (with painted median) east of Mission Avenida. Cochrane Road east of San Rafael Street transitions to a two-lane undivided roadway. Cochrane Road serves retail and commercial land uses near U.S. 101 and transitions to residential land uses east of Mission Avenida. Approximately 12 residential properties have direct driveway access to Cochrane Road between Avenida Mission and Malaguerra Avenue. The daily traffic volume capacity on Cochrane Road likely varies between 20,000 and less than 10,000 daily vehicles.

The combined effect of excavation trips by year would contribute up to 630-daily truck trips added to Cochrane Road as soil is disposed at Anderson Dam (see Table 3.10-4). The peak daily excavation truck trips occurs in Year 2 of construction, with lower truck trips added to local roadways. Accounting for approximately 10 percent of excavation trips traveling to Lake Silveira directly from Reach 7A excavation instead of to Anderson Dam, then approximately 474 daily truck trips are forecast to be added to Cochrane Road in other construction years. The addition of construction vehicle trips to Cochrane Road likely can be accommodated from a traffic capacity perspective; however, a temporary traffic impact is expected where the predominant land use is residential. While the roadway can likely accommodate the increase in traffic volumes, residents would view the additional truck trips on the roadway as an impact from non-compatible vehicles (dump trucks). The traffic volume increase is small in terms of percentage increase, but the effect on context would likely be an impact to the community. Therefore, impacts from the addition of construction-related trips to Cochrane Road would be a temporary, significant impact.

The Preferred Alternative would have potentially significant impacts associated with the temporary closure of Ciolino Avenue in Reach 7B, Hale Avenue in Reach 8, and from additional truck traffic on Cochrane Road. These impacts would be reduced to less than significant through the preparation of the Traffic Control Plan and implementation of Mitigation Measure TRAFFIC-1 T, described below.

Operations and Maintenance

After construction of the Preferred Alternative, maintenance of stream channels, such as sediment removal, vegetation management, and associated minor activities, would occur. Traffic volumes from equipment and personnel accessing the channel to perform maintenance would be far less, temporary and intermittent compared to construction levels.

Sediment removal, vegetation management, and minor maintenance and repairs are typical maintenance activities that require the use of heavy equipment. In the past, sediment maintenance has occurred only in Reach 14 and near the Church Pond inlet in Reach 6. Sediment maintenance could occur in other locations in the future, but the Project contains design features that encourage any sediment to collect in a part of Reach 6 and near the confluence of Reaches 4, 5, and 14, as well as in Reach 8. Maintenance equipment is transported to and from maintenance sites and moved once projects are completed. Equipment is not stored permanently at maintenance sites. Nearly all maintenance would occur from maintenance roads to be constructed located at the top of channel banks or through planned access roads down the banks to the channel bottom. Maintenance activities would rarely occur from public roadways; and, therefore, would not regularly interfere with traffic patterns. Mobilization and demobilization of equipment from public roadways to SCVWD maintenance roads may briefly interfere with access to residences and businesses; however, maintenance activities are temporary and intermittent and would not affect traffic loads on the local street system. Impacts are less than significant.

Best Management Practices (BMPs)

BMPs are implemented to reduce the impacts to levels less than significant. Applicable construction BMPs include the following resource protection measures:

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

BMP TR-1 calls for the installation of fences, barriers, lights, flagging, guards, and signs to give adequate warning to the public of the construction and of any dangerous condition to be encountered. BMP TR-2 calls for conducting work in a manner that maintains two-way traffic flow on public roadways in the vicinity of the work site, maintaining access to public transit routes, and limiting the blockage of driveways and private roads, as well as providing adequate notification if temporary blockages cannot be avoided. The full description of the BMPs are provided in Appendix C.

Mitigation Measures

Mitigation measures have been identified to reduce the level of significance of impacts through providing notification to affected properties and ensure transit vehicles are accommodated during construction activities as follows:

Mitigation Measure TRAFFIC-1 T: Maintain Access to Local Residences and Businesses. The SCVWD shall include specifications for vehicle and pedestrian access control during construction activities that would serve as mitigation as follows:

> Convenient access by vehicles and pedestrians to driveways, houses, buildings, and businesses along the work shall be maintained in operational condition and temporary approaches to crossings or intersecting streets shall be provided and kept in good condition.

> When construction operation is directly within the driveway area, the SCVWD must provide temporary access. The existing access shall not be closed until the temporary replacement access is usable. Once construction is completed, restore access to a condition equal to or better than the existing condition prior to the operation.

Implementation of BMPs and Mitigation Measure TRAFFIC-1 T would reduce impacts to less-than-significant levels.

TRAFFIC-2 T—Exceed, either individually or cumulatively, an LOS standard established by the County Congestion Management Agency for designated roads or highways

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTS	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The nearest CMP facilities to the Proposed Project are U.S. 101 and State Route 152. There would be a minor increase in traffic along and near U.S. 101 as demonstrated in the reach discussions under Impact TRAFFIC-1 T. For example, in Reach 4, ADT volumes for U.S. 101 from Masten Avenue to State Route 152 are 98,000 ADT (Table 3.10-1). The addition of approximately 134 daily trips for construction Years 1, 2, and 3, as shown in Table 3.10-4 is not expected to affect local traffic patterns. Similar increases of less than a couple of percent to existing traffic volumes are discussed throughout the reach discussions in Impact TRAFFIC-1 T and apply to this discussion. These increases to existing ADT volumes are negligible and, therefore, impacts are less than significant.

Operations and Maintenance

Sediment removal, vegetation management, minor maintenance and repairs are typical maintenance activities that require the use of heavy equipment. In the past, sediment maintenance has occurred only in Reach 14 and near the Church Pond inlet in Reach 6. Sediment maintenance could occur in other locations in the future, but the Project contains design features that encourage sediments to collect in a part of Reach 6 and near the confluence of Reaches 4, 5, and 14 and in Reach 8. Maintenance equipment is transported to and from maintenance sites and moved once projects are completed. Equipment is not stored permanently at maintenance sites. Nearly all maintenance would occur along newly planned SCVWD maintenance roads located at the top of channel banks or through planned access roads down the banks to the channel bottom. Maintenance activities would rarely occur from public roadways; and therefore, would not interfere with traffic patterns. Mobilization and demobilization of equipment from public roadways to SCVWD maintenance roads may briefly interfere with access to residences and businesses; however, maintenance activities are temporary and intermittent and would not affect traffic loads on the local street system.

As mentioned above, the nearest CMP facilities to the Proposed Project are U.S. 101 and State Route 152. The Project area borders U.S. 101 through much of its length. Maintenance vehicles may use U.S. 101 for access to maintenance sites; however, maintenance work would be intermittent and for short durations and related traffic would be far less than during construction; therefore, impacts from operations and maintenance activities would be less than significant.

Best Management Practices (BMPs)

Applicable construction BMPs include the following resource protection measures:

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

TRAFFIC-3 T—Result in inadequate emergency access

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

During construction, temporary road closures and increased truck traffic would apply to the Preferred Alternative and may impede emergency access in the Project area, resulting in a temporary significant impact. By maintaining access to local businesses and residences (Mitigation Measure TRAFFIC-1 T), and with implementation of the Traffic Control Plan, which includes a provision for emergency vehicle access so that emergency vehicle access would be provided along project area roadways at all times during construction, impacts would be reduced to less-than-significant levels. Additionally, as part of the Traffic Control Plan, the local fire and police departments (Morgan Hill Police Department and Santa

Clara County Fire Department) would be also notified of the time and duration of planned lane closures in advance, and a public safety monitor would be present during all lane closures to ensure emergency vehicle access through the area.

With implementation of Mitigation Measure TRAFFIC-1 T, impacts would be reduced to less than significant.

Operations and Maintenance

After construction of the Preferred Alternative, routine maintenance of stream channels involving sediment removal, vegetation management, and associated minor activities would occur. Traffic volumes compared to construction levels would be far less, temporary, and intermittent.

Sediment removal, vegetation management, minor maintenance, and repairs are typical maintenance activities that require the use of heavy equipment. In the past, sediment maintenance has occurred only in Reach 14 and near the Church Pond inlet in Reach 6. Sediment maintenance could occur in other locations in the future, but the Project contains design features that encourage any sediment to collect in a part of Reach 6 and near the confluence of Reaches 4, 5, and 14, as well as in Reach 8. Maintenance equipment is transported to and from maintenance sites and moved once projects are completed. Equipment is not stored permanently at maintenance sites. Nearly all maintenance would occur along proposed SCVWD maintenance roads located at the top of channel banks or through planned access roads down the banks to the channel bottom. Maintenance activities would rarely occur from public roadways and, therefore, would not regularly interfere with traffic patterns. Mobilization and demobilization of equipment from public roadways to SCVWD maintenance roads may briefly interfere with access to residences and businesses; however, maintenance activities are temporary and intermittent and would not affect emergency access. Impacts are less than significant.

Best Management Practices (BMPs)

BMPs are implemented to reduce the impacts to levels less than significant. Applicable construction BMPs include the following resource protection measures:

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

Mitigation Measures

Mitigation Measure TRAFFIC-1 T: Maintain Access to Local Residences and Businesses.

Implementation of BMPs and Mitigation Measure TRAFFIC-1 T would reduce impacts to less-than-significant levels.

TRAFFIC-4 T—Conflict with adopted policies, plans, or programs supporting alternative transportation

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTS	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

During construction of the Preferred Alternative, temporary lane closures and construction adjacent to alternative transportation facilities, such as bike paths, may occur. The following is a description of potential conflicts with alternative transportation facilities and associated policies by reach. Construction in Reaches 4, 5, 6 and 14 would not result in conflicts with alternative transportation facilities. The General Plan for the City of Morgan Hill promulagates the following policies with regard to supporting walking trails and bikeways as alternative transportation facilities:

> *Policy 18l.* Coordinate trails, parks, and recreation facilities with a citywide bikeways system to include bicycle paths, lanes and routes

> *Policy 7h.* Where feasible, implement the bikeways system concurrent with adjacent development. Establish priorities for bikeways implementation based on improving safety and enhancing both commute and recreational cycling. These priorities shall be considered in directing resources and efforts to obtain funding for implementation. Priorities shall be regularly reviewed and updated as implementation proceeds. Current priorities for implementation of the bikeways plan include the following:

  – Live Oak High School Access
  – Little Llagas Creek Trail
  – Santa Teresa and Monterey Highway Corridor Improvements
  – East West Connection to Coyote Creek Trail

> *Policy 7p.* Promote extension of bicycle paths in conjunction with flood control efforts

Reach 7A

The SCVWD has a maintenance easement along the roadway section that is also the West Little Llagas Creek Trail (Reaches 7A and 7B). The trail provides opportunities for walking, biking, and other trail related activities. The trail runs along the creek from Spring Avenue (about 0.25 mile south of downtown) through Watsonville Road. The trail is on both sides of the channel from La Crosse Drive south to Watsonville Road. This multi-use paved path surface would be replaced by an aggregate surfaced maintenance road that would be constructed on the improved bank. Additionally, the existing pedestrian bridge over West Little Llagas Creek just upstream from Watsonville Road would be removed. Improvements for public use as a future trail and/or bike path would be subject to an agreement between the SCVWD and the City of Morgan Hill. Per the Joint Use Agreement between the city and SCVWD, the trail cannot “unreasonably interfere” the SCVWD goal of using these lands for flood protection; therefore, the trail was always potentially subject to modification. Such a future improvement would require a separate action and approval from this Project. The opportunity for the City to re-surface the proposed aggregate maintenance road is not foreclosed by the proposed construction and, therefore, remains supportive of the City’s policies in regards to trails and bikeways as alternative forms of transportation. Additionally, there are other alternative routes for pedestrians in the area, and the temporary or permanent loss of a single pedestrian facility in an area where other alternative pedestrian pathways exist would be a less than significant impact.

Reach 7B

The West Little Llagas Creek Trail described above continues in Reach 7B between Edes Court and La Crosse Drive on the south side of the channel where the planned maintenance road and pathway would overlap at a couple of locations. Where this occurs, the path would be modified such that the SCVWD maintenance road and pathway would be a shared use facility and the path would be unpaved. During construction the pathway may not be safe or available for access. Other pedestrian access is available in the area via sidewalks along surface streets, which would allow for continued access. Additionally, with

implementation of BMPs, such as TR-1 and TR-2 as part of the Project, impacts would be less than significant.

Reach 8

Temporary lane closures along Hale Avenue and Main Avenue for construction activities could affect local transit service provided by VTA for fixed route Bus Line 68. Fixed route Bus Line 68 operates at roughly 15-minute headways during peak morning and afternoon times. While at least one travel lane would be open in each direction, traffic congestion would cause delays along segments where lane closures are in effect. This would be a temporary, significant impact. The Traffic Control Plan includes provisions for maintaining transit access during construction. VTA would be notified of the time and duration of planned lane closures in advance of such closures. A public safety monitor would be present during all lane closures to ensure bus access through the area. Impacts would be less than significant.

Operations and Maintenance

After construction of the Preferred Alternative, routine maintenance of stream channels involving sediment removal, vegetation management, and associated minor activities would occur. Traffic volumes compared to construction levels would be far less, temporary, and intermittent.

Sediment removal, vegetation management, minor maintenance and repairs are typical maintenance activities that require the use of heavy equipment. In the past, sediment maintenance has occurred only in Reach 14 and near the Church Pond inlet in Reach 6. Sediment maintenance could occur in other locations in the future, but the Project contains design features that encourage any sediment to collect in a part of Reach 6 and near the confluence of Reaches 4, 5, and 14, as well as in the sediment detention basin to be constructed in Reach 8. Maintenance equipment is transported to and from maintenance sites and moved once projects are completed. Equipment is not stored permanently at maintenance sites. Nearly all maintenance would occur along proposed SCVWD maintenance roads to be located at the top of channel banks or through planned access roads down the banks to the channel bottom. Maintenance activities would rarely occur from public roadways and, therefore, would not regularly interfere with traffic patterns. Mobilization and demobilization of equipment from public roadways to SCVWD maintenance roads may briefly interfere with access to alternative transportation facilities, such as bike paths and trails; however, maintenance activities are temporary and intermittent and would not affect alternative transportation. Impacts are less than significant.

Best Management Practices (BMPs)

Applicable construction BMPs include the following resource protection measures:

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

TRAFFIC-5 T— Fail to provide safe access; obstruct access to nearby uses, including due to the loss of parking facilities; or fail to provide for future street right-of-way

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

During construction, temporary road closures and increased truck traffic, as discussed in Impact TRAFFIC-1 T above, may obstruct safe access in the Project area, resulting in a temporary significant impact. Impacts would be reduced to a level less than significant by maintaining access to local businesses and residences through the implementation of BMP TR-1 (see description above), which would ensure public safety, including pedestrian safety and provide safe access in the Project area.

Lack of access to residences and businesses during construction activities may occur, as discussed in Impact TRAFFIC-1 T and would be a temporary significant impact; however, access would be maintained to the extent possible through Mitigation Measure TRAFFIC-1 T. With implementation of this measure and Mitigation Measure TRAFFIC-5 T (discussed below) impacts would be reduced to less than significant with mitigation.

The onsite parking provided for the food processing company in Reach 6 would be affected by the proposed widening of Llagas Creek, requiring relocation of some facility parking spaces. Construction would result in temporary loss or modification of existing parking supply to accommodate excavation, construction vehicles, and equipment. The Preferred Alternative would partially avoid the Morgan Hill Plaza Shopping Center parking lot in Reach 8 as opposed to the NRCS and Culvert/Channel alternatives (discussed in their respective sections); however the Project construction alignment would affect the rear parking area behind the shopping center. Construction would result in temporary loss or modification of existing parking supply and potentially loading areas during construction for the Preferred Alternative. With implementation of Mitigation Measure TRAFFIC-5 T, impacts would be reduced to less than significant.

Operations and Maintenance

After construction of the Preferred Alternative, routine maintenance of stream channels involving sediment removal, vegetation management, and associated minor activities would occur. Traffic volumes compared to construction levels would be far less, temporary, and intermittent.

Sediment removal, vegetation management, and minor maintenance, and repairs are typical maintenance activities that require the use of heavy equipment. In the past, sediment maintenance has occurred only in Reach 14 and near the Church Pond inlet in Reach 6. Sediment maintenance could occur in other locations in the future. Maintenance equipment is transported to and from maintenance sites and moved once projects are completed. Equipment is not stored permanently at maintenance sites. Nearly all maintenance would occur along proposed SCVWD maintenance roads to be located at the top of channel banks or through planned access roads down the banks to the channel bottom. Maintenance activities would rarely occur from public roadways and, therefore, would not regularly interfere with traffic patterns. Mobilization and demobilization of equipment from public roadways to SCVWD maintenance roads may briefly interfere with access to residences and businesses; however, maintenance activities are temporary and intermittent and would not affect safe access to adjacent uses. Impacts are less than significant.

Best Management Practices (BMPs)

BMPs are implemented to reduce the impacts to levels less than significant. Applicable construction BMPs (see brief description under TRAFFIC-1 T and full BMP in Appendix C) include the following resource protection measures:

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

Mitigation Measures

Mitigation Measure TRAFFIC-1 T: Maintain Access to Local Residences and Businesses.

Mitigation Measure TRAFFIC-5 T: Coordinate with Local Business Regarding Parking. The SCVWD and its contractors shall work with the operators/business owners, such as the Morgan Hill Plaza Shopping Center, to ensure that sufficient customer parking is maintained for those businesses during Project construction. Prior to any construction activities, the SCVWD shall develop a circulation and parking mitigation plan that specifically defines the areas of the parking lot that will affect the Morgan Hill Plaza shopping center and any other Project locations where construction may affect parking that is used to access local residences or businesses. The mitigation shall provide temporary restriping of remaining parking areas to provide additional spaces, if necessary and temporary restriping of circulation drive aisles, as needed. Construction vehicle and equipment staging and storage shall be limited to the immediate construction area to the extent feasible so as not to affect customer vehicle traffic.

Implementation of BMPs and Mitigation Measures TRAFFIC-1 T and TRAFFIC-5 T would reduce impacts to less-than-significant levels.

TRAFFIC-6 T—Potential damage to roads due to construction-generated traffic

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Travel of trucks and other heavy construction equipment on local roads could cause damage to pavement from long-term hauling over 6 years and construction activities. Impacts on roadway facilities could also occur, as a result of loading and maneuvering of oversize and heavy vehicles. Impacts to roadways related to construction activities might be significant, but with implementation of Mitigation Measure TRAFFIC-6 T impacts would be reduced to less than significant.

Operations and Maintenance

After construction of the Preferred Alternative, routine maintenance of stream channels involving sediment removal, vegetation management, and associated minor activities would occur. Traffic volumes compared to construction levels would be far less, temporary, and intermittent.

Sediment removal, vegetation management, minor maintenance, and repairs are typical maintenance activities that require the use of heavy equipment. In the past, sediment maintenance has occurred only in Reach 14 and near the Church Pond inlet in Reach 6. Sediment maintenance could occur in other

locations in the future, but the Project contains design features that encourage sediment to collect in a part of Reach 6 and near the confluence of Reaches 4, 5, and 14, as well as in the sediment detention basin to be constructed in Reach 8. Maintenance equipment is transported to and from maintenance sites and moved once projects are completed. Equipment is not stored permanently at maintenance sites. Nearly all maintenance would occur along proposed SCVWD maintenance roads to be located at the top of channel banks or through planned access roads down the banks to the channel bottom. Maintenance activities would rarely occur from public roadways and, therefore, would not regularly impact local roadways. Mobilization and demobilization of equipment from public roadways to SCVWD maintenance roads may briefly interfere with access to residences and businesses; however, maintenance activities are temporary and intermittent and would not deteriorate and impact local roads. Impacts are less than significant.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure TRAFFIC-6 T: Repair Local Roadways to Pre-Project Conditions. The SCVWD will consult with Santa Clara County and the City of Morgan Hill before the start of construction to discuss use of local roadways as haul routes. The SCVWD shall document the existing condition of the roads and haul routes. Following construction, SCVWD will consult with Santa Clara County and the City of Morgan Hill and will repair any damage to local roads that occurred as a result of construction activities. If it is determined that the Project construction activities caused road damage along haul routes, then those roads will be restored to pre-Project conditions immediately after all construction work using a haul road has been completed. If there is interim damage identified to a roadway segment on a haul route prior to completion of Project construction that requires repairs, then the County and City will consult with SCVWD and determine if temporary repairs are needed until the Project construction is completed and the SCVWD can implement a permanent repair of the road.

Implementation of Mitigation Measure TRAFFIC-6 T would reduce impacts to roads to less than significant.

3.10.5.3 Natural Resources Conservation Service (NRCS) Alternative

The NRCS Alternative would provide flood management for urban areas, specifically the following: a 1-percent flood in Morgan Hill (Reaches 8, 7A, and 7B); 10-percent flood management for the semi-urban area around East Little Llagas Creek (Reach 14); and avoid induced flooding elsewhere on Llagas Creek (Reaches 6, 5, and 4) due to upstream improvement.

Under the NRCS Alternative, 1,626,600 CY of earth materials from excavation would be disposed of (1,355,500 bank cubic yards [bcy][3] x 1.2 for soil expansion factor after excavation from in-situ = 1,626,600 CY), with 275,000 CY to be hauled from Reach 7A to nearby Lake Silveira for habitat restoration, leaving approximately 1,351,600 CY to be hauled offsite for disposal and storage at Anderson Dam. Construction of the NRCS Alternative would require loading approximately 112,633 trucks for a roundtrip to Anderson Dam over the 6-year life of the Project. Since a truck trip requires a roundtrip, one outbound to the dam, and one return trip to the Project site to obtain another load, this is considered two trips for each load, or 112,633 x 2 = 225,266 truck trips with a 12 CY truck capacity. Phase 1 of the Project would include construction of the bypass channel in Reach 7A and the channel improvements in Reach 4. During Phase 2, channel construction would be sequenced from downstream, starting in Reach 5 to upstream, to avoid induced flooding.

[3] BCY is “bank cubic yards”, which is a measure of volume of sediment in-situ. The BCY expands by a factor of 1.2x when it is excavated and placed into dump trucks for off-site hauling.

Temporary road closures would likely be necessary under the NRCS Alternative at West 2nd, 3rd, 4th, and 5th Streets, and along Monterey Road in downtown Morgan Hill and through the Morgan Hill Plaza Shopping Center parking lot (between West Dunne Avenue and Ciolino Avenue). Construction for the NRCS Alternative is expected to last for 6 years.

TRAFFIC-1 NRCS—Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The NRCS alternative would not result in any permanent traffic impacts as no existing roadways would be altered, no new roadways would be developed, and there is no additional traffic added since this is a flood-management Project. However, construction activities under the NRCS Alternative are anticipated to temporarily interfere with local traffic patterns including temporary road closures, traffic delays due to construction vehicle access, and construction activities including material hauling and disposing. Construction would take place Monday through Friday from 7:00 a.m. to 8:00 p.m. and Saturdays from 9:00 a.m. to 6:00 p.m. As compared to the Preferred Alternative, the NRCS Alternative would involve additional traffic in Reach 7B and Reach 8, as described below.

Reach 7B

Construction activities and features for Reach 7B are similar to those described for the Preferred Alternative above 1 acre of vacant land along La Jolla Drive at Via Navoana, upstream from Watsonville Road on the south side of the channel, would be used as a staging area during construction for Reach 7B.

As shown in Table 3.10-2, Reach 7B forecast construction-related trips total to 64 daily trips, which would be dispersed over multiple area roadways. Reach 7B construction is anticipated to take place in construction Years 3 and 4, as shown in Table 3.10-4, and would add approximately 64 daily trips over those 2 years; and is, therefore, not expected to affect local traffic patterns in a meaningful way. Construction staff trips would occur during the early morning and early afternoon avoiding peak traffic, while excavation, materials delivery, and support staff trips would occur periodically throughout the workday. ADT volumes for local roadways range from 112,000 along U.S. 101 to 6,580 along Dunne Avenue. Therefore, the addition of 64 average daily trips to the Reach 7B local roadway network would be less than significant.

The preferred haul route between U.S. 101 and Reach 7B is provided via Cosmo Avenue, to Monterey Road, to Tennant Avenue Road, to the U.S. 101 ramps. If all the forecast construction-related daily trips for each reach were added to U.S. 101, the percent change would be less than 1 percent. This forecast of nominal addition to U.S. 101 would occur throughout the day, and conservatively assumes that construction of all reaches would occur concurrently, and that all trips would travel in the same direction. If distribution to the north, south, or west were included, and if timing of reach construction were included, then the percent change on U.S. 101 would be lower. Therefore, the addition of Reach 7B forecast construction-related trips to the regional roadway network (U.S. 101) would be less than significant.

Reach 8

For the NRCS Alternative, Reach 8 involves channel widening and deepening through downtown Morgan Hill. Approximately 1.4 acres of vacant land at the site of the Pacific Gas and Electric Company (PG&E) substation, on the southwest of the intersection of Hale Avenue and East Main Avenue on the west side of the channel (APN# 767-05-001), would be used as a staging area during construction for Reach 8.

As shown in Table 3.10-2, Reach 8 construction-related trips total to 42 daily trips, which would be dispersed over multiple area roadways. ADT volumes for local roadways near Reach 8 range from 125,000 ADT along U.S. 101 to 6,210 ADT along Hale Avenue. Construction in Reach 8 is anticipated to take place in construction Years 2 through 5, as shown in Table 3.10-4, and would add approximately 42 daily trips over each of those 4 years; which is a very small percentage of the local ADT and, therefore, would not affect local traffic patterns. Construction staff trips would occur during the early morning and early afternoon avoiding peak traffic, while excavation, materials delivery, and support staff trips would occur periodically throughout the workday.

Hale Avenue is a two-lane undivided roadway serving residential and institutional land uses in the vicinity of Reach 8. Hale Avenue in the Project vicinity currently accommodates approximately 6,200 vehicles per day, as identified in the City of Morgan Hill General Plan Circulation Update (2009). Temporary closure of Hale Avenue is planned for construction activities related to Reach 8. Since Hale Avenue would be intermittent during the temporary construction activities, the traffic operations on the roadway would be affected, causing a substantial impact to traffic load and capacity on the road. The temporary detour of Hale Avenue traffic due to Reach 8 construction activity is a temporary, significant impact. With implementation of the Traffic Control Plan and Mitigation Measures TRAFFIC-1 T and TRAFFIC-1 NRCS, which involve coordinating and maintaining access to local residences and business, impacts would be reduced to less than significant with mitigation.

The preferred haul route for Reach 8 is provided via Hale Avenue to Tilton Avenue to Monterey Road to Cochrane Road and to Anderson Dam. If all of the forecast construction-related daily trips for each reach were added to U.S. 101, the percent change would be less than 1 percent. This forecast of nominal addition to U.S. 101 would occur throughout the day, and conservatively assumes that construction of all reaches would occur concurrently, and that all trips travel in the same direction. If distribution to the north, south, or west were included and if timing of reach construction were included, then the percent change on U.S. 101 would be lower. Therefore, the addition of Reach 8 forecast construction-related trips to the regional roadway network (U.S. 101) would be less than significant.

Operations and Maintenance

After construction of the NRCS Alternative, maintenance of stream channels such as sediment removal, vegetation management and associated minor activities would occur. Traffic volumes from equipment and personnel accessing the channel to perform maintenance would be far less, temporary and intermittent compared to construction levels.

Sediment removal, vegetation management, and minor maintenance and repairs are typical maintenance activities that require the use of heavy equipment. In the past, sediment maintenance has occurred only in Reach 14 and near the Church Pond inlet in Reach 6. Sediment maintenance could occur in other locations in the future, but the Project contains design features that encourage any sediment to collect in a part of Reach 6 and near the confluence of Reaches 4, 5, and 14. Maintenance equipment is transported to and from maintenance sites and moved once projects are completed. Equipment is not stored permanently at maintenance sites. Nearly all maintenance would occur from maintenance roads to be constructed located at the top of channel banks, or through planned access roads down the banks to the channel bottom. Maintenance activities would rarely occur from public roadways, and, therefore, would not regularly interfere with traffic patterns. Mobilization and demobilization of equipment from public roadways to SCVWD maintenance roads may briefly interfere with access to residences and businesses;

however, maintenance activities are temporary and intermittent and would not affect traffic loads on the local street system. Impacts are less than significant.

Best Management Practices (BMPs)

BMPs are implemented to reduce the impacts to levels less than significant. Applicable construction BMPs include the following resource protection measures:

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

Mitigation Measures

Mitigation Measure TRAFFIC-1 T: Maintain Access to Local Residences and Businesses.

Mitigation Measure TRAFFIC-1 NRCS: Coordinate with Local Businesses Regarding Access. Where construction will take place along Monterey Road in downtown Morgan Hill (Reach 8), the SCVWD shall work with the construction contractors and the local business owners to ensure that employee and patron access is maintained at all times during business hours. Prior to any construction activities in Reach 8 that would affect the downtown area, the SCVWD shall develop an access mitigation plan that specifically defines the areas of the sidewalk/street affected by Project construction and includes provisions to ensure that customers can park and walk to those businesses. These provisions should include, but not be limited to, signage stating that "Businesses are Open During Construction", signage directing motorists to alternate parking locations on side streets, and detour signage for any segments of sidewalk that are closed during construction. A public meeting or other outreach efforts shall be conducted to ensure that local business owners are provided an opportunity to review these provisions and discuss Project impacts prior to the start of construction. The SCVWD shall conduct the construction operations in a manner that will cause as little inconvenience as possible to adjacent property owners. Mitigation shall accomplish the following:

> Convenient access by vehicles and pedestrians to driveways, houses, buildings, and businesses shall be maintained in operational condition; and temporary approaches to crossings or intersecting streets shall be provided and kept in good condition.

> When construction operation is directly within a driveway area, the SCVWD shall provide temporary access. The existing access shall not be closed until the temporary replacement access is usable. Once construction is completed, access shall be restored to a condition equal to or better than the existing condition prior to the operation.

Implementation of BMPs and Mitigation Measures TRAFFIC-1 T and TRAFFIC-1 NRCS would reduce impacts related to increased traffic to less than significant.

TRAFFIC-2 NRCS—Exceed, either individually or cumulatively, an LOS standard established by the County Congestion Management Agency for designated roads or highways

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTS	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The nearest CMP facilities to the Proposed Project are U.S. 101 and State Route 152. There would be a minor increase in traffic along and near U.S. 101 as demonstrated in the reach discussions under Impact TRAFFIC-1 T. For example, in Reach 4, ADT volumes for U.S. 101 from Masten Avenue to State Route 152 are 98,000 ADT (Table 3.10-1). The addition of approximately 134 daily trips for construction Years 1, 2, and 3, as shown in Table 3.10-4, would not substantially increase or change local traffic patterns. Similar increases of less than percent to existing traffic volumes are discussed throughout the reach discussions in Impact TRAFFIC-1 T. These increases to existing ADT volumes are negligible and, therefore, impacts are less than significant.

Operations and Maintenance

After construction of the NRCS Alternative, routine maintenance of stream channels involving sediment removal, vegetation management, and associated minor activities would occur. As mentioned above, the nearest CMP facilities to the Proposed Project are U.S. 101 and State Route 152. The Project area borders U.S. 101 through much of its length. Maintenance vehicles may use U.S. 101 for access to maintenance sites; however, maintenance work would be intermittent and for short durations, and related traffic would be far less than during construction. Therefore, impacts from operations and maintenance activities would be similar to Impact TRAFFIC-2 T and, therefore, less than significant.

Best Management Practices (BMPs)

BMPs are implemented to reduce the impacts to levels less than significant. Applicable construction BMPs include the following resource protection measures:

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

TRAFFIC-3 NRCS—Result in inadequate emergency access

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

During construction, temporary road closures and increased truck traffic, as discussed in Impact TRAFFIC-1 NRCS above, may impede emergency access in the Project area resulting in a temporary significant impact. By maintaining access to local businesses and residences (Mitigation Measures TRAFFIC-1 T and TRAFFIC-1 NRCS) and implementation of a Traffic Control Plan as part of the Project, which includes a provision for emergency vehicle access so that emergency vehicles will be provided along Project area roadways at all times during construction, impacts would be reduced to less-than-significant levels. Additionally, as part of the Traffic Control Plan, the local fire and police

departments (Santa Clara County Fire Department and Morgan Hill Police Department) would be also notified of the time and duration of planned lane closures in advance, and a public safety monitor would be present during all lane closures to ensure emergency vehicle access through the area.

With implementation of a Traffic Control Plan and implementation of Mitigation Measures TRAFFIC-1 T and TRAFFIC-1 NRCS, impacts would be reduced to less than significant with mitigation.

Operations and Maintenance

After construction of the NRCS Alternative, routine maintenance of stream channels involving sediment removal, vegetation management, and associated minor activities would occur. Traffic volumes compared to construction levels would be far less, temporary, and intermittent.

Sediment removal, vegetation management, minor maintenance, and repairs are typical maintenance activities that require the use of heavy equipment. In the past, sediment maintenance has occurred only in Reach 14 and near the Church Pond inlet in Reach 6. Sediment maintenance could occur in other locations in the future, but the Project contains design features that encourage any sediment to collect in a part of Reach 6 and near the confluence of Reaches 4, 5, and 14. Maintenance equipment is transported to and from maintenance sites and moved once projects are completed. Equipment is not stored permanently at maintenance sites. Nearly all maintenance would occur along proposed SCVWD maintenance roads to be constructed at the top of channel banks or through planned access roads down the banks to the channel bottom. Maintenance activities would rarely occur from public roadways and, therefore, would not regularly interfere with traffic patterns. Mobilization and demobilization of equipment from public roadways to SCVWD maintenance roads may briefly interfere with access to residences and businesses; however, maintenance activities are temporary and intermittent and would not affect emergency access. Impacts are less than significant.

Best Management Practices (BMPs)

BMPs are implemented to reduce the impacts to levels less than significant. Applicable construction BMPs include the following resource protection measures:

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

Mitigation Measures

Mitigation Measure TRAFFIC-1 T: Maintain Access to Local Residences and Businesses.

Mitigation Measure TRAFFIC-1 NRCS: Coordinate with Local Businesses Regarding Access.

Implementation of BMPs and Mitigation Measures TRAFFIC-1 T and TRAFFIC-1 NRCS would reduce impacts to emergency access to less than significant.

TRAFFIC-4 NRCS—Conflict with adopted policies, plans, or programs supporting alternative transportation

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTS	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

During construction of the NRCS Alternative, temporary lane closures and construction adjacent to alternative transportation facilities, such as bike paths, may occur. The following is a description of potential conflicts with alternative transportation facilities and associated policies by reach. Construction within Reaches 4, 5, 6, and 14 would not result in conflicts with alternative transportation facilities. The General Plan for the City of Morgan Hill promulagates the following policies with regard to supporting walking trails and bikeways as alternative transportation facilities:

> *Policy 18l.* Coordinate trails, parks, and recreation facilities with a citywide bikeways system to include bicycle paths, lanes and routes

> *Policy 7h.* Where feasible, implement the bikeways system concurrent with adjacent development. Establish priorities for bikeways implementation based on improving safety and enhancing both commute and recreational cycling. These priorities shall be considered in directing resources and efforts to obtain funding for implementation. Priorities shall be regularly reviewed and updated as implementation proceeds. Current priorities for implementation of the bikeways plan include the following:

  – Live Oak High School Access
  – Little Llagas Creek Trail
  – Santa Teresa and Monterey Highway Corridor Improvements
  – East West Connection to Coyote Creek Trail

> *Policy 7p.* Promote extension of bicycle paths in conjunction with flood control efforts

Reach 7A

The SCVWD has a maintenance easement along the roadway section that is also the West Little Llagas Creek Trail (Reaches 7A and 7B). The trail provides opportunities for walking, biking, and other trail related activities. The trail runs along the creek from Spring Avenue (about 0.25 mile south of downtown) through Watsonville Road. The trail is on both sides of the channel from La Crosse Drive south to Watsonville Road. This multi-use paved path surface would be replaced by an aggregate surfaced maintenance road that would be constructed on the improved bank. Additionally, the existing pedestrian bridge over West Little Llagas Creek just upstream from Watsonville Road would be removed. Improvements for public use, such as paving for a future trail and/or bike path, would be subject to an agreement between the SCVWD and the City of Morgan Hill. Per the Joint Use Agreement between the city and SCVWD, the trail cannot “unreasonably interfere” the SCVWD goal of using these lands for flood protection; therefore, the trail was always potentially subject to modification. Such a future improvement would require a separate action and approval from this Project. The opportunity for the City to re-surface the proposed aggregate maintenance road is not foreclosed by the proposed construction and, therefore, remains supportive of the City’s policies in regards to trails and bikeways as alternative forms of transportation. Additionally, there are other alternative routes for pedestrians in the area, and the temporary or permanent loss of a single pedestrian facility in an area where other alternative pedestrian pathways exist would be a less-than-significant impact.

Reach 7B

The West Little Llagas Creek Trail continues between Edes Court and La Crosse Drive on the south side of the channel where the planned maintenance road and pathway would overlap at two locations. Where this occurs, the path would be modified such that the SCVWD maintenance road and pathway would be a shared use facility; and the pathway would be unpaved. During construction, the pathway may not be safe or available for access. Other pedestrian access is available in the area via sidewalks along surface

streets. Additionally, with implementation of BMPs, such as TR-1 and TR-2 as part of the Project, impacts would be less than significant.

Reach 8

Temporary lane closures along Hale Avenue and Main Avenue for construction activities could affect local transit service provided by VTA for fixed route Bus Line 68. Fixed route Bus Line 68 operates at roughly 15-minute headways during peak morning and afternoon times. While at least one travel lane would be open in each direction, traffic congestion would cause delays along segments where lane closures are in effect. This would be a temporary, significant impact. Implementation of the Traffic Control Plan includes provisions for maintaining transit access during construction. VTA would be notified of the time and duration of planned lane closures in advance of such closures. A public safety monitor would be present during all lane closures to ensure bus access through the area. Impacts would be less than significant.

Operations and Maintenance

After construction of the NRCS Alternative, routine maintenance of stream channels involving sediment removal, vegetation management, and associated minor maintenance activities would occur. Traffic volumes compared to construction levels would be far less, temporary, and intermittent.

Sediment removal, vegetation management, and minor maintenance, are typical maintenance activities that could require the use of heavy equipment. In the past, sediment maintenance has occurred only in Reach 14 and near the Church Pond inlet in Reach 6. Sediment maintenance could occur in other locations in the future, but the Project contains design features that encourage any sediment to collect in a part of Reach 6 and near the confluence of Reaches 4, 5, and 14. Maintenance equipment is transported to and from maintenance sites and moved once projects are completed. Equipment is not stored permanently at maintenance sites. Nearly all maintenance would occur along proposed SCVWD maintenance roads located at the top of channel banks or through planned access roads down the banks to the channel bottom. Maintenance activities would rarely occur from public roadways and, therefore, would not regularly interfere with traffic patterns. Mobilization and demobilization of equipment from public roadways to SCVWD maintenance roads may briefly interfere with access to alternative transportation facilities, such as bike paths and trails; however, maintenance activities are temporary and intermittent and would not affect access to public transportation. Impacts are less than significant.

Best Management Practices (BMPs)

BMPs are implemented to reduce the impacts to levels less than significant. Applicable construction BMPs include the following resource protection measures:

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

TRAFFIC-5 NRCS— Fail to provide safe access; obstruct access to nearby uses, including due to the loss of parking facilities; or fail to provide for future street right-of-way

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

During construction, temporary road closures and increased truck traffic, as discussed in Impact TRAFFIC-1 NRCS above, may obstruct safe access in the Project area resulting in a temporary significant impact. Impacts would be reduced to less than significant by maintaining access to local businesses and residences with the implementation of BMP TR-1, which would be implemented to ensure public safety and provide safe access in the Project area.

Lack of access to residences and businesses during construction activities may occur, as discussed in Impact TRAFFIC-1 NRCS, and would be a temporary significant impact; however, access would be maintained to the extent possible through Mitigation Measures TRAFFIC-1 T and TRAFFIC-1 NRCS. With implementation of these measures, impacts would be reduced to less than significant.

The onsite parking provided for the food processing company in Reach 6 would be affected by the proposed widening of Llagas Creek, requiring relocation of some facility parking spaces. Construction would result in temporary loss or modification of existing parking supply to accommodate excavation, construction vehicles, and equipment. Construction would also occur within the Morgan Hill Plaza Shopping Center parking lot, between Ciolino Avenue and W. Dunne Avenue (the creek extends in an underground culvert beneath the parking lot). During construction there would be a temporary loss or modification of existing parking supply during to accommodate excavation, construction vehicles, and equipment. Due to parking effects at the Morgan Hill Plaza Shopping Center and other businesses, the temporary parking and storage of construction equipment in the Project area would be a temporary, significant impact. The impact would be reduced to a less-than than-significant level through the implementation of Mitigation Measure TRAFFIC-5 T, Coordinate with Local Business Regarding Parking. The Morgan Hill Plaza Shopping Center parking spaces would be replaced to match existing conditions at the conclusion of construction activities.

Operations and Maintenance

After construction of the NRCS Alternative, routine maintenance of stream channels involving sediment removal, vegetation management, and associated minor activities would occur. Traffic volumes compared to construction levels would be far less, temporary, and intermittent.

Sediment removal, vegetation management, minor maintenance, and repairs are typical maintenance activities that require the use of heavy equipment. In the past, sediment maintenance has occurred only in Reach 14 and near the Church Pond inlet in Reach 6. Sediment maintenance could occur in other locations in the future, but the Project contains design features that encourage any sediment to collect in a part of Reach 6 and near the confluence of Reaches 4, 5, and 14. Maintenance equipment is transported to and from maintenance sites and moved once projects are completed. Equipment is not stored permanently at maintenance sites. Nearly all maintenance would occur along proposed SCVWD maintenance roads to be located at the top of channel banks or through planned access roads down the banks to the channel bottom. Maintenance activities would rarely occur from public roadways and,

therefore, would not regularly interfere with traffic patterns. Mobilization and demobilization of equipment from public roadways to SCVWD maintenance roads may briefly interfere with access to residences and businesses; however, maintenance activities are temporary and intermittent and would not affect safe access to adjacent uses. Impacts are less than significant.

Best Management Practices (BMPs)

BMPs are implemented to reduce the impacts to levels less than significant. Applicable construction BMPs include the following resource protection measures:

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

Mitigation Measures

Mitigation Measure TRAFFIC-1 T: Maintain Access to Local Residences and Businesses.

Mitigation Measure TRAFFIC-5 T: Coordinate with Local Businesses Regarding Parking.

Mitigation Measure TRAFFIC-1 NRCS: Coordinate with Local Businesses Regarding Access.

Implementation of BMPs and Mitigation Measures TRAFFIC-1, TRAFFIC-5 T, and TRAFFIC 1 NRCS would reduce impacts to less than significant.

TRAFFIC-6 NRCS—Potential damage to roads due to construction-generated traffic

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Travel of trucks and other construction equipment on local roads could cause damage to pavement from long-term hauling and construction activities. Impacts on roadway facilities could also occur, as a result of loading and maneuvering of oversize vehicles over the 6-year construction period. Roadway impacts related to construction activities could be potentially significant, but with implementation of Mitigation Measure TRAFFIC-6 T, impacts would be reduced to less than significant with mitigation.

Operations and Maintenance

After construction of the NRCS Alternative, routine maintenance of stream channels involving sediment removal, vegetation management, and associated minor activities would occur. Traffic volumes compared to construction levels would be far less, temporary, and intermittent.

Sediment removal, vegetation management, minor maintenance, and repairs are typical maintenance activities that require the use of heavy equipment. In the past, sediment maintenance has occurred only in Reach 14 and near the Church Pond inlet in Reach 6. Sediment maintenance could occur in other locations in the future, but the Project contains design features that encourage any sediment to collect in a part of Reach 6 and near the confluence of Reaches 4, 5, and 14. Maintenance equipment is transported to and from maintenance sites and moved once projects are completed. Equipment is not stored permanently at maintenance sites. Nearly all maintenance would occur along proposed SCVWD

maintenance roads to be located at the top of channel banks or through planned access roads down the banks to the channel bottom. Maintenance activities would rarely occur from public roadways and, therefore, would not regularly impact local roadways. Mobilization and demobilization of equipment from public roadways to SCVWD maintenance roads may briefly interfere with access to residences and businesses; however, maintenance activities are temporary and intermittent and would not deteriorate and impact local roads. Impacts are less than significant.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure TRAFFIC-6 T: Repair Local Roadways to Pre-Project Conditions.

Implementation of Mitigation Measure TRAFFIC-6 T would reduce impacts related to road damage to less than significant.

3.10.5.4 Culvert/Channel Alternative

The key feature of the Culvert/Channel Alternative is elimination of the need for channel deepening and widening through residential properties, as proposed for the NRCS Alternative between West Main Avenue and West 2nd Street in Reach 8. The construction approach for the Culvert/Channel Alternative would be the same throughout all Project reaches as previously described for the NRCS Alternative. Construction duration for the Culvert/Channel Alternative would be 6 years, with construction lasting for about 36 months in Reach 8, same as the NRCS Alternative. Construction activities, equipment, and crew size would be the same as that described for the NRCS Alternative, except that in a segment of Reach 8; construction would occur through athletic fields and along Del Monte Road to West 2nd Street, rather than through a section of residential homes between West Main Avenue and West 2nd Street. Road closures would likely be necessary under the Culvert/Channel Alternative at West 2nd, 3rd, 4th, and 5th streets, and along Monterey Road in downtown Morgan Hill and through the Morgan Hill Plaza Shopping Center parking lot (between West Dunne Avenue and Ciolino Avenue).

Under the Culvert/Channel Alternative, 1,629,600 CY of earth materials from excavation would be disposed (1,358,000 bcy x 1.2 for soil expansion factor after excavation from in-situ = 1,629,000 CY) with 275,000 CY to be hauled from Reach 7A nearby for use at Lake Silveira, leaving approximately 1,354,600 CY to be hauled offsite for disposal and storage at Anderson Dam. Construction of the Culvert/Channel Alternative would require loading approximately 112,833 trucks for a roundtrip to Anderson Dam over the 6-year life of the Project, nearly the same as for the NRCS Alternative. Since a truck trip requires a roundtrip, one outbound to the dam, and one return trip to the Project site to obtain another load, this is considered two trips for each load, or 112,833 x 2 = 225,766 truck trips with a 12 CY truck capacity.

TRAFFIC-1 CC—Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The Culvert/Channel Alternative would not result in any permanent traffic impacts as no existing roadways would be altered, no new roadways would be developed, and there is no additional traffic added since this is a flood improvement Project, which primarily deals with construction related physical changes to the creek channel, which does not in itself generate or change traffic patterns. However, construction activities are anticipated to temporarily interfere with local traffic patterns. Construction activities that are anticipated to interfere with local traffic patterns include temporary road closures, traffic delays due to construction vehicle access and construction activities including material hauling and disposing. Impacts related to the Culvert/Channel Alternative would be very similar to the NRCS Alternative, discussed above. Unlike the NRCS Alternative, Reach 8 construction would occur through the athletic fields off of Hale Avenue and along Del Monte Road to West 2nd Street, rather than through a section of residential homes between West Main Avenue and West 2nd Street (see Figure 2.7-1). However, traffic related to construction would generally remain the same as the Preferred Alternative along all other reaches. With implementation of the Traffic Control Plan and Mitigation Measures TRAFFIC-1 T and TRAFFIC-1 NRCS, access would be maintained to the extent possible and public noticing and safety measures, as well as detours would be required to be posted; and impacts would be reduced to less than significant with mitigation.

Operations and Maintenance

Maintenance would be similar to the NRCS and Preferred Alternatives including sediment removal, vegetation management, and associated minor activities. Traffic volumes during operations and maintenance compared to construction levels would be far less, temporary, and intermittent. Overall traffic effects would be the same, as described for these other alternatives and impacts for the Culvert/Channel Alternative would be the same as the NRCS Alternative, discussed above, and would be less than significant.

Best Management Practices (BMPs)

BMPs are implemented to reduce the impacts to levels less than significant. Applicable construction BMPs include the following resource protection measures:

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

Mitigation Measures

Mitigation Measure TRAFFIC-1 T: Maintain Access to Local Residences and Businesses.

Mitigation Measure TRAFFIC-1 NRCS: Coordinate with Local Business Regarding Access.

Implementation of BMPs and Mitigation Measures TRAFFIC-1 T and TRAFFIC-1 NRCS would reduce impacts related to increased traffic to less than significant.

TRAFFIC-2 CC—Exceed, either individually or cumulatively, a LOS standard established by the County Congestion Management Agency for designated roads or highways

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTS	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The nearest CMP facilities to the Proposed Project are U.S. 101 and State Route 152. There would be a minor increase in traffic along and near U.S. 101 as demonstrated in the reach discussions Impact TRAFFIC-1 T. For example, in Reach 4, ADT volumes for U.S. 101 from Masten Avenue to State Route 152 is 98,000 ADT (Table 3.10-1). The addition of approximately 134 daily trips for construction Years 1, 2, and 3, as shown in Table 3.10-4, is a very small percentage increase in this volume and, therefore, would not affect local traffic patterns. Similar increases of less than 1 percent to existing traffic volumes is discussed for the other reaches under Impact TRAFFIC-1 T. The increase to existing ADT volumes is considered negligible and, therefore, impacts are less than significant.

Operations and Maintenance

After construction of the Culvert/Channel Alternative, routine maintenance of stream channels involving sediment removal, vegetation management, and associated minor maintenance activities would occur. As mentioned above, the nearest CMP facilities to the Proposed Project are U.S. 101 and State Route 152. The Project area borders U.S. 101 through much of its length. Maintenance vehicles may use U.S.101 for access to maintenance sites. However, maintenance work would be intermittent and for short durations and related traffic would be far less than during construction; therefore, impacts from operations and maintenance activities would be similar to Impact TRAFFIC-2 NRCS and would be less than significant.

Best Management Practices (BMPs)

BMPs are implemented to reduce the impacts to levels less than significant. Applicable construction BMPs include the following resource protection measures:

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

TRAFFIC-3 CC—Result in inadequate emergency access

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

During construction, temporary road closures and increased truck traffic would be similar with the Culvert/Channel Alternative, as discussed in the NRCS Alternative above, and may impede emergency access in the Project area, resulting in a temporary significant impact. Impacts would be reduced to less-than-significant levels by maintaining access to local businesses and residences (through Mitigation Measures TRAFFIC-1 T and TRAFFIC-1 NRCS) and the implementation of the Traffic Control Plan as part of the Project, which includes a provision for emergency vehicle access so that emergency vehicle access will be provided along Project area roadways at all times during construction. Additionally, as part of the Traffic Control Plan, the local fire and police departments (Santa Clara County Fire Department and Morgan Hill Police Department) would be also notified of the time and duration of planned lane closures in advance; and a public safety monitor would be present during all lane closures to ensure emergency vehicle access through the area.

With implementation of Mitigation Measures TRAFFIC-1 T and TRAFFIC-1 NRCS, impacts would be reduced to less than significant with mitigation.

Operations and Maintenance

After construction of the Culvert/Channel Alternative, routine maintenance of stream channels involving sediment removal, vegetation management, and associated minor activities would occur. Traffic volumes compared to construction levels would be far less, temporary, and intermittent.

Sediment removal, vegetation management, minor maintenance, and repairs are typical maintenance activities that require the use of heavy equipment. In the past, sediment maintenance has occurred only in Reach 14 and near the Church Pond inlet in Reach 6. Sediment maintenance could occur in other locations in the future, but the Project contains design features that encourage any sediment to collect in a part of Reach 6 and near the confluence of Reaches 4, 5, and 14. Maintenance equipment is transported to and from maintenance sites and moved once projects are completed. Equipment is not stored permanently at maintenance sites. Nearly all maintenance would occur along proposed SCVWD maintenance roads to be located at the top of channel banks or through planned access roads down the banks to the channel bottom. Maintenance activities would rarely occur from public roadways and, therefore, would not regularly interfere with traffic patterns. Mobilization and demobilization of equipment from public roadways to SCVWD maintenance roads may briefly interfere with access to residences and businesses; however, maintenance activities are temporary and intermittent and would not affect emergency access. Impacts are less than significant.

Best Management Practices (BMPs)

BMPs are implemented to reduce the impacts to levels less than significant. Applicable construction BMPs include the following resource protection measures:

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

Mitigation Measures

Mitigation Measure TRAFFIC-1 T: Maintain Access to Local Residences and Businesses.

Mitigation Measure TRAFFIC-1 NRCS: Coordinate with Local Businesses Regarding Access.

Implementation of BMPs and Mitigation Measures TRAFFIC-1 and TRAFFIC-1 NRCS would reduce impacts related to inadequate emergency access to less than significant.

TRAFFIC-4 CC—Conflict with adopted policies, plans, or programs supporting alternative transportation

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTS	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

During construction of the Culvert/Channel Alternative, which is very similar to the NRCS Alternative (see Section 2.7), temporary lane closures and construction adjacent to alternative transportation facilities, such as bike paths may occur. Construction in Reaches 4, 5, 6, and 14 would not result in conflicts with alternative transportation facilities. Traffic conflicts with alternative transportation facilities and associated policies are the same as those described under TRAFFIC-4 NRCS.

Operations and Maintenance

After construction of the Culvert/Channel Alternative, routine maintenance of stream channels involving sediment removal, vegetation management, bank protection, and associated minor activities would occur. Traffic volumes compared to construction levels would be far less, temporary, and intermittent.

Sediment removal, vegetation management, and minor maintenance, and repairs are typical maintenance activities that require the use of heavy equipment. In the past, sediment maintenance has occurred only in Reach 14 and near the Church Pond inlet in Reach 6. Sediment maintenance could occur in other locations in the future, but the Project contains design features that encourage any sediment to collect in a part of Reach 6 and near the confluence of Reaches 4, 5, and 14. Maintenance equipment is transported to and from maintenance sites and moved once projects are completed. Equipment is not stored permanently at maintenance sites. Nearly all maintenance would occur from proposed SCVWD maintenance roads to be located at the top of channel banks or through planned access roads down the banks to the channel bottom. Maintenance activities would rarely occur from public roadways and, therefore, would not regularly interfere with traffic patterns. Mobilization and demobilization of equipment from public roadways to SCVWD maintenance roads may briefly interfere with access to alternative transportation facilities, such as bike paths and trails; however, maintenance activities are temporary and intermittent and would not affect alternative transportation. Impacts are less than significant.

Best Management Practices (BMPs)

BMPs are implemented to reduce the impacts to levels less than significant. Applicable construction BMPs include the following resource protection measures:

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

TRAFFIC-5 CC—Fail to provide safe access; obstruct access to nearby uses, including due to the loss of parking facilities; or fail to provide for future street right-of-way

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

During construction, temporary road closures and increased truck traffic, as discussed under Impact TRAFFIC-1 NRCS above, may obstruct safe access in the Project area, resulting in a temporary significant impact. Culvert/Channel Alternative construction in Reach 8 would occur through athletic fields and along Del Monte Road to West 2nd Street, rather than through a section of residential homes between West Main Avenue and West 2nd Street. By avoiding these residences, the relative amount of construction-related traffic close to residences and access to nearby uses in Reach 8, would be reduced compared to the NRCS Alternative; however, traffic access and parking impacts of the Project in other reaches would remain the same, including parking at the Morgan Hill Plaza shopping center in Reach 7B and to the vegetable washing business in Reach 6. By maintaining access to local businesses and residences and implementation of BMP TR-1, which would be implemented to ensure public safety and provide safe access in the Project area.

Lack of access to residences and businesses during construction activities may occur in other reaches, as discussed in Impact TRAFFIC-1 NRCS, and would be a temporary significant impact. However, access would be maintained, to the extent possible, through Mitigation Measures TRAFFIC-1 T, TRAFFIC-5 T, and TRAFFIC-1 NRCS. With implementation of these measures, impacts would be reduced to less than significant with mitigation.

Operations and Maintenance

After construction of the Culvert/Channel Alternative, routine maintenance of stream channels involving sediment removal, vegetation management, and associated minor activities would occur. Traffic volumes compared to construction levels would be far less, temporary, and intermittent.

Sediment removal, vegetation management, minor maintenance, and repairs are typical maintenance activities that require the use of heavy equipment. In the past, sediment maintenance has occurred only in Reach 14 and near the Church Pond inlet in Reach 6. Sediment maintenance could occur in other locations in the future, but the Project contains design features that encourage any sediment to collect in a part of Reach 6 and near the confluence of Reaches 4, 5, and 14. Maintenance equipment is transported to and from maintenance sites and moved once projects are completed. Equipment is not stored permanently at maintenance sites. Nearly all maintenance would occur from proposed SCVWD

maintenance roads to be located at the top of channel banks or through planned access roads down the banks to the channel bottom. Maintenance activities would rarely occur from public roadways and, therefore, would not regularly interfere with traffic patterns. Mobilization and demobilization of equipment from public roadways to SCVWD maintenance roads may briefly interfere with access to residences and businesses; however, maintenance activities are temporary and intermittent and would not affect safe access to adjacent uses. Impacts are less than significant.

Best Management Practices (BMPs)

BMPs are implemented to reduce the impacts to levels less than significant. Applicable construction BMPs include the following resource protection measures:

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

Mitigation Measures

Mitigation Measure TRAFFIC-1 T: Maintain Access to Local Residences and Businesses.

Mitigation Measure TRAFFIC-5 T: Coordinate with Local Businesses Regarding Parking.

Mitigation Measure TRAFFIC-1 NRCS: Coordinate with Local Businesses Regarding Access.

Implementation of BMPs and Mitigation Measures TRAFFIC-1 T, TRAFFIC-5 T, and TRAFFIC-1 NRCS would reduce impacts to less than significant.

TRAFFIC-6 CC—Potential damage to roads due to construction-generated traffic

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Roadway impacts would be similar to Impact TRAFFIC-1 NRCS, since hauling and construction activities would be the same through all reaches, with the exception of Reach 8. Travel of trucks and other construction equipment on local roads could cause damage to pavement from long-term hauling and construction activities. Impacts on roadway facilities could also occur, as a result of loading and maneuvering of oversize vehicles. Roadway impacts related to construction activities would be significant; but with implementation of Mitigation Measure TRAFFIC-6 T, impacts would be reduced to less than significant with mitigation.

Operations and Maintenance

After construction of the Culvert/Channel Alternative, routine maintenance of stream channels involving sediment removal, vegetation management, and associated minor activities would occur. Traffic volumes compared to construction levels would be far less, temporary, and intermittent.

Sediment removal, vegetation management, minor maintenance, and repairs are typical maintenance activities that require the use of heavy equipment. In the past, sediment maintenance has occurred only in Reach 14 and near the Church Pond inlet in Reach 6. Sediment maintenance could occur in other

locations in the future, but the Project contains design features that encourage any sediment to collect in a part of Reach 6 and near the confluence of Reaches 4, 5, and 14. Maintenance equipment is transported to and from maintenance sites and moved once projects are completed. Equipment is not stored permanently at maintenance sites. Nearly all maintenance would occur from proposed SCVWD maintenance roads to be located at the top of channel banks or through planned access roads down the banks to the channel bottom. Maintenance activities would rarely occur from public roadways and, therefore, would not regularly impact local roadways. Mobilization and demobilization of equipment from public roadways to SCVWD maintenance roads may briefly interfere with access to residences and businesses; however, maintenance activities are temporary and intermittent and would not deteriorate and impact local roads. Impacts are less than significant.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure TRAFFIC-6 T: Repair Local Roadways to Pre-Project Conditions.

Implementation of Mitigation Measure TRAFFIC-6 T would reduce impacts related to road damage to less than significant.

3.10.5.5 Reach 6 Bypass Alternative

Reach 6 Bypass Alternative construction involves construction of a high-flow bypass channel between Reach 6 of Llagas Creek and Reach 14 of East Little Llagas Creek. The bypass would eliminate the need for construction and improvements along Reach 6 downstream of the proposed bypass channel (which is approximately 0.5 mile downstream from Monterey Highway) or Reach 5 downstream of the proposed bypass.

Under the Reach 6 Bypass Alternative, 1,196,400 CY of earth materials from excavation would be disposed with 275,000 CY to be hauled from Reach 7A nearby for Llagas Creek restoration at Lake Silveira, leaving approximately 921,400 CY to be hauled offsite for disposal and storage at Anderson Dam. Construction of the Reach 6 Bypass Alternative would require loading approximately 76,783 trucks for a roundtrip to Anderson Dam over the 5-year life of the Project, which is less than the other action alternatives. Since a truck trip requires a roundtrip, one outbound to the dam and one return trip to the Project site to obtain another load, this is considered two trips for each load, or 76,783 x 2 = 153,566 truck trips with a 12-CY truck capacity.

TRAFFIC-1 BY—Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	S	N/A
Operations and Maintenance Activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The Reach 6 Bypass Alternative would not result in any permanent traffic impacts once construction is completed, as it will not alter, reduce or add roads, and would not generate new additional sources of

traffic in association with the flood-management Project. However, construction activities are anticipated to interfere with local traffic patterns and with traffic along U.S. 101 due to detours related to construction of bridges to accommodate the Reach 6 bypass channel. Construction activities that are anticipated to interfere with local traffic patterns include temporary road closures, traffic delays due to construction vehicle access, and construction activities including material hauling and disposing. Impacts related to the Reach 6 Bypass Alternative would be very similar to the Preferred Alternative in all Project reaches, discussed above, with the exception of Reaches 5 and 6 as described below.

Reach 5 and Reach 6

Construction of the Reach 6 Bypass Alternative requires building three new bridges on existing roadways in Reaches 5 and 6 serving local and regional traffic: at Murphy Avenue, and U.S. 101 southbound and northbound (see Figures 2.8-3, 2.8-4, and 2.8-5). Construction of the bridges would require diversion of traffic onto a temporary roadway around the construction zone. The temporary roadway diversions would require extensive permitting and design coordination with Santa Clara County and Caltrans.

Staging of construction activities is planned through construction of a temporary bypass for both northbound and southbound U.S. 101 traffic. The temporary bypass would be localized to the area of construction and would not divert traffic onto the local circulation system. A temporary bypass would be constructed adjacent U.S. 101, and traffic would be realigned during an overnight and/or weekend closure. Caltrans will likely require the U.S. 101 realignment to accommodate high-speed travel while the bridges are constructed. Upon re-opening of U.S. 101, after diversion of traffic onto the bypass, U.S. 101 traffic would travel through the construction zone with nominal delays. The total number of days for the two-phase construction of U.S. 101 bridges for the Reach 6 Bypass is approximately 250 days, with traffic diverted on the temporary bypass for 90–180 days, depending on the direction of travel. Upon the completion of the bridge construction, an overnight and/or weekend closure would again occur to return traffic to the mainline freeway, utilizing the new bridges as they pass over the Reach 6 Bypass.

Caltrans requires preparation of a TMP whenever closures are planned on freeway facilities to minimize motorist delay and provide public notification regarding closures and impacts. The Traffic Control Plan will be prepared to be compliant with Caltrans TMP requirements. The TMP identifies times allowed for closure and details regarding notification of the public, including a public awareness campaign. While closure of U.S. 101 to construct the detour routes would be facilitated through the TMP, the closures of the U.S. 101 would remain a temporary impact for overnight and/or weekend closures when traffic is rerouted onto a temporary freeway alignment for northbound and southbound traffic. The construction of the two new bridges for Reach 6 Bypass will not close U.S. 101 for the entirety of the 250-day construction duration, as closures would be limited to overnight and/or weekend closures. Since U.S. 101 would be temporarily closed, related to staging of the bypass, a temporary impact is forecast to occur for overnight and/or weekend closures of U.S. 101.

Construction of the Reach 6 Bypass Alternative would not require any construction in Reach 5 and would require construction in a portion of Reach 6 for the bypass channel itself. Therefore, excavation quantities and disposal-related truck trips would be reduced relative to the NRCS Alternative.

Construction staff trips would occur during the early morning and early afternoon, avoiding peak traffic while excavation, materials delivery, and support staff trips would occur periodically throughout the workday. Temporary rerouting of traffic on Murphy Avenue for construction of a new bridge would be necessary for construction activities related to the Reach 6 Bypass Alternative. Murphy Avenue is a two-lane undivided roadway serving residential, agricultural, and industrial land uses. Murphy Avenue, in the vicinity of the bypass, extends to Middle Avenue on the north and San Martin Avenue on the south. The temporary detour of Murphy Avenue traffic due to Reach 6 Bypass Alternative construction activity is a temporary, significant impact on the local roadway network. With implementation of a Traffic Control Plan and Mitigation Measure TRAFFIC-1 T, access would be maintained to the extent possible and public noticing and safety measures, as well as detours would be required to be posted. Impacts would be

reduced to less than significant with mitigation. The preferred haul route between U.S. 101 and Reach 6 Bypass Alternative is provided via Llagas Avenue and Sycamore Canyon to San Martin Avenue to the U.S. 101 ramps. ADT Volumes in this area are 109,000 along U.S. 101 and 10,600 on Monterey Road. If all the forecast, construction-related daily trips for each reach were added to U.S. 101, the percent change would be less than 1 percent. This forecast of nominal addition to U.S. 101 would occur throughout the day, and conservatively assumes that construction of all reaches would occur concurrently, and that all trips would travel in the same direction. If distribution to the north, south, or west were included, and if timing of reach construction were included, then the percent change on U.S. 101 would be lower.

Temporary rerouting of traffic on U.S. 101 for construction of three new bridges is planned for construction activities related to the Reach 6 Bypass Alternative. Therefore, the temporary detour of U.S. 101 traffic due to Reach 6 Bypass Alternative construction activity is a temporary, significant impact on the regional roadway network (U.S. 101). A Traffic Control Plan would be prepared and implemented to maintain access, to the extent possible, and provide public noticing and safety measures. However, given the extent of use of U.S. 101 as part of a regional commute network and the likelihood of slow-downs for the detour over an extended 0.75-year period, this impact is significant and unavoidable.

Reach 8

Similar to the Preferred Alternative, approximately 1.4 acres of vacant land at the site of the PG&E substation on the southwest of the intersection of Hale Avenue and East Main Avenue on the west side of the channel (APN# 767-05-001), would be used as a staging area during construction for Reach 8. This staging site would be the main location for equipment and materials needed to construct the portal inlet and tunnel for the Reach 6 Bypass Alternative. Temporary road closures in Reach 8 would be reduced in the Reach 6 Bypass Alternative, as compared to the NRCS Alternative; and will only include Hale Avenue, Wright Avenue, Main Avenue, and Warren Avenue.

Operations and Maintenance

After construction of the Reach 6 Bypass Alternative, routine maintenance of stream channels involving sediment removal, vegetation management, and associated minor activities would occur. Traffic volumes compared to construction levels would be far less, temporary, and intermittent. As previously discussed, maintenance activities will take place almost entirely from constructed maintenance roads and access roads to the channel bottom and would not affect traffic on public roadways; therefore, maintenance related traffic effects would be less than significant. Maintenance would still occur on those portions of Reach 5 and Reach 6 downstream of the bypass where no construction is proposed for this alternative, and where the SCVWD has access easements that maintenance is covered under the existing SMP.

Best Management Practices (BMPs)

BMPs are implemented to reduce the impacts to levels less than significant. Applicable construction BMPs include the following resource protection measures:

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

Mitigation Measures

Mitigation Measure TRAFFIC-1 T: Maintain Access to Local Residences and Businesses.

Implementation of BMPs and Mitigation Measure TRAFFIC-1 T would not reduce impacts related to increased traffic, specifically to U.S. 101 to less than significant; impacts would be significant and unavoidable.

TRAFFIC-2 BY—Exceed, either individually or cumulatively, an LOS standard established by the County Congestion Management Agency for designated roads or highways

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTS	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The nearest CMP facilities to the Proposed Project are U.S. 101 and State Route 152. Construction of the Reach 6 Bypass Alternative requires construction of three new bridges on existing roadways in Reach 6 serving local and regional traffic: at Murphy Avenue and U.S. 101 southbound and northbound. Construction of the bridges would require diversion of traffic onto a temporary roadway around the construction zone. The temporary roadway diversions would require extensive permitting and design coordination with Santa Clara County and Caltrans. The temporary diversionary detour on U.S. 101 is forecast to occur for 90 days for northbound traffic and 180 days for southbound traffic. Construction activities in the vicinity of U.S. 101 requiring permitting with Caltrans for the Reach 6 Bypass Alternative are anticipated for 250 days in total. Upon completion of the new bridges on Murphy Avenue and U.S. 101, the temporary traffic detour routes would be removed. The temporary detour of U.S. 101 traffic due to Reach 6 Bypass Alternative construction activity is a temporary, significant impact on the regional roadway network (U.S. 101). With implementation of Traffic Control Plan, access would be maintained to the extent possible and public noticing, safety measures, and detours would be required. Impacts would be reduced to less than significant.

Operations and Maintenance

After construction of the Reach 6 Bypass Alternative, maintenance of stream channels involving sediment removal, vegetation management, and associated minor maintenance activities would occur. As mentioned above, the nearest CMP facilities to the Proposed Project are U.S. 101 and State Route 152. The Project area borders U.S. 101 through much of its length. Maintenance vehicles may use U.S. 101 for access to maintenance sites. However, maintenance work would be intermittent and for short durations and related traffic would be far less than during construction. Therefore, impacts from operations and maintenance activities would be similar to Impact TRAFFIC-2 NRCS, and would be less than significant.

Best Management Practices (BMPs)

Applicable construction and maintenance BMPs include the following resource protection measures:

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

TRAFFIC-3 BY—Result in inadequate emergency access

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction activities, such as temporary road closures and increased truck traffic, may impede emergency access in the Project area resulting in a temporary significant impact. Impacts would be reduced to less-than-significant levels by maintaining access to local businesses and residences (Mitigation Measure TRAFFIC-1 T) and the implementation of a Traffic Control Plan, which includes a provision for emergency vehicle access so that emergency vehicles will be provided along Project area roadways at all times during construction. Additionally, as part of the TMP, the local fire and police departments (Santa Clara County Fire Department and Morgan Hill Police Department) would be also notified of the time and duration of planned lane closures in advance, and a public safety monitor would be present during all lane closures to ensure emergency vehicle access through the area.

With implementation of Mitigation Measure TRAFFIC-1 T, impacts would be reduced to less than significant.

Operations and Maintenance

After construction of the Reach 6 Bypass Alternative, routine maintenance of stream channels involving sediment removal, vegetation management, and associated minor activities would occur. Although there would be less construction in Reaches 5 and 6 associated with the Reach 6 Bypass Alternative, routine maintenance would still occur in these channels. Traffic volumes compared to construction levels would be far less temporary and intermittent.

Sediment removal, vegetation management, minor maintenance, and repairs are typical maintenance activities that require the use of heavy equipment. In the past, sediment maintenance has occurred only in Reach 14 and near the Church Pond inlet in Reach 6; although, sediment maintenance could occur in other locations in the future. Maintenance equipment is transported to and from maintenance sites and moved once projects are completed. Equipment is not stored permanently at maintenance sites. Nearly all maintenance would occur from proposed SCVWD maintenance roads to be located at the top of channel banks or through planned access roads down the banks to the channel bottom. Maintenance activities would rarely occur from public roadways and, therefore, would not regularly interfere with traffic patterns. Mobilization and demobilization of equipment from public roadways to SCVWD maintenance roads may briefly interfere with access to residences and businesses; however, maintenance activities are temporary and intermittent and would not affect emergency access. Impacts are less than significant.

Best Management Practices (BMPs)

BMPs are implemented to reduce the impacts to levels less than significant. Applicable construction BMPs include the following resource protection measures:

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

Mitigation Measures

Mitigation Measure TRAFFIC-1 T: Maintain Access to Local Residences and Businesses.

Implementation of BMPs and Mitigation Measure TRAFFIC-1 T would reduce impacts related emergency access to less than significant.

TRAFFIC-4 BY—Conflict with adopted policies, plans, or programs supporting alternative transportation

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTS	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

During construction of the Reach 6 Bypass Alternative, temporary lane closures and construction adjacent to alternative transportation facilities, such as bike paths, may occur. Construction in Reaches 4, 6, and 14 would not result in conflicts with alternative transportation facilities. Traffic conflicts with alternative transportation facilities and associated policies in Reaches 7A, 7B, and 8 are the same as those described under TRAFFIC-4 T.

Operations and Maintenance

After construction of the Reach 6 Bypass Alternative, routine maintenance of stream channels involving sediment removal, vegetation management, and associated minor activities would occur. Although there would be less construction in Reaches 5 and 6 associated with the Reach 6 Bypass Alternative, routine maintenance would still occur in these channels. Traffic volumes compared to construction levels would be far less temporary and intermittent.

Sediment removal, vegetation management, minor maintenance, and repairs are typical maintenance activities that require the use of heavy equipment. In the past, sediment maintenance has occurred only in Reach 14 and near the Church Pond inlet in Reach 6; although, sediment maintenance could occur in other locations in the future. Maintenance equipment is transported to and from maintenance sites and moved once projects are completed. Equipment is not stored permanently at maintenance sites. Nearly all maintenance would occur from proposed SCVWD maintenance roads to be located at the top of channel banks or through planned access roads down the banks to the channel bottom. Maintenance activities would rarely occur from public roadways and, therefore, would not regularly interfere with traffic patterns. Mobilization and demobilization of equipment from public roadways to SCVWD maintenance roads may briefly interfere with access to alternative transportation facilities, such as bike paths and trails. However, maintenance activities are temporary and intermittent and would not affect alternative transportation. Impacts are less than significant.

Best Management Practices (BMPs)

Applicable construction BMPs include the following resource protection measures:

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

TRAFFIC-5 BY—Fail to provide safe access; obstruct access to nearby uses, including due to the loss of parking facilities; or fail to provide for future street right-of-way

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

During construction, temporary road closures and increased truck traffic, as discussed Impact TRAFFIC-1 NRCS above, may obstruct safe access in the Project area resulting in a temporary significant impact. By maintaining access to local businesses and residences and implementation of BMP TR-1, which would be implemented to ensure public safety, including pedestrian safety and provide safe access in the Project area, impacts would be reduced.

Lack of access to residences and businesses during construction activities, including due to the loss of parking facilities, may occur as discussed in Impact TRAFFIC-5 T, and would be a temporary significant impact; however, access would be maintained to the extent possible through Mitigation Measures TRAFFIC-1 T and TRAFFIC-5 T. With implementation of these mitigation measures, impacts would be reduced to less than significant with mitigation.

Operations and Maintenance

After construction of the Reach 6 Bypass Alternative, routine maintenance of stream channels involving sediment removal, vegetation management, and associated minor activities would occur. Although there would be less construction in Reaches 5 and 6 associated with the Reach 6 Bypass Alternative, routine maintenance would still occur in these channels. Traffic volumes compared to construction levels would be far less, temporary, and intermittent.

Sediment removal, vegetation management, minor maintenance, and repairs are typical maintenance activities that require the use of heavy equipment. In the past, sediment maintenance has occurred only in Reach 14 and near the Church Pond inlet in Reach 6; although, sediment maintenance could occur in other locations in the future. Maintenance equipment is transported to and from maintenance sites and moved once projects are completed. Equipment is not stored permanently at maintenance sites. Nearly all maintenance would occur from proposed SCVWD maintenance roads to be located at the top of channel banks or through planned access roads down the banks to the channel bottom. Maintenance activities would rarely occur from public roadways and, therefore, would not regularly interfere with traffic patterns. Mobilization and demobilization of equipment from public roadways to SCVWD maintenance roads may briefly interfere with access to residences and businesses. However, maintenance activities are temporary and intermittent and would not affect safe access to adjacent uses. Impacts are less than significant.

Best Management Practices (BMPs)

BMPs are implemented to reduce the impacts to levels less than significant. Applicable construction BMPs include the following resource protection measures:

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

Mitigation Measures

Mitigation Measure TRAFFIC-1 T: Maintain Access to Local Residences and Businesses.

Mitigation Measure TRAFFIC-5 T: Coordinate with Local Businesses Regarding Parking.

Implementation of BMPs and Mitigation Measures TRAFFIC-1 T and TRAFFIC-5 T would reduce impacts to less than significant.

TRAFFIC-6 BY—Potential damage to roads due to construction-generated traffic

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operations and Maintenance Activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Roadway impacts would be reduced as compared to the Preferred, NRCS, and Culvert/Channel alternatives, since hauling and construction activities would be reduced without the need for construction in Reach 5 and a portion of Reach 6. However, the Reach 6 Bypass Alternative would still be subject to deterioration of local roadways due to travel of trucks and other construction equipment on local roads along the remaining reaches. Therefore, construction of the Reach 6 Bypass Alternative could still cause damage to pavement from hauling and construction activities. Impacts on roadway facilities could also occur as a result of loading and maneuvering of oversize vehicles over the 5-year construction period. Roadway impacts related to construction activities would be significant; but with implementation of Mitigation Measure TRAFFIC-6 T, impacts would be reduced to less than significant.

Operations and Maintenance

After construction of the Reach 6 Bypass Alternative, routine maintenance of stream channels involving sediment removal, vegetation management, and associated minor activities would occur. Traffic volumes compared to construction levels would be far less, temporary, and intermittent.

Sediment removal, vegetation management, minor maintenance, and repairs are typical maintenance activities that require the use of heavy equipment. In the past, sediment maintenance has occurred only in Reach 14 and near the Church Pond inlet in Reach 6; although, sediment maintenance could occur in other locations in the future. Maintenance equipment is transported to and from maintenance sites and moved once projects are completed. Equipment is not stored permanently at maintenance sites. Nearly all maintenance would occur from proposed SCVWD maintenance roads to be located at the top of channel banks or through planned access roads down the banks to the channel bottom. Maintenance activities would rarely occur from public roadways and, therefore, would not regularly impact local roadways. Mobilization and demobilization of equipment from public roadways to SCVWD maintenance

roads may briefly interfere with access to residences and businesses; however, maintenance activities are temporary and intermittent and would not deteriorate and impact local roads. Impacts are less than significant.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure TRAFFIC-6 T: Repair Local Roadways to Pre-Project Conditions.

Implementation of Mitigation Measure TRAFFIC-6 T would reduce impacts related to road damage to less than significant.

3.10.6 Summary of Impacts to Traffic and Circulation

The Preferred Alternative and the Reach 6 Bypass Alternative would not require construction on a portion of West Little Llagas Creek through downtown Morgan Hill which would result in less construction-related interference in Reach 8 with commercial and residential areas as compared with the NRCS and Culvert Channel alternatives.

The potential environmental concerns related to traffic and circulation identified for the Project reaches would primarily occur during the construction phase and would involve interference with local traffic patterns. Activities, such as heavy equipment access, construction-related traffic, truck trips related to disposal of fill at Anderson Dam, deterioration of local roads, temporary detours on U.S. 101 (Reach 6 Bypass Alternative only), and temporary impacts to parking spots at the Morgan Hill Plaza Shopping, all have the potential for temporary significant impacts as they relate to all action alternatives. With the implementation of BMPs, a Traffic Control Plan, and mitigation measures the potential impacts related to construction can be reduced to levels less than significant, with the exception of the temporary detours on U.S. 101 for bridge construction in the Reach 6 Bypass Alternative, which would remain a significant impact to traffic.

Routine maintenance would occur along all Project reaches as it does currently; and impacts would continue to be less than significant with the implementation of maintenance BMPs.

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3.11 Air Quality and Greenhouse Gases

3.11.1 Introduction

California state and U.S. federal law defines criteria emissions to include the following: reactive or volatile organic compounds (ROCs or VOCs) as ozone (O_3) precursors, nitrogen oxides (NO and NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), respirable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$). Elimination of tetraethyl lead in motor gasoline has eliminated emissions of lead (Pb) from vehicles and portable equipment, although tetraethyl lead is still used in some types of aviation gasoline. Principal greenhouse gases (GHGs) include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and other fluorinated gases including nitrogen trifluoride and hydrofluorinated ethers.

During construction activities, the Project would cause criteria and GHG emissions from the combustion of fossil fuels (i.e., gasoline and diesel) used to operate off-road equipment, portable equipment, and vehicles in the vicinity of Morgan Hill and San Martin located in southern Santa Clara County. In addition, fugitive dust (as PM_{10} and $PM_{2.5}$) would be generated by earthmoving tasks. This section evaluates Project emissions to determine overall effects of the four variants—Preferred Alternative, NRCS Alternative, Culvert/Channel Alternative, or Reach 6 Bypass Alternative—in relation to established thresholds of significance.

3.11.2 Study Area

The Project study area (Reaches 4, 5, 6, 7A, 7B, 8, and 14) is entirely within Santa Clara County, which is part of the San Francisco Bay Area Air Basin (SFBAAB), under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD).

3.11.2.1 Air Quality Environmental Setting

Air districts in California are required to monitor air pollutant levels to assure that National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) are met and, in the event that they are not, to develop strategies to meet these standards. If the standards are met, the local air basin is classified as being in “attainment”; if the standards are exceeded, it is classified as “nonattainment.” Where insufficient data exist to make a determination, an area is deemed “unclassified”.

The SFBAAB is designated as nonattainment for the state 1-hour, state 8-hour, and federal 8-hour ozone (O_3) standards; and nonattainment for all state PM_{10} and $PM_{2.5}$ (i.e., respirable particulate matter with an aerodynamic diameter of 10 and 2.5 micrometers or less) standards. The SFBAAB is also designated unclassified for the 24-hour federal PM_{10} standard, and nonattainment and attainment for the federal 24-hour and annual $PM_{2.5}$ standards, respectively. For all other pollutants and standards, the SFBAAB is designated as either attainment or unclassified status (BAAQMD 2012a, CARB 2012b, USEPA 2012a, see Table 3.11-1 below).

Table 3.11-1 Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards		Federal Standards	
		ppmv	µg/m^3	ppmv	µg/m^3
Ozone (O_3)	1-hour	0.09	177	—	—
	8-hour	0.07	137	0.075	147
Nitrogen Dioxide (NO_2)	1-hour	0.18	338	0.100	188
	Annual	0.03	56	0.053	100
Sulfur Dioxide (SO_2)	1-hour	0.25	655	0.075	196
	3-hour Secondary	—	—	0.50	1,309
	24-hour	0.04	105	—	—
Carbon Monoxide (CO)	1-hour	20	22,898	35	40,071
	8-hour	9	10,304	9	10,304
	Lake Tahoe (8-hr)	6	6,869	—	—
Particulates (as PM_{10})	24-hour	—	50	—	150
	Annual	—	20	—	—
Particulates (as $PM_{2.5}$)	24-hour	—	—	—	35
	Annual Primary	—	12	—	12
	Annual Secondary	—	—	—	15
Lead (Pb)	30-day	—	1.5	—	—
	3-month (rolling)	—	—	—	0.15
Sulfates (as SO_4)	24-hour	—	25	—	—
Hydrogen Sulfide (H_2S)	1-hour	0.03	42	—	—
Vinyl Chloride (C_2H_3Cl)	24-hour	0.01	26	—	—
Visibility Reducing Particles	8-hour	Extinction coefficient of 0.23 per km; visibility of 10 miles or more (0.07 to 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70%.		—	—

ppmv = parts per million by volume

µg/m^3 = micrograms per cubic meter

The 1.5 µg/m^3 federal quarterly lead standard applied until 2008; 0.15 µg/m^3 rolling 3-month average thereafter

For gases, µg /m^3 calculated from ppmv based on molecular weight and standard conditions

Standard Temperature 25 deg. C

Standard Molar Volume 24.465 liter/g-mole

Sources: CARB 2012a, USEPA 2011a

3.11.2.2 Meteorology and Climate

The Project area climate is characterized by moderately wet winters and dry summers. About 90 percent of the annual total rainfall is received in the November through April period. Between June and September, normal rainfall is typically less than 0.6 inch (1.5 centimeters). Temperatures in the Project area average about 60°F (15°C) annually, with average summer highs in the 80 to 90°F (27 to 32°C) range and average winter lows in the 35 to 40°F (2 to 4°C) range. Precipitation averages about 21 inches (53 centimeters) per year, although annual precipitation can vary significantly from year-to-year. Annual average wind speeds in the Project area are about 6 to 8 MPH (2.7 to 3.6 meters per second). The predominant direction of air pollution transport in the Project area is inland from the coastal areas (BAAQMD 2010b; WC 2013; NOAA 2008).

3.11.2.3 Criteria Air Pollutants

A criteria or regulated air pollutant is any air pollutant for which ambient air quality standards have been set by the U.S. Environmental Protection Agency (USEPA) or the California Air Resources Board (CARB). Primary air quality standards are established to protect human (public) health. Secondary air quality standards are designed to protect public welfare from effects, such as diminished production and quality of agricultural crops, reduced visibility, degraded soils, materials and infrastructure damage, and damaged vegetation. Criteria pollutants include ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), respirable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$). These six most prevalent criteria pollutants and their potential health effects are described below.

Ozone (O_3)

Ground-level O_3 is a secondary pollutant formed in the atmosphere by a series of complex chemical reactions and transformations in the presence of sunlight above urban areas due to the mixing effects of temperature inversions. Nitrogen oxides (NO_X) and reactive organic gases (ROGs)[1] are the principal constituents in these reactions. NO_X and ROG emissions are predominantly attributed to mobile sources (on-road motor vehicles and other mobile sources). Thus, regulation and control of NO_X and ROGs from these sources is essential to reduce the formation of ground-level O_3.

Ozone (O_3) is a strong irritating gas that can chemically burn and cause narrowing of airways, forcing the lungs and heart to work harder to provide oxygen to the body. A powerful oxidant, O_3 is capable of destroying organic matter, including human lung and airway tissue; it essentially burns through cell walls. O_3 damages cells in the lungs, making the passages inflamed and swollen. O_3 also causes shortness of breath, nasal congestion, coughing, eye irritation, sore throat, headache, chest discomfort, breathing pain, throat dryness, wheezing, fatigue, and nausea. It can damage alveoli, the individual air sacs in the lungs where oxygen and carbon dioxide are exchanged. O_3 has been associated with a decrease in resistance to infections. People most likely to be affected by O_3 include the elderly, the young, and athletes. O_3 may pose its worst health threat to people who already suffer from respiratory diseases, such as asthma, emphysema, and chronic bronchitis (VCAPCD 2003).

Nitrogen Dioxide (NO_2)

Nitrogen dioxide is formed in the atmosphere primarily by the rapid reaction of the colorless gas nitric oxide (NO) with atmospheric oxygen. It is a reddish-brown gas with an odor similar to that of bleach. NO_2 participates in the photochemical reactions that result in O_3. The greatest source of NO, and subsequently NO_2, is the high-temperature combustion of fossil fuels, such as in motor vehicle engines and power plant boilers. NO_2 and NO are referred to collectively as NO_X. NO_2 can irritate and damage the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections, such as influenza. Researchers

[1] Also referred to as reactive organic compounds (ROCs) or volatile organic compounds (VOCs).

have identified harmful effects, similar to those caused by O_3, with progressive changes over 4 hours of exposure causing impaired pulmonary function, increased incidence of acute respiratory disease, and difficult breathing for both bronchitis sufferers and healthy persons (VCAPCD 2003).

Carbon Monoxide (CO)

Carbon monoxide (CO) is a common, colorless, odorless, highly toxic gas. It is produced by natural and anthropogenic (caused by human activity) combustion processes. The major source of CO in urban areas is incomplete combustion of carbon-containing fuels (primarily gasoline, diesel fuel, and natural gas). However, it also results from combustion processes including forest fires and agricultural burning. Ambient CO concentrations are generally higher in the winter, usually on cold, clear days and nights with little or no wind. Low wind speeds inhibit horizontal dispersion and surface inversions inhibit vertical mixing. Traffic-congested intersections have the potential to result in localized high CO levels.

When inhaled, CO does not directly harm the lungs. The impact from CO is on oxygenation of the entire body. CO combines chemically with hemoglobin, the oxygen-transporting component of blood. This diminishes the ability of blood to carry oxygen to the brain, heart, and other vital organs. Red blood cells have 220 times the attraction for CO as for oxygen. This affinity interferes with movement of oxygen to the body's tissues. Effects from CO exposure include headaches, nausea, and death. People with heart ailments are at risk from low-level exposure to CO. Also sensitive are people with chronic respiratory disease, the elderly, infants and fetuses, and people suffering from anemia and other conditions that affect the oxygen-carrying capacity of blood. High CO levels in a concentrated area can result in asphyxiation. Studies show a synergistic negative health effect when CO and O_3 are combined in ambient air, such as in urban environments, where respiratory distress is heightened in the presence of both pollutants. (VCAPCD 2003)

Sulfur Dioxide (SO_2)

Sulfur dioxide (SO_2) is a colorless gas with a sharp, irritating odor. It can react in the atmosphere to produce sulfuric acid and sulfates, which contribute to acid deposition and atmospheric visibility reduction. It also contributes to the formation of PM_{10}. Most of the SO_2 emitted into the atmosphere is from burning sulfur-containing fossil fuels by mobile sources, such as marine vessels and farm equipment and stationary fuel combustion. SO_2 irritates the mucous membranes of the eyes and nose and may also affect the mouth, trachea, and lungs. Healthy people may experience sore throats, coughing, and breathing difficulties when exposed to high concentrations. SO_2 causes constriction of the airways and poses a health hazard to asthmatics, which are very sensitive to SO_2. Children often experience more respiratory tract infections when they are exposed to SO_2 (VCAPCD 2003).

Respirable Particulate Matter, 10 Microns (PM_{10})

Respirable particulate matter, 10 microns consists of particulate matter, fine dusts and aerosols, 10 microns or smaller in diameter. When inhaled, particles larger than 10 microns generally are caught in the nose and throat and do not enter the lungs. PM_{10} can enter the large upper branches of the lungs just below the throat, where they are caught and removed (by coughing, spitting, or swallowing).

The primary sources of PM_{10} include dust from paved and unpaved roads and construction and demolition operations. Lesser sources of PM_{10} include wind erosion, agricultural operations, residential wood combustion, smoke, tailpipe emissions, and industrial sources. These sources have different constituents and, therefore, varying effects on health. Road dust is composed of many particles other than soil dust. It also includes engine exhaust, tire rubber, oil, and truck load spills. Diesel particulate matter (DPM) contains many toxic particle and elemental carbon (soot), and is considered a toxic air contaminant in California. Airborne particles absorb and adsorb toxic substances and can be inhaled and lodged in the lungs. Once in the lungs, the toxic substances can be absorbed into the bloodstream and carried throughout the body. Concentrations of PM_{10} tend to be lower during the winter months, because

weather greatly affects PM_{10} concentrations. During rain, concentrations are relatively low; and on windy days, PM_{10} levels can be high. Photochemical aerosols, formed by chemical reactions with manmade emissions, may also influence PM_{10} concentrations.

Elevated ambient particulate levels are associated with premature death, an increased number of asthma attacks, reduced lung function, aggravation of bronchitis, respiratory disease, cancer, and other serious health effects. Short-term exposure to particulates can lead to coughing, minor throat irritation, and a reduction in lung function. Long-term exposure can be more harmful. The USEPA estimates that 8 percent of urban nonsmoker lung cancer risk is due to PM_{10} in soot from diesel trucks, buses, and cars. Additional studies by USEPA and the Harvard School of Public Health estimate that 50,000 to 60,000 deaths per year in the United States are caused by particulates. Particles of PM_{10} collect in the upper portion of the respiratory system, affecting the bronchial tubes, nose, and throat. They contribute to aggravation of asthma, premature death, increased number of asthma attacks, bronchitis, reduced lung function, respiratory disease, aggravation of respiratory and cardiovascular disease, alteration of lung tissue and structure, changes in respiratory defense mechanisms, and cancer (VCAPCD 2003).

Fine Particulate Matter, 2.5 Microns ($PM_{2.5}$)

Fine particulate matter, 2.5 microns ($PM_{2.5}$) is a mixture of particulate matter fine dusts and aerosols 2.5 microns or smaller in aerodynamic diameter. Particles of $PM_{2.5}$ can enter the deepest portions of the lungs where gas exchange occurs between the air and the blood stream. These are the most dangerous particles, because the lungs have no efficient mechanisms for removing them. If these particles are soluble in water, they pass directly into the blood stream within minutes. If they are not soluble in water, they are retained deep in the lungs and can remain there permanently. This increases the risks of long-term disease including chronic respiratory disease, cancer, and increased and premature death. Other effects include increased respiratory stress and disease, decreased lung function, alterations in lung tissue and structure, and alterations in respiratory tract defense mechanisms.

Particles of $PM_{2.5}$ are emitted from activities, such as industrial and residential combustion processes, wood burning, and from diesel and gasoline-powered vehicles. They are also formed in the atmosphere from gases, such as SO_2, NO_X, ammonia, and VOCs that are emitted from combustion activities and then become particles as a result of chemical transformations in the air (secondary particles) (VCAPCD 2003).

3.11.2.4 Sources of Air Pollutants

The most significant regional sources of O_3, NO_2, and CO in ambient air are automobiles, trucks, and other on-road vehicles, along with trains, vessels, and aircraft. Ozone is not directly emitted; rather, photochemical O_3 is formed by the atmospheric reaction of VOCs and NO_X in sunlight. Gasoline and diesel engines emit VOCs and NO_X as combustion products, as does natural gas-fired equipment (stationary sources), such as pump engines, gas turbine generators, process heaters, and steam boilers.

Local emissions of PM_{10} are primarily the result of fugitive dust from travel on unpaved roads, as well as construction and agricultural activities. Coarser particles also may be emitted from activities that disturb the topsoil. Other sources include wind-blown dust, pollen, salts, brake dust, and tire wear. Although $PM_{2.5}$ is a subset of PM_{10}, it differs from the rest of PM_{10}. While most of the ambient PM_{10} results from direct emissions of the pollutant, a significant amount of the ambient $PM_{2.5}$ results from transformation of precursors and condensing of gaseous pollutants in the atmosphere. Other than direct $PM_{2.5}$ emissions, the key pollutants contributing to $PM_{2.5}$ concentrations in the atmosphere are SO_2, NO_X, VOCs, and ammonia (CARB 2005).

The Project would cause emissions of criteria pollutants: VOC, CO, NO_X, SO_2, PM_{10}, and $PM_{2.5}$, primarily in diesel engine exhaust (off-road equipment, portable equipment, and larger trucks), and also in gasoline engine exhaust (small equipment and worker vehicles). Earthmoving activities would also generate emissions of fugitive dust as PM_{10} and $PM_{2.5}$.

3.11.2.5 Ambient Air Quality

Air quality is affected by a variety of sources in the general vicinity of the Project area. Large stationary sources, such as oil refineries and power plants emit substantial amounts of NO_X and ROCs, along with PM_{10} and $PM_{2.5}$. Light motor vehicles, diesel powered construction equipment, and commercial trucks used in the Project area would be another source of these pollutants. Noncombustion sources of PM_{10} and $PM_{2.5}$ include fugitive dust from roads, construction, demolition, and earthmoving. Finally, commercial and general aviation aircraft generate emissions that affect air quality.

The major sources of O_3 precursors NO_X and VOC in the Bay Area are motor vehicles and other mobile equipment (including agricultural equipment), solvent use, petroleum industry activities, nonelectric agricultural water pumping, and electric utilities operation.

BAAQMD operates an extensive regional air monitoring network comprised of monitoring stations (sites) that collectively measure the ambient concentrations of six criteria air pollutants: O_3, NO_2, CO, SO_2, PM_{10}, and $PM_{2.5}$. Not all monitoring stations are fully instrumented for these pollutants, while some sites have not been operating for adequate periods of time to provide representative data for characterization of attainment status.

Monitoring stations within or near the Project area are San Martin (O_3 only), Gilroy (O_3 and $PM_{2.5}$), and San Jose (O_3, NO_2, CO, SO_2, PM_{10}, and $PM_{2.5}$); there is no monitoring station in Morgan Hill. A 3-year (2009 through 2011) summary of ambient air quality monitored at these sites is presented in Section 3.11-3, Regulatory Setting. In general, air quality in the Project area is good with occasional exceedences of O_3 and $PM_{2.5}$ ambient air quality standards.

3.11.2.6 Sensitive Receptors

Certain population groups are considered more sensitive to air pollution and odors than others; in particular, children, elderly, and acutely ill and chronically ill persons, especially those with cardio respiratory diseases, such as asthma and bronchitis. Sensitive receptors (land uses) indicate locations where such individuals are typically found, namely schools, daycare centers, hospitals, convalescent homes, residences of sensitive persons, and parks with active recreational uses, such as youth sports.

Persons engaged in strenuous work or physical exercise also have increased sensitivity to poor air quality. Residential areas are considered more sensitive to air quality conditions than commercial and industrial areas, because people generally spend longer periods of time at their residences, resulting in greater exposure to ambient air quality conditions. Recreational uses, such as parks, are also considered sensitive, due to the greater exposure to ambient air quality conditions and because the presence of pollution detracts from the recreational experience.

A project with the potential to expose sensitive receptors (including residential areas) or the general public to substantial levels of toxic air contaminants, as designated by CARB under 17 California Code of Regulations (CCR) Subchapter 7, Sections 93000 and 93001, would be deemed to have a significant impact. Air toxics are pollutants that may result in an increase in mortality or serious illness, or that may pose a present or potential hazard to human health. Health effects of air toxics include cancer, birth defects, neurological damage, damage to the body's natural defense system, and diseases that can lead to premature death.

DPM is considered a carcinogenic air toxic in California (§93000). At the federal level, Title III of the Clean Air Act Amendments of 1990 identifies 188 pollutants as Hazardous Air Pollutants (HAPs), the federal term for air toxics. In 2001, the USEPA identified 21 HAPs as mobile source air toxics (MSATs), six of which are designated priority pollutants (66 Federal Register 17235): acetaldehyde, acrolein, benzene,1,3-butadiene, diesel exhaust (particulate matter and organic gases), and formaldehyde. The California Office of Environmental Health Hazard Assessment ([OEHHA] 2009) has published a cancer Unit Risk Value (URV) for DPM, which aggregates the individual URVs for the principal hazardous

constituents of DPM, including aromatic hydrocarbons (benzene, ethylbenzene, toluene, xylenes – BETX), carbonyls (acrolein, acetaldehyde, formaldehyde), and PAHs (polycyclic aromatic hydrocarbons).

A screening-level Health Risk Assessment (HRA) for DPM was performed using conservative methodology for maximum excavation activity levels and timeframes. Conservative methodology overestimates impacts; thus, actual impacts would be lower. Detailed quantitative results of the HRA are presented in Sections 3.11.5 and 3.11.6. In general, due to the broad geographic dispersion of Project activities and their short-term temporary nature at any particular location, no significant risk to sensitive receptors or the general public would be posed by Project-related engine exhaust.

3.11.3 Regulatory Environment

The following paragraphs describe the federal, state, and local agencies and the laws and regulations governing air quality. It is the practice of the SCVWD to work with Project area jurisdictions and agencies during Project planning to reasonably consider the local environmental protection policies and to conform to the extent required.

3.11.3.1 Standards and Attainment Status

The Clean Air Act of 1970 ([CAA], amended 1977 and 1990, 42 United States Code 7401 et seq.) established National Ambient Air Quality Standards (NAAQS), and individual states retained the option to adopt more stringent standards and to include other pollution sources. California had already established its own air quality standards when federal standards were established, and because of the unique meteorological problems in the state, there is considerable diversity between the federal and the state standards currently in effect in California, as shown in Table 3.11-1. Under the CAA, California Ambient Air Quality Standards (CAAQS) are at least as protective as national standards and some are more stringent.

The ambient air quality standards, shown in Table 3.11-1, are intended to protect the public health and welfare and specify the concentration of pollutants (with an adequate margin of safety) to which the public may be exposed without adverse health effects. The standards are designed to protect those segments of the public most susceptible to respiratory distress (known as sensitive receptors), including asthmatics, the very young, the elderly, people weak from other illness or disease, or persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollution levels somewhat above the ambient air quality standards before adverse health effects are observed.

As previously described, air districts in California are required to monitor air pollutant levels to assure that NAAQS and CAAQS are met and, in the event that they are not, to develop strategies to meet these standards. Depending on whether the standards are met or exceeded, the local air basin is classified as being in “attainment” or “nonattainment”. Where insufficient data exist to make a determination, an area is deemed “unclassified”. The attainment status of the main Bay Area region is shown in Table 3.11-2.

In general, the San Francisco Bay Area experiences low concentrations of most pollutants when compared to state and federal standards, except for ozone and particulate matter, for which standards are exceeded periodically. With respect to the Project area, the southern portion of Santa Clara County sometimes experiences mildly elevated concentrations of O_3 and $PM_{2.5}$ (BAAQMD 2013, CARB 2012b, USEPA 2012a). Table 3.11-3 summarizes monitored air quality within or near the Project area at San Martin, Gilroy, and San Jose (there is no monitoring station in Morgan Hill) for the most recent 3-year period, 2009 through 2011.

Table 3.11-2 Attainment Status Summary - Bay Area Region

Criteria Pollutant	State Designation	Federal Designation
Ozone (O_3) (1-hour)	Nonattainment	—
Ozone (O_3) (8-hour)	Nonattainment	Nonattainment[1]
Nitrogen Dioxide (NO_2) (1-hour)	Attainment	Unclassified[2]
Nitrogen Dioxide (NO_2) (annual)	Attainment	Attainment
Sulfur Dioxide (SO_2)	Attainment	Attainment
Carbon Monoxide (CO)	Attainment	Attainment
Resp. Particulates (as PM_{10}) (24-hour)	Nonattainment	Unclassified[2]
Resp. Particulates (as PM_{10}) (annual)	Nonattainment	—
Fine Particulates (as $PM_{2.5}$) (24-hour)	—	Nonattainment
Fine Particulates (as $PM_{2.5}$) (annual)	Nonattainment	Attainment
Lead (Pb)	Attainment	Attainment
Sulfates (as SO_4)	Attainment	—
Hydrogen Sulfide (H_2S)	Unclassified[2]	—
Vinyl Chloride (C_2H_3Cl)	n/d	—
Visibility	Unclassified[2]	—

[1] The 0.08 ppmv federal 8-hour ozone standard applied until 2008; 0.075 ppmv thereafter

[2] At the time of designation, if the available data does not support a designation of attainment or nonattainment, the area is designated as unclassified.

n/d - no data/information available

Source: BAAQMD 2012a, CARB 2012b, USEPA 2012a

Table 3.11-3 Ambient Air Quality in Project Vicinity - Santa Clara County

Criteria Pollutant	Year	San Jose		San Martin		Gilroy	
		monitored value	days over standard	monitored value	days over standard	monitored value	days over standard
Ozone (O_3) (1-hour max ppmv) (state)	2011	0.098	1	0.091	0	0.081	0
	2010	0.126	5	0.109	2	0.094	0
	2009	0.088	0	0.107	4	0.098	1
Ozone (O_3) (8-hour max ppmv) (state and federal)	2011	0.067	0	0.072	2	0.073	1
	2010	0.086	3	0.087	8	0.081	7
	2009	0.068	0	0.081	6	0.078	4
Nitrogen Dioxide (NO_2) (1-hour max ppmv)	2011	0.061	0	—	—	—	—
	2010	0.064	0	—	—	—	—
	2009	0.069	0	—	—	—	—

Table 3.11-3 Ambient Air Quality in Project Vicinity - Santa Clara County

Criteria Pollutant	Year	San Jose		San Martin		Gilroy	
		monitored value	days over standard	monitored value	days over standard	monitored value	days over standard
Nitrogen Dioxide (NO_2) (annual average ppmv)	2011	0.015	0	—	—	—	—
	2010	0.014	0	—	—	—	—
	2009	0.015	0	—	—	—	—
Sulfur Dioxide (SO_2) (1-hour max ppmv)	2011	0.0072	0	—	—	—	—
	2010	0.0049	0	—	—	—	—
	2009	—	0	—	—	—	—
Sulfur Dioxide (SO_2) (24-hour max ppmv)	2011	0.0024	0	—	—	—	—
	2010	0.0018	0	—	—	—	—
	2009	0.0010	0	—	—	—	—
Carbon Monoxide (CO) (1-hour max ppmv)	2011	2.5	0	—	—	—	—
	2010	2.8	0	—	—	—	—
	2009	3.4	0	—	—	—	—
Carbon Monoxide (CO) (8-hour max ppmv)	2011	2.3	0	—	—	—	—
	2010	2.2	0	—	—	—	—
	2009	2.5	0	—	—	—	—
Resp. Particulates (as PM_{10}) (24-hour max $\mu g/m^3$)	2011	44	0	—	—	—	—
	2010	47	0	—	—	—	—
	2009	43	0	—	—	—	—
Resp. Particulates (as PM_{10}) (annual avg $\mu g/m^3$)	2011	19.2	0	—	—	—	—
	2010	19.5	0	—	—	—	—
	2009	20.4	0	—	—	—	—
Fine Particulates (as $PM_{2.5}$) (24-hour max $\mu g/m^3$)	2011	50.5	3	—	—	35.5	1
	2010	41.5	3	—	—	29.9	0
	2009	35.0	0	—	—	36.6	1
Fine Particulates (as $PM_{2.5}$) (annual avg $\mu g/m^3$)	2011	9.9	0	—	—	8.1	0
	2010	8.8	0	—	—	8.2	0
	2009	10.1	0	—	—	8.9	0

Source: BAAQMD 2013

As shown in Table 3.11-3, ozone levels in the San Martin and Gilroy areas exceeded the state 1-hour standard on at least 6 days during the 3-year period, and exceeded the state and federal 8-hour standards on at least 16 days during the same period. On a percentage basis, this means that the 1-hour standard was exceeded at least 0.5 percent of the time and the 8-hour standards were exceeded at least 1.5 percent of the time. There were only two exceedences of the federal 24-hour $PM_{2.5}$ standard during the same period, both in Gilroy.

3.11.3.2 Federal

The 1977 CAA amendments required that regional planning and air pollution control agencies prepare regional air quality plans to outline the measures by which both stationary and mobile sources of pollutants can be controlled to achieve all standards by the deadlines specified in the act.

For the SFBAAB, the Association of Bay Area Governments, the Metropolitan Transportation Commission, and BAAQMD jointly prepared the *2005 Bay Area Ozone Strategy*, which provided inputs to the most recent *2010 Clean Air Plan* issued by BAAQMD (2012a). These plans contain control strategies that demonstrate attainment with NAAQS by the deadlines established in the federal CAA and become part of the State Implementation Plan (SIP) administered by CARB and submitted to USEPA.

Under the 1990 CAA amendments, areas that did not meet the original federal 1-hour O_3 standard were classified according to the severity of each area's respective O_3 problem. The 1-hour classifications were Marginal, Moderate, Serious, Severe, and Extreme. Marginal areas were closest to meeting the 1-hour O_3 standard. Extreme areas had the worst air quality problems. Areas with severe O_3 problems had progressively more stringent control requirements to meet under the Act. An area's classification determined how long the area had to attain the O_3 standard. Marginal areas had 3 years; Moderate areas had 6 years; Serious areas had 9 years; Severe areas had either 15 or 17 years, depending on the magnitude of their O_3 problem; and Extreme areas had 20 years. Under the Act, the SFBAAB is a "Serious" federal nonattainment area for O_3 and a federal nonattainment area for $PM_{2.5}$ (USEPA 2012a).

3.11.3.3 State

Pursuant to the federal CAA, states have the right to establish and enforce their own air quality standards; state standards may be equal to or more stringent, but not less stringent than federal standards. In 1988, the state legislature passed the California CAA (California Health and Safety Code Section 39600 et. seq.), which, like its federal counterpart, called for designations of areas as attainment or nonattainment based on state rather than federal standards.

Similar to the federal CAA, the California CAA also classifies areas according to pollution levels. Under the Act, the Bay Area is a "Serious" O_3 nonattainment area and state PM_{10} and $PM_{2.5}$ nonattainment areas. In addition, localized CO concentrations, also known as CO "hotspots," may occur at heavily traveled roadways, particularly at intersections or other locations where the traffic is congested and vehicles idle for prolonged periods. CO concentrations exceeding the existing standard may occur at intersections that operate at a Level of Service D or worse.

CARB is the state agency responsible for regulating air quality, and its responsibilities include establishing state ambient air quality standards, emissions standards, and regulations for mobile emissions sources (e.g., autos, trucks, etc.), as well as overseeing the efforts of countywide and multi-county air pollution control districts, which have primary responsibility over stationary sources. The emission standards most relevant to the programs are those related to automobiles, light- and medium-duty trucks, and California heavy-duty truck and construction equipment engines. CARB also regulates vehicle fuels with the intent to reduce emissions; to this end, CARB has set emission reduction performance requirements for gasoline (California reformulated gasoline) and has stringently limited the sulfur and aromatic content of diesel fuel to make it burn cleaner. CARB also sets the standards used to pass or fail vehicles in smog check and heavy-duty truck inspection programs.

3.11.3.4 Local

Bay Area Air Quality Management District (BAAQMD)

BAAQMD is the regional agency responsible for air quality regulation within the San Francisco Bay Area. Under CARB authority, California air districts regulate air quality through planning, monitoring, rulemaking, permitting, and enforcement activities. Districts have permit authority over most types of stationary emission sources and can require stationary sources to obtain permits; they can also impose emission limits, set fuel or material specifications, or establish operational limits to reduce air emissions. The BAAQMD also regulates new or expanding stationary sources of toxic air contaminants. For state air quality planning purposes, the Bay Area is classified by the California CAA as a nonattainment area for O_3. The "Serious" classification triggers various plan submittal requirements and transportation performance standards. One such requirement is that each district update its air quality attainment plan every 3 years (triennially) to reflect progress in meeting the air quality standards and to incorporate new information regarding the feasibility of control measures and new emission inventory data. Districts indirectly regulate construction projects that use mobile sources via the statewide Portable Equipment Registration Program, discussed below. Since the Project would not meet the definition of permanent stationary source, no permit would be required from the BAAQMD.

County of Santa Clara

The Santa Clara County General Plan, 1995–2010 (1994) air quality element advocates four broad strategies to reduce public exposure to air pollution and achieve ambient air quality standards:

> Growth management and land use policies for cleaner air;

> Develop transit systems providing feasible travel options;

> Increase travel demand management and traffic congestion relief; and

> Reduce particulate and small scale emissions.

At the county level, these strategies for improving air quality are consistent with strategies outlined in the growth and development and transportation chapters of the General Plan. They address some of the most fundamental, underlying causes of high mobile source emissions, such as suburban, automobile-dependent land use and development patterns, and supplement stationary and mobile source regulations and controls implemented by BAAQMD and CARB.

In addition, the General Plan stipulates that countywide or multi-jurisdictional planning by the cities and county should promote efforts to improve air quality and maximize effectiveness of implementation efforts. Guidance and assistance from the BAAQMD should be sought in the preparation of coordinated, multi-jurisdictional plans, as well as in environmental review of projects that have potential for regionally significant air quality impacts (Santa Clara County 1994).

City of Morgan Hill

The City of Morgan Hill General Plan does not contain a specific air quality element; however, the City is subject to the regionwide provisions described above under the auspices of the BAAQMD (City of Morgan Hill 2010a).

City of Gilroy

The City of Gilroy General Plan advocates achieving federal and state air quality standards by managing locally generated pollutants, coordinating with other jurisdictions, and implementing land use and transportation measures to reduce automobile trips and congestion, encouraging more walking, biking, and transit use. Six policies are identified in the plan (City of Gilroy 2002):

- *Sensitive Receptors.* Use land use planning and project siting to separate air pollution sources from residential areas and other sensitive receptors, which could be affected by elevated concentrations of pollutants.
- *Landscaping to Reduce Pollutants.* Promote the use of trees and plants in landscaping to reduce air pollutant levels.
- *Trip Reduction and Congestion Management.* Aim to reduce the frequency and length of automobile trips and the amount of traffic congestion by controlling urban sprawl, promoting infill development, mixed-use development, and encouraging higher density development with access to public transit.
- *Regional Collaboration.* Cooperate with the BAAQMD and other agencies that deal with issues related to air quality to develop and implement regional air quality strategies. Support subregional coordination with other cities and county agencies to address land use, jobs/housing balance, and transportation planning issues as a means of improving air quality.
- *Air Quality Impacts from Construction Activity.* Help reduce the air quality impacts associated with construction activity by reducing the exhaust emissions through appropriate mitigation measures.
- *Traffic Control Measures.* Implement recommended Transportation Control Measures (TCMs) contained in the BAAQMD Clean Air Plan to reduce mobile source emissions.

Consistent with its six policies, the city is also subject to the regionwide provisions, described above under the auspices of the BAAQMD.

3.11.3.5 Source-Specific Regulations

Non-road Engine Standards

CARB regulates mobile sources of air pollution in the State of California. Self-propelled nonroad construction equipment is considered a vehicle, as defined by the California Vehicle Code. A vehicle may have an engine that both propels the vehicle and powers equipment mounted on the vehicle. As such, vehicles are generally exempt from regulation by the air districts. However, not included in exemption provisions is any equipment mounted on a vehicle that would otherwise require a permit under air district rules and regulations.

Federal Tier 1 standards for off-road diesel engines were adopted as part of the California requirements for 1995. Federal Tier 2 and Tier 3 standards were adopted in 2000 and selectively apply to the full range of diesel off-road engine power categories. Both Tier 2 and Tier 3 standards include durability requirements to ensure compliance with the standards throughout the useful life of the engine (40 Code of Federal Regulations [CFR] 89.112, 13 CCR 2423).

On May 11, 2004, the USEPA signed the final rule implementing Tier 4 emission standards, which are to be phased-in over the period of 2008–2015 (69 Federal Register [FR] 38957-39273, 29 June 2004). The Tier 4 standards require that emissions of PM and NO_X be further reduced by about 90 percent. Such emission reductions can be achieved through the use of advanced control technologies—including advanced exhaust gas after treatment similar to those required by the 2007–2010 standards for highway diesel engines.

On July 26, 2007, CARB adopted the Regulation for In-Use Off-Road Diesel-Fueled Fleets (13 CCR 2449 et seq.) in order to reduce DPM and NO_X emissions from in-use (existing) off-road heavy-duty diesel vehicles and equipment used in construction, mining, and industrial operations. However, on February 11, 2010, CARB issued an enforcement delay of the DPM and NO_X requirements for fleets while reporting, labeling, idling, and sales disclosure requirements remain in effect. Relevant to the Project, the regulation does not prohibit the use of “grandfathered” older equipment in the near future; however, adding older Tier 0, Tier 1, or Tier 2 engines to a fleet will be prohibited beyond certain dates, pending rescindment of

the enforcement delay. Older equipment can be "repowered" with new engines or fitted with aftermarket controls (BACT) to meet fleetwide standards effective on certain dates (also pending rescindment). Tier 0 and Tier 1 engines will be completely phased-out by 2029. For the foreseeable future, any piece of equipment, whether "grandfathered" or relatively new, could be used for Project construction, regardless of engine status, whether Tiered or BACT, whether rented or contractor-owned. Notwithstanding the enforcement delay, compliance is the responsibility of the fleet owner (renter or contractor); however, the operator must comply with the 5-minute idling limit.

Portable Equipment Registration Program (PERP)

The statewide PERP establishes a uniform program to regulate portable engines and portable engine-driven equipment units. Once registered in PERP, engines and equipment units may operate throughout the State of California without the need to obtain individual permits from local air districts, such as BAAQMD. Owners or operators of portable engines and certain types of equipment can register their units under the PERP in order to operate their equipment anywhere in the state (CARB 2012c).

The BAAQMD operates stipulated enforcement programs for owners and operators of portable equipment, which does not comply with CARB's Portable Diesel Airborne Toxic Control Measure (ATCM) regulation. Under this rule, any portable diesel engine not registered in the PERP prior to January 1, 2006, is illegal and may not be operated in California unless it meets the ATCM Tier requirements or has an operating permit issued by an air district.

The BAAQMD Regulation 2, Sections 2-1-105 and 2-1-114, list types of portable equipment commonly used in construction as exempt from stationary source rule requirements provided that the equipment complies with all applicable requirements of the statewide PERP pursuant to 13 CCR, Division 3, Chapter 3, Article 5. The Project would not be subject to BAAQMD permitting requirements, because the Project would not involve any stationary air pollution sources that are subject to BAAQMD review, including engine-driven pumps, generators, and air compressors.

Air Toxics Control Measures

On July 26, 2007, CARB adopted a regulation to reduce DPM and NO_X emissions from use (existing) off-road heavy-duty diesel vehicles in California. Such vehicles are used in construction, mining, and industrial operations. Not included in this category are locomotives, commercial marine vessels, marine engines over 50 horsepower, or recreational vehicles. The ATCM regulation supplements existing tiered emission standards for nonroad diesel engines in California (CARB 2012d).

Senate Bill 656

Senate Bill 656 is a planning requirement that calls for a plan and strategy for reducing $PM_{2.5}$ and PM_{10}. This bill requires CARB to identify, develop, and adopt a list of control measures to reduce the emissions of $PM_{2.5}$ and PM_{10} from new and existing stationary, mobile, and area sources. BAAQMD has developed particulate matter control measures and submitted plans to CARB that include lists of measures to reduce particulate matter. Under the plans, air districts are required to continue to assess $PM_{2.5}$ and PM_{10} emissions and their impacts.

For construction emissions of fugitive PM_{10}, California air districts have adopted a number of feasible control measures that can be reasonably implemented to significantly reduce fugitive PM_{10} emissions from construction. In general, most districts' approach to CEQA analyses of construction impacts is to emphasize implementation of effective and comprehensive dust control measures rather than detailed quantification of emissions.

Nuisance (Odors)

BAAQMD CEQA Air Quality Guidelines (BAAQMD 2012b, 2010c), require an assessment of a project's potential to cause a public nuisance by subjecting surrounding land uses (receptors) to objectionable odors.

Nuisance is a fundamental air pollution control rule across the state in all air districts, including BAAQMD Regulation 1, Rule 301, which states that *"No person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public; or which endangers the comfort, repose, health or safety of any such persons or the public, or which causes, or has a natural tendency to cause, injury or damage to business or property"*.

An objectionable odor problem is defined by the BAAQMD Regulation 7, Rule 102, as when the Air Pollution Control Officer *"receives odor complaints from ten or more complainants within a 90-day period, alleging that a person has caused odors perceived at or beyond the property line of such person and deemed to be objectionable by the complainants in the normal course of their work, travel, or residence"*. The assessment protocol includes projects that have the potential to cause odors or projects that may subject potential sensitive receptors to nearby existing or proposed land uses that emit objectionable odors.

Toxic Air Contaminants

A project with the potential to expose sensitive receptors (including residential areas) or the general public to substantial levels of toxic air contaminants, as designated by CARB under 17 CCR Section 93001, listed in BAAQMD's Toxic Air Contaminants Inventory (BAAQMD 2004), would be deemed to have a significant impact. This includes projects that would locate receptors near existing sources of toxic air contaminants, as well as projects that would place sources of toxic air contaminants near existing receptors.

Projects that have the potential to expose the public to toxic air contaminants in excess of the following thresholds would be considered to have a significant air quality impact for receptors within 1,000 feet of a source boundary. These thresholds, which are based on the 2010 BAAQMD CEQA Air Quality Guidelines, are as follows:

> Compliance with a qualified community risk reduction plan; or

> Increased probability of contracting cancer for the Maximally Exposed Individual (MEI) which exceeds 10 in 1 million. The MEI is a hypothetical person exposed for 70 years continuously (24 hours per day, 365 days per year);

> Increased ground-level concentrations of chronic or acute noncarcinogenic toxic air contaminants which result in a Hazard Index greater than 1.0 for the MEI;

> Increased ambient $PM_{2.5}$ concentration of 0.3 $\mu g/m^3$ or greater (annual average basis).

DPM is considered a toxic air contaminant in California (BAAQMD 2004). Due to the short-term use of diesel-powered vehicles and equipment in any particular location and broad geographic scope of the Project, emissions of DPM would not be sufficient to pose a significant risk to sensitive receptors (see Section 3.11.2.5) from off-road equipment operations. Detailed quantitative results of the DPM HRA are presented in Sections 3.11.5 and 3.11.6.

3.11.3.6 General Conformity

A General Conformity determination is required for federally sponsored, permitted, or funded actions in NAAQS nonattainment areas or in certain maintenance areas when the total direct and indirect net emissions of nonattainment pollutants (or their precursors) exceed specified thresholds (Clean Air Act

Amendments of 1990 Section 176[c]). This regulation ensures that federal actions conform to SIPs and agency NAAQS attainment plans.

As discussed in Section 3.11.3.1 and shown in Table 3.11-2, the Bay Area region is a "Serious" federal nonattainment area for O_3 and a federal nonattainment area for $PM_{2.5}$ (USEPA 2012a). Thus, emissions of nonattainment pollutants NO_X, VOCs, and $PM_{2.5}$ would be subject to the Rule, since the Project is a federal action. However, since annual Project emissions would fall below applicable thresholds pursuant to 40 CFR 93.153(b)(1) and (2), a General Conformity determination is not required.

3.11.3.7 Greenhouse Gases

The Atmosphere

Air is a mixture of constituent gases and its composition varies slightly with location and altitude. For 20th century scientific and engineering purposes, it became necessary to define a standard composition known as the U.S. Standard Atmosphere. In addition to the common gases (nitrogen, oxygen, carbon dioxide, methane, hydrogen, and nitrous oxide), the atmosphere contains noble or inert gases (argon, neon, helium, krypton, xenon). Radon (Rn) is also present in low concentrations near ground level in limited geographic areas where it is naturally emitted from certain types of rock and soil. Table 3.11-4 shows the typical composition of dry standard air, which is over 99 percent nitrogen and oxygen (UIG 2008, USEPA 2012b). The apparent molecular weight of dry standard air is 28.966 grams per mole (Jennings 1970, du Pont 1971).

Table 3.11-4 Standard Composition of Dry Air

Principal Gas	Chemical Symbol	Gas MW g/mole	Concentration ppmv	Fraction percent	Fraction MW g/mole
Nitrogen	N_2	28.014	780,805.00	78.080500	21.873471
Oxygen	O_2	31.998	209,440.00	20.944000	6.701661
Argon	Ar	39.948	9,340.00	0.934000	0.373114
Carbon Dioxide	CO_2	44.009	387.69	0.038769	0.017062
Neon	Ne	20.183	18.21	0.001821	0.000368
Helium	He	4.003	5.24	0.000524	0.000021
Methane	CH_4	16.043	1.81	0.000181	0.000029
Krypton	Kr	83.800	1.14	0.000114	0.000096
Hydrogen	H_2	2.016	0.50	0.000050	0.000001
Nitrous Oxide	N_2O	44.013	0.32	0.000032	0.000014
Xenon	Xe	31.300	0.09	0.000009	0.000003
Totals		**345.327**	**1,000,000.00**	**100.000**	**28.966**

MW = molecular weight, g/mole

ppmv = parts per million by volume (10^{-6})

Sources: UIG 2008, USEPA 2012b, du Pont 1971, Jennings 1970

The atmosphere consists of five basic altitude zones: troposphere (sea level to 8 miles); stratosphere (8 to 32 miles); mesosphere (32 to 50 miles); thermosphere (50 to 350 miles); and exosphere (350 to 500 miles). Within the stratosphere is the ozone layer (9 to 22 miles), which absorbs ultraviolet wavelengths; and within the mesosphere is the ionosphere (62 to 190 miles), which reflects shortwave radio signals and produces auroras. These approximate altitude ranges vary with latitude, season, solar activity, and turbulence. Greenhouse gases persist mainly in the troposphere and stratosphere—some in

the mesosphere—for different lengths of time, ranging from less than 5 years to over 50,000 years, long enough to become well-mixed, meaning that atmospheric concentrations are about the same all over the world, regardless of source locations (USEPA 2012e). Thus, the homogeneous composition of the lower atmosphere is the global setting for climate change.

3.11.3.8 Principal Greenhouse Gases (GHGs)

Gases that trap heat in the atmosphere are called greenhouse gases or GHGs. Principal GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and other fluorinated gases including nitrogen trifluoride and hydrofluorinated ethers. Greenhouse gases occur naturally, because of volcanoes, forest fires, and biological processes, such as enteric fermentation and aerobic decomposition. They are also produced by combustion of fuels, industrial processes, agricultural operations, waste management, and land use changes, such as loss of farmland to urbanization. The most common GHG from human activity (fuel combustion) is CO_2, followed by CH_4 and N_2O (USEPA 2012f).

Concentration, or abundance, is the amount of a particular gas in the air. Larger emissions of greenhouse gases lead to higher concentrations in the atmosphere. Greenhouse gas concentrations are measured in units of parts per million (ppm), parts per billion (ppb), and parts per trillion (ppt). One part per million is equivalent to 1-cubic centimeter (cc) of pure gas diluted in 1-cubic meter of air. Similarly, 1-part per billion is 1 cc diluted in 1,000 cubic meters, and 1-part per trillion is 1 cc diluted in 1,000,000 cubic meters (USEPA 2012f).

Carbon Dioxide (CO_2)

Carbon dioxide enters the atmosphere through burning fossil fuels (coal, natural gas, and petroleum products), decomposition of solid waste, trees and wood products, fermentation, and also as a result of certain chemical reactions, such as manufacture of cement. Carbon dioxide is removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biologic carbon cycle. In the carbon cycle, carbon in various molecular forms is cycled among atmospheric, oceanic, land biotic, marine biotic, and mineral reservoirs. Atmospheric carbon dioxide is part of this global carbon cycle. Carbon dioxide concentrations in the atmosphere have increased from about 280 ppm in pre-industrial times to about 390 ppm today, a 39 percent increase. The Intergovernmental Panel on Climate Change (IPCC), notes that *"this concentration has not been exceeded during the past 420,000 years, and likely not during the past 20 million years. The rate of increase over the past century is unprecedented, at least during the past 20,000 years"*. The IPCC definitively states that *"the present atmospheric CO_2 increase is caused by anthropogenic emissions of CO_2"* (USEPA 2012f, IPCC 2007).

Global Warming Potential (GWP) is a quantified measure of the globally averaged relative radiative forcing impacts of a particular GHG. It is defined as the cumulative radiative forcing both direct and indirect effects integrated over a period of time from the emission of a unit mass of gas relative to a reference gas. Carbon dioxide is the reference gas with a GWP of unity (1). Carbon dioxide equivalents (CO_2 e) are calculated by summing the products of mass GHG emissions by species times their respective USEPA official GWP coefficients. The persistence of CO_2 in the atmosphere is estimated to be in the range of 50 to 200 years, depending on variations in the carbon cycle (USEPA 2012b, USEPA 2012f).

Methane (CH_4)

Methane is primarily produced through anaerobic decomposition of organic matter in biological systems. Agricultural processes, such as wetland rice cultivation, enteric fermentation in ruminant animals (e.g., cows), and the decomposition of animal wastes emit methane, as does the decomposition of municipal solid wastes. Methane is also fugitively emitted during the production and distribution of natural gas and petroleum, and is released as a by-product of coal mining and incomplete fossil fuel combustion. Pipeline-

quality natural gas is over 90 percent methane by volume and is considered a "clean fuel" by industry with carbon dioxide and water vapor as its main combustion byproducts. Atmospheric concentrations of methane have increased by about 160 percent since pre-industrial times, although the rate of increase has been declining. The IPCC has estimated that slightly more than half of the current methane flux to the atmosphere is anthropogenic, from human activities, such as agriculture, fossil fuel use, and waste disposal. The USEPA's official GWP coefficient of CH_4 is 21, and its persistence in the atmosphere is estimated to be about 9 to 15 years (USEPA 2012b, USEPA 2012f).

Nitrous Oxide (N_2O)

Nitrous oxide is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste. Anthropogenic sources of nitrous oxide emissions include agricultural soils, especially the use of synthetic and manure fertilizers; fossil fuel combustion, especially from mobile combustion; adipic (nylon) and nitric acid production; wastewater treatment and waste combustion; and biomass burning. The atmospheric concentration of N_2O has increased by about 19 percent since 1750, from a pre-industrial value of about 270 ppb to about 320 ppb today, a concentration that has not been exceeded during the last thousand years. The USEPA's official GWP coefficient of N_2O is 310, and its persistence in the atmosphere is estimated to be about 110 to 120 years (USEPA 2012b, USEPA 2012f).

Fluorinated gases

Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances (e.g., chlorofluorocarbons, hydrochlorofluorocarbons, and halons). In the electric utility industry, sulfur hexafluoride (SF_6) is used as a dielectric gas in high-voltage equipment, such as switchgear and circuit breakers. As man-made gas, SF_6 in the atmosphere has increased from 0 to about 7 ppt in modern times. Due to their expense, all of these fluorinated gases are typically emitted (lost) in small quantities relative to combustion byproducts, but because they are potent greenhouse gases, they are sometimes referred to as "High GWP gases" with estimated persistence in the atmosphere ranging from 1.5 to 50,000 years. Of these, SF_6 is the most potent, with an USEPA official GWP of 23,900 and an estimated persistence of about 3,200 years (USEPA 2012b, USEPA 2012f).

3.11.3.9 Emission Sources

The USEPA tracks greenhouse gas emissions in the United States and publishes the *Inventory of U.S. Greenhouse Gas Emissions and Sinks*, which is updated annually (USEPA 2012b). This detailed report contains estimates of the total national greenhouse gas emissions and removals associated with human activities in all 50 states. From the current report, the main sources of greenhouse gas emissions in the United States are identified below (USEPA 2012f):

> Electric power generation accounts for 34 percent of GHG emissions nationwide. Over 70 percent of electric power is generated by burning fossil fuels, mainly coal and natural gas. Greenhouse gas emissions from electric power generation in the United States have increased by about 24 percent since 1990 as demand for electric power has grown and fossil fuels have remained the dominant energy source for generation due to their low cost and high reliability.

> Transportation accounts for 27 percent of GHG emissions nationwide. Greenhouse gas emissions from transportation result from burning fossil fuels in automobiles, trucks, trains, ships, and aircraft. About 90 percent of the fuel used for transportation is petroleum-based, which includes gasoline, diesel, and jet fuel.

- Industry accounts for 21 percent of GHG emissions nationwide. Greenhouse gas emissions from industry are associated mainly with burning fossil fuels (coal and natural gas) for heat energy, as well as emissions from certain chemical reactions necessary to produce goods from raw materials.
- Commercial and Residential uses account for 11 percent of GHG emissions nationwide. Greenhouse gas emissions from businesses and homes result primarily from fossil fuels burned for heat, the use of certain products that contain GHGs, and the handling and disposal of domestic wastes.
- Agriculture accounts for 7 percent of GHG emissions nationwide. Greenhouse gas emissions from agriculture are caused by livestock such as cows (enteric fermentation), soil management practices, and rice farming.
- Land Use and Forestry offsets (absorbs or sequesters) about 15 percent of GHG emissions nationwide. Land areas can act as GHG sinks (absorbing CO_2 from the atmosphere) or GHG sources. Since 1990, well-managed forests and other lands have absorbed more CO_2 from the atmosphere than they emit.

3.11.3.10 Emission Trends

Annual GHG emission inventories provide the basis for establishing historical emission trends. Trends are useful in tracking progress towards a specific goal or target. There are many factors affecting GHG emissions, including the state of the economy, changes in demography, improved efficiency, and changes in environmental conditions such as drought.

From 2000 to 2009, California's gross GHG emissions decreased by 1.5 percent overall from 464 to 457 million metric tonnes (MMT) CO_2 e, with a maximum of 489 MMT CO_2 e in 2007. During the same period, California's population grew by 9.7 percent from 33.9 to 37.2 million; therefore, per capita GHG emissions decreased from 13.7 to 12.3 metric tonnes of CO_2 e per person. From 2008 to 2009, overall GHG emissions decreased by about 6 percent. This reflects the effect of the economic recession and higher fuel prices, with marked declines in on-road transportation, cement production, and electric power consumption. As the economy recovers, emissions are likely to rise again until GHG reduction measures begin to take effect (CARB 2011a).

Since 1990, greenhouse gas emissions in the United States have increased by about 10 percent. However, from year-to-year emissions can increase or decrease due to changes in the economy, the price of fuel, weather, and other factors. In 2010, national GHG emissions increased about 3 percent from 2009 levels. This increase was primarily due to the improving economy, which increased energy consumption across all sectors. In addition, a hot summer caused an increase in electric power demand for air conditioning that was generated mainly by burning coal and natural gas in existing power plants (USEPA 2012f).

3.11.3.11 Mobile Sources

While stationary sources, such as power plants and oil refineries emit large quantities of greenhouse gases, mobile sources, due to their sheer numbers nationwide, also emit significant amounts. Mobile sources include onroad vehicles (e.g., automobiles, trucks, and motorcycles), equipment (e.g., earthmovers, cranes, portable pumps, and generators), trains (e.g., freight, passenger, and light rail), vessels (e.g., boats, ships, and watercraft), and aircraft (e.g., general aviation, commercial, and military). Mobile source fuels include gasoline, diesel, heavy fuel oil (large marine vessels), and jet fuel, all of which emit GHGs when combusted.

The Project would cause emissions of greenhouse gases, CO_2, CH_4, and N_2O, primarily in diesel engine exhaust (off-road equipment, portable equipment, and larger trucks), and also in gasoline engine exhaust (small equipment and worker vehicles). The dominant fuel used for these mobile sources is diesel along with some gasoline. Typical GHG contents of common fuels are presented in Table 3.11-5.

Table 3.11-5 Typical GHG Contents of Common Fuels

Fuel	CO_2 kg/mmBTU	CH_4 kg/mmBTU	N_2O kg/mmBTU	CO_2 e lb/mmBTU	Energy BTU/gal	CO_2 e lb/gal
Diesel Fuel No. 2	73.96	0.0105	0.0006	163.97	138,300	22.68
Kerosene	73.19	0.0105	0.0006	162.27	138,700	22.51
Jet Fuel	72.23	0.0105	0.0006	160.17	135,000	21.62
Motor Gasoline	71.35	0.0105	0.0006	158.23	122,600	19.40
Aviation Gasoline	69.15	0.0105	0.0006	153.38	120,200	18.44
Propane	62.22	0.0053	0.0001	137.49	91,300	12.55
Pipeline Natural Gas	53.02	0.0053	0.0001	117.20	—	—

kg/mmBTU - kilograms per million British Thermal Units

lb/mmBTU - pounds per million British Thermal Units

BTU - the amount of energy (heat) required to raise 1 pound of liquid water 1 degree Fahrenheit from 39 to 40°F

Sources: USEPA 2012b, USEPA 2011b

3.11.3.12 Sensitive Receptors

None of the greenhouse gases described in Section 3.11.4.2 are considered toxic; however, all are classified as asphyxiants. Thus, in high enough concentrations in confined spaces they can displace the oxygen in air and present hazards to industrial workers; however, GHG concentrations in ambient air (Table 3.11-4) are far below any danger levels. Therefore, no risk to sensitive receptors (as described in Section 3.11.2.5) or the general public is posed by greenhouse gases emitted to outdoor air, either from stationary or mobile sources.

3.11.3.13 Climate Change

National and International Assessments

The American Meteorological Society (Society) refers to climate change as any systematic change in the long-term statistics of climate elements (such as temperature, pressure, or winds) sustained over several decades or longer. The Society also indicates that climate change may be due to natural external forcings, such as changes in solar emission or slow changes in the Earth's orbital elements; natural internal processes of the climate system; or anthropogenic forcing (AMS 2012). The climate system can be influenced by changes in the concentration of various GHGs in the atmosphere that affect the Earth's absorption of radiation.

In its *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2011*, the USEPA (2012b) provides summary information on the work of the United Nations Framework Convention on Climate Change (UNFCCC, 2009) and the Intergovernmental Panel on Climate Control (IPCC 1990-2007); key information from that report is summarized below—more details may be found in the cited source documents.

The UNFCCC defines climate change as *"a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods"* (UNFCCC 2009). In its *Second Assessment Report* of the science of climate change, the IPCC concluded "*human activities are changing the atmospheric concentrations and distributions of greenhouse gases and aerosols*" (IPCC 1995). "*These changes can produce a radiative forcing by changing either the reflection or absorption of solar radiation, or the emission and absorption of terrestrial radiation."* Building on this conclusion, the IPCC *Third Assessment Report* (IPCC 2001) asserted *"concentrations of atmospheric greenhouse gases and their radiative forcing have continued to increase as a result of human activities."*

The IPCC reports the global average surface temperature of the Earth has increased by 1.1 ± 0.4°F (0.6 ± 0.2°C) over the 20th century. This value is about 0.27°F (0.15°C) larger than that estimated by the Second Assessment Report, which reported for the period up to 1994, *"owing to the relatively high temperatures of the additional years (1995 to 2000) and improved methods of processing the data"*.

While the *Second Assessment Report* concluded, *"the balance of evidence suggests there is a discernible human influence on global climate"*, the *Third Assessment Report* more directly connects the influence of human activities on climate. IPCC concluded, *"In light of new evidence and taking into account the remaining uncertainties, most of the observed warming over the last 50 years is likely to have been due to the increase in greenhouse gas concentrations"*.

In its most recent *Fourth Assessment Report*, IPCC stated warming of Earth's climate is unequivocal, and that warming is very likely attributable to increases in atmospheric greenhouse gases caused by human activities (IPCC 2007). IPCC further stated changes in many physical and biological systems, such as increases in global temperatures, more frequent heat waves, rising sea levels, coastal flooding, loss of wildlife habitat, spread of infectious disease, and other potential environmental impacts are linked to changes in the climate system, and some changes might be irreversible.

The mobile sources used in project activities emit greenhouse gases and, therefore, contribute incrementally to climate change; however, as described in Section 3.11.6, these emissions comprise a very small fraction of the Bay Area, California, and U.S. GHG inventories. This fact precludes any meaningful analysis of quantitative effects that project activities operations may specifically have on climate; although, taken together with regional, national, and worldwide GHG emissions, global effects are as described above.

State Policies

The Global Warming Solutions Act of 2006 (AB 32, see Section 3.11.4.9, below) required CARB to prepare a Scoping Plan to achieve substantial GHG emissions reductions, both from within the state and from "exported" emissions, such as importing electric power generated at coal-fired power plants located in neighboring western states. The 2008 Scoping Plan outlines a wide range of strategies for reducing statewide GHG emissions to 1990 levels by 2020. This will be achieved by cutting about 30 percent from business-as-usual emission levels projected for 2020, or about 15 percent from 2008 levels. Allowing for population growth, the goal is to reduce annual per capita emissions from 14 metric tonnes (MT) of CO_2 e down to about 10 MT CO_2 e per capita by 2020 (CARB 2008).

3.11.3.14 Emissions Inventories

Project activity emissions would occur in the Bay Area; therefore, the comprehensive 2007 Bay Area GHG inventory is used as the regional benchmark for comparison purposes.

Table 3.11-6 shows aggregated national, state, and regional GHG emissions for all sources on a gross basis, i.e., CO_2 e emissions only, not including CO_2 sinks, such as forestry and agriculture. As shown, California accounts for about 7 percent of gross CO_2 e emissions in the U.S. annually, and the Bay Area accounts for about 20 percent of gross CO_2 e emissions in California.

Tables 3.11-7, 3.11-8, and 3.11-9 present progressively focused Bay Area GHG emissions inventory data for 2007 broken down by sectors, counties, and applicable sub-sectors. This information will be used as a basis for comparisons with estimated Project activity emissions presented in Section 3.11.5.

Table 3.11-6 Greenhouse Gas Emissions Inventories - Gross Basis

Summary Year	National MMT CO_2 e	California MMT CO_2 e	Bay Area MMT CO_2 e
2005	7,204	482.5	—
2006	7,159	481.9	—
2007	7,253	488.8	95.8
2008	7,048	484.7	—
2009	6,608	456.8	—
5-Year Average	**7,054**	**478.9**	—
Average Annual Variation	**2.6%**	**1.8%**	—

MMT - million metric tonnes (annual)
1 metric tonne = 1,000 kilograms or 2,204.6 pounds
2009 is most recent CARB published data; Bay Area for 2007 only
Sources: USEPA 2012b, CARB 2011b, BAAQMD 2010d

Table 3.11-7 Bay Area GHG Emissions by Sector

End-Use Sector	District Emissions	
	Percent	MMT CO_2 e
Industrial / Commercial	36.4%	34.9
Residential Fuel Use	7.1%	6.8
Local Electric Power Generation	8.5%	8.1
Imported Electric Power Generation	7.4%	7.1
Off-road Equipment	3.0%	2.9
Transportation	36.4%	34.9
Agriculture / Farming	1.2%	1.1
Totals	**100.0%**	**95.8**

MMT - million metric tonnes (annual)
1 metric tonne = 1,000 kilograms or 2,204.6 pounds
Source: BAAQMD 2010d

Table 3.11-8 Bay Area GHG Emissions by County

County	District Emissions	
	Percent	MMT CO_2 e
Alameda	16.4%	15.7
Contra Costa	32.9%	31.5
Marin	2.8%	2.7
Napa	1.8%	1.7
San Francisco	7.4%	7.1
San Mateo	8.9%	8.5
Santa Clara	19.6%	18.8
Solano (within BAAQMD)	5.9%	5.7
Sonoma (within BAAQMD)	4.3%	4.1
Totals	**100.0%**	**95.8**

MMT - million metric tonnes (annual)
1 metric tonne = 1,000 kilograms or 2,204.6 pounds
Source: BAAQMD 2010d

Table 3.11-9 Mobile Sectors GHG Emissions by County

County	Off-road MT CO_2 e	Transportation MT CO_2 e
Alameda	569,000	8,351,000
Contra Costa	406,000	4,998,000
Marin	99,000	1,286,000
Napa	50,000	917,000
San Francisco	415,000	2,673,000
San Mateo	270,000	4,850,000
Santa Clara	790,000	7,859,000
Solano (within BAAQMD)	147,000	1,834,000
Sonoma (within BAAQMD)	175,000	2,103,000
Totals	**2,921,000**	**34,871,000**

MT - metric tonnes (annual)
[1] metric tonne = 1,000 kilograms or 2,204.6 pounds
Values rounded to nearest 1,000 tonnes
"Off-road" is offroad equipment category
Source: BAAQMD 2010d

3.11.3.15 Greenhouse Gas Regulatory Setting

Currently, no local, state, or federal regulatory standards directly apply to GHG emissions from temporary or intermittent mobile sources, such as construction activities. However, in the context of the Scoping Plan discussed in Section 3.11.4.7 above, implementation of Low Carbon Fuel Standard (Executive Order S-1-07, below) would indirectly apply to Project activities via fuel usage. Summaries of principal federal, state, and local GHG statutes, regulations, and programs, which affect other types of sources, are presented below.

Federal

40 CFR Part 98 – Greenhouse Gas Reporting

On October 30, 2009, the USEPA issued the Mandatory Reporting of Greenhouse Gases rule (74 FR 56260, 40 CFR 98, effective December 29, 2009), which requires reporting of GHG data and other relevant information from large sources and suppliers in the United States pursuant to Fiscal Year 2008 Consolidated Appropriations Act (HR 2764; Public Law 110-161).

The new rule facilitates collection of accurate and comprehensive emissions data to provide a basis for future USEPA policy decisions and regulatory initiatives. The rule requires specified industrial source categories and facilities with an aggregated heat input of 30 mm BTU or more per hour or that emit 25,000 metric tons or more per year of GHG to submit annual reports to the USEPA. The gases covered by the rule are CO_2, CH_4, N_2O, and HFCs, PFCs, SF_6, and other fluorinated gases including nitrogen trifluoride and hydrofluorinated ethers. Since the Project does not meet the definition of an affected stationary source (i.e., mobile sources only), the GHG reporting rule does not apply.

Notwithstanding the GHG reporting rule, no federal regulations currently limit or curtail GHG emissions of carbon dioxide and methane, and USEPA cap-and-trade programs currently apply only to acid rain precursors sulfur dioxide (SO_2) and nitrogen oxides (NO_X) (USEPA 2012g). However, emissions of N_2O are regulated, albeit indirectly, through limitation of NO_X emissions as a criteria pollutant under New Source Performance Standards (NSPS) and federal, state, and local operating permits.

General Conformity

A General Conformity determination is required for federally sponsored, permitted, or funded actions in NAAQS nonattainment areas or in certain maintenance areas when the total direct and indirect net emissions of nonattainment pollutants (or their precursors) exceed specified thresholds (Clean Air Act Amendments of 1990 Section 176[c]). This regulation ensures that federal actions conform to SIPs and agency NAAQS attainment plans. Since GHGs are not regulated air pollutants, General Conformity does not apply to GHG emissions.

State

Global Warming Solutions Act

The Global Warming Solutions Act of 2006 (AB 32, Núñez, Chapter 488, Statutes of 2006) codifies California's goal of reducing statewide emissions of GHGs to 1990 levels by 2020. This reduction will be accomplished through an enforceable statewide cap on global warming emissions that will be phased in starting in 2012 to achieve maximum technologically feasible and cost-effective GHG emission reductions. In order to effectively implement the cap, AB 32 directs CARB to develop appropriate regulations and establish a mandatory reporting system to track and monitor global warming emissions levels.

On September 25, 2009, CARB adopted the AB 32 Cost of Implementation Fee Regulation (Health and Safety Code 38597); however, since the Project is not an affected stationary source, the AB 32 fee regulation does not apply.

Cap and Trade

The California Air Resources Board's new "Cap and Trade" regulation (Subchapter 10, Article 5, Sections 95800 to 96023, Title 17, California Code of Regulations) is a set of rules (effective September 1, 2012) that establishes a limit on GHG emissions from the largest sources of GHGs in the state. The purpose of *California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms* is to reduce emissions of GHGs from affected stationary sources through the establishment, administration, and enforcement of an aggregate GHG allowance budget and to provide a trading mechanism for compliance instruments (i.e., "GHG allowances" or "carbon credits"). Since the Project is not an affected stationary source under the rule, "Cap and Trade" does not apply. No other statewide quantitative standards of significance for GHG impacts have been established for nonaffected sources under CEQA.

Executive Order S-3-05

On June 1, 2005, Executive Order S-3-05 was issued establishing GHG emission reduction targets: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80 percent below 1990 levels.

Executive Order S-1-07

On January 18, 2007, the Low Carbon Fuel Standard (LCFS) was issued mandating a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020. It instructed the California Environmental Protection Agency to coordinate activities among the University of California, the California Energy Commission, and other state agencies to develop and propose a draft compliance schedule to meet the 2020 target. Furthermore, it directed CARB to consider initiating regulatory proceedings to establish and implement the LCFS. In response, CARB identified the LCFS as an early action item with a regulation to be adopted and implemented by 2010.

Executive Order S-13-08

On November 14, 2008, Executive Order S-20-04 was issued directing the California Resources Agency, in cooperation with the Department of Water Resources, the California Energy Commission, California's coastal management agencies, and the Ocean Protection Council to request that the National Academy of Sciences convene an independent panel to complete the first California Sea Level Rise Assessment Report, which was issued on December 17, 2009, as a staff report to the State Lands Commission. As part of this effort, the Resources Agency is to create an independent sea level rise science and policy committee made up of state, national, and international experts and to hold public workshops to gather policy-relevant information.

Local

BAAQMD CEQA Guidelines

In its 2010 CEQA Air Quality Guidelines, BAAQMD established the following quantitative thresholds of significance for operational-related GHG emissions in terms of carbon dioxide equivalents (CO_2 e), a metric that accounts for emissions of various greenhouse gases based on their global warming potentials (MT = metric tonne, 1,000 kilograms or 2,204.6 pounds; SP = Service Population, residents + employees). (BAAQMD 2012b, 2010c):

> For land use development projects, the threshold is compliance with a qualified GHG Reduction Strategy; or annual CO_2 e emissions less than 1,100 MT/year; or 4.6 MT/SP/year. Land use development projects include residential, commercial, industrial, and public land uses and facilities.

> For stationary source projects, the threshold is 10,000 MT/year of CO_2 e. Stationary source projects include land uses that would accommodate industrial processes and equipment that emit GHGs and would require permit to operate (PTO) from the BAAQMD.

> For plans, the threshold is 6.6 MT/SP/year CO_2e.

If annual emissions of operational-related GHGs exceed these threshold levels, a project is presumed to result in a cumulatively considerable contribution of GHG emissions and a cumulatively significant impact to global climate change (BAAQMD 2012b, 2010c). However, since the Project does not meet the definition of a land use development project, stationary source project, or planning-level activity, the above thresholds do not apply. Further, there are no GHG thresholds for construction-related emissions from mobile and portable sources, i.e., vehicles and equipment, used in building stationary or nonstationary source projects. Therefore, no GHG threshold applies to the Project.

3.11.4 Impact Analysis

3.11.4.1 Significance Criteria

The Impact Analysis addresses the following standards of significance as based on CEQA Guidelines Appendix G. Project implementation would have a significant impact related to the existing air quality environment if it were to result in any of the following conditions:

> Conflict with or obstruct implementation of the applicable Air Quality Attainment Plan or Congestion Management Plan;

> Violate any stationary source air quality standard or contribute to an existing or projected air quality violation;

> Result in a net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);

> Expose sensitive receptors to substantial pollutant concentrations; or

> Create objectionable odors affecting a substantial number of people.

In accordance with NEPA criteria and CEQA Guidelines Appendix G, Project implementation would have a significant impact related to GHGs if it were to result in any of the following conditions:

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

> Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

For this Project, determinations made with respect to significance criteria are documented in Section 3.11.6, below.

BAAQMD CEQA Thresholds

On June 2, 2010, the BAAQMD adopted new CEQA Air Quality Guidelines (BAAQMD 2012b, 2010c) for consideration by lead agencies tasked with evaluating the air quality and climate change impacts of proposed new projects. The new guidelines supersede the December 1999 Guidelines (BAAQMD 1999). As guidelines, they do not comprise enforceable rules or regulations per se, nevertheless, the guidelines establish new quantitative thresholds of significance for criteria and greenhouse gas emissions.

On March 5, 2012, the Alameda County Superior Court issued a judgment finding that the BAAQMD had failed to comply with CEQA when it adopted the new thresholds of significance for criteria pollutants, air toxics, and GHGs. The court did not determine whether the thresholds were valid on the merits, but found that the adoption of the thresholds was a “project” under CEQA. The court issued a writ of mandate

ordering the BAAQMD to set aside the 2010 thresholds and cease dissemination of them until it had complied with CEQA via the EIR process. (BAAQMD 2012b)

On August 13, 2013, in *California Building Industry Association v. Bay Area Air Quality Management District*, the First Appellate District Court of Appeal ruled that adoption of environmental thresholds by a public agency following the provisions of CEQA Guidelines Section 15064.7 is not a "project" under CEQA. The decision upheld the process followed by the BAAQMD to adopt its 2010 significance thresholds for emissions of criteria pollutants, air toxics, and GHGs. As a result of this decision, the 2010 significance thresholds were reinstated and are currently in effect. (CA 2013)

For this EIR, air quality impacts are quantitatively assessed using significance thresholds established by BAAQMD in its 2010 CEQA Guidelines for nonattainment pollutants (VOC, NO_X, PM_{10}, $PM_{2.5}$) and USEPA for attainment pollutants (SO_X), which are listed in Table 3.11-10. For attainment pollutant CO, the BAAQMD stipulates that no violation of CAAQS shall be caused by a project (BAAQMD 2012b, 2010c). Further, since the Bay Area is in CAAQS and NAAQS attainment for SO_2, there is no annual or daily CEQA threshold for SO_X emissions, only the annual Prevention of Significant Deterioration (PSD) threshold per 40 CFR 51.166.

As shown in Tables 3.11-11, 3.11-12, and 3.11-13 (peak daily emissions), the only applicable CEQA threshold in Table 3.11-10 which would be exceed by Project construction activities (whether Preferred, NRCS, Culvert/Channel, or Reach 6 Bypass) would be NO_X (54 pounds per day). No other thresholds would be exceeded, neither VOC, CO, SO_X, PM_{10}, nor $PM_{2.5}$. Annual CEQA thresholds do not apply to construction activities. (BAAQMD 2012b, 2010c)

3.11.4.2 Approach to Analysis – Methodology

As described in Section 3.11.2.3, operation of off-road equipment, onroad vehicles, and portable equipment would result in emissions of criteria pollutants (NO_X, VOC, CO, SO_X, PM_{10}, $PM_{2.5}$) and GHGs (CO_2, CH_4, N_2O) in engine exhaust and fugitive dust (PM_{10} and $PM_{2.5}$) from earthmoving tasks. Preliminary lists of equipment and estimated usage were established and are shown in Appendix K, Table 3.11-h. Emission calculations (Appendix K, Tables 3.11-h, -i, -j) were performed for the year 2017[2] using the most recent (2008) emission factors and algorithms published by the South Coast Air Quality Management District (SCAQMD)[3] and the USEPA (2011b, 2012b, 2012c). For the 6-year Project, construction is expected to require about 5 to 8 months of planned work activities annually during the dry season (generally mid-March through mid-November) depending on the reaches being altered in any given year (phase). Deviations from this schedule would not affect the air quality analysis, because it is based on maximum daily emissions (pounds per day) and total Project emissions (tons), which would remain unchanged.

Estimated criteria air pollutants and greenhouse gas emissions of the four variants— NRCS Alternative; Preferred Alternative; Culvert/Channel Alternative; and Reach 6 Bypass Alternative—are shown in Tables 3.11-11 through 3.11-21 for peak daily, average annual, and Project total timeframes. Total emissions for the alternatives are compared side-by-side in Tables 3.11-17 and 3.11-21. Peak daily criteria emissions are evaluated with respect to BAAQMD thresholds of significance in Tables 3.11-11, 3.11-12, and 3.11-13; no other numeric thresholds for criteria pollutants or GHGs apply to the Project. Note that for

[2] On a preliminary basis, 2017 is possibly the earliest year that maximum activity levels could occur, i.e., Years 2 or 3 of the Project.

[3] BAAQMD does not publish its own emission factors per se; the SCAQMD off-road factors are based on federal standards pursuant to 40 CFR 89.112; SCAQMD on-road factors are based on 40 CFR 86 et seq. vehicle category standards; the SCAQMD factors are output from CARB's OFFROAD and EMFAC applications which reference the above cited regulations, respectively. These are the same emission factors used in the statewide general-purpose land-use model CalEEMod (California Emissions Estimator Model) which has been officially adopted by air districts including BAAQMD.

evaluation purposes, the NRCS and Culvert/Channel alternatives would have approximately the same activity levels; therefore, approximately the same emissions.

Table 3.11-10 CEQA Significance Thresholds for Criteria Pollutants - BAAQMD (2010)

Applicability	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Operation, tons/year	10	CAAQS [1]	10	40 [2]	15	10
Operation, pounds/year	20,000	CAAQS [1]	20,000	80,000 [2]	30,000	20,000
Operation, pounds/day	54	CAAQS [1]	54	—	82	54
Construction, pounds/day	54	CAAQS [1]	54	—	82 [3]	54 [3]

[1] No violation of CAAQS for CO (9 ppmv for 1 hour, 20 ppmv for 8 hours)

[2] PSD, annual only; no applicable BAAQMD threshold for SO_X (attainment).

[3] For construction projects, applies to exhaust emissions only, BMPs required for fugitive dusts

[4] Since the Project does not meet the definition of a land use development project, stationary source project, or planning activity, no GHG thresholds apply. There are no GHG thresholds for construction-related emissions from mobile and portable sources used in building stationary or nonstationary source projects.

[5] BAAQMD nonattainment pollutants to which CEQA thresholds apply are ozone (as VOC and NO_X emissions), PM_{10}, and $PM_{2.5}$.Sources: BAAQMD 2012b, 2010c (see note 4), 40 CFR 51.166

Table 3.11-11 Estimated Peak Daily Criteria Emissions for Project with NRCS or Culvert/Channel Alternatives

Project Phase	VOC	CO	NO_X	SO_X	C-PM_{10}	C-$PM_{2.5}$	F-PM_{10}	F-$PM_{2.5}$
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Year 1	13	72	88	0.2	5	4	21	3
Year 2	38	210	260	0.5	14	12	62	8
Year 3	38	207	257	0.5	13	12	62	8
Year 4	19	104	128	0.3	7	6	31	4
Year 5	19	104	128	0.3	7	6	21	3
Year 6	7	36	44	0.1	2	2	10	1
Peak Day	**38**	**210**	**260**	**0.5**	**14**	**12**	**62**	**8**
Significance	**LTS**	**LTS**	**S**	**—**	**LTS**	**LTS**	**—**	**—**

Culvert/Channel Alternative same as NRCS Alternative (estimated emissions are the same)

"C" prefix denotes combustion byproduct particulate matter; "F" prefix denotes fugitive dust particulate matter

LTS = Less than significant; S = Significant; LTSM = Less than significant with mitigation; *B = beneficial under NEPA

Sources: SCAQMD 2008, USEPA 2011b

Table 3.11-12 Estimated Peak Daily Criteria Emissions for Project with Preferred Alternative

Project Phase	VOC	CO	NO_X	SO_X	C-PM_{10}	C-$PM_{2.5}$	F-PM_{10}	F-$PM_{2.5}$
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Year 1	13	72	88	0.2	5	4	21	3
Year 2	44	242	303	0.6	16	15	64	9
Year 3	44	240	300	0.6	16	14	64	9
Year 4	25	136	171	0.3	9	8	33	5
Year 5	25	136	171	0.3	9	8	23	3
Year 6	7	36	44	0.1	2	2	10	1
Peak Day	**44**	**242**	**303**	**0.6**	**16**	**15**	**64**	**9**
Significance	**LTS**	**LTS**	**S**	**—**	**LTS**	**LTS**	**—**	**—**

"C" prefix denotes combustion byproduct particulate matter; "F" prefix denotes fugitive dust particulate matter
LTS = Less than significant; S = Significant; LTSM = Less than significant with mitigation; *B = beneficial under NEPA
Sources: SCAQMD 2008, USEPA 2011b

Table 3.11-13 Estimated Peak Daily Criteria Emissions for Project with Reach 6 Bypass Alternative

Project Phase	VOC	CO	NO_X	SO_X	C-PM_{10}	C-$PM_{2.5}$	F-PM_{10}	F-$PM_{2.5}$
	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Year 1	13	72	88	0.2	5	4	21	3
Year 2	40	221	277	0.5	15	13	55	8
Year 3	40	219	274	0.5	14	13	55	8
Year 4	21	115	145	0.3	8	7	24	4
Year 5	21	115	145	0.3	8	7	14	2
Year 6	7	36	44	0.1	2	2	10	1
Peak Day	**40**	**221**	**277**	**0.5**	**15**	**13**	**55**	**8**
Significance	**LTS**	**LTS**	**S**	**—**	**LTS**	**LTS**	**—**	**—**

"C" prefix denotes combustion byproduct particulate matter; "F" prefix denotes fugitive dust particulate matter
LTS = Less than significant; S = Significant; LTSM = Less than significant with mitigation; *B = beneficial under NEPA
Sources: SCAQMD 2008, USEPA 2011b

Table 3.11-14 Estimated Average Annual Criteria Emissions for Project with NRCS or Culvert/Channel Alternatives

Project Phase	VOC	CO	NO_X	SO_X	C-PM_{10}	C-$PM_{2.5}$	F-PM_{10}	F-$PM_{2.5}$
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
Year 1	1.0	5.6	6.8	0.01	0.4	0.3	1.4	0.2
Year 2	3.1	17.1	21.2	0.04	1.1	1.0	4.5	0.6
Year 3	3.2	17.2	21.4	0.04	1.1	1.0	4.6	0.6
Year 4	1.7	9.5	11.8	0.02	0.6	0.6	2.5	0.3
Year 5	1.7	9.5	11.8	0.02	0.6	0.6	1.8	0.2
Year 6	0.7	3.6	4.4	0.01	0.2	0.2	0.9	0.1
Highest Year	**3.2**	**17.2**	**21.4**	**0.04**	**1.1**	**1.0**	**4.6**	**0.6**

"C" prefix denotes combustion byproduct particulate matter; "F" prefix denotes fugitive dust particulate matter

Culvert/Channel Alternative same as NRCS Alternative (estimated emissions are the same)

Sources: SCAQMD 2008, USEPA 2011b

Table 3.11-15 Estimated Average Annual Criteria Emissions for Project with Preferred Alternative

Project Phase	VOC	CO	NO_X	SO_X	C-PM_{10}	C-$PM_{2.5}$	F-PM_{10}	F-$PM_{2.5}$
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
Year 1	1.0	5.6	6.8	0.01	0.4	0.3	1.4	0.2
Year 2	3.7	20.1	25.2	0.05	1.3	1.2	4.7	0.7
Year 3	3.7	20.3	25.3	0.05	1.3	1.2	4.7	0.7
Year 4	2.3	12.5	15.7	0.03	0.8	0.8	2.7	0.4
Year 5	2.3	12.5	15.7	0.03	0.8	0.8	1.9	0.3
Year 6	0.7	3.6	4.4	0.01	0.2	0.2	0.9	0.1
Highest Year	**3.7**	**20.3**	**25.3**	**0.05**	**1.3**	**1.2**	**4.7**	**0.7**

"C" prefix denotes combustion byproduct particulate matter; "F" prefix denotes fugitive dust particulate matter

Sources: SCAQMD 2008, USEPA 2011b

Table 3.11-16 Estimated Average Annual Criteria Emissions for Project with Reach 6 Bypass Alternative

Project Phase	VOC	CO	NO_X	SO_X	C-PM_{10}	C-$PM_{2.5}$	F-PM_{10}	F-$PM_{2.5}$
	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr
Year 1	1.0	5.6	6.8	0.01	0.4	0.3	1.4	0.2
Year 2	3.5	19.2	24.0	0.05	1.3	1.2	4.2	0.6
Year 3	3.5	19.3	24.1	0.05	1.3	1.2	4.3	0.6
Year 4	2.1	11.6	14.5	0.03	0.8	0.7	2.2	0.3
Year 5	2.1	11.6	14.5	0.03	0.8	0.7	1.5	0.2
Year 6	0.7	3.6	4.4	0.01	0.2	0.2	0.9	0.1
Highest Year	**3.5**	**19.3**	**24.1**	**0.05**	**1.3**	**1.2**	**4.3**	**0.6**

"C" prefix denotes combustion byproduct particulate matter; "F" prefix denotes fugitive dust particulate matter

Sources: SCAQMD 2008, USEPA 2011b

Table 3.11-17 Estimated Total Criteria Emissions for All Project Alternatives

Project Options	VOC	CO	NO_X	SO_X	C-PM_{10}	C-$PM_{2.5}$	F-PM_{10}	F-$PM_{2.5}$
	tons	tons	tons	tons	tons	tons	tons	tons
NRCS or Culvert/Channel	11.5	62.7	77.4	0.15	4.0	3.7	16.5	2.2
Preferred Alternative	13.7	74.7	93.2	0.18	4.9	4.5	17.2	2.4
Reach 6 Bypass	12.9	71.3	88.9	0.17	4.7	4.3	15.5	2.2

"C" prefix denotes combustion byproduct particulate matter; "F" prefix denotes fugitive dust particulate matter

Culvert/Channel Alternative same as NRCS Alternative (estimated emissions are the same)

Sources: SCAQMD 2008, USEPA 2011b

Table 3.11-18 Estimated GHG Emissions for NRCS or Culvert/Channel Alternatives

Project Phase	CO_2	CH_4	N_2O	CO_2 e
	MT/yr	MT/yr	MT/yr	MT/yr
Year 1	1,084	0.1	0.0	1,097
Year 2	3,380	0.3	0.1	3,422
Year 3	3,406	0.3	0.1	3,449
Year 4	1,893	0.1	0.1	1,917
Year 5	1,893	0.1	0.1	1,917
Year 6	714	0.1	0.0	723
Highest Year	**3,406**	**0.3**	**0.1**	**3,449**

1 metric tonne (MT) = 1,000 kilograms or 2,204.6 pounds

Culvert/Channel Alternative same as NRCS Alternative (estimated emissions are the same)

Sources: SCAQMD 2008, USEPA 2012b

Table 3.11-19 Estimated GHG Emissions for Preferred Alternative

Project Phase	CO_2	CH_4	N_2O	CO_2 e
	MT/yr	MT/yr	MT/yr	MT/yr
Year 1	1,084	0.1	0.0	1,097
Year 2	3,977	0.3	0.1	4,027
Year 3	4,003	0.3	0.1	4,054
Year 4	2,491	0.2	0.1	2,522
Year 5	2,491	0.2	0.1	2,522
Year 6	714	0.1	0.0	723
Highest Year	**4,003**	**0.3**	**0.1**	**4,054**

1 metric tonne (MT) = 1,000 kilograms or 2,204.6 pounds

Sources: SCAQMD 2008, USEPA 2012b

Table 3.11-20 Estimated GHG Emissions for Reach 6 Bypass Alternative

Project Phase	CO_2	CH_4	N_2O	CO_2 e
	MT/yr	MT/yr	MT/yr	MT/yr
Year 1	1,084	0.1	0.0	1,097
Year 2	3,808	0.3	0.1	3,855
Year 3	3,834	0.3	0.1	3,882
Year 4	2,321	0.2	0.1	2,350
Year 5	2,321	0.2	0.1	2,350
Year 6	714	0.1	0.0	723
Highest Year	**3,834**	**0.3**	**0.1**	**3,882**

1 metric tonne (MT) = 1,000 kilograms or 2,204.6 pounds

Sources: SCAQMD 2008, USEPA 2012b

Table 3.11-21 Estimated Total GHG Emissions for All Project Alternatives

Project Options	CO_2	CH_4	N_2O	CO_2 e
	MT	MT	MT	MT
NRCS or Culvert/Channel Alternative	12,386	0.9	0.4	12,543
Preferred Alternative	14,777	1.1	0.5	14,962
Reach 6 Bypass Alternative	14,179	1.0	0.5	14,354

1 metric tonne (MT) = 1,000 kilograms or 2,204.6 pounds

Culvert/Channel Alternative same as NRCS Alternative (estimated emissions are the same)

Sources: SCAQMD 2008, USEPA 2012b

Table 3.11-22 Screening Health Risk Assessment for Excavation Activity

DPM Screen Parameter	Units	Reach 7A	Reach 7B	Reach 8
Onsite Emission Rate	lb/day	0.526	0.351	0.526
	g/sec	2.76E-03	1.84E-03	2.76E-03
Receptor Distance	meters	20	20	10
Modeled Hourly Concentration	$\mu g/m^3$	2.478	1.652	5.588
Corrected Annual Concentration	$\mu g/m^3$	0.248	0.165	0.559
Unit Risk Value (70-year MEI)	$(\mu g/m^3)^{-1}$	3.00E-04	3.00E-04	3.00E-04
Activity Duration	days	5	12	20
Annual MEI Correction	fraction	2.0E-04	4.7E-04	7.8E-04
Cancer Risk	probability	1.5E-08	2.3E-08	1.3E-07
	per million	0.01	0.02	0.13
CEQA Threshold	per million	10	10	10
	significance	LTS	LTS	LTS

DPM = diesel particulate matter (PM_{10})

70-year maximally exposed individual = 25,550 days = 613,200 hours

LTS = less than significant; S = significant

Sources: NOAA 2008, USEPA 1992, USEPA 2011c, OEHHA 2009, WC 2013, BAAQMD 2012b, 2010c

DPM is considered a toxic (carcinogenic) air contaminant in California (17 CCR Subchapter 7, Section 93000). Table 3.11-22 presents the results of a screening-level HRA for DPM (as C-PM_{10}) using conservative methodology for maximum excavation activity levels and timeframes. For the modeled point sources (i.e., mid-size diesel-powered excavating machines), release parameters for the engine exhaust pipes (stacks) were determined (i.e., height, diameter, temperature, and exit velocity), taking into account that the machines would most likely be operating in the channels (depressions), which reduces overall release height by several feet, roughly parallel with the surrounding receptors (5 feet or 1.5 meters). For two or three machines operating in combination, depending on location, the similar stacks were merged into one equivalent stack, pursuant to USEPA modeling guidance (1992). This was done to facilitate the screening procedure, provide additional conservatism, and eliminate small differences in dispersion, which would have little effect on overall results.

The screening version, AERSCREEN of the AERMOD dispersion model developed by USEPA (2011c), was used to determine worst-case ambient concentrations of emissions. For DPM, an organic air toxic with published emission factors and unit risk values (OEHHA 2009), cumulative cancer risk was determined for the nearest sensitive receptors, 33 to 66 feet (10 to 20 meters) away from excavations in Reaches 7A, 7B, and 8 for maximum working periods of 5, 12, and 20 days, respectively. Thus, the 70-year (613,200 lifetime hours) unit risk value for DPM was corrected to reflect these actual lengths of time (120 hours, 288 hours, and 480 hours, respectively). AERSCREEN predicts “worst-case” 1-hour, 3-hour, 8-hour, 24-hour, and annual concentrations—without the need for site-specific hourly meteorological data—that are equal to or greater than generated by AERMOD; however, the degree of conservatism varies depending on the application. Appendix K, Tables 3.11-d and 3.11-k contain calculation templates and dispersion modeling outputs.

3.11.5 Impacts and Mitigation Measures

Construction of any of the four improvement alternatives—Preferred Alternative, NRCS Alternative, Culvert/Channel Alternative, or Reach 6 Bypass Alternative—would cause criteria and GHG emissions from the combustion of fossil fuels (i.e., gasoline and diesel) used to operate off-road equipment, portable equipment, and vehicles in the vicinity of Morgan Hill and San Martin located in southern Santa Clara County. In addition, fugitive dust (as PM_{10} and $PM_{2.5}$) is generated by earthmoving tasks. This section evaluates Project emissions against established thresholds of significance. The No Project Alternative would not result in any construction activity; therefore, no emissions and no impacts.

3.11.5.1 No Project Alternative

AQ-1 NP—Conflict with or obstruct implementation of the applicable Air Quality Attainment Plan or Congestion Management Plan

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Existing conditions	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Under the No Project Alternative, no construction activity would occur and no emissions of criteria pollutants (NO_X, VOC, CO, SO_X, PM_{10}, $PM_{2.5}$) in engine exhaust or fugitive dust (PM_{10} and $PM_{2.5}$) from earthmoving tasks would occur.

Operations and Maintenance

Under the No Project Alternative, maintenance to the existing creekbed, described in Section 2.4.5,, would be higher than the other alternatives; however, emissions would not be in excess of applicable daily significance thresholds shown in Table 3.11-10.

Best Management Practices (BMPs)

None applicable

Impacts would be less than significant.

AQ-2 NP—Violate any stationary source air quality standard or contribute to an existing or projected air quality violation

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Existing conditions	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Under the No Project Alternative, no construction activity would occur and no emissions of criteria pollutants (NO_X, VOC, CO, SO_X, PM_{10}, $PM_{2.5}$) in engine exhaust or fugitive dust (PM_{10} and $PM_{2.5}$) from earthmoving tasks would occur.

Operations and Maintenance

Under the No Project Alternative, maintenance to the existing creekbed, described in Section 2.4.5,, would be higher than the other alternatives; however, emissions would not be in excess of applicable daily significance thresholds shown in Table 3.11-10.

Best Management Practices (BMPs)

None applicable

Impacts would be less than significant.

AQ-3 NP—Result in a net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Existing conditions	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Under the No Project Alternative, no construction activity would occur and no emissions of criteria pollutants (NO_X, VOC, CO, SO_X, PM_{10}, $PM_{2.5}$) in engine exhaust or fugitive dust (PM_{10} and $PM_{2.5}$) from earthmoving tasks would occur.

Operations and Maintenance

Under the No Project Alternative, maintenance to the existing creekbed, such as clearing sediment and debris, would be higher than the other alternatives; however, emissions would not be in excess of applicable daily significance thresholds shown in Table 3.11-10.

Best Management Practices (BMPs)

None applicable

Impacts would be less than significant.

AQ-4 NP—Expose sensitive receptors to substantial pollutant concentrations

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Existing conditions	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Under the No Project Alternative, no construction activity would occur and no emissions of criteria pollutants (NO_X, VOC, CO, SO_X, PM_{10}, $PM_{2.5}$) in engine exhaust or fugitive dust (PM_{10} and $PM_{2.5}$) from earthmoving tasks would occur.

Operations and Maintenance

Under the No Project Alternative, maintenance to the existing creekbed, described in Section 2.4.5,, would be higher than the other alternatives; however, emissions would not be in excess of applicable daily significance thresholds shown in Table 3.11-22.

Best Management Practices (BMPs)

None applicable

Impacts would be less than significant.

AQ-5 NP—Create objectionable odors affecting a substantial number of people

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Existing conditions	NI	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Under the No Project Alternative, no construction activity would occur and no odors would be emitted.

Operations and Maintenance

Under the No Project Alternative, maintenance, to the existing creekbed, described in Section 2.4.5, would be higher than the other alternatives; however, no new odors would be emitted.

Best Management Practices (BMPs)

None applicable

No odors would be generated; therefore there would not be an impact.

GHG-1 NP—Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Existing conditions	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Under the No Project Alternative, no construction activity would occur and no emissions of GHGs (CO_2, CH_4, N_2O) in engine exhaust would occur.

Operations and Maintenance

Under the No Project Alternative, maintenance to the existing creekbed, such as clearing sediment and debris, would be higher than the other alternatives; however, maintenance would cause very small incremental amounts of GHG emissions.

Impacts would be less than significant.

Best Management Practices (BMPs)

None applicable

GHG-2 NP—Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Existing conditions	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Under the No Project Alternative, no construction activity would occur and no emissions of GHGs (CO_2, CH_4, N_2O) in engine exhaust would occur.

Operations and Maintenance

Under the No Project Alternative, maintenance to the existing creekbed, such as clearing sediment and debris, would be higher than the other alternatives; however, maintenance would cause very small incremental amounts of GHG emissions.

Best Management Practices (BMPs)

None applicable

Impacts would be less than significant.

3.11.5.2 Tunnel Alternative (Preferred Alternative)

The key feature of the Preferred Alternative is to use an underground concrete tunnel instead of channel widening and deepening proposed through Reach 8 in downtown Morgan Hill. The tunnel would be constructed under the Nob Hill Terrace neighborhood, and a sediment detention basin would be constructed in the 600 feet of channel between Wright Avenue and Hillwood Lane with an 18-foot-wide maintenance/access road for maintenance access to the sediment detention basin. Construction duration for the Preferred Alternative would be 6 years, with construction lasting for about 36 months in Reach 8.

AQ-1 T—Conflict with or obstruct implementation of the applicable Air Quality Attainment Plan or Congestion Management Plan

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	LTS	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Refer to Tables 3.11-12, 3.11-15, 3.11-19, and 3.11-22. Under the Preferred Alternative, seasonal construction activity would occur over the course of 6 years in the Project area. Emissions of criteria pollutants (NO_X, VOC, CO, SO_X, PM_{10}, $PM_{2.5}$) in engine exhaust and fugitive dust (PM_{10} and $PM_{2.5}$) from earthmoving tasks would occur as a result of the construction activity. Also emitted would be DPM as PM_{10} in diesel engine exhaust.

The Project would not conflict with the *2010 Clean Air Plan* issued by BAAQMD (2012a), because general construction activity related emissions (i.e., temporary sources) are accounted for in the emission inventories included in the plan. Therefore, impacts on air quality plan objectives would be less than significant.

General estimated basin-wide construction-related emissions are included in BAAQMD's emission inventories (which, in part, form the basis for the air quality plans cited above) and are not expected to prevent attainment or maintenance of the O_3, particulate matter, and CO standards within the Bay Area. Therefore, construction impacts related to air quality plans for these pollutants would be less than significant, and no mitigation measures would be required, since they are presently estimated and accounted for in BAAQMD's emission inventories.

Operations and Maintenance

Under the Preferred Alternative, SCVWD would be responsible for maintaining all Project features, such as the channel, tunnel, piping, culverts, roads, fences, and grade control structures consistent with SCVWD guidelines as applicable including work conducted from Hillwood Lane through Llagas Road within Morgan Hill. This would include vegetation and sediment removal needed to maintain adequate flow capacity of the channel and culverts. The maintenance methods and activities are described in Section 2.6.5.

Compared to construction activities, maintenance emissions would be small and intermittent, mainly from on-road service vehicles (e.g., pickup trucks, dump trucks), small off-road equipment (e.g., mini-excavators, Bobcats™), portable equipment (e.g., wood chippers), and hand-held equipment (e.g., chainsaws, brush/grass cutters). As such, maintenance would not cause an exceedence of applicable daily significance thresholds shown in Table 3.11-10.

General estimated basin-wide maintenance-related emissions are included in BAAQMD's emission inventories. Therefore, maintenance impacts would be less than significant, and no mitigation measures would be required, since they are presently estimated and accounted for in BAAQMD's emission inventories.

Best Management Practices (BMPs)

> **AQ-1:** Use dust control measures for soil disturbing activities.

> **AQ-2 / GHG-1:** Minimize diesel and gasoline engine exhaust emissions.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

AQ-2 T—Violate any stationary source air quality standard or contribute to an existing or projected air quality violation

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	S	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Refer to Tables 3.11-12, 3.11-15, 3.11-19, and 3.11-22. Under the Preferred Alternative, seasonal construction activity would occur over the course of 6 years in the Project area. Emissions of criteria pollutants (NO_X, VOC, CO, SO_X, PM_{10}, $PM_{2.5}$) in engine exhaust and fugitive dust (PM_{10} and $PM_{2.5}$) from earthmoving tasks would occur as a result of the construction activity. Also emitted would be DPM as PM_{10} in diesel engine exhaust.

As shown in Tables 3.11-12 and 3.11-15, the Project would have a limited potential to incrementally contribute to existing regional violations of state and federal air quality standards (i.e., nonattainment) in the Project vicinity (i.e., SFBAAB) for O_3, PM_{10}, and $PM_{2.5}$, as discussed in Air Quality Regulatory Setting, primarily through diesel engine exhaust and fugitive dust emissions during construction activities. However, incremental impacts would be small, temporary, and would permanently cease upon Project completion.

Except for peak daily NO_X emissions comprising onsite and offsite mobile sources, no applicable quantitative emissions thresholds would be exceeded in BAAQMD. Due to geographic dispersion and effective onsite fugitive dust mitigation measures, no local ambient air quality violations would occur solely due to Project emissions for any other pollutant, including CO, PM_{10}, and $PM_{2.5}$.

As discussed in Source Specific Regulations, the use of newer, less polluting Tiers 1, 2, 3, and 4 engines in most fleet construction equipment used onsite is a mitigating factor for combustion emissions of NO_X, VOCs, CO, PM_{10}, and $PM_{2.5}$. California ultra-low sulfur diesel fuel, with a maximum sulfur content of 15 ppm by weight, would be used in all diesel-powered equipment to minimize SO_2 and particulate emissions. However, since fleet-average Tiered emission standards and California ultra-low sulfur diesel fuel are the current baseline for the state, their use does not comprise mitigation, per se.

Operations and Maintenance

Under the Preferred Alternative, SCVWD would be responsible for maintaining all Project features, such as the channel, tunnel, piping, culverts, roads, fences, and grade control structures consistent with SCVWD guidelines as applicable including work conducted from Hillwood Lane through Llagas Road

within Morgan Hill. This would include vegetation and sediment removal needed to maintain adequate flow capacity of the channel and culverts. The maintenance methods and activities are described in Section 2.6.5.

Compared to construction activities, maintenance emissions would be small and intermittent, mainly from on-road service vehicles (e.g., pickup trucks, dump trucks), small off-road equipment (e.g., mini-excavators, Bobcats™), portable equipment (e.g., wood chippers), and hand-held equipment (e.g., chainsaws, brush/grass cutters). As such, maintenance would not cause an exceedence of applicable daily significance thresholds shown in Table 3.11-10.

Best Management Practices (BMPs)

> **AQ-1:** Use dust control measures for soil disturbing activities.

> **AQ-2 / GHG-1:** Minimize diesel and gasoline engine exhaust emissions.

Mitigation Measures

Mitigation Measure AQ-2 T: Exhaust Emissions Reduction Measures. The SCVWD and its contractor(s) shall implement the following measures during construction of all Project activities to reduce construction-related exhaust emissions:

> Idling time of diesel powered construction equipment shall be minimized by shutting equipment off when not in use and reducing idling time to two minutes. Clear signage shall be provided for construction workers at all access points.

> All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked and determined to be running in proper condition prior to operations.

> All diesel-powered construction equipment shall be in compliance with the In-Use Off-Road Diesel-Fueled Fleets Rule and all portable equipment shall be in compliance with PERP as effective and applicable at the time construction work is performed (see Section 3.11.3.5).

Daily NO_X emission thresholds would be exceeded using fleet-average equipment and BMPs. However, BMPs and mitigation measures, as described above and incorporated into emissions estimates, would nevertheless reduce the impact by about 15 to 20 percent compared to uncontrolled emissions. Therefore, the impact from NO_X emissions would be significant due to the sizes and quantities of diesel-powered equipment and vehicles used on a daily basis, which exceed the mitigating capacity of BMPs and measures.

AQ-3 T—Result in a net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	S	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Refer to Tables 3.11-12, 3.11-15, 3.11-19, and 3.11-22. Under the Preferred Alternative, seasonal construction activity would occur over the course of 6 years in the Project area. Emissions of criteria pollutants (NO_X, VOC, CO, SO_X, PM_{10}, $PM_{2.5}$) in engine exhaust and fugitive dust (PM_{10} and $PM_{2.5}$) from earthmoving tasks would occur as a result of the construction activity. Also emitted would be DPM as PM_{10} in diesel engine exhaust.

The Preferred Alternative would result in a small temporary incremental contribution to a cumulative effect for several criteria pollutants for which the SFBAAB is in nonattainment under an applicable federal or state ambient air quality standard (i.e., O_3, PM_{10}, and $PM_{2.5}$).

As shown in Table 3.11-12, except for NO_X, none of the significance thresholds shown in Table 3.11-10 would be exceeded by the Project, neither daily nor annually, as applicable. Mitigation measures, described below, would not be able to fully reduce NO_X emissions to below the significance threshold. However, except for NO_X, since emissions would be controlled with BMPs AQ-1 and AQ-2 and short-term in nature, they would not be cumulatively considerable and would, thus, be less than significant.

Localized impacts would be less than significant, because the Preferred Alternative would be temporary and implement applicable fugitive dust controls listed under BMP AQ-1. The use of newer, less polluting Tiers 1, 2, 3, and 4 engines in most fleet construction equipment used onsite is a measure for reducing combustion emissions of NO_X, VOCs, CO, PM_{10}, and $PM_{2.5}$. Although not a CEQA mitigation measure, per se, California ultra-low sulfur diesel fuel with a maximum sulfur content of 15 ppm by weight would be used in all diesel-powered equipment, which would minimize SO_2 and particulate emissions. However, since fleet-average Tiered emission standards and California ultra-low sulfur diesel fuel are the current baseline for the state, their use does not comprise mitigation, per se.

Operations and Maintenance

Under the Preferred Alternative, SCVWD would be responsible for maintaining all Project features, such as the channel, tunnel, piping, culverts, roads, fences, and grade control structures consistent with SCVWD guidelines as applicable including work conducted from Hillwood Lane through Llagas Road within Morgan Hill. This would include vegetation and sediment removal needed to maintain adequate flow capacity of the channel and culverts. The maintenance methods and activities are described in Section 2.6.5.

Compared to construction activities, maintenance emissions would be small and intermittent, mainly from on-road service vehicles (e.g., pickup trucks, dump trucks), small off-road equipment (e.g., mini-excavators, Bobcats™), portable equipment (e.g., wood chippers), and hand-held equipment (e.g., chainsaws, brush/grass cutters). As such, maintenance would not cause an exceedence of applicable daily significance thresholds shown in Table 3.11-10.

Best Management Practices (BMPs)

> **AQ-1:** Use dust control measures for soil disturbing activities.

> **AQ-2 / GHG-1:** Minimize diesel and gasoline engine exhaust emissions.

Mitigation Measures

Mitigation Measure AQ-2 T: Exhaust Emissions Reduction Measures.

Daily NO_X emission thresholds would be exceeded using fleet-average equipment and BMPs. However, BMPs and mitigation, as described in AQ-2 T and incorporated into emissions estimates would nevertheless reduce the impact by about 15 to 20 percent compared to uncontrolled emissions. Therefore, the impact from NO_X emissions would be significant due to the sizes and quantities of diesel-

powered equipment and vehicles used on a daily basis which exceed the mitigating capacity of BMPs and mitigation measures.

AQ-4 T—Expose sensitive receptors to substantial pollutant concentrations

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	LTS	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Refer to Tables 3.11-12, 3.11-15, 3.11-19, and 3.11-22. Under the Preferred Alternative, seasonal construction activity would occur over the course of 6 years in the Project area. Emissions of criteria pollutants (NO_X, VOC, CO, SO_X, PM_{10}, $PM_{2.5}$) in engine exhaust and fugitive dust (PM_{10} and $PM_{2.5}$) from earthmoving tasks would occur as a result of the construction activity. Also emitted would be DPM as PM_{10} in diesel engine exhaust.

DPM contains substances that are suspected carcinogens, along with pulmonary irritants and hazardous compounds, which may affect sensitive receptors such as young children, senior citizens, or those susceptible to respiratory disease. Where construction activity occurs in proximity to long-term sensitive receptors, there could be a potential for unhealthful exposure of those receptors to diesel exhaust, including residential receptors.

The Project sites are located in populated suburban areas. Several residential dwellings are in very close proximity to the watercourses, typically in Reaches 7A, 7B, and 8, approximately 33 to 66 feet (10 to 20 meters). The nearest schools within 1,000 feet (305 meters) of the Project area are Burnett Elementary School, St. Catherine's School, Britton Middle School, Oakwood Elementary School, and Gwinn Elementary School. The Centennial Senior Center is also within 1,000 feet of the creek. Nearby parks include Galvan Park, Britton Field, Morgan Hill Community Park, and Paradise Park. There are no hospitals proximate to Project sites.

In order to assess the potential impacts of Project construction activities upon proximate sensitive receptors, a screening-level HRA for DPM was performed using conservative methodology for maximum (intensive) excavation activity levels and timeframes, as described in Section 3.11.4.2. Conservative methodology overestimates impacts, thus, actual impacts would be lower than shown in Table 3.11-22.

Table 3.11-22 shows the results of the screening HRA. The 2010 BAAQMD cumulative cancer risk threshold of 10^{-5} (10 in a million) would not be exceeded in the vicinity of the excavations at the closest sensitive receptors or in the neighboring areas. For Reaches 7A, 7B, and 8, respective cumulative risk values are 0.01, 0.02, and 0.13 in a million, which are far below the threshold. This is due to (1) the short-term temporary nature of the mobile sources (days, not years), and (2) the relatively small size of the mobile sources (mid-size excavating machines) compared to permanent industrial stationary sources.

Due to the relatively small scale of the proposed construction activity in any one location, its short-term temporary nature, and its large overall footprint in the Project area, the exposure of sensitive receptors to substantial pollutant concentrations would be less than significant. BAAQMD control measures for diesel exhaust would be implemented as described in BMP AQ-2 in combination with the fugitive dust controls

described in BMP AQ-1. The Project would not expose sensitive receptors to substantial pollutant concentrations and the impact would be less than significant.

Operations and Maintenance

Under the Preferred Alternative, SCVWD would be responsible for maintaining all Project features, such as the channel, tunnel, piping, culverts, roads, fences, and grade control structures consistent with SCVWD guidelines as applicable including work conducted from Hillwood Lane through Llagas Road within Morgan Hill. This would include vegetation and sediment removal needed to maintain adequate flow capacity of the channel and culverts. The maintenance methods and activities are described in Section 2.6.5.

Compared to construction activities, maintenance emissions would be small and intermittent, mainly from on-road service vehicles (e.g., pickup trucks, dump trucks), small off-road equipment (e.g., mini-excavators, Bobcats™), portable equipment (e.g., wood chippers), and hand-held equipment (e.g., chainsaws, brush/grass cutters). As such, maintenance would not cause an exceedence of applicable significance thresholds shown in Table 3.11-22.

Best Management Practices (BMPs)

> **AQ-1:** Use dust control measures for soil disturbing activities.

> **AQ-2 / GHG-1:** Minimize diesel and gasoline engine exhaust emissions.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

AQ-5 T—Create objectionable odors affecting a substantial number of people

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	LTS	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

California ultra-low sulfur diesel fuel with a maximum sulfur content of 15 ppm by weight would be used in all diesel-powered equipment, which minimizes emissions of sulfurous gases (SO_2, hydrogen sulfide, carbon disulfide, and carbonyl sulfide). Therefore, no objectionable odors are anticipated from construction activities due to the use of diesel-powered equipment and vehicles.

Since excavation work may encounter odorous materials, such as decaying organic matter (plants, wood, leaves, etc.), a possibility exists that such odorous material could cause a nuisance as described in Section 3.11.3.5. BMP AQ-3 is designed to prevent such a nuisance from affecting a considerable number of persons.

The Preferred Alternative would not create objectionable odors affecting a considerable number of persons; therefore, the impact would be less than significant with implementation of BMPs.

Operations and Maintenance

Under the Preferred Alternative, operations and maintenance would be the same as described in Section 2.4.5.Compared to construction activities, maintenance emissions would be small and intermittent, mainly from on-road service vehicles (e.g., pickup trucks, dump trucks), small off-road equipment (e.g., mini-excavators, Bobcats™), portable equipment (e.g., wood chippers), and hand-held equipment (e.g., chainsaws, brush/grass cutters). No new odors would be generated.

Best Management Practices (BMPs)

> **AQ-3:** Avoid stockpiling potentially odorous materials.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

GHG-1 T—Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	LTS	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; |N/A = not applicable

Construction

Refer to Tables 3.11-19 and 3.11-21. Under the Preferred Alternative, seasonal construction activity would occur over the course of 6 years in the Project area. Emissions of GHGs (CO_2, CH_4, N_2O) in engine exhaust would occur as a result of the construction activity.

As shown in Tables 3.11-19 and 3.11-21, construction emissions would be about 4,000 metric tonnes CO_2 e in the highest year, and a cumulative total of about 15,000 metric tonnes CO_2 e occurring over the course of 6 years. These emissions would be temporary and would permanently cease upon Project completion, although GHGs can persist in the atmosphere for indefinite lengths of time. Compared to national, statewide, and Bay Area GHG inventories shown in Table 3.11-6, mitigated construction emissions would comprise about 0.00006, 0.0008, and 0.005 percent of these respective inventories on an annual basis. In Santa Clara County (Tables 3.11-8 and 3.11-9), Project emissions would be about 0.02 percent of the countywide annual total, and 0.05 percent of the mobile source sector within the county. These GHG emissions are well within USEPA limits of precision of -2 to +5 percent for fossil fuel combustion (USEPA 2012b) and are thus negligible in context.

Due to its small temporary scale and GHG mitigations, the Project would not individually affect the environment or impede the state's ability to meet its 2020 GHG emission reduction goal; thus, the individual impact would be less than significant with implementation of BMP GHG-1, and the incremental cumulative impact would not be considerable.

Operations and Maintenance

Under the Preferred Alternative, operations and maintenance would be the same as described in Section 2.6.5.Compared to construction activities, maintenance emissions would be small and intermittent, mainly from on-road service vehicles (e.g., pickup trucks, dump trucks), small off-road equipment (e.g., mini-excavators, Bobcats™), portable equipment (e.g., wood chippers), and hand-held equipment (e.g., chainsaws, brush/grass cutters). As such, maintenance would cause very small incremental amounts of GHG emissions.

Best Management Practices (BMPs)

> **AQ-2 / GHG-1:** Minimize diesel and gasoline engine exhaust emissions.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

GHG-2 T—Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	LTS	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

On a statewide basis, agencies in California are in the process of implementing strategies to reduce GHG emissions pursuant to the Global Warming Solutions Act of 2006, which requires that California reduce its statewide GHG emissions to 1990 levels by 2020. Assembly Bill 32 required CARB to develop the Scoping Plan (2008) in coordination with the California Energy Commission's Climate Action Team (2010). The Scoping Plan defines a comprehensive set of measures to achieve the mandated emissions level. Key approaches for reducing GHG emissions to 1990 levels by 2020 include:

> Expanding and strengthening existing energy efficiency programs as well as building and appliance standards.

> Achieving a statewide renewable electricity standard of 33 percent.

> Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system.

> Establishing targets for transportation-related greenhouse gas emissions for regions throughout California, and pursuing policies and incentives to achieve those targets.

> Adopting and implementing measures to reduce transportation sector emissions, including California's Clean Car Standards, goods movement measures, and the Low Carbon Fuel Standard.

> Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the state's long-term commitment to AB 32 implementation.

Due to its small scale and temporary status, the Project would not conflict with state and local plans, policies, or regulations aimed at curbing GHG emissions.

Operations and Maintenance

Under the Preferred Alternative, operations and maintenance would be the same as described in Section 2.6.5. Compared to construction activities, maintenance emissions would be small and intermittent, mainly from on-road service vehicles (e.g., pickup trucks, dump trucks), small off-road equipment (e.g., mini-excavators, Bobcats™), portable equipment (e.g., wood chippers), and hand-held equipment (e.g., chainsaws, brush/grass cutters). As such, maintenance would cause very small incremental amounts of GHG emissions.

Best Management Practices (BMPs)

> **AQ-2 / GHG-1:** Minimize diesel and gasoline engine exhaust emissions.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

3.11.5.3 Natural Resources Conservation Service (NRCS) Alternative

Compared to the Preferred Alternative, estimated daily NO_X emissions from fuel combustion would be about 14 percent lower, while fugitive dust emissions would be about 4 percent lower. However, since estimated emissions for the NRCS Alternative would be in the same quantitative range as the Preferred Alternative and no BAAQMD thresholds would be exceeded except daily NO_X, CEQA impact determinations, BMPs, and mitigation measures are the same as for the Preferred Alternative. Thus, there is no significant difference in emissions impacts between the NRCS and Preferred alternatives.

AQ-1 NRCS—Conflict with or obstruct implementation of the applicable Air Quality Attainment Plan or Congestion Management Plan

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	LTS	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Refer to Tables 3.11-11, 3.11-14, 3.11-18, and 3.11-22. Under the NRCS Alternative, seasonal construction activity would occur over the course of 6 years in the Project area. Emissions of criteria pollutants (NO_X, VOC, CO, SO_X, PM_{10}, $PM_{2.5}$) and GHGs (CO_2, CH_4, N_2O) in engine exhaust and fugitive dust (PM_{10} and $PM_{2.5}$) from earthmoving tasks would occur as a result of the construction activity. Also emitted would be DPM as PM_{10} in diesel engine exhaust.

The Project would not conflict with the *2010 Clean Air Plan* issued by BAAQMD (2012a), because general construction activity related emissions (i.e., temporary sources) are accounted for in the emission

inventories included in the plan. Therefore, impacts on air quality plan objectives would be less than significant.

General estimated basin-wide construction-related emissions are included in BAAQMD's emission inventories (which, in part, form the basis for the air quality plans cited above) and are not expected to prevent attainment or maintenance of the O_3, particulate matter, and CO standards within the Bay Area. Therefore, construction impacts related to air quality plans for these pollutants would be less than significant and no mitigation measures would be required, since they are presently estimated and accounted for in BAAQMD's emission inventories.

Operations and Maintenance

Under the NRCS Alternative, SCVWD would be responsible for maintaining all Project features, such as the channel, culverts, roads, fences, and grade control structures consistent with SCVWD guidelines. This would include vegetation and sediment removal needed to maintain adequate flow capacity of the channel and culverts. The maintenance methods and activities are described in Section 2.5.5. Compared to construction activities, maintenance emissions would be small and intermittent, mainly from on-road service vehicles (e.g., pickup trucks, dump trucks), small off-road equipment (e.g., mini-excavators, Bobcats™), portable equipment (e.g., wood chippers), and hand-held equipment (e.g., chainsaws, brush/grass cutters). As such, maintenance would not cause an exceedence of applicable daily significance thresholds shown in Table 3.11-10.

General estimated basin-wide maintenance-related emissions are included in BAAQMD's emission inventories. Therefore, maintenance impacts would be less than significant and no mitigation measures would be required, since they are presently estimated and accounted for in BAAQMD's emission inventories.

Best Management Practices (BMPs)

> **AQ-1:** Use dust control measures for soil disturbing activities.

> **AQ-2 / GHG-1:** Minimize diesel and gasoline engine exhaust emissions.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

AQ-2 NRCS—Violate any stationary source air quality standard or contribute to an existing or projected air quality violation

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	S	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Refer to Tables 3.11-11, 3.11-14, 3.11-18, and 3.11-22. Under the NRCS Alternative, seasonal construction activity would occur over the course of 6 years in the Project area. Emissions of criteria

pollutants (NO_X, VOC, CO, SO_X, PM_{10}, $PM_{2.5}$) and GHGs (CO_2, CH_4, N_2O) in engine exhaust and fugitive dust (PM_{10} and $PM_{2.5}$) from earthmoving tasks would occur as a result of the construction activity. Also emitted would be DPM as PM_{10} in diesel engine exhaust.

As shown in Tables 3.11-11 and 3.11-14, the Project would have a limited potential to incrementally contribute to existing regional violations of state and federal air quality standards (i.e., nonattainment) in the Project vicinity (i.e., SFBAAB) for O_3, PM_{10}, and $PM_{2.5}$, as discussed in Air Quality Regulatory Setting, primarily through diesel engine exhaust and fugitive dust emissions during construction activities. However, incremental impacts would be small, temporary, and would permanently cease upon Project completion.

Except for peak daily NO_X emissions comprising onsite and offsite mobile sources, no applicable quantitative emissions thresholds would be exceeded in BAAQMD. Due to geographic dispersion and effective onsite fugitive dust mitigation measures, no local ambient air quality violations would occur solely due to Project emissions for any other pollutant, including CO, PM_{10}, and $PM_{2.5}$.

As discussed in Source Specific Regulations, the use of newer, less polluting Tiers 1, 2, 3 and 4 engines in most fleet construction equipment used onsite is a mitigating factor for combustion emissions of NO_X, VOCs, CO, PM_{10}, and $PM_{2.5}$. California ultra-low sulfur diesel fuel with a maximum sulfur content of 15 ppm by weight would be used in all diesel-powered equipment to minimize SO_2 and particulate emissions. However, since fleet-average Tiered emission standards and California ultra-low sulfur diesel fuel are the current baseline for the state, their use does not comprise mitigation, per se.

Operations and Maintenance

Under the NRCS Alternative, SCVWD would be responsible for maintaining all Project features, such as the channel, culverts, roads, fences, and grade control structures consistent with SCVWD guidelines. This would include vegetation and sediment removal needed to maintain adequate flow capacity of the channel and culverts. The maintenance methods and activities are in Section 2.5.5. Compared to construction activities, maintenance emissions would be small and intermittent, mainly from on-road service vehicles (e.g., pickup trucks, dump trucks), small off-road equipment (e.g., mini-excavators, Bobcats™), portable equipment (e.g., wood chippers), and hand-held equipment (e.g., chainsaws, brush/grass cutters). As such, maintenance would not cause an exceedence of applicable daily significance thresholds shown in Table 3.11-10.

Best Management Practices (BMPs)

> **AQ-1:** Use dust control measures for soil disturbing activities.

> **AQ-2 / GHG-1:** Minimize diesel and gasoline engine exhaust emissions.

Mitigation Measures

Mitigation Measure AQ-2 T: Exhaust Emissions Reduction Measures.

Daily NO_X emission thresholds would be exceeded using fleet-average equipment and BMPs. However, BMPs and mitigation measures, as described AQ-2 T and incorporated into emissions estimates, would nevertheless reduce the impact by about 15 to 20 percent compared to uncontrolled emissions. Therefore, the impact from NO_X emissions would be significant due to the sizes and quantities of diesel-powered equipment and vehicles used on a daily basis which exceed the mitigating capacity of BMPs.

AQ-3 NRCS—Result in a net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	S	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Refer to Tables 3.11-11, 3.11-14, 3.11-18, and 3.11-22. Under the NRCS Alternative, seasonal construction activity would occur over the course of 6 years in the Project area. Emissions of criteria pollutants (NO_X, VOC, CO, SO_X, PM_{10}, $PM_{2.5}$) in engine exhaust and fugitive dust (PM_{10} and $PM_{2.5}$) from earthmoving tasks would occur as a result of the construction activity. Also emitted would be DPM as PM_{10} in diesel engine exhaust.

The Project would result in a small temporary incremental contribution to a cumulative effect for several criteria pollutants for which the SFBAAB is in nonattainment under an applicable federal or state ambient air quality standard (i.e., O_3, PM_{10}, and $PM_{2.5}$).

As shown in Table 3.11-11, except for NO_X, none of the significance thresholds shown in Table 3.11-10 would be exceeded by the Project, neither daily nor annually, as applicable. Mitigation measures, described below, would not be able to fully reduce NO_X emissions to below the significance threshold. However, except for NO_X, since emissions would be controlled with BMPs AQ-1 and AQ-2 and short-term in nature, they would not be cumulatively considerable and would, thus, be less than significant.

Localized impacts would be less than significant because the Project would be temporary and implement applicable fugitive dust controls listed under BMP AQ-1. The use of newer, less polluting Tiers 1, 2, 3 and 4 engines in most fleet construction equipment used onsite is a measure for reducing combustion emissions of NO_X, VOCs, CO, PM_{10}, and $PM_{2.5}$. Although not a CEQA mitigation measure, California ultra-low sulfur diesel fuel with a maximum sulfur content of 15 ppm by weight would be used in all diesel-powered equipment, which would minimize SO_2 and particulate emissions. However, since fleet-average Tiered emission standards and California ultra-low sulfur diesel fuel are the current baseline for the state, their use does not comprise mitigation, per se.

Operations and Maintenance

Under the NRCS Alternative, SCVWD would be responsible for maintaining all Project features, such as the channel, culverts, roads, fences, and grade control structures consistent with SCVWD guidelines. This would include vegetation and sediment removal needed to maintain adequate flow capacity of the channel and culverts. The maintenance methods and activities are described in Section 2.5.5. Compared to construction activities, maintenance emissions would be small and intermittent, mainly from on-road service vehicles (e.g., pickup trucks, dump trucks), small off-road equipment (e.g., mini-excavators, Bobcats™), portable equipment (e.g., wood chippers), and hand-held equipment (e.g., chainsaws, brush/grass cutters). As such, maintenance would not cause an exceedence of applicable daily significance thresholds shown in Table 3.11-10.

Best Management Practices (BMPs)

> **AQ-1:** Use dust control measures for soil disturbing activities.

> **AQ-2 / GHG-1:** Minimize diesel and gasoline engine exhaust emissions.

Mitigation Measures

Mitigation Measure AQ-2 T: Exhaust Emissions Reduction Measures.

Daily NO_X emission thresholds would be exceeded using fleet-average equipment and BMPs. However, BMPs and mitigation measures, as described in AQ-2 T and incorporated into emissions estimates, would nevertheless reduce the impact by about 15 to 20 percent compared to uncontrolled emissions. Therefore, the impact from NO_X emissions would be significant due to the sizes and quantities of diesel-powered equipment and vehicles used on a daily basis which exceed the mitigating capacity of BMPs and mitigation measures.

AQ-4 NRCS—Expose sensitive receptors to substantial pollutant concentrations

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	LTS	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Refer to Tables 3.11-11, 3.11-14, 3.11-18, and 3.11-22. Under the NRCS Alternative, seasonal construction activity would occur over the course of 6 years in the Project area. Emissions of criteria pollutants (NO_X, VOC, CO, SO_X, PM_{10}, $PM_{2.5}$) in engine exhaust and fugitive dust (PM_{10} and $PM_{2.5}$) from earthmoving tasks would occur as a result of the construction activity. Also emitted would be DPM as PM_{10} in diesel engine exhaust.

DPM contains substances that are suspected carcinogens, along with pulmonary irritants and hazardous compounds, which may affect sensitive receptors such as young children, senior citizens, or those susceptible to respiratory disease. Where construction activity occurs in proximity to long-term sensitive receptors, there could be a potential for unhealthful exposure of those receptors to diesel exhaust, including residential receptors.

The Project sites are located in populated suburban areas. Several residential dwellings are in very close proximity to the watercourses, typically in Reaches 7A, 7B, and 8, approximately 33 to 66 feet (10 to 20 meters). The nearest schools within 1,000 feet (305 meters) of the Project area are Burnett Elementary School, St. Catherine's School, Britton Middle School, Oakwood Elementary School, and Gwinn Elementary School. The Centennial Senior Center is also within 1,000 feet of the creek. Nearby parks include Galvan Park, Britton Field, Morgan Hill Community Park, and Paradise Park. There are no hospitals proximate to Project sites.

In order to assess the potential impacts of Project construction activities upon proximate sensitive receptors, a screening-level HRA for DPM was performed using conservative methodology for maximum (intensive) excavation activity levels and timeframes, as described in Section 3.11.4.2. Conservative methodology overestimates impacts, thus, actual impacts would be lower than shown in Table 3.11-22.

Table 3.11-22 shows the results of the screening HRA. The BAAQMD (1999) cumulative cancer risk threshold of 10^{-5} (10 in a million) would not be exceeded in the vicinity of the excavations at the closest sensitive receptors or in the neighboring areas. For Reaches 7A, 7B, and 8, respective cumulative risk values are 0.01, 0.02, and 0.13 in a million, which are far below the threshold. This is due to (1) the short-term temporary nature of the mobile sources (days, not years), and (2) the relatively small size of the mobile sources (mid-size excavating machines) compared to permanent industrial stationary sources.

Due to the relatively small scale of the proposed construction activity in any one location, its short-term temporary nature, and its large overall footprint in the Project area, the exposure of sensitive receptors to substantial pollutant concentrations would be less than significant. BAAQMD control measures for diesel exhaust would be implemented, as described in BMP AQ-2, in combination with the fugitive dust controls described in BMP AQ-1. The Project would not expose sensitive receptors to substantial pollutant concentrations and the impact would be less than significant.

Operations and Maintenance

Under the NRCS Alternative, SCVWD would be responsible for maintaining all Project features, such as the channel, culverts, roads, fences, and grade control structures consistent with SCVWD guidelines. This would include vegetation and sediment removal needed to maintain adequate flow capacity of the channel and culverts. The maintenance methods and activities are described in Section 2.5.5. Compared to construction activities, maintenance emissions would be small and intermittent, mainly from on-road service vehicles (e.g., pickup trucks, dump trucks), small off-road equipment (e.g., mini-excavators, Bobcats™), portable equipment (e.g., wood chippers), and hand-held equipment (e.g., chainsaws, brush/grass cutters). As such, maintenance would not cause an exceedence of applicable significance thresholds shown in Table 3.11-22.

Best Management Practices (BMPs)

> **AQ-1:** Use dust control measures for soil disturbing activities.

> **AQ-2 / GHG-1:** Minimize diesel and gasoline engine exhaust emissions.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

AQ-5 NRCS—Create objectionable odors affecting a substantial number of people

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	LTS	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

California ultra-low sulfur diesel fuel with a maximum sulfur content of 15 ppm by weight would be used in all diesel-powered equipment, which minimizes emissions of sulfurous gases (SO_2, hydrogen sulfide, carbon disulfide, and carbonyl sulfide). Therefore, no objectionable odors are anticipated from construction activities due to the use of diesel-powered equipment and vehicles.

Since excavation work may encounter odorous materials, such as decaying organic matter (plants, wood, leaves, etc.), a possibility exists that such odorous material could cause a nuisance as described in Section 3.11.3.5. BMP AQ-3 is designed to prevent such a nuisance from affecting a considerable number of persons.

The Project would not create objectionable odors affecting a considerable number of persons; therefore, the impact would be less than significant with implementation of BMPs.

Operations and Maintenance

Under the NRCS Alternative, SCVWD would be responsible for maintaining all Project features, such as the channel, culverts, roads, fences, and grade control structures consistent with SCVWD guidelines. This would include vegetation and sediment removal needed to maintain adequate flow capacity of the channel and culverts. The maintenance methods and activities are described in Section 2.5.5. No new odors would be generated.

Best Management Practices (BMPs)

> **AQ-3:** Avoid stockpiling potentially odorous materials.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

GHG-1 NRCS—Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	LTS	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Refer to Tables 3.11-18 and 3.11-21. Under the NRCS Alternative, seasonal construction activity would occur over the course of 6 years in the Project area. Emissions of GHGs (CO_2, CH_4, N_2O) in engine exhaust would occur as a result of the construction activity.

As described in Greenhouse Gas Regulatory Setting, there are no promulgated standards of significance for GHG impacts established under CEQA for construction-only projects. Thus, Project emissions are compared against existing GHG inventories for context.

As shown in Tables 3.11-18 and 3.11-21, construction emissions would be about 3,450 metric tonnes CO_2 e in the highest year, and a cumulative total of about 12,500 metric tonnes CO_2 e occurring over the course of 6 years. These emissions would be temporary and would permanently cease upon Project completion; although, GHGs can persist in the atmosphere for indefinite lengths of time. Compared to national, statewide, and Bay Area GHG inventories shown in Table 3.11-6, mitigated construction emissions would comprise about 0.00005 percent, 0.0007 percent, and 0.004 percent of these respective inventories on an annual basis. In Santa Clara County (Tables 3.11-8 and 3.11-9), Project emissions

would be about 0.02 percent of the countywide annual total, and 0.04 percent of the mobile source sector within the county. These GHG emissions are well within USEPA limits of precision of -2 to +5 percent for fossil fuel combustion (USEPA 2012b) and are, thus, negligible in context.

Due to its small temporary scale and GHG mitigations, the Project would not individually affect the environment or impede the state's ability to meet its 2020 GHG emission reduction goal; thus, the individual impact would be less than significant with implementation of BMP GHG-1, and the incremental cumulative impact would not be considerable.

Operations and Maintenance

Under the NRCS Alternative, SCVWD would be responsible for maintaining all Project features, such as the channel, culverts, roads, fences, and grade control structures consistent with SCVWD guidelines. This would include vegetation and sediment removal needed to maintain adequate flow capacity of the channel and culverts. The maintenance methods and activities are described in Section 2.5.5. Compared to construction activities, maintenance emissions would be small and intermittent, mainly from on-road service vehicles (e.g., pickup trucks, dump trucks), small off-road equipment (e.g., mini-excavators, Bobcats™), portable equipment (e.g., wood chippers), and hand-held equipment (e.g., chainsaws, brush/grass cutters). As such, maintenance would cause very small incremental amounts of GHG emissions.

Best Management Practices (BMPs)

> **AQ-2 / GHG-1:** Minimize diesel and gasoline engine exhaust emissions.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

GHG-2 NRCS—Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	LTS	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

On a statewide basis, agencies in California are in the process of implementing strategies to reduce GHG emissions pursuant to the Global Warming Solutions Act of 2006, which requires that California reduce its statewide GHG emissions to 1990 levels by 2020. Assembly Bill 32 required CARB to develop the Scoping Plan (2008) in coordination with the California Energy Commission's Climate Action Team (2010). The Scoping Plan defines a comprehensive set of measures to achieve the mandated emissions level. Key approaches for reducing GHG emissions to 1990 levels by 2020 include:

> Expanding and strengthening existing energy efficiency programs as well as building and appliance standards.

> Achieving a statewide renewable electricity standard of 33 percent.

> Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system.

> Establishing targets for transportation-related greenhouse gas emissions for regions throughout California, and pursuing policies and incentives to achieve those targets.

> Adopting and implementing measures to reduce transportation sector emissions, including California's Clean Car Standards, goods movement measures, and the Low Carbon Fuel Standard.

> Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the state's long-term commitment to AB 32 implementation.

Due to its small scale and temporary status, the Project would not conflict with state and local plans, policies, or regulations aimed at curbing GHG emissions.

Operations and Maintenance

Under the NRCS Alternative, SCVWD would be responsible for maintaining all Project features, such as the channel, culverts, roads, fences, and grade control structures consistent with SCVWD guidelines. This would include vegetation and sediment removal needed to maintain adequate flow capacity of the channel and culverts. The maintenance methods and activities are described in Section 25.5. Compared to construction activities, maintenance emissions would be small and intermittent, mainly from on-road service vehicles (e.g., pickup trucks, dump trucks), small off-road equipment (e.g., mini-excavators, Bobcats™), portable equipment (e.g., wood chippers), and hand-held equipment (e.g., chainsaws, brush/grass cutters). As such, maintenance would cause very small incremental amounts of GHG emissions.

Best Management Practices (BMPs)

> **AQ-2 / GHG-1:** Minimize diesel and gasoline engine exhaust emissions.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

3.11.5.4 Culvert/Channel Alternative

Compared to the Preferred Alternative, estimated daily NO_X emissions from fuel combustion would be about 14 percent lower, while fugitive dust emissions would be about 4 percent lower. However, since estimated emissions for the Culvert/Channel Alternative would be in the same quantitative range as the Preferred Alternative and no BAAQMD thresholds would be exceeded except daily NO_X, CEQA impact determinations, BMPs, and mitigation measures are the same as for the Preferred Alternative. Thus, there is no significant difference in emissions impacts between the Culvert/Channel and Preferred alternatives.

AQ-1 CC—Conflict with or obstruct implementation of the applicable Air Quality Attainment Plan or Congestion Management Plan

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	LTS	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Refer to Tables 3.11-11, 3.11-14, 3.11-18, and 3.11-22. Under the Culvert/Channel Alternative, seasonal construction activity would occur over the course of 6 years in the Project area. Emissions of criteria pollutants (NO_X, VOC, CO, SO_X, PM_{10}, $PM_{2.5}$) in engine exhaust and fugitive dust (PM_{10} and $PM_{2.5}$) from earthmoving tasks would occur as a result of the construction activity. Also emitted would be DPM as PM_{10} in diesel engine exhaust.

Estimated emissions are the same as the NRCS Alternative; therefore, CEQA impact determinations, BMPs, and mitigations are the same as the NRCS Alternative listed above.

Operations and Maintenance

Under the Culvert/Channel Alternative, operations and maintenance would be virtually the same as the NRCS Alternative and are described in Section 2.7.5. Operation and maintenance activities would not cause an exceedence of applicable daily significance thresholds shown in Table 3.11-10. Determinations, BMPs, and mitigation measures are the same as the NRCS Alternative, listed above. General estimated basin-wide maintenance-related emissions are included in BAAQMD's emission inventories. Therefore, maintenance impacts would be less than significant, and no mitigation measures would be required, since they are presently estimated and accounted for in BAAQMD's emission inventories.

Best Management Practices (BMPs)

> **AQ-1:** Use dust control measures for soil disturbing activities

> **AQ-2 / GHG-1:** Minimize diesel and gasoline engine exhaust emissions.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

AQ-2 CC—Violate any stationary source air quality standard or contribute to an existing or projected air quality violation

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	S	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Refer to Tables 3.11-11, 3.11-14, 3.11-18, and 3.11-22. Under the Culvert/Channel Alternative, seasonal construction activity would occur over the course of 6 years in the Project area. Emissions of criteria pollutants (NO_X, VOC, CO, SO_X, PM_{10}, $PM_{2.5}$) in engine exhaust and fugitive dust (PM_{10} and $PM_{2.5}$) from earthmoving tasks would occur as a result of the construction activity. Also emitted would be DPM as PM_{10} in diesel engine exhaust.

Estimated emissions are the same as the NRCS Alternative; therefore, CEQA impact determinations, BMPs, and mitigations are the same as the NRCS Alternative listed above.

Operations and Maintenance

Under the Culvert/Channel Alternative, operations and maintenance would be virtually the same as the NRCS Alternative and are described in Section 2.7.5. Operation and maintenance activities would not cause an exceedence of applicable daily significance thresholds shown in Table 3.11-10. Determinations, BMPs, and mitigation measures are the same as the NRCS Alternative, listed above.

Best Management Practices (BMPs)

> **AQ-1:** Use dust control measures for soil disturbing activities.

> **AQ-2 / GHG-1:** Minimize diesel and gasoline engine exhaust emissions.

Mitigation Measures

Mitigation Measure AQ-2 T: Exhaust Emissions Reduction Measures.

Daily NO_X emission thresholds would be exceeded using fleet-average equipment and BMPs. However, BMPs and mitigation measures, as described in AQ-2 T and incorporated into emissions estimates, would nevertheless reduce the impact by about 15 to 20 percent compared to uncontrolled emissions. Therefore, the impact from NO_X emissions would be significant due to the sizes and quantities of diesel-powered equipment and vehicles used on a daily basis which exceed the mitigating capacity of BMPs and mitigation measures.

AQ-3 CC—Result in a net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	S	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Refer to Tables 3.11-11, 3.11-14, 3.11-18, and 3.11-22. Under the Culvert/Channel Alternative, seasonal construction activity would occur over the course of 6 years in the Project area. Emissions of criteria pollutants (NO_X, VOC, CO, SO_X, PM_{10}, $PM_{2.5}$) in engine exhaust and fugitive dust (PM_{10} and $PM_{2.5}$) from earthmoving tasks would occur as a result of the construction activity. Also emitted would be DPM as PM_{10} in diesel engine exhaust.

Estimated emissions are the same as the NRCS Alternative; therefore, CEQA impact determinations, BMPs, and mitigations are the same as the NRCS Alternative listed above.

Operations and Maintenance

Under the Culvert/Channel Alternative, operations and maintenance would be virtually the same as the NRCS Alternative and are described in Section 2.7.5. Operation and maintenance activities would not cause an exceedence of applicable daily significance thresholds shown in Table 3.11-10. Determinations, BMPs, and mitigation measures are the same as the NRCS Alternative listed above.

Best Management Practices (BMPs)

> **AQ-1:** Use dust control measures for soil disturbing activities.

> **AQ-2 / GHG-1:** Minimize diesel and gasoline engine exhaust emissions.

Mitigation Measures

Mitigation Measure AQ-2 T: Exhaust Emissions Reduction Measures.

Daily NO_X emission thresholds would be exceeded using fleet-average equipment and BMPs. However, BMPs and mitigation measures, as described in AQ-2 T and incorporated into emissions estimates, would nevertheless reduce the impact by about 15 to 20 percent compared to uncontrolled emissions. Therefore, the impact from NO_X emissions would be significant due to the sizes and quantities of diesel-powered equipment and vehicles used on a daily basis which exceed the mitigating capacity of BMPs and mitigation measures.

AQ-4 CC—Expose sensitive receptors to substantial pollutant concentrations

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	LTS	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Refer to Tables 3.11-11, 3.11-14, 3.11-18, and 3.11-22. Under the Culvert/Channel Alternative, seasonal construction activity would occur over the course of 6 years in the Project area. Emissions of criteria pollutants (NO_X, VOC, CO, SO_X, PM_{10}, $PM_{2.5}$) in engine exhaust and fugitive dust (PM_{10} and $PM_{2.5}$) from earthmoving tasks would occur as a result of the construction activity. Also emitted would be DPM as PM_{10} in diesel engine exhaust.

Estimated emissions are the same as the NRCS Alternative; therefore, CEQA impact determinations, BMPs, and mitigation measures are the same as the NRCS Alternative, listed above.

Operations and Maintenance

Under the Culvert/Channel Alternative, operations and maintenance would be virtually the same as the NRCS Alternative and are described in Section 2.7.5. Operation and maintenance activities would not cause an exceedence of applicable significance thresholds shown in Table 3.11-22. Determinations, BMPs, and mitigation measures are the same as the NRCS Alternative, listed above.

Best Management Practices (BMPs)

> **AQ-1:** Use dust control measures for soil disturbing activities.

> **AQ-2 / GHG-1:** Minimize diesel and gasoline engine exhaust emissions.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

AQ-5 CC—Create objectionable odors affecting a substantial number of people

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	LTS	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

California ultra-low sulfur diesel fuel with a maximum sulfur content of 15 ppm by weight would be used in all diesel-powered equipment which minimizes emissions of sulfurous gases (SO_2, hydrogen sulfide, carbon disulfide, and carbonyl sulfide). Therefore, no objectionable odors are anticipated from construction activities due to the use of diesel-powered equipment and vehicles.

Since excavation work may encounter odorous materials such as decaying organic matter (plants, wood, leaves, etc.), a possibility exists that such odorous material could cause a nuisance as described in Section 3.11.3.5. BMP AQ-3 is designed to prevent such a nuisance from affecting a considerable number of persons.

The Project would not create objectionable odors affecting a considerable number of persons; therefore, the impact would be less than significant with implementation of BMPs.

Operations and Maintenance

Under the Culvert/Channel Alternative, operations and maintenance would be virtually the same as the NRCS Alternative are described in Section 2.7.5. No new odors would be created.

Best Management Practices (BMPs)

> **AQ-3:** Avoid stockpiling potentially odorous materials.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

GHG-1 CC Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	LTS	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Refer to Tables 3.11-18 and 3.11-21. Under the Culvert/Channel Alternative, seasonal construction activity would occur over the course of 6 years in the Project area. Emissions of GHGs (CO_2, CH_4, N_2O) in engine exhaust would occur as a result of the construction activity.

Estimated emissions are the same as the NRCS Alternative; therefore, CEQA impact determinations, BMPs, and mitigations are the same as the NRCS Alternative listed above.

Operations and Maintenance

Under the Culvert/Channel Alternative, operations and maintenance would be virtually the same as the NRCS Alternative are described in Section 2.7.5. As such, maintenance would cause very small incremental amounts of GHG emissions.

Best Management Practices (BMPs)

> **AQ-2 / GHG-1:** Minimize diesel and gasoline engine exhaust emissions.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

GHG-2 CC—Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	LTS	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

On a statewide basis, agencies in California are in the process of implementing strategies to reduce GHG emissions pursuant to the Global Warming Solutions Act of 2006, which requires that California reduce its statewide GHG emissions to 1990 levels by 2020. Assembly Bill 32 required CARB to develop the Scoping Plan (2008) in coordination with the California Energy Commission's Climate Action Team (2010). The Scoping Plan defines a comprehensive set of measures to achieve the mandated emissions level. Key approaches for reducing GHG emissions to 1990 levels by 2020 include:

> Expanding and strengthening existing energy efficiency programs as well as building and appliance standards.

> Achieving a statewide renewable electricity standard of 33 percent.

> Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system.

> Establishing targets for transportation-related greenhouse gas emissions for regions throughout California, and pursuing policies and incentives to achieve those targets.

> Adopting and implementing measures to reduce transportation sector emissions, including California's Clean Car Standards, goods movement measures, and the Low Carbon Fuel Standard.

> Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the state's long-term commitment to AB 32 implementation.

Due to its small scale and temporary status, the Project would not conflict with state and local plans, policies, or regulations aimed at curbing GHG emissions.

Operations and Maintenance

Under the Culvert/Channel Alternative, operations and maintenance would be virtually the same as the NRCS Alternative are described in Section 2.7.5. As such, maintenance would cause very small incremental amounts of GHG emissions.

Best Management Practices (BMPs)

> **AQ-2 / GHG-1:** Minimize diesel and gasoline engine exhaust emissions.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

3.11.5.5 Reach 6 Bypass Alternative

Compared to the Preferred Alternative, estimated daily NO_X emissions from fuel combustion would be about 9 percent lower, while fugitive dust emissions would be about 12 percent lower. The Reach 6 Bypass avoids the need for extensive excavation and earthmoving work in Reaches 5 and 6, thus, the bulk of emissions associated with these activities in other alternatives (i.e., Preferred, NRCS, or Culvert/Channel) would not occur. As a result, aggregated NO_X emissions for the Bypass would be about 26 pounds per day less than excavation and earthmoving work in Reaches 5 and 6. However, since estimated emissions for the Reach 6 Bypass Alternative would be in the same quantitative range as the Preferred Alternative and no BAAQMD thresholds would be exceeded except daily NO_X, CEQA impact determinations, BMPs, and mitigation measures are the same as for the Preferred Alternative. Thus, there is no significant difference in emissions impacts between the Reach 6 Bypass and Preferred alternatives.

AQ-1 BY—Conflict with or obstruct implementation of the applicable Air Quality Attainment Plan or Congestion Management Plan

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	LTS	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Refer to Tables 3.11-13, 3.11-16, 3.11-20, and 3.11-22. Under the Reach 6 Bypass Alternative, seasonal construction activity would occur over the course of 6 years in the Project area. Emissions of criteria pollutants (NO_X, VOC, CO, SO_X, PM_{10}, $PM_{2.5}$) in engine exhaust and fugitive dust (PM_{10} and $PM_{2.5}$) from earthmoving tasks would occur as a result of the construction activity. Also emitted would be DPM as PM_{10} in diesel engine exhaust.

The Project would not conflict with the *2010 Clean Air Plan* issued by BAAQMD (2012a), because general construction activity related emissions (i.e., temporary sources) are accounted for in the emission inventories included in the plan. Therefore, impacts on air quality plan objectives would be less than significant.

General estimated basin-wide construction-related emissions are included in BAAQMD's emission inventories (which, in part, form the basis for the air quality plans cited above) and are not expected to prevent attainment or maintenance of the O_3, particulate matter, and CO standards within the Bay Area. Therefore, construction impacts related to air quality plans for these pollutants would be less than

significant, and no mitigation measures would be required, since they are presently estimated and accounted for in BAAQMD's emission inventories.

Operations and Maintenance

Under the Reach 6 Bypass Alternative, operations and maintenance would be the same as described in Section 2.8.5, and would be the same as the Preferred Alternative in all Project reaches, but with a few differences in Reaches 5 and 6. Reaches 5 and 6 downstream of the bypass would be maintained under the SMP because those reaches would not be improved as part of this alternative. Reach 6 above the bypass would be maintained same as all action alternatives.

Compared to construction activities, maintenance emissions would be small and intermittent, mainly from on-road service vehicles (e.g., pickup trucks, dump trucks), small off-road equipment (e.g., mini-excavators, Bobcats™), portable equipment (e.g., wood chippers), and hand-held equipment (e.g., chainsaws, brush/grass cutters). As such, maintenance would not cause an exceedence of applicable daily significance thresholds shown in Table 3.11-10.

General estimated basin-wide maintenance-related emissions are included in BAAQMD's emission inventories. Therefore, maintenance impacts would be less than significant, and no mitigation measures would be required, since they are presently estimated and accounted for in BAAQMD's emission inventories.

Best Management Practices (BMPs)

> **AQ-1:** Use dust control measures for soil disturbing activities.

> **AQ-2 / GHG-1:** Minimize diesel and gasoline engine exhaust emissions.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

AQ-2 BY—Violate any stationary source air quality standard or contribute to an existing or projected air quality violation

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	S	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Refer to Tables 3.11-13, 3.11-16, 3.11-20, and 3.11-22. Under the Reach 6 Bypass Alternative, seasonal construction activity would occur over the course of 6 years in the Project area. Emissions of criteria pollutants (NO_X, VOC, CO, SO_X, PM_{10}, $PM_{2.5}$) in engine exhaust and fugitive dust (PM_{10} and $PM_{2.5}$) from earthmoving tasks would occur as a result of the construction activity. Also emitted would be DPM as PM_{10} in diesel engine exhaust.

Except for peak daily NO_X emissions comprising onsite and offsite mobile sources, no applicable quantitative emissions thresholds would be exceeded in BAAQMD. Due to geographic dispersion and

effective onsite fugitive dust mitigation measures, no local ambient air quality violations would occur solely due to Project emissions for any other pollutant, including CO, PM_{10}, and $PM_{2.5}$.

As discussed in Source Specific Regulations, the use of newer, less polluting Tiers 1, 2, 3, and 4 engines in most fleet construction equipment used onsite is a mitigating factor for combustion emissions of NO_X, VOCs, CO, PM_{10}, and $PM_{2.5}$. California ultra-low sulfur diesel fuel with a maximum sulfur content of 15 ppm by weight would be used in all diesel-powered equipment to minimize SO_2 and particulate emissions. However, since fleet-average Tiered emission standards and California ultra-low sulfur diesel fuel are the current baseline for the state, their use does not comprise mitigation, per se.

Operations and Maintenance

Under the Reach 6 Bypass Alternative, operations and maintenance would be the same as described in Section 2.8.5 and would be the same as the Preferred Alternative in all Project reaches, but with a few differences in Reaches 5 and 6. Reaches 5 and 6, downstream of the bypass, would be maintained under the SMP; because those reaches would not be improved as part of this alternative. Reach 6, above the bypass, would be maintained the same as all action alternatives.

Compared to construction activities, maintenance emissions would be small and intermittent, mainly from on-road service vehicles (e.g., pickup trucks, dump trucks), small off-road equipment (e.g., mini-excavators, Bobcats™), portable equipment (e.g., wood chippers), and hand-held equipment (e.g., chainsaws, brush/grass cutters). As such, maintenance would not cause an exceedence of applicable daily significance thresholds shown in Table 3.11-10.

Best Management Practices (BMPs)

> **AQ-1:** Use dust control measures for soil disturbing activities

> **AQ-2 / GHG-1:** Minimize diesel and gasoline engine exhaust emissions.

Mitigation Measures

Mitigation Measure AQ-2 T: Exhaust Emissions Reduction Measures.

Daily NO_X emission thresholds would be exceeded using fleet-average equipment and BMPs. However, BMPs and mitigation measures, as described in AQ-2 T and incorporated into emissions estimates, would nevertheless reduce the impact by about 15 to 20 percent compared to uncontrolled emissions. Therefore, the impact from NO_X emissions would be significant due to the sizes and quantities of diesel-powered equipment and vehicles used on a daily basis which exceed the mitigating capacity of BMPs and mitigation measures.

AQ-3 BY—Result in a net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	S	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Refer to Tables 3.11-13, 3.11-16, 3.11-20, and 3.11-22. Under the Reach 6 Bypass Alternative, seasonal construction activity would occur over the course of 6 years in the Project area. Emissions of criteria pollutants (NO_X, VOC, CO, SO_X, PM_{10}, $PM_{2.5}$) in engine exhaust and fugitive dust (PM_{10} and $PM_{2.5}$) from earthmoving tasks would occur as a result of the construction activity. Also emitted would be DPM as PM_{10} in diesel engine exhaust.

This alternative would result in a small temporary incremental contribution to a cumulative effect for several criteria pollutants for which the SFBAAB is in nonattainment under an applicable federal or state ambient air quality standard (i.e., O_3, PM_{10}, and $PM_{2.5}$).

As shown in Table 3.11-13, except for NO_X, none of the significance thresholds shown in Table 3.11-10 would be exceeded by the Project, neither daily nor annually, as applicable. Mitigation measures, described below, would not be able to fully reduce NO_X emissions to below the significance threshold. However, except for NO_X, since emissions would be controlled with BMPs AQ-1 and AQ-2 and short-term in nature, they would not be cumulatively considerable and would, thus, be less than significant.

Localized impacts would be less than significant, because the Project would be temporary and implement applicable fugitive dust controls listed under BMP AQ-1. The use of newer, less polluting Tiers 1, 2, 3, and 4 engines in most fleet construction equipment used onsite is a measure for reducing combustion emissions of NO_X, VOCs, CO, PM_{10}, and $PM_{2.5}$. Although not a CEQA mitigation measure, California ultra-low sulfur diesel fuel with a maximum sulfur content of 15 ppm by weight would be used in all diesel-powered equipment, which would minimize SO_2 and particulate emissions. However, since fleet-average Tiered emission standards and California ultra-low sulfur diesel fuel are the current baseline for the state, their use does not comprise mitigation, per se.

Operations and Maintenance

Under the Reach 6 Bypass Alternative, operations and maintenance would be the same as described in Section 2.8.5 and would be the same as the Preferred Alternative in all Project reaches, but with a few differences in Reaches 5 and 6. Reaches 5 and 6, downstream of the bypass, would be maintained under the SMP; because those reaches would not be improved as part of this alternative. Reach 6 above the bypass would be maintained the same as all action alternatives.

Compared to construction activities, maintenance emissions would be small and intermittent, mainly from on-road service vehicles (e.g., pickup trucks, dump trucks), small off-road equipment (e.g., mini-excavators, Bobcats™), portable equipment (e.g., wood chippers), and hand-held equipment (e.g., chainsaws, brush/grass cutters). As such, maintenance would not cause an exceedence of applicable daily significance thresholds shown in Table 3.11-10.

Best Management Practices (BMPs)

> **AQ-1:** Use dust control measures for soil disturbing activities.

> **AQ-2 / GHG-1:** Minimize diesel and gasoline engine exhaust emissions.

Mitigation Measures

Mitigation Measure AQ-2 T: Exhaust Emissions Reduction Measures.

Daily NO_X emission thresholds would be exceeded using fleet-average equipment and BMPs. However, BMPs and mitigation measures, as described in AQ-2 T and incorporated into emissions estimates, would nevertheless reduce the impact by about 15 to 20 percent compared to uncontrolled emissions but would remain above the thresholds. Therefore, the impact from NO_X emissions would be significant due to the sizes and quantities of diesel-powered equipment and vehicles used on a daily basis, which exceed the mitigating capacity of BMPs and mitigation measures.

AQ-4 BY—Expose sensitive receptors to substantial pollutant concentrations

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	LTS	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Refer to Tables 3.11-13, 3.11-16, 3.11-20, and 3.11-22. Under the Reach 6 Bypass Alternative, seasonal construction activity would occur over the course of 6 years in the Project area. Emissions of criteria pollutants (NO_X, VOC, CO, SO_X, PM_{10}, $PM_{2.5}$) in engine exhaust and fugitive dust (PM_{10} and $PM_{2.5}$) from earthmoving tasks would occur as a result of the construction activity. Also emitted would be DPM as PM_{10} in diesel engine exhaust.

DPM contains substances that are suspected carcinogens, along with pulmonary irritants and hazardous compounds, which may affect sensitive receptors such as young children, senior citizens, or those susceptible to respiratory disease. Where construction activity occurs in proximity to long-term sensitive receptors, there could be a potential for unhealthful exposure of those receptors to diesel exhaust, including residential receptors.

The Project sites are located in populated suburban areas. Several residential dwellings are in very close proximity to the watercourses, typically in Reaches 7A, 7B, and 8, approximately 33 to 66 feet (10 to 20 meters). The nearest schools within 1,000 feet (305 meters) of the Project area are Burnett Elementary School, St. Catherine's School, Britton Middle School, Oakwood Elementary School, and Gwinn Elementary School. The Centennial Senior Center is also within 1,000 feet of the creek. Nearby parks include Galvan Park, Britton Field, Morgan Hill Community Park, and Paradise Park. There are no hospitals proximate to Project sites.

In order to assess the potential impacts of Project construction activities upon proximate sensitive receptors, a screening-level HRA for DPM was performed using conservative methodology for maximum (intensive) excavation activity levels and timeframes as described in Section 3.11.4.2. Conservative methodology overestimates impacts, thus, actual impacts would be lower than shown in Table 3.11-22.

Table 3.11-22 shows the results of the screening HRA. The 2010 BAAQMD cumulative cancer risk threshold of 10^{-5} (10 in a million) would not be exceeded in the vicinity of the excavations at the closest sensitive receptors or in the neighboring areas. For Reaches 7A, 7B, and 8, respective cumulative risk values are 0.01, 0.02, and 0.13 in a million, which are far below the threshold. This is due to (1) the short-term temporary nature of the mobile sources (days, not years), and (2) the relatively small size of the mobile sources (mid-size excavating machines) compared to permanent industrial stationary sources.

Due to the relatively small scale of the proposed construction activity in any one location, its short-term temporary nature, and its large overall footprint in the Project area, the exposure of sensitive receptors to substantial pollutant concentrations would be less than significant. BAAQMD control measures for diesel exhaust would be implemented as described in BMP AQ-2 in combination with the fugitive dust controls described in BMP AQ-1. The Project would not expose sensitive receptors to substantial pollutant concentrations and the impact would be less than significant.

Operations and Maintenance

Under the Reach 6 Bypass Alternative, operations and maintenance would be the same as described in Section 2.8.5 and would be the same as the Preferred Alternative in all Project reaches, but with a few differences in Reaches 5 and 6. Reaches 5 and 6 downstream of the bypass would be maintained under the SMP, because those reaches would not be improved as part of this alternative. Reach 6 above the bypass would be maintained the same as all action alternatives.

Compared to construction activities, maintenance emissions would be small and intermittent, mainly from on-road service vehicles (e.g., pickup trucks, dump trucks), small off-road equipment (e.g., mini-excavators, Bobcats™), portable equipment (e.g., wood chippers), and hand-held equipment (e.g., chainsaws, brush/grass cutters). As such, maintenance would not cause an exceedence of applicable significance thresholds shown in Table 3.11-22.

Best Management Practices (BMPs)

> **AQ-1:** Use dust control measures for soil disturbing activities.

> **AQ-2 / GHG-1:** Minimize diesel and gasoline engine exhaust emissions.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

AQ-5 BY—Create objectionable odors affecting a substantial number of people

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	LTS	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

California ultra-low sulfur diesel fuel with a maximum sulfur content of 15 ppm by weight would be used in all diesel-powered equipment which minimizes emissions of sulfurous gases (SO_2, hydrogen sulfide, carbon disulfide, and carbonyl sulfide). Therefore, no objectionable odors are anticipated from construction activities due to the use of diesel-powered equipment and vehicles.

Since excavation work may encounter odorous materials, such as decaying organic matter (plants, wood, leaves, etc.), a possibility exists that such odorous material could cause a nuisance as described in Section 3.11.3.5. BMP AQ-3 is designed to prevent, such a nuisance from affecting a considerable number of persons.

The Project would not create objectionable odors affecting a considerable number of persons; therefore, the impact would be less than significant with implementation of BMPs.

Operations and Maintenance

Under the Reach 6 Bypass Alternative, operations and maintenance would be the same as described in Section 2.8.5 and would be the same as the Preferred Alternative in all Project reaches, but with a few

differences in Reaches 5 and 6. Reaches 5 and 6 downstream of the bypass would be maintained under the SMP, because those reaches would not be improved as part of this alternative. Reach 6 above the bypass would be maintained the same as all action alternatives.

Compared to construction activities, maintenance emissions would be small and intermittent, mainly from on-road service vehicles (e.g., pickup trucks, dump trucks), small off-road equipment (e.g., mini-excavators, Bobcats™), portable equipment (e.g., wood chippers), and hand-held equipment (e.g., chainsaws, brush/grass cutters). No new odors would be generated.

Best Management Practices (BMPs)

> **AQ-3:** Avoid stockpiling potentially odorous materials.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

GHG-1 BY—Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	LTS	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Refer to Tables 3.11-20 and 3.11-21. Under the Reach 6 Bypass Alternative, seasonal construction activity would occur over the course of 6 years in the Project area. Emissions of GHGs (CO_2, CH_4, N_2O) in engine exhaust from earthmoving tasks would occur as a result of the construction activity.

As shown in Tables 3.11-20 and 3.11-21, construction emissions would be about 4,300 metric tonnes CO_2 e in the highest year, and a cumulative total of about 15,200 metric tonnes CO_2 e occurring over the course of 6 years. These emissions would be temporary and would permanently cease upon Project completion, although GHGs can persist in the atmosphere for indefinite lengths of time. Compared to national, statewide, and Bay Area GHG inventories shown in Table 3.11-6, mitigated construction emissions would comprise about 0.00006, 0.0008, and 0.005 percent of these respective inventories on an annual basis. In Santa Clara County (Tables 3.11-8 and 3.11-9), Project emissions would be about 0.02 percent of the countywide annual total, and 0.05 percent of the mobile source sector within the county. These GHG emissions are well within USEPA limits of precision of -2 to +5 percent for fossil fuel combustion (USEPA 2012b) and are thus negligible in context.

Due to its small temporary scale and GHG mitigations, the Project would not individually affect the environment or impede the state's ability to meet its 2020 GHG emission reduction goal; thus, the individual impact would be less than significant with implementation of BMP GHG-1, and the incremental cumulative impact would not be considerable.

Operations and Maintenance

Under the Reach 6 Bypass Alternative, operations and maintenance would be the same as described in Section 2.8.5 and would be the same as the Preferred Alternative in all Project reaches, but with a few differences in Reaches 5 and 6. Reaches 5 and 6 downstream of the bypass would be maintained under the SMP, because those reaches would not be improved as part of this alternative. Reach 6 above the bypass would be maintained the same as all action alternatives.

Compared to construction activities, maintenance emissions would be small and intermittent, mainly from on-road service vehicles (e.g., pickup trucks, dump trucks), small off-road equipment (e.g., mini-excavators, Bobcats™), portable equipment (e.g., wood chippers), and hand-held equipment (e.g., chainsaws, brush/grass cutters). As such, maintenance would cause very small incremental amounts of GHG emissions.

Best Management Practices (BMPs)

> **AQ-2 / GHG-1:** Minimize diesel and gasoline engine exhaust emissions.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

GHG-2 BY—Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel excavation and widening and other construction activity	LTS	NI
Sediment removal and vegetation management	NI	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

On a statewide basis, agencies in California are in the process of implementing strategies to reduce GHG emissions pursuant to the Global Warming Solutions Act of 2006, which requires that California reduce its statewide GHG emissions to 1990 levels by 2020. Assembly Bill 32 required CARB to develop the Scoping Plan (2008) in coordination with the California Energy Commission's Climate Action Team (2010). The Scoping Plan defines a comprehensive set of measures to achieve the mandated emissions level. Key approaches for reducing GHG emissions to 1990 levels by 2020 include:

> Expanding and strengthening existing energy efficiency programs as well as building and appliance standards.

> Achieving a statewide renewable electricity standard of 33 percent.

> Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system.

> Establishing targets for transportation-related greenhouse gas emissions for regions throughout California, and pursuing policies and incentives to achieve those targets.

> Adopting and implementing measures to reduce transportation sector emissions, including California's Clean Car Standards, goods movement measures, and the Low Carbon Fuel Standard.

> Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the state's long-term commitment to AB 32 implementation.

Due to its small scale and temporary status, the Project would not conflict with state and local plans, policies, or regulations aimed at curbing GHG emissions.

Operations and Maintenance

Under the Reach 6 Bypass Alternative, operations and maintenance would be the same as described in Section 2.8.5 and would be the same as the Preferred Alternative in all Project reaches, but with a few differences in Reaches 5 and 6. Reaches 5 and 6 downstream of the bypass would be maintained under the SMP, because those reaches would not be improved as part of this alternative. Reach 6 above the bypass would be maintained the same as all action alternatives.

Compared to construction activities, maintenance emissions would be small and intermittent, mainly from on-road service vehicles (e.g., pickup trucks, dump trucks), small off-road equipment (e.g., mini-excavators, Bobcats™), portable equipment (e.g., wood chippers), and hand-held equipment (e.g., chainsaws, brush/grass cutters). As such, maintenance would cause very small incremental amounts of GHG emissions.

Best Management Practices (BMPs)

> **AQ-2 / GHG-1:** Minimize diesel and gasoline engine exhaust emissions.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

3.11.6 Summary of Impacts to Air Quality and Greenhouse Gases

Table S-1 summarizes the findings of the preceding sections for construction of the alternatives. The No Project Alternative would not result in any construction activity; therefore, no construction emissions and no construction impacts. Except for peak daily NO_X emissions, which would exceed the BAAQMD significance threshold of 54 pounds per day, all construction impacts would be less than significant for the Preferred, NRCS, Culvert/Channel, and Reach 6 Bypass alternatives whether criteria pollutants, DPM, or GHGs in engine exhaust or fugitive dust from earthmoving tasks. No other applicable daily significance thresholds shown in Tables 3.11-10 and 3.11-22 would be exceeded.

Consistent with BAAQMD guidelines, standard BMPs adopted by the SCVWD and Mitigation Measure AQ-2 T are incorporated into the alternatives analysis (Project design). As implemented, these BMPs and mitigation measures would reduce diesel exhaust emissions by about 15 to 20 percent overall compared to uncontrolled emissions; however, these practices and measures would not be able to reduce peak daily NO_X emissions below 54 pounds per day. Notwithstanding significance, these emissions would be temporary and permanently cease upon completion of Project construction.

Long-term operations and maintenance would not result in significant new emissions of criteria pollutants, DPM, or GHGs in engine exhaust or fugitive dust from earthmoving tasks, which would cause an exceedence of applicable daily significance thresholds shown in Tables 3.11-10 and 3.11-22. In the context of significance thresholds, future maintenance activity would be essentially the same as existing

maintenance, albeit with some changes; therefore, there would be no substantive changes in emissions and no substantive changes in impacts, which would be less than significant.

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3.12 Noise

3.12.1 Introduction

This section describes the general characteristics of noise and discusses the existing noise environment in southern Santa Clara County, the cities of Morgan Hill and Gilroy, the community of San Martin, and surrounding Llagas Creek, East Little Llagas Creek, and West Little Llagas Creek in relation to the Project.

This section also identifies applicable noise and vibration regulations, analyzes potential impacts, and provides mitigation measures associated with the implementation of the alternatives. Specifically, this section analyzes the potential noise and vibration impacts stemming from the proposed flood risk management and improvements in the study area, relative to applicable noise and vibration criteria and the existing ambient noise environment.

3.12.2 Study Area

The Project area is located in southern Santa Clara County, with portions located within the jurisdictions of the City of Morgan Hill, and the unincorporated town of San Martin. The study area includes lands bordering Reaches 4, 5, and 6 on Llagas Creek, Reaches 7A, 7B, and 8 on West Little Llagas Creek, and Reach 14 on East Little Llagas Creek.

Fundamental Concepts of Environmental Noise

Sound is mechanical energy transmitted by pressure waves in a compressible or incompressible medium, such as air or water, respectively (U.S. Department of Transportation [DOT], Federal Transit Administration [FTA] 2006a). Sound is a fluctuation of air pressure, and the number of times the fluctuation occurs in a second is known as frequency. Some sounds, like whistles, are associated with a single frequency and known as a “pure tone.” Usually, sound is made up of many frequencies, all blended together. When sound becomes excessive, annoying, or unwanted, it is referred to as noise. Noise may be continuous (constant noise with a steady decibel level), steady (constant noise with a fluctuating decibel level), impulsive (having a high peak of short duration), stationary (occurring from a fixed source), intermittent (occurring at the same rate), or transient (occurring at different rates). Noise levels are quantified using units of decibels (dB). The decibel is defined as ten times the base 10 logarithm (an exponent used in mathematical calculations to depict the perceived levels of variable quantities, such as visible light energy, electromagnetic field strength, and sound intensity) of the ratio between the two quantities of sound pressure squared. Sound pressure level attenuates (reduces with increased distance from the noise source), with respect to the inverse distance law, where sound pressure is inversely proportional to the distance from the noise source (USEPA 1974 and Plog 1988). Table 3.12-1 provides the dB of some common sound levels.

Two measurements used by local, state, and federal agencies, which relate the time-varying quality of environmental noise to its known effect on people are (1) the 24-hour equivalent sound level ($L_{EQ}(24)$); and (2) the day-night sound level (L_{DN}). The $L_{EQ}(24)$ is the level of sound with the same energy as the time-varying sound of interest, averaged over a 24-hour period. The L_{DN} is the $L_{EQ}(24)$ with 10 decibels on the A-weighted decibel scale (dBA) (the equivalent constant sound level for a varying sound level measured over a period of time) added to nighttime sound levels between the hours of 10:00 p.m. and 7:00 a.m. to account for people’s greater sensitivity to sound during nighttime hours. The 10th percentile-exceeded sound level, L_{10}, is the A-weighted sound level, which happens 10 percent or more of the time of the measurement (USEPA 1974). Other measures include L_{50} and L_{90}, which represent 50 percent and 90 percent of the case, respectively.

Table 3.12-1 Typical Sound Level Characteristics

Level dB	Sound Level Characteristic
160	Rocket Launch
150	Military Jet Plane Takeoff
140	Threshold of Pain
130	Commercial Jet Plane Takeoff
120	Industrial Chipper or Punch Press
110	Loud Automobile Horn
100	Passing Diesel Truck
90	Factory - Heavy Manufacturing
80	Factory - Light Manufacturing
70	Open Floor Office - Cubicles
60	Conversational Speech
50	Private Office - Walled
40	Residence in Daytime
30	Bedroom at Night
20	Recording or Broadcasting Studio
10	Threshold of Good Hearing - Adult
0	Threshold of Excellent Hearing – Child

Source: Plog 1988

Noise Levels, Perception, and Sources

In 1974, the USEPA published *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. This document provides information for state and local agencies to use in developing their ambient noise standards.

In the EPA document, the agency identified outdoor and indoor noise levels to protect public health and welfare. A $L_{EQ}(24)$ of 70 dBA was identified as the level of environmental noise that would not result in any measurable hearing loss over a lifetime. A L_{DN} of 55 dBA outdoors and a L_{DN} of 45 dBA indoors were identified as noise thresholds that would prevent activity interference or annoyance. These levels are not "peak" levels but are 24-hour averages over several years. Occasional high levels of noise may occur. A L_{DN} of 55 dBA is equivalent to a continuous noise level of 48.6 dBA. Examples of typical noise levels measured at a typical distance (within 50 feet) from the source are as follows (USEPA 1974):

> Quiet room: 28–33 dBA;

> Computer room: 37–45 dBA;

> Refrigerator: 40–43 dBA;

> Forced hot air heating system: 42–52 dBA;

> Microwave oven: 55–59 dBA;

> Clothes dryer: 56–58 dBA;

> Clothes washer: 65–70 dBA;

> Telephone ringer: 66–75 dBA;

> Garbage disposal: 76–83 dBA;

> Hair dryer: 80-95 dBA; and

> Grass trimmer: 94–96 dBA.

The following relationships occur with regard to increases in noise measured on the A-weighted decibel scale (USEPA 1974):

> A change of 1 dBA cannot be perceived by humans, except in carefully controlled laboratory environments;

> Outside of the laboratory, a 3 dBA change is considered a just-perceivable difference by humans;

> A change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and

> A 10 dBA change is subjectively heard as approximately a doubling in loudness and can cause an adverse response.

In most areas, transportation sources, such as automobiles, trucks, trains, and aircraft are the principal sources of ambient noise. Industrial and commercial equipment operations and wind-related sounds also contribute to the ambient noise environment in their vicinities. According to the National Institutes of Health, National Institute on Deafness and Communication Disorder (NIDCD), Noise-Induced Hearing Loss (NIHL) can occur when one is exposed to harmful noise. Brief exposure to sounds that are very loud, or longer-term exposure to fairly loud sounds can cause damage to the sensitive structures of the inner ear, called hair cells, in the cochlea (auditory portion of the inner ear). Once damaged, the hair cells cannot grow back, resulting in permanent NIHL (NIDCD 2008).

Sources of noise that can cause NIHL include loud motorcycles, firecrackers, and small firearms, all emitting sounds from 120 to 150 dBA. In addition, long or repeated exposure to sounds at or above 85 dBA can cause hearing loss, such as in an industrial setting. The louder the sound, the shorter the time period for NIHL to occur. Sounds of less than 75 dBA, even after long exposure, are unlikely to cause significant hearing loss. In populated areas, excessive noise levels of 90 to 110 dBA, which are typical during jet flyovers at 1,000 feet or a diesel truck at 50 feet, commonly result in complaints to civic authorities. Although being aware of decibel levels is an important factor in protecting one's hearing, distance from the source of the sound and duration of exposure to the sound are equally important (NIDCD 2008).

Noise also varies with distance. As an example, typical highway traffic 50 feet from a receptor typically produces sound levels of approximately 70 dBA. The same highway noise measures 66 dBA at a distance of 100 feet, assuming soft ground conditions (as opposed to hard surface such as rock). This decrease is known as attenuation. The outdoor attenuation rate for line sources, such as traffic, is a decrease of approximately 4.5 dBA (for soft ground) for every doubling of distance between the source of noise and the receptor (for hard ground the outdoor drop-off rate is 3 dBA for line sources). Assuming soft ground, for point sources, such as amplified music or speech, the outdoor attenuation rate is a decrease of approximately 7.5 dBA for every doubling of distance between the noise source and receptor (for hard ground the outdoor attenuation rate is 6 dBA for point sources).

Vibration

Vibrations are energy transmitted in waves through soil. These energy waves dissipate with distance from the vibration source (e.g. pile driving). Since energy is lost during the transfer of energy from one particle to another, vibration that is distant from the source is usually less perceptible than vibration closer to the

source. However, actual human and structure response to different vibration levels is influenced by a combination of factors, including soil type, distance between the source and receptor, duration, and the number of perceived events.

If great enough, the energy transmitted through the ground as vibration can result in structural damage. To assess the potential for structural damage associated with vibration, the vibratory ground motion in the vicinity of the affected structure is measured in terms of peak particle velocity (PPV) in the vertical and horizontal directions (vector sum), typically in units of inches per second. A freight train passing at 100 feet can cause peak particle velocities of 0.1 inch per second, while a strong earthquake can produce peak particle velocities in the range of 10 inches per second. Minor cosmetic damage to buildings can begin in the range of 0.5 inch per second.

Ground-borne vibration consists of rapidly fluctuating motions within the ground that have a net motion of zero. The effects of ground-borne vibrations typically cause a nuisance only to people, but at extreme vibration levels, damage to buildings may occur. Although ground-borne vibration can be felt outdoors, it is typically an annoyance only to people indoors, where the associated effects of the shaking of a building can be notable and because people are moving around less indoors (e.g., seated). Induced ground-borne noise is an effect of ground-borne vibration and only exists indoors, since it is produced from noise radiated from the motion of the walls and floors of a room and may consist of the rattling of windows or dishes on shelves. Although the perceptibility threshold is about 65 VdB (vibration decibels), human response to vibration is not usually significant unless the vibration exceeds 70 VdB with the threshold of potential architectural damage to fragile (e.g., old masonry) structures at about 100 VdB. Human response to different levels of ground-borne noise and vibration are as follows (FTA 2006a,b):

> 65 VdB produces a noise level between 25 (low frequency) and 40 dBA (high frequency) and is the approximate threshold of perception for many humans. Low-frequency sound is usually inaudible, mid-frequency sound can be excessive for quiet sleeping areas;

> 75 VdB produces a noise level between 35 (low frequency) and 50 dBA (high frequency). Approximate dividing line between barely perceptible and distinctly perceptible. Many people find transit vibration (e.g., passing trains) at this level annoying. Low-frequency noise acceptable for sleeping areas, mid-frequency noise annoying in most quiet occupied areas; and

> 85 VdB produces a noise level between 45 (low frequency) and 60 dBA (high frequency). Vibration acceptable only if there are an infrequent number of events per day. Low-frequency noise annoying for sleeping areas, mid-frequency noise annoying even for infrequent events with institutional land uses, such as schools and churches.

Blasting Airblast and Vibration

The two primary environmental effects of blasting are ground vibration (discussed above) and airblast. The following is a brief discussion of the two types of airblast.

Airblast

Energy released in an explosion creates an air overpressure, commonly called an airblast in the form of a propagating wave. If the receiver is close enough to the blast, the overpressure can be felt as the pressure front of the airblast passes. The accompanying booming sound lasts for only a few seconds. The explosive charges used in mining and mass grading are typically wholly contained in the ground, resulting in an airblast with frequency content below about 250 cycles per second, or hertz (Hz).

Because an airblast lasts for only a few seconds, use of L_{EQ}, a measure of sound level averaged over a specified period of time, to describe blast noise is inappropriate. Airblast is properly measured and described as a linear peak air overpressure (i.e., an increase above atmospheric pressure) in pounds per square inch (psi). Modern blast monitoring equipment is also capable of measuring peak overpressure

data in terms of unweighted dB. Decibels, as used to describe airblast, should not be confused with or compared to dBA, which are commonly used to describe relatively steady-state noise levels. An airblast with a peak overpressure of 130 dB can be described as being mildly unpleasant, whereas exposure to jet aircraft noise at a level of 130 dBA would be painful and deafening.

Human Response to Airblast and Ground Vibration

Human response to blast vibration and airblast is difficult to quantify. Vibration and airblast can be felt or heard well below the levels that produce any damage to structures. The duration of the event has an effect on human response, as does blast frequency. Blast events are relatively short, on the order of several seconds for sequentially delayed blasts. Generally, as blast duration and vibration frequency increase, the potential for adverse human response increases. Studies have shown that a few blasts of longer duration produce a less adverse human response than short blasts that occur more often.

The average human response to ground vibration and airblast that may be anticipated when a person is at rest in quiet surroundings is listed below. If the person is engaged in any type of physical activity, the level required for the responses indicated would be increased considerably.

> Barely to distinctly perceptible—0.02 to 0.10 PPV;50 to 70 dB;

> Distinctly perceptible to strongly perceptible—0.10 to 0.50; 70 to 90 dB;

> Strongly perceptible to mildly unpleasant—0.50 to 1.00; 90 to 120 dB;

> Mildly unpleasant to distinctly unpleasant—1.00–2.00; 120 to 140 dB; and

> Distinctly unpleasant to intolerable—2.00 to 10.00; 140 to 170 dB

It is important to understand that the foregoing describes the responses of average individuals. Individual responses can fall anywhere within the full range of the human response spectrum.

Sensitive Receptors

Some land uses are generally regarded as being more sensitive to noise and vibration than others due to the types of population groups or activities involved. Sensitive population groups generally include children and the elderly. Noise sensitive land uses typically include all residential uses (single- and multi-family, mobile homes, dormitories, and similar uses), hospitals, nursing homes, schools, and parks.

Sensitive land uses are present along all proposed reaches, with the densest residential area in Morgan Hill along Reaches 7A, 7B, and 8, but more rural residences occurring along all reaches. The closest hospitals to the Project area are located north of Reach 8 in San Jose and south of Reach 4 in Gilroy. The closest nursing homes are along Reaches 6, 7B, and 8. The closest schools and parks are along Reaches 7A, 7B, and 8.

Table 3.12-2 lists the nearest residential receptors to each reach, while Table 3.12-3 summarizes the non-residential sensitive receptors closest to the Project area.

Table 3.12-2 Nearest Residential Sensitive Receptors

Reach	Distance to Nearest Receptor
4	40 feet
5	100 feet
6	50 feet
7A	50 feet

Table 3.12-2 Nearest Residential Sensitive Receptors

Reach	Distance to Nearest Receptor
7B	40 feet
8	25 feet
14	85 feet

Table 3.12-3 Nearest Sensitive Receptors (Non-Residential)

Receptor	Reach	Distance and Direction
St Louise Regional Hospital	4	4,500 feet south
South County Retirement Home	6	750 feet east
Pacific Hills Manor/Morgan Hill Villa	8	1,500 feet west
Britton Middle School	8	50 feet east
Crossroads Christian Center School	8	400 feet east
Oakwood School	7A	250 feet east
San Martin/Gwinn Elementary School	6	650 feet west
Paradise Valley Elementary School	7B	900 feet west
PA Walsh Elementary School	8	950 feet west
Kiddie Academy of Morgan Hill	7A/7B	1,150 feet east
Stratford School Morgan Hill	8	900 feet north
Rucker Elementary School	5	3,300 feet west
Galvan Park	8	200 feet west
Morgan Hill Community Park/Dog Park	7B	800 feet west
Paradise Park	7B	1,100 feet west

3.12.2.1 Environmental Setting

This section describes the existing noise setting by Project reach as described in Chapter 2, Description of Alternatives.

Noise Setting

Noise measurements were collected at seven locations in the Project area in November and December 2011 to determine baseline noise levels for existing noise sources. Below is a description of the primary noise sources by reach and the estimated noise levels from the 2011 measurements. This information is summarized in Table 3.12-4. All measurements were taken on Wednesday, Thursday, or Friday; and 1 hour measurements were taken in late morning. Automobile traffic was the dominant noise source observed at all locations. Other sources of detectable noises included landscaping (lawn mowers, hedge trimmers, and leaf cutters), pedestrian traffic, and vegetation blowing during gusts of wind. Figure 3.12-1 shows the locations of the seven measurement sites. Appendix L, ULC Baseline Noise Measurements, includes noise measurement data and observations.

Table 3.12-4 Baseline Noise Measurement Locations

Site No.	Reach	Location	Duration	Average Noise Level (dB L_{EQ})	Primary Noise Sources Observed
1	14	Amistad Lane/ Church Avenue, San Martin	24-hr	63.6	traffic
2	6	Spring Street/Llagas Avenue, San Martin	24-hr	55.4	traffic, airport
3	7A	Watsonville Road/La Jolla Drive, Morgan Hill	24-hr	63.3	traffic
4	8	Warren/Hale Avenue, Morgan Hill.	24-hr	49.5	landscaping
5	8	Del Monte Avenue between Dunne Avenue/5th Street, Morgan Hill	24-hr	53.5	traffic
6	4	Rucker Avenue/Borges Court south of San Martin	1-hr	60.1	traffic
7	7B	Monterey Road/Spring Avenue, Morgan Hill	1-hr	62.1	traffic

Reach 4

Reach 4 is a semi-urban area with residential, agricultural, and commercial uses along the stream banks. A 1-hour noise measurement (Site 6) was collected along Reach 4, near Rucker Avenue and Borges Court south of San Martin on November 17, 2011. The L_{EQ} was 60.1 dB. Primary sources of noise observed during measurements included light traffic along Rucker Avenue.

Reach 5

Reach 5 is a semi-urban area with residential, agricultural, and commercial uses along the stream banks. The closest noise measurement to Reach 5 was Site 1 along Reach 14, approximately 0.5 mile from Reach 5. A 24-hour noise measurement was collected at Amistad Lane and Church Avenue in San Martin on November 22, 2011. The L_{EQ} was 63.6 dB. Primary sources of noise observed during measurements included light vehicle traffic along Church Avenue, agricultural vehicle traffic in fields to the west, minor noise from the South County Airport west of U.S. 101 and minor levels of U.S. 101 freeway traffic.

Reach 6

Reach 6 is a semi-urban area with residential, agricultural, and commercial uses along the stream banks and the South County Airport to the east. A 24-hour noise measurement (Site 2) was collected along Reach 6 near Spring Street and Llagas Avenue in San Martin on November 30, 2011. The L_{EQ} was 55.4 dB. Primary sources of noise observed during measurements included noise along Llagas Avenue and minor airport noise.

Reach 7A and Reach 7B

Reaches 7A and 7B are increasingly urbanized traveling north along these reaches, with dense residential populations along Reach 7A. A 24-hour noise measurement (Site 3) was collected along Reach 7A near Watsonville Road and La Jolla Drive in Morgan Hill on December 21, 2011, with an L_{EQ} of 63.3 dB. A 1-hour measurement (Site 7) was collected along Reach 7B near Monterey Road and Spring Avenue in Morgan Hill on November 15, 2011, with an L_{EQ} of 62.1 dB. Primary sources of noise observed

during measurements at Site 3 included a moderate amount of flowing traffic along Watsonville Road and minor neighborhood traffic along La Jolla Drive. Primary sources of noise observed during measurements at Site 7 included vehicle traffic along Spring Avenue, truck backup alarms, and pedestrian traffic.

Reach 8

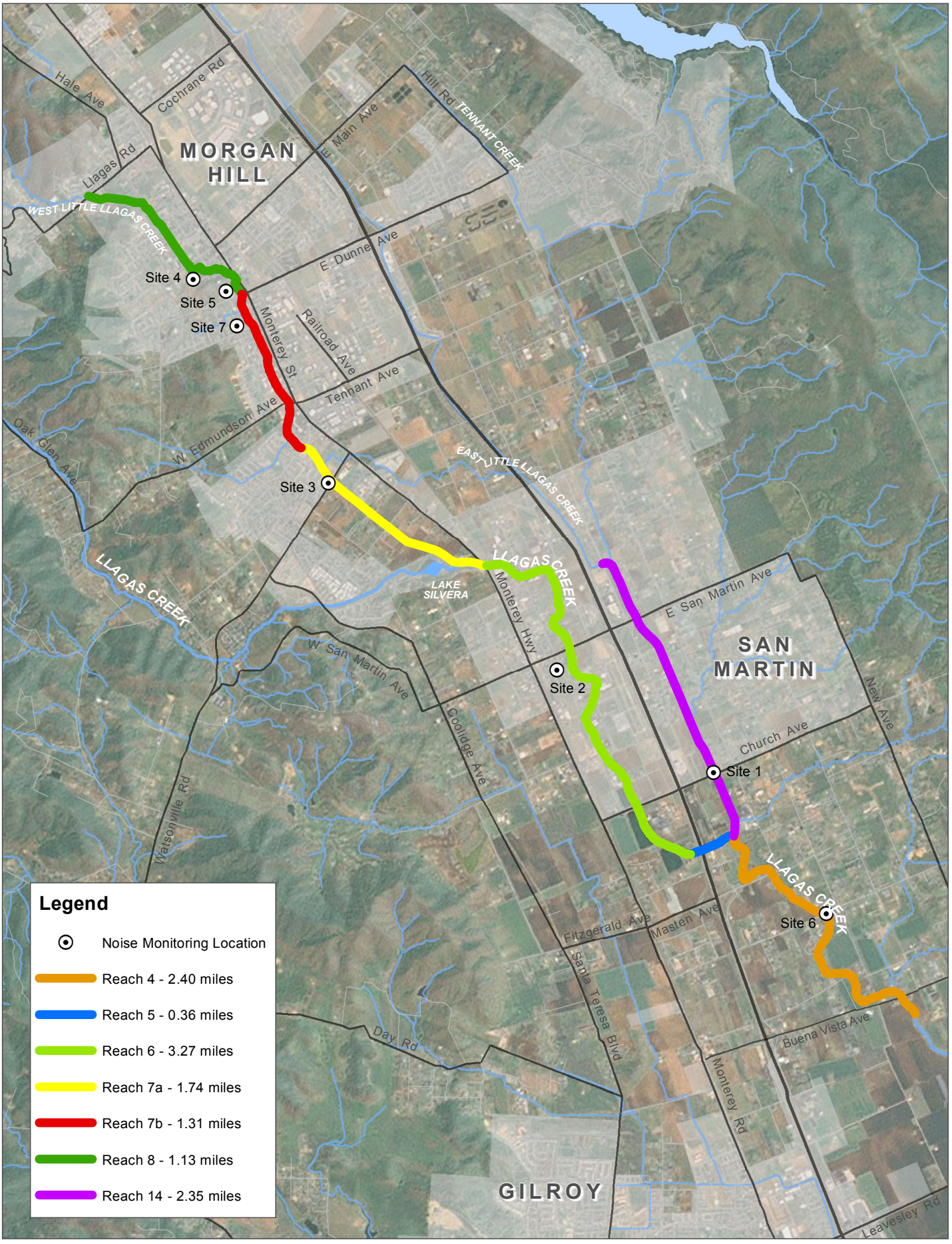
Reach 8 is an urbanized area within Morgan Hill with dense residential and commercial uses along the stream banks. Two 24-hour noise measurements (Sites 4 and 5) were collected along Reach 8 near Warren Avenue and Hale Avenue and along Del Monte Avenue between Dunne Avenue and 5th Street, respectively, in Morgan Hill. Site 4 was collected November 15, 2011 with an L_{EQ} of 49.5 dB, while Site 5 was collected December 20, 2011 with an L_{EQ} of 53.5 dB. Primary sources of noise observed during measurements at Site 4 included lawnmowers and leaf blowers. Primary sources of noise observed during measurements at Site 5 included light traffic along Del Monte Avenue.

Reach 14

Reach 14 is a semi-urban area with residential, agricultural, and commercial uses along the stream banks and the South County Airport to the west. A 24-hour noise measurement was collected along Reach 14 at Amistad Lane and Church Avenue in San Martin on November 22, 2011. The L_{EQ} was 63.6 dB. Primary sources of noise observed during measurements including light vehicle traffic along Church Avenue, agricultural vehicle traffic in fields to the west, minor noise from the airport west of U.S. 101 and minor levels of U.S. 101 freeway traffic.

Vibration Setting

Vibration sources in an area with both residential and industrial use, such as along most of the Project area, would include truck and vehicle traffic, as well as industrial operations. Vibration levels are not typically measured for background information, rather expected vibration levels are calculated for the various phases of a project, as is done for the Proposed Project activities. Vibration impact criteria do not take existing vibration levels into account. Typically, the existing environment does not include a significant number of perceptible ground-borne vibration events (which is true for the Project area). When a project would result in vibration levels greater than 5 VdB over the existing source, the existing source is not considered, and standard vibration criteria is applied (FTA 2006a,b).



Upper Llagas Creek Project EIS

FIGURE 3.12-1

Noise Measurement Locations

Cardno ENTRIX

3.12.3 Regulatory Environment

Potentially applicable federal, state, regional, and local requirements for the Project are described below.

3.12.3.1 Federal

U.S. Environmental Protection Agency

In 1974, in response to the requirements of the 1972 Federal Noise Control Act, U.S. Environmental Protection Agency identified indoor and outdoor noise limits to protect public health and welfare (communication disruption, sleep disturbance, and hearing damage). Outdoor L_{dn} limits of 55 dB and indoor L_{dn} levels of 45 dB are identified as desirable to protect against speech interference and sleep disturbance for residential, educational, and healthcare areas. Sound-level criteria to protect against hearing damage in commercial and industrial areas are identified as 24-hour L_{eq} values of 70 dB (both outdoors and indoors).

U.S. Department of Transportation/Federal Transit Administration (DOT/FTA)

The U.S. DOT/FTA (2006a,b) provides vibration standards for structural damage based on a building's structure, to buildings constructed of non-engineered timber or masonry buildings, as shown in Table 3.12-5.

Table 3.12-5 Federal Transit Administration Construction Vibration Damage Criteria

Building Category	PPV (in/sec)
Reinforced-concrete, steel or timber (no plaster)	0.5
Engineered concrete and masonry (no plaster)	0.3
Non-engineered timber and masonry buildings	0.2
Buildings extremely susceptible to vibration damage	0.12

Source: FTA 2006a,b

U.S. Bureau of Mines and Office of Surface Mining Reclamation and Enforcement

The U.S. Bureau of Mines (USBM) and Office of Surface Mining Reclamation and Enforcement (OSMRE) have developed a blast vibration limit ranging from 0.5 to 2.0 inches per second depending on vibration frequency and distances to protect buildings with various structure type and condition. Studies have shown that blast vibration typically does not damage residential structures even at levels exceeding USBM and OSMRE blast vibration limits (Caltrans 2004).

3.12.3.2 State

The State of California does not promulgate standards for environmental noise, but requires each city and county to include a noise element in its general plan (California Government Code Section 65302(f)). In addition, Title 4 CCR (California Code of Regulations) has guidelines for evaluating the compatibility of various land uses as a function of community noise exposure. There are no other state regulations or policies related to noise that would apply to the Project.

California Department of Transportation (Caltrans)

The Caltrans (2004) has established construction vibration standards in its Transportation and Construction-Induced Vibration Guidance Manual. Continuous sources include the use of vibratory compaction equipment and other construction equipment that creates vibration other than in single

events. Transient sources create a single isolated vibration event, such as blasting. Thresholds for continuous sources are 0.5 and 0.1 inch per second PPV for structural damage and annoyance and for transient sources, 1.0 and 0.9 PPV for structural damage and annoyance, respectively.

3.12.3.3 Local

Santa Clara County

County of Santa Clara General Plan Health and Safety Chapter

The Public Health and Safety chapter of the Santa Clara County General Plan, 1995–2010 (1994) establishes a land use compatibility standard of 55 dB L_{DN}. This noise level limit is considered "satisfactory" for residential and other noise-sensitive uses, and is generally measured at outdoor activity areas. An interior noise exposure limit of 45 dB L_{DN} is recommended for residential receivers (assuming doors and windows closed).

County of Santa Clara Ordinance Code

County Ordinance Code Section B11-150, Declaration of findings, intent and policy, states: *"It is determined that certain noise levels and vibrations are detrimental to the public health, welfare and safety, and are contrary to public interest"*. The section concludes: *"Creating, maintaining, causing or allowing to be created, caused or maintained any noise or vibration in a manner prohibited by or not in conformity with the provisions of this chapter is hereby declared a nuisance"*.

Section B11-151 defines vibration perception threshold as the minimum ground or structure-borne vibrational motion necessary to cause a normal person to be aware of the vibration by direct means as, but not limited to, sensation by touch or visual observation of moving objects. Section B11-154 prohibits operating or permitting the operation of any device that creates a vibrating or quivering effect that: (a) endangers or injures the safety or health of human beings or animals; or (b) annoys or disturbs a person of normal sensitivities; or c) endangers or injures personal or real properties.

County Ordinance Code Section B11-152 establishes noise exposure criteria for non-transportation noise sources (such as stationary sources) at noise-sensitive land uses. These standards are generally established for conflict resolution in established parts of the county and are appropriate for the determination of Project noise impacts where other standards may be lacking. The criteria are summarized in Table 3.12-6. Each of the noise exposure limits listed in Table 3.12-6 is lowered by 5 dB when addressing impulsive or tonal sources, or sources consisting primarily of speech or music. Also, if the ambient noise exposure exceeds the applicable L_{50} to L_2 criteria, then the criteria is increased in 5 dB increments to encompass the ambient noise exposure. If the L_{MAX} exceeds the listed criteria, then the measured noise exposure is used as the applicable noise exposure limit.

Table 3.12-6 Santa Clara County Noise Exposure Limits

Noise Descriptor	Noise Level, dB	
	Daytime (7:00 a.m. to 10:00 p.m.)	Nighttime (10:00 p.m. to 7:00 a.m.)
L_{50}	60	50
L_{25}	65	55
L_8	70	60
L_2	75	65
L_{MAX}	80	70

Source: Santa Clara County Municipal Code 2012b

City of Morgan Hill

City of Morgan Hill General Plan

The Public Health and Safety Element of the City of Morgan Hill General Plan sets forth noise and land use compatibility standards to guide development, and noise goals and policies to protect citizens from the harmful and annoying effects of excessive noise. Policies established in the Noise Element of the General Plan that are applicable to the Proposed Project include:

> The maximum exterior noise level of 60 dBA L_{DN} shall be applied in residential areas where outdoor noise is a major consideration (e.g., backyards in single family housing developments and recreation areas in multi-family housing projects.) Where the city determines that providing an L_{DN} of 60 dBA or lower cannot be achieved after the application of reasonable and feasible mitigation, an L_{DN} of 65 dBA may be permitted; and

> Noise level increases resulting from traffic associated with new projects shall be considered significant if: a) the noise level increase is 5 dBA L_{DN} or greater, with a future noise level of less than 60 dBA Ldn, or b) the noise level increase is 3 dBA L_{DN} or greater, with a future noise level of 60 dBA Ldn or greater.

Morgan Hill Municipal Code

The City of Morgan Hill limits nuisances caused by excessive noise through the Municipal Code. Chapter 8.28.040 of the Code limits construction activities to the hours of 7:00 a.m. to 8:00 p.m., Monday through Friday, and between the hours of 9:00 a.m. and 6:00 p.m. on Saturdays. No construction activities should occur on Sundays or federal holidays. Chapter 18.48.075 of the Code limits maximum noise levels when adjacent to various uses. These standards include limiting the maximum sound generated by any use at the lot line to 70 to 75 dBA when adjacent to industrial or wholesale uses, 65 to 70 dBA when adjacent to offices, retail or sensitive industries, and 60 dBA when adjacent or contiguous to residential, park or institutional uses. Excluded from these standards are occasional sounds generated by the movement of railroad equipment, temporary construction activities, or warning devices. Chapter 18.48.040 D.1.d exempts public works projects and indicates the public works director shall set construction hours for these types of projects.

Chapter 18.48.135 states that no vibration shall be permitted which is discernible without instruments at the lot line of the establishment or use.

City of Gilroy

City of Gilroy General Plan

The Community Resources and Potential Hazards section of the City of Gilroy General Plan has established a goal for the "Protection of Gilroy residents from exposure to excessive noise and its effects through appropriate mitigation measures and responsive land use planning". This goal is implemented by a series of policies establishing maximum noise levels by land use type.

City of Gilroy Municipal Code

Section 16.31 of the Municipal Code prohibits anyone from making any *"loud, boisterous, irritating, penetrating or unusual noise or own, occupy, operate or keep any business, public meeting or gathering, game, dance, amusement, appliance, contrivance, device, structure, construction, ride, machine, vehicle, implement or instrument or animal or fowl, the use, operation or keeping of which makes a loud, boisterous, irritating, penetrating or unusual noise which disturbs another in any residence, hotel, apartment house, cabin, cottage, court, rooming house or any building or place regularly used for sleeping purposes in the city, between the hours of 10:00 pm and 7:00 am of any day"*.

Section 16.38 of the Municipal Code limits construction to 7:00 a.m. to 7:00 p.m., Monday through Friday, and 9:00 a.m. to 7:00 p.m. on Saturday, without a permit stating otherwise.

City of Gilroy Zoning Ordinance

Section 41.20 of the Zoning Ordinance states: "*No land or building in any zoning district in the City shall be used or occupied in any manner so as to constitute any dangerous, injurious, noxious or otherwise objectionable public nuisance." Nuisance includes noise or vibration.* Section 41.31 states: *"It shall be unlawful to generate noise within the City limits that exceeds the limits established in this section of the Zoning Ordinance"*. These limits are 70 dBA for fixed source mechanical equipment measured at the residential property line from commercial and industrial sources.

Town of San Martin

San Martin is an unincorporated town and does not have noise or vibration policies or regulations pertaining to the Project. Due to its proximity to the City of Morgan Hill, and the fact that Morgan Hill standards are more conservative than Santa Clara County, those standards will be used for impacts analysis in San Martin.

3.12.4 Impact Analysis

3.12.4.1 Significance Criteria

In accordance with CEQA Guidelines, Appendix G, Project implementation would have a significant impact related to the existing noise environment if it were to result in any of the following conditions:

> 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. Thresholds are as follows:
  - Noise levels of 75 dBA measured at the lot line in the City of Morgan Hill (for Reaches 5, 6, 7A, 7B, 8, and 14); or
  - Noise levels of 80 dB at the residential property line in the County of Santa Clara (for Reach 4)

> Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels. Thresholds are as follows:
  - Vibration levels of 0.5 and 0.1 inch per second PPV for structural damage and annoyance, respectively, for construction activities; or
  - Blast vibration limit from 0.5 to 2.0 inches per second PPV.

> A substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project. Thresholds are as follows:
  - Permanent increase of 5 dBA LEQ as a result of Project operation based on ambient noise levels.

> A substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project. Thresholds are as follows:
  - Temporary increase of 5 dBA LEQ as a result of Project construction based on ambient noise levels.

> 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, if the Project would subject construction workers to excessive noise levels from a public airport.

> For a project within the vicinity of a private airstrip, if the Project would subject construction workers to excessive noise levels from a private airstrip.

3.12.4.2 Approach to Analysis

Construction

Construction activities are described in Chapter 2. Construction activity proposed for the Project alternatives would be considered short-term, occurring over some portion of the entire construction period (approximately 6 years). Construction would take place year-round and depending on the alternative, would include tunnel construction, existing channel improvements (excavation and grading to deepen and widen), excavation and construction of diversion channel, construction of permanent access roads, and installation of reinforced concrete boxes, as well as the development of Lake Silveira mitigation (see Chapter 2, Section 2.4.6 for further details on the Lake Silveira mitigation element). In-channel work would occur, to the extent feasible, during the dry season, typically between May 1 and October 15, when flows are low or, in most reaches, the channel is dry. Revegetation and work in upland areas adjacent to the creek channel could occur outside the dry season. Construction is assumed to take place Monday through Friday from 7:00 a.m. to 8:00 p.m. with the potential for construction work in the evenings until 10:00 p.m.; in emergencies, it could be later, and on Saturdays from 9:00 a.m. to 6:00 p.m., as necessary for certain activities. All construction activities within residential areas, including work hours, would be governed by local noise ordinances (the City of Morgan Hill and the County of Santa Clara), but generally would be limited to weekdays.

The use of construction equipment to accomplish any of the Proposed Project alternatives would result in noise in the Project area, i.e., construction zone. Table 3.12-7 shows typical noise levels for common construction equipment that have been identified for use in the Project (see Chapter 2, Section 2.5.2, Construction, for NRCS Alternative). A few pieces of specialty equipment for other alternatives have been included, such as a drill rig, paving breaker (jackhammer), pile driver, and vibratory roller.

Table 3.12-7 Typical Noise Levels for Proposed Construction Equipment (at 50 feet)

Equipment	L_{MAX} (dBA)
Pile Driver	101
Paving Breaker (Jackhammer)	89
Jumbo 2-boom Diesel Drill Rig	89
Grader	85
Scraper	84
Compactor	83
Dozer	82
Spader	82
Cement Pump Truck	81
Crane	81
Excavator	81
Vibratory Roller	80
Static Roller	80
Concrete Truck	79

Table 3.12-7 Typical Noise Levels for Proposed Construction Equipment (at 50 feet)

Equipment	L_{MAX} (dBA)
Front End Loader	79
Wheel Loader	79
Air Compressor	78
Backhoe	78
Paver	77
Dump Truck	76
Flat Bed Truck	74
Water Tanker	74
Hydroseeder	74
Pick-up Trucks	74
Tractor Crawler	40

Source: FHA 2006a,b

The source-noise levels shown in Table 3.12-7, which are normally measured at 50 feet, are used to determine the noise levels at nearby sensitive receptors by attenuating 6 dB for each doubling of distance for point sources of noise such as operating construction equipment. Noise levels at the nearest receptors for each reach were analyzed on a worst-case basis, using the equipment with the highest noise level expected to be used at the nearest receptor along the reach.

Some of the construction equipment listed in Table 3.12-7 would also produce groundborne vibration. The pieces of equipment proposed for the Project that would produce the highest vibration levels are listed in Table 3.12-8.

Table 3.12-8 Typical Vibration Levels for Proposed Construction Equipment (at 25 feet)

Equipment	Inches/second PPV
Vibratory Pile Driver	0.644
Vibratory Roller	0.210
Dozer	0.089
Flat Bed Truck	0.076
Paving Breaker	0.035

Source: FTA 2006a,b

The source vibratory levels shown in Table 3.12-7, which occur at 25 feet, are used to determine the vibration levels at nearby sensitive receptors by dividing the source PPV (point peak velocity/peak particle velocity) value by the distance to the receptor. Vibration levels at the nearest receptors for each reach were analyzed on a worst-case basis, using the equipment with the highest vibratory level expected to be used at the nearest receptor along each reach.

Operations and Maintenance

Action Alternatives

Maintenance activities associated with any of the action alternatives are those procedures needed to maintain channel flood capacity, such as sediment and vegetation management such as culverts; debris removal, minor maintenance; and additionally maintenance of the Lake Silveira inlet and outlet structures and structural facilities, (see Chapter 2, Section 2.4.6 for further details on the Lake Silveira element). Maintenance activities proposed for the Project are considered long-term and, therefore, are recognized for purposes of the impact analysis as a permanent activity, even though maintenance does not occur on a continuous basis, but rather occurs relatively infrequently and intermittently since it is performed as-needed, typically for a few days every year. Mowing, for example, is necessary once or twice per year for 1 or 2 days in a given area. Maintenance activities listed below (also see Section 2.4.5 of this EIR) are necessary to help to maintain flood conveyance capacity, protect flood-related infrastructure, and to thereby reduce potential flood damage. These maintenance activities intermittently occur under current baseline conditions (see the No Project Alternative below).

Noise-generating equipment would be required for use during maintenance, including mounted flail and disc mowers, weed/grass trimmers, chain saws, and trucks for vegetation maintenance, and excavators or backhoes and dump trucks for sediment maintenance. Minor maintenance would include excavators and graders, dump trucks, along with smaller-scale equipment. Table 3.12-9 shows typical noise levels for the maintenance equipment that has been identified for use in the Project. It should be noted that noise from some of the equipment proposed for maintenance, such as mowers and weed-eaters, would likely not be discernible over typical residential noise sources. This is because the type of landscape equipment used and the type of noise generated for vegetation maintenance associated with the Project is not distinguishable from the type of landscape maintenance generated noise in residential areas. However, noise from graders, backhoes, excavators, and trucks would be very different from landscape equipment generating noise, and as such would be much more discernible in residential areas.

Table 3.12-9 Typical Noise Levels for Proposed Maintenance Equipment (at 50 feet)

Equipment	L_{MAX} (dBA)
Weed/Grass Trimmer	96
Disc Mower	91
Flail Mower	90
Grader	85
Chain Saw	84
Excavator	81
Backhoe	78
Dump Truck	76
Haul Truck	74

Source: FHA 2006a,b; USEPA 1974

The use of heavy equipment to accomplish the Proposed Project maintenance activities would result in noise in the Project area. The source noise levels shown in Table 3.12-9, which occur at 50 feet, are used to determine the noise levels at nearby sensitive receptors by attenuating 6 dB for each doubling of distance for point sources of noise such as operating heavy equipment. Noise levels at the nearest receptors for each reach were analyzed on a worst-case basis, using the equipment with the highest noise level expected to be used at each receptor.

Some of the maintenance equipment would also produce groundborne vibration. The pieces of equipment proposed for Project maintenance that would produce some of the highest vibration levels are listed in Table 3.12-10. The source vibratory levels, which occur at 25 feet, are used to determine the vibration levels at nearby sensitive receptors by dividing the source PPV value by the distance to the receptor. Vibration levels at the nearest receptors for each reach were analyzed on a worst-case basis, using the equipment with the highest vibratory level expected to be used at each receptor.

Table 3.12-10 Typical Vibration Levels for Proposed Maintenance Equipment (at 25 feet)

Equipment	Inches/second PPV
Excavator	0.044
Backhoe	0.044
Grader	0.044
Haul/Dump Truck	0.076

Source: FTA 2006a,b; ATS 2013

No Project Alternative

As discussed in Chapter 2, Section 2.3 of the Description of Alternatives, under the No Project Alternative the Project would not be built, and no new land purchases or construction activities would occur. Maintenance activities would occur in accordance with the updated SMP, which addresses bank stabilization, sediment removal, vegetation management, and minor maintenance. Implementation of the SMP renewal project began in late 2012 and is re-authorized for the next 10 years.

Activity under the SMP would fall under two general categories: regularly-scheduled work occurring in the same place and the same manner with a predictable frequency; and other routine work not on a regular annual schedule, but done as the need arises. In the Project area, SCVWD maintenance staff conduct annual inspections of fee-owned and easement areas. Following inspections, SCVWD staff evaluates what work should be conducted.

In-stream sediment removal and bank protection work is carried out from June 15 to October 30, or the first significant rainfall after October 15, whichever occurs first. Typical maintenance activities include the following:

> Channel debris clearing;

> Stream bank protection;

> Structural element maintenance;

> Minor maintenance;

> Sediment management; and,

> Vegetation management.

Maintenance under the No Project Alternative would be considered long-term because it will periodically occur over a 10-year-time period, consistent with the duration of the SMP. It is also considered intermittent because maintenance activity would be performed on an as-needed basis, typically for a few days in a given locale each year, but with a frequency that would be unknown and unplanned, and that could vary each year.

3.12.5 Impacts and Mitigation Measures

3.12.5.1 No Project Alternative

NOI-1 NP—Noise generation levels in excess of established standards

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sediment removal and bank stabilization	N/A	S
Vegetation management	N/A	S
Minor maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

As discussed in Chapter 2, Section 2.3, No Project Alternative, the Project would not be built, and no new land purchases or construction activities would occur under this alternative. People would not be exposed to noise levels in excess of standards as there would be no construction activity, and therefore there would be no impact.

Operations and Maintenance

As discussed in Section 3.12.4.2, under the No Project Alternative, maintenance activities would occur in accordance with the updated SMP, which addresses bank stabilization, sediment removal, vegetation management, and minor maintenance. The previous SMP was implemented in 2002 and continued until late 2012. Implementation of the SMP renewal project began in late 2012 and is re-authorized for the next 9 years. Since the same SMP activities would continue under the renewal project, a perceptible noise increase over existing conditions would not be expected. Noise levels during maintenance activity could still result in noise above standards for the jurisdictions along all reaches. Maintenance activity under the No Project Alternative would be considered long-term but would be intermittent because it is as-needed, typically for a few days every year in a given area.

Maintenance activity would include the use of both mechanized equipment and hand tools. Use of hand tools would not affect the existing noise environment with the exception of vehicles bringing maintenance workers to and from the site. Maintenance worker vehicles would not be expected to result in a perceptible increase in noise over vehicles already used for ongoing maintenance under the SMP. Mechanized equipment would be expected to increase noise in the Project area during the use of the equipment.

Although maintenance activities would likely occur during daytime hours, noise could still be considered substantially disruptive to residents. However, periods of intrusive noise exposure would be intermittent and generally temporary and would represent existing conditions. Noise from maintenance activity could vary significantly on a day-to-day basis, and is dependent on how many pieces of equipment are operating simultaneously. The noise levels shown in Table 3.12-11 represent a worst-case scenario for the closest receptors (all residential), using the loudest piece of equipment, a grader, at 85 dBA at 50 feet (see Table 3.12-7) and reducing noise by 6 dB for every doubling of distance. Residential and non-residential receptors further away would experience lower noise levels due to attenuation by distance. Such worst-case scenarios would likely exist only for short periods at any particular residence on a given day. Landscape-type equipment for vegetation maintenance is not considered because the noise levels generated from this type of equipment would not be discernible over typical residential landscaping noise

sources. This is because the type of landscape equipment used and the type of noise generated for vegetation maintenance associated with the Project is not distinguishable from the type of landscape maintenance generated noise in residential areas. However, noise from graders, backhoes, excavators, and trucks would be very different from landscape equipment generating noise, and as such would be much more discernible in residential areas.

Table 3.12-12 shows estimated noise levels at the nearest non-residential receptors as listed in Table 3.12-3.

Table 3.12-11 shows the estimated noise levels at the closest receptors along the reaches that would be affected under the No Project Alternative. Section 3.12.4.1 indicated the following thresholds for determining an exceedence of noise standards:

> Noise levels of 75 dBA measured at the lot line in the City of Morgan Hill (for Reaches 5, 6, 7A, 7B, 8, and 14); or

> Noise levels of 80 dB at the residential property line in the County of Santa Clara (for Reach 4).

Based on the thresholds, the nearest residences along all reaches would exceed corresponding noise standards. It should be noted that noise standards are in dB for Santa Clara County rather than the A-weighted dBA (see Section 3.12.1), however, 89 dBA would still exceed an 80-dB standard. Noise levels from maintenance may exceed noise standards. Although work would be intermittent, likely occurring for a few days every year, it would be a significant unavoidable impact due to exceedance of the applicable standards. SCVWD will implement the following BMPs to minimize the impacts to the nearby residences, but noise levels may still exceed standards.

Table 3.12-11 Maintenance Noise at Nearest Residential Receptors by Reach (No Project Alternative)

Reach	Distance from Proposed Maintenance Activity	Source Level at 50 Feet (dBA) [1]	Noise Level at Receptor (dBA)
4	40 feet	85	89
5	100 feet	85	79
6	50 feet	85	85
7A	50 feet	85	85
7B	40 feet	85	89
8	25 feet	85	91
14	85 feet	85	81

[1] Equipment with the loudest noise levels, used to demonstrate the worst-case scenario, is a grader.

Table 3.12-12 Maintenance Noise at Nearest Non-Residential Receptors by Reach (No Project Alternative)

Receptor	Reach	Distance and Direction	Source Level at 50 Feet (dBA)[1]	Noise Level at Receptor (dBA)
St Louise Regional Hospital	4	4,500 feet south	85	48
South County Retirement Home	6	750 feet east	85	63
Pacific Hills Manor/Morgan Hill Villa	8	1,500 feet west	85	56
Britton Middle School	8	50 feet east	85	85
Crossroads Christian Center School	8	400 feet east	85	67
Oakwood School	7A	250 feet east	85	72
San Martin/Gwinn Elementary School	6	650 feet west	85	63
Paradise Valley Elementary School	7B	900 feet west	85	60
PA Walsh Elementary School	8	950 feet west	85	60
Kiddie Academy of Morgan Hill	7A/7B	1,150 feet east	85	59
Stratford School Morgan Hill	8	900 feet north	85	60
Rucker Elementary School	5	3,300 feet west	85	49
Galvan Park	8	200 feet west	85	73
Morgan Hill Community Park/Dog Park	7B	800 feet west	85	61
Paradise Park	7B	1,100 feet west	85	59

Best Management Practices (BMPs) (from SCVWD SMP)

> **GEN-36:** Public Outreach.

> **GEN-38:** Minimize Noise Disturbances to Residential Areas.

Implementation of BMPs would reduce noise impacts, but temporary exceedence of noise standards would be significant and unavoidable.

NOI-2 NP—Generation of excessive groundborne vibration

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sediment removal and bank stabilization	N/A	LTS
Vegetation management	N/A	LTS
Minor maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

As discussed in Chapter 2, Section 2.3, No Project Alternative, the Project would not be built, and no new land purchases or construction activities would occur under this alternative. People would not be exposed

to excessive groundborne vibration as there would be no construction activity, and therefore there would be no impact.

Operations and Maintenance

As discussed in Section 3.12.4.2, under the No Project Alternative, maintenance activities would occur in accordance with the updated SMP, which addresses bank stabilization, sediment removal, vegetation management, and minor maintenance. The previous SMP was implemented in 2002 and continued until late 2012. Implementation of the SMP renewal project began in late 2012 and is re-authorized for the next 9 years. Since the same SMP activities would continue under the renewal project, a perceptible increase over existing vibration conditions would not be expected. Vibration levels during maintenance activity could still result in vibration above standards for the jurisdictions along all reaches. Maintenance activity under the No Project Alternative would be considered long-term but would be intermittent because it is as-needed, typically for a few days every year in a given area.

Maintenance activity would include the use of both mechanized equipment and hand tools. Use of hand tools would not affect the existing vibration levels with the exception of vehicles bringing maintenance workers to and from the site. Maintenance worker vehicles would not be expected to result in a perceptible increase in vibration over vehicles already used for ongoing maintenance under the SMP. Mechanized equipment would be expected to increase vibration in the Project area during the use of the equipment.

Although maintenance activities would likely occur during daytime hours, vibration could still be considered substantially disruptive to residents. However, periods of intrusive vibration exposure would be intermittent and generally temporary. Vibration from maintenance activity could vary significantly on a day-to-day basis, and is dependent on how many pieces of equipment are operating simultaneously. The vibration levels shown in Table 3.12-13 represent a worst-case scenario. Such worst-case scenarios would likely exist only for short periods at any particular residence on a given day.

Maintenance activity would be expected to use the equipment listed in Table 3.12-8. Based on the activities that would be expected for the No Project Alternative, the equipment with the greatest vibratory levels that may be used often during activity would be an excavator, backhoe, or grader which would produce vibration levels of 0.044 inch per second PPV at a distance of 25 feet. Table 3.12-13 shows the estimated vibration levels at each receptor along the reaches that would be maintained under the No Project Alternative. Vibration levels at each receptor were determined by taking the source PPV level for the most vibratory equipment proposed to demonstrate worst-case scenario (0.044 inch per second PPV for an excavator, backhoe, or grader at 25 feet), and extrapolating for the distance and attenuation, relative to 25 feet, for each receptor. For example, the nearest receptor along Reach 5 is located 100 feet away. One hundred feet divided by 25 feet equals 4; therefore 0.044 inch per second PPV divided by 4 equals 0.011 inch per second PPV at the receptor 100 feet away). Due to attenuation by distance similar to noise, receptors further from the equipment and activity would experience lower vibration levels.

Section 3.12.4.1 indicated the following thresholds for determining generation of excessive vibration:

> Vibration levels of 0.5 and 0.1 inch per second PPV for structural damage and annoyance, respectively, for construction activities.

Based on the thresholds, none of the nearest residences along any reach with proposed No Project Alternative maintenance would experience vibration levels in excess of state standards for either structural damage or annoyance.

Table 3.12-13 Maintenance Vibration at Nearest Residential Receptors by Reach (No Project Alternative)

Reach	Distance	Source Level at 25 Feet (PPV) [1]	Vibration Level at Receptor (PPV)
4	40 feet	0.044	0.0285
5	100 feet	0.044	0.011
6	50 feet	0.044	0.022
7A	50 feet	0.044	0.022
7B	40 feet	0.044	0.0278
8	25 feet	0.044	0.044
14	85 feet	0.044	0.013

[1] Equipment with the greatest vibration levels, used to demonstrate the worst-case scenario, is an excavator, backhoe, or grader.

Best Management Practices (BMPs)

None applicable

Impacts would be less than significant.

NOI-3 NP—Substantial permanent increase in ambient noise levels

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sediment removal and bank stabilization	N/A	LTS
Vegetation management	N/A	LTS
Minor maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

As discussed in Chapter 2, Section 2.3, No Project Alternative, the Project would not be built, and no new land purchases or construction activities would occur under this alternative. The No Project Alternative would not have construction activities that would contribute to a substantial, permanent increase in noise levels. Therefore, no impact would occur.

Operations and Maintenance

As discussed in Section 3.12.4.2, under the No Project Alternative, maintenance activities would occur in accordance with the updated SMP, which addresses bank stabilization, sediment removal, vegetation management, and minor maintenance. The previous SMP was implemented in 2002 and continued until late 2012. Implementation of the SMP renewal project began in late 2012 and is re-authorized for the next 9 years. Therefore, a perceptible noise increase over existing conditions would not be expected and thus, no permanent noise increase along the reaches would occur.

Best Management Practices (BMPs)

None applicable

Impacts associated with permanent noise increases would be less than significant.

NOI-4 NP—Substantial temporary increase in ambient noise levels

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sediment removal and bank stabilization	N/A	LTS
Vegetation management	N/A	LTS
Minor maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

As discussed in Section 2.3, No Project Alternative, the Project would not be built, and no new land purchases or construction activities would occur under this alternative. The No Project Alternative would not have construction activities that would contribute to a temporary or periodic increase in noise levels. Therefore, no impact would occur.

Operations and Maintenance

As discussed in Section 3.12.4.2, under the No Project Alternative, maintenance activities would occur in accordance with the updated SMP, which addresses bank stabilization, sediment removal, vegetation management, and minor maintenance. The previous SMP was implemented in 2002 and continued until late 2012. Implementation of the SMP renewal project began in late 2012 and is re-authorized for the next 9 years. Therefore, a perceptible noise increase over existing conditions would not be expected and thus, no perceptible temporary or periodic increase in noise levels along the reaches would occur.

Best Management Practices (BMPs)

None applicable

Impacts associated with temporary noise increases would be less than significant.

NOI-5 NP—Subject construction workers to excessive noise levels from public airport

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sediment removal and bank stabilization	N/A	LTS
Vegetation management	N/A	LTS
Minor maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

As discussed in Chapter 2, Section 2.3, No Project Alternative, the Project would not be built, and no new land purchases or construction activities would occur under this alternative. The No Project Alternative would not have construction activities that would expose people to excessive noise levels from a public airport. Therefore, no impact would occur.

Operations and Maintenance

There are five airports in Santa Clara County, including Reid-Hillview Airport, Mineta San Jose International Airport, Palo Alto Airport of Santa Clara County, Moffett Federal Airfield, and South County Airport of Santa Clara County (South County). The airport closest to the Project is South County, 180 feet from Reach 6 and 0.3 mile from Reach 14. South County is operated by the county and is open to the public. On average, there are 117 aircraft operations per day on the single runway at this airport (Air Nav 2013).

The No Project Alternative would require a workforce to temporarily/intermittently spend time near the airport when working on Reaches 5, 6, and 14, but there would be no introduction of a permanent population in the vicinity of the airport. As shown in Table 3.12-4 above, the average noise level during 24-hour noise measurements along Reach 6 was 55.4 dB, with primary sources of noise during that time noted as airport and traffic. The average noise levels along Reach 14, measured over 24 hours, was 63.6 dB, with the primary noise source noted as traffic. As such, the No Project Alternative would not expose people residing or working in the Project area to excessive airport-related noise levels. Therefore, impacts would be less than significant for maintenance activities.

Best Management Practices (BMPs)

None applicable

NOI-6 NP—Subject construction workers to excessive noise levels from private airstrip

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sediment removal and bank stabilization	N/A	NI
Vegetation management	N/A	NI
Minor maintenance	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

As discussed in Chapter 2, Section 2.3, No Project Alternative, the Project would not be built, and no new land purchases or construction activities would occur under this alternative. The No Project Alternative would not have construction activities that would expose people to excessive noise levels from a public airport. Therefore, no impact would occur.

Operations and Maintenance

There are no private-use airports in Santa Clara County. Therefore, there would be no excessive noise levels from private airstrips in the area and subsequently no impact from excessive noise levels to maintenance workers.

Best Management Practices (BMPs)

None applicable

3.12.5.2 Tunnel Alternative (Preferred Alternative)

As discussed in Chapter 2, Description of Alternatives, the Preferred Alternative would provide an increased level of flood protection for urban and semi-urban areas and would also protect agricultural land. All reaches would be deepened and widened. Construction proposed for Reach 8 for the tunnel

would result in increased noise levels from the use of equipment specifically for the portal intake and tunnel and from blasting. The following sections analyzing noise impacts consider the predominant and representative noise-generating construction activities.

NOI-1 T—Noise generation levels in excess of established standards

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction of tunnel and associated structures	S	N/A
Channel improvements (excavation and grading), exhumation of bridges and culvert replacement	S	N/A
Excavation and construction of a diversion channel	S	N/A
Construction of permanent access roads	S	N/A
Installation of reinforced concrete boxes	S	N/A
Relocation of some homes, farm structures, and wells within the ROW	S	N/A
Relocation of some utility and other public service facilities	LTS	N/A
Stream operation and maintenance activities	N/A	S

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The type of construction with the greatest noise contributions proposed for the Preferred Alternative is the tunnel, which would be excavated using conventional mining equipment and methods to excavate, specifically roadheaders, excavators, and controlled detonations. Controlled detonations would be used in sections of harder rock, to fracture the rock for the roadheader or excavator. Controlled detonation would be performed by drilling small holes in a specified pattern in the rock face, packing them with small amounts of explosive and primer and detonating the explosives using a specified time delay between successive detonations. The detonations would sound like a short succession of thunder generally lasting a few seconds. Controlled detonation methods would adhere to stringent state and federal safety requirements and would also be conducted in accordance with local noise ordinances. Typically, less than 20 pounds of explosives per delay would be used. A Blasting Plan would be prepared for the Project to provide guidelines for the safe use and storage of blasting materials that may be used during construction, and would also provide measures to reduce noise, including the following:

> Drill multiple, small charge holes rather than fewer larger holes;

> Retain soil 3 to 4 feet above blasting material before detonation;

> Use blast mats and timing delays;

> Blast small horizontal and vertical areas rather than large areas;

> Stem blast holes with dense sand;

> Direct charges away from the direction of sensitive receptors; and

> Place physical barriers between the detonation site and the nearest receptors.

See Section 3.18, Hazards and Hazardous Materials, for further detail on the Blasting Plan.

Due to the intensity, duration, and proximity of construction activities to the nearby residences, two temporary sound barriers (e.g., walls, sound-absorbing blankets) would be installed along some of the work area boundaries. These sound barriers would be designed to provide a minimum 10-dBA (decibel) reduction in noise. The final design of the sound barrier would be determined by the contractor to achieve the Project's noise performance standards. The barrier is assumed to be approximately 20 feet high.

Other construction activities for the Preferred Alternative would include channel improvements (e.g., excavation to deepen and widen existing channels), excavation and construction of diversion channel, construction of permanent access roads, and installation of reinforced concrete boxes. Although construction activities would occur mostly during daytime hours, noise could still be considered substantially disruptive to residents due to the distance between the activity and the receptors. However, periods of intrusive noise exposure would be temporary. Noise from construction activity could vary significantly on a day-to-day basis, and is dependent on how many pieces of equipment are operating simultaneously. The noise levels shown in Table 3.12-14 represent a worst-case scenario, with the use of the loudest equipment which is a pavement breaker/jackhammer (89 dBA at 50 feet) along Reaches 4, 5, 6, 7B, and 14, a drill rig (89 dBA at 50 feet) along Reach 8, and a grader (85 dBA at 50 feet) along Reach 7A. Noise levels would reduce 6 dB for every doubling of distance away from the noise source. Such worst-case scenarios would likely exist only for short periods at any particular residence on a given day.

Table 3.12-14 Construction Noise at Nearest Residential Receptors by Reach (Preferred Alternative)

Reach	Distance	Source Level at 50 Feet (dBA)[1]	Noise Level at Receptor (dBA)
4	40 feet	89	92
5	100 feet	89	84
6	50 feet	89	89
7A	50 feet	85	85
7B	40 feet	89	90
8	25 feet	89	95
14	85 feet	89	84

[1] Equipment with the highest noise levels, used to demonstrate the worst-case scenario, is a breaker/jackhammer along Reaches 4, 5, 6, 7B, and 14, a drill rig along Reach 8, and a grader along Reach 7A.

Construction activity would be expected to use equipment listed in Table 3.12-7, which is further differentiated by reach in Chapter 2, Description of Alternatives, Table 2.5-5. Table 3.12-14 shows the estimated noise levels at the nearest receptor along each reach which correspond to the loudest piece of equipment proposed for each reach that would be affected under the Preferred Alternative, as best represented by the most predominant type of construction activities including channel improvements (excavation and grading of existing channel reaches to widen and deepen), excavation and construction of diversion channel, construction of permanent access roads, installation of reinforced concrete boxes, and demolition/removal of buildings and structures. As discussed in Chapter 2, Description of Alternatives, some residences may be removed or relocated under the Preferred Alternative; however the nearest receptors may not be those identified for removal/relocation and could remain during construction activity and be exposed to the noise generated. Section 3.12.4.1 indicated the following thresholds for determining an exceedence of noise standards:

> Noise levels of 75 dBA measured at the lot line in the City of Morgan Hill (for Reaches 5, 6, 7A, 7B, 8, and 14); or

> Noise levels of 80 dB at the residential property line in the County of Santa Clara (for Reach 4).

Based on the thresholds, the nearest residences along all reaches would exceed corresponding noise standards, and impacts would be significant for construction of tunnel, channel improvements, excavation and construction of diversion channel, construction of permanent access roads, installation of reinforced concrete boxes, and demolition/removal of buildings and structures. Impacts would be less than significant for relocation of utilities. It should be noted that noise standards are in dB for Santa Clara County rather than the A-weighted dBA (see Section 3.12.1), however, 92 dBA would still exceed an 80-dB standard. The SCVWD will implement BMPs NO-1 (Minimize Noise Pollution) and NO-2 (Minimize Noise Disturbance to residential neighborhoods) to reduce noise produced by construction activities to below applicable noise standards where feasible. However, even with implementation of the BMPs, construction noise would still exceed noise standards for Morgan Hill and the county, which is a significant impact.

Mitigation Measures NOI-1a, NOI-1b, and NOI-1c T would reduce noise levels from construction equipment along all reaches; however, due to the distance between the construction areas and receptors along these reaches, impacts would not be reduced to less than significant levels because at the distances from the receptors, noise levels from construction equipment would be more than 5 dBA over existing noise levels. Therefore, impacts associated with noise standards exceedance for construction activities would remain significant. Construction of sound barriers between noise sources and sensitive receptors was considered, but rejected as infeasible by the SCVWD due to the large scale of the construction activity covering a distance of nearly 13.5 miles and the fact that the construction would be constantly moving along the channel reaches requiring barriers to be set up, taken down, and moved along with the work. Installing barriers, removing them, and re-erecting the barriers in new places would have its own effects on noise, visual, and biotic resources. It should also be noted, City of Morgan Hill Municipal Code Chapter 18.48.040 D.1.d exempts public works projects from noise standards and indicates the public works director shall set construction hours for these types of projects. However, even though noise from the Project generated in Morgan Hill would be exempt from the applicable standards, the nearest residences along Reaches 5, 6, 7A, 7B, 8, and 14 would experience noise levels that would be significant.

Operations and Maintenance

Under the Preferred Alternative, operational activities would be limited to typical maintenance procedures, including minor maintenance, and specific tunnel maintenance procedures such as excavating the sediments in the detention basin at the upstream boundary of the Project in Reach 8 and accessing the box culverts for maintenance in Reach 8, either through major access points with removable panels; through smaller hatches; or through manways. Operational activity proposed for the Project would be considered long-term but would be intermittent because it is performed as-needed, typically for a few days every year. Maintenance activities are discussed in Section 3.12.4.2.

Maintenance activity would include the use of both mechanized equipment and hand tools. Use of hand tools would not affect the existing noise environment with the exception of vehicles bringing maintenance workers to and from the site. Maintenance worker vehicles would not be expected to result in a perceptible increase in noise over vehicles already used for ongoing maintenance, as described under the No Project Alternative. Mechanized equipment would be expected to increase noise in the Project area during the use of the equipment.

However, periods of intrusive noise exposure would be intermittent and generally temporary and similar to existing conditions as described under the No Project Alternative. Noise from maintenance activity would vary on a day-to-day basis, and is dependent on how many pieces of equipment are operating simultaneously. The noise levels shown in Table 3.12-15 represent a reasonable worst-case scenario used for maintenance for the closest receptors (all residential), using the loudest piece of equipment, a

grader, at 85 dBA at 50 feet (see Table 3.12-7) and reducing noise by 6 dB for every doubling of distance. Residential and non-residential receptors further away would experience lower noise levels due to attenuation by distance. Table 3.12-12 under the No Project Alternative shows the noise levels that would be expected during maintenance activity at the non-residential receptors, which would be the same for the Preferred Alternative. Such conditions (or noise levels) would likely exist only for short periods at any particular residence on a given day. Landscape-type equipment for vegetation maintenance is not considered because noise from this equipment would not be discernible over typical residential landscaping and vegetation maintenance noise sources. This is because the type of landscape equipment used and the type of noise generated for vegetation maintenance associated with the Project is not distinguishable from the type of landscape maintenance generated noise in residential areas. However, noise from graders, backhoes, excavators, and trucks would be very different from landscape equipment generating noise, and as such would be much more discernible in residential areas.

Table 3.12-15 Operation and Maintenance Noise at Nearest Residential Receptors by Reach (Preferred Alternative)

Reach	Distance	Source Level at 50 Feet (dBA) [1]	Noise Level at Receptor (dBA)
4	40 feet	85	89
5	100 feet	85	79
6	50 feet	85	85
7A	50 feet	85	85
7B	40 feet	85	89
8	25 feet	85	91
14	85 feet	85	81

[1] Equipment with the highest noise levels, used to demonstrate the worst-case scenario, is a grader.

Table 3.12-15 shows the estimated noise levels at each receptor along the reaches that would be affected under the Preferred Alternative. As discussed in Chapter 2, Description of Alternatives, some residences may be removed or relocated under the Preferred Alternative; however, the nearest receptors may not be those identified for removal/relocation and could be present during maintenance activity and be exposed to the noise generated.

Section 3.12.4.1 indicated the following thresholds for determining an exceedence of noise standards:

> Noise levels of 75 dBA measured at the lot line in the City of Morgan Hill (for Reaches 5, 6, 7A, 7B, 8, and 14); or

> Noise levels of 80 dB at the residential property line in the County of Santa Clara (for Reach 4).

It should be noted that noise standards are in dB for Santa Clara County rather than the A-weighted dBA (see Section 3.12.1), however, 89 dBA would still exceed an 80-dB standard. Based on the thresholds, the nearest residences along all reaches would exceed corresponding noise standards. Although maintenance activities would be intermittent, infrequent, and similar to activities currently occurring, impacts would be significant due to the exceedances.

Best Management Practices (BMPs)

> **NO-1:** Minimized Noise Pollution.

> **NO-2:** Minimize Noise Disturbance to residential neighborhoods.

BMPs have been prescribed specific to the tunnel construction in order to reduce noise associated with the tunneling activity. Some BMPs designed to reduce noise also reduce vibrations. The BMPs specific to tunnel construction are listed and explained in Section 2.6.2.5.

Mitigation Measures

Mitigation Measure NOI-1a T: Reduce Noise from Construction and Operational Activity. Use noise-reducing enclosures around stationary noise-generating equipment capable of 6-dB attenuation and take advantage of existing barrier features, including material stockpiles, to block sound transmission.

Mitigation Measure NOI-1b T: Noise and Vibration Control Plan. Prepare a Noise and Vibration Control Plan that will include noise control measures to achieve compliance with applicable noise performance standards for non-tunnel construction activity (as the Noise and Vibration Control Plan listed in BMPs above are related to tunnel construction only).

Mitigation Measure NOI-1c T: Notify Residents of Construction Work; Implement Noise Complaint Procedure. Before construction, the SCWVD shall send out a notice to residences within 1,500 feet of the Project work areas, which will include the proposed start date and contact information for reporting complaints related to noise. SCVWD will designate a Project liaison to respond to noise complaints during construction.

Implementation of BMPs NO-1 and NO-2, BMPs specific to tunnel construction, Mitigation Measures NOI-1a T, NOI-1b T, and NOI-1c T, the use of sound barriers along Reach 8 work sites and adherence to the Blasting Plan would reduce construction noise impacts. However, due to the distance between work areas and receptors along all reaches, impacts would not be reduced to less than significant levels. Therefore, impacts associated with noise standards exceedence for both construction and operation and maintenance activities would remain significant as noise levels would exceed applicable standards as shown in Tables 3.12-14 and 3.12-15, respectively.

NOI-2 T—Generation of excessive groundborne vibration

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction of tunnel and associated structures	S	N/A
Channel improvements, exhumation of bridges and culvert replacement	S	N/A
Excavation and construction of a diversion channel	S	N/A
Construction of permanent access roads	S	N/A
Installation of reinforced concrete boxes	S	N/A
Relocation of some homes, farm structures, and wells within the ROW	LTS	N/A
Relocation of some utility and other public service facilities	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

As discussed under NOI-1 T above, controlled detonation would be performed by drilling small holes in a specified pattern in the rock face, packing them with small amounts of explosive and primer and detonating the explosives using a specified time delay between successive detonations. The detonations would sound like a short succession of thunder generally lasting a few seconds. Controlled detonation

methods would adhere to stringent state and federal safety requirements and would also be conducted in accordance with local noise ordinances. Typically, less than 20 pounds of explosives per delay would be used. A Blasting Plan would be prepared for the Project to provide guidelines for the safe use and storage of blasting materials that may be used during construction, and would also provide measures to reduce vibration, including:

> Strict management of blast design;

> Use of proper charge size and detonation sequence in accordance with the scaled-distance (SD) factor guidelines provided by the OSMRE; and

> Use of seismograph equipment to monitor PPV levels at nearby receptors; and

> Cessation of blasting activity and modification of blasting plan if PPV levels exceed all applicable regulations.

See Section 3.18, Hazards and Hazardous Materials, for further detail on the Blasting Plan.

The SCVWD's BMP NO-2 will implement the following measures in residential areas surrounding work sites that would reduce the impact of vibration (1) conduct work during normal working hours; and (2) limit the arrival and departure of trucks hauling material to the hours of construction. BMPs specific to tunnel construction (listed in NOI-1 T above) would also reduce vibration through controlled detonation and other measures.

Vibration levels associated with blasting are site-specific and are dependent on the amount of explosive used, soil conditions between the blast site and the receptor, and the elevation where blasting would take place (specifically, the below surface elevation where bedrock would be encountered). Blasting below the surface, as is proposed for the Project, would produce lower vibration levels at a receptor due to additional attenuation provided by distance and transmission through soil and rock. The use of controlled detonations for blasting and adherence to the Blasting Plan would result in less than significant impacts as blasting vibration levels would be below state and federal requirements. However, impacts would be significant based on vibration levels produced by construction equipment (see further discussion below).

Other construction activities for the Preferred Alternative would include channel improvements, excavation and construction of diversion channel, construction of permanent access roads, and installation of reinforced concrete boxes. Although construction activities would mostly occur during daytime hours, vibration could still be considered substantially disruptive to residents. However, periods of intrusive vibration exposure would be intermittent and generally temporary. Vibration from construction activity could vary significantly on a day-to-day basis, and is dependent on how many pieces of equipment are operating simultaneously. The vibration levels shown in Table 3.12-16 represent a worst-case scenario. Vibration levels at each receptor were determined by taking the source PPV level for the most vibratory equipment proposed to demonstrate worst-case scenario (0.644 inch per second PPV for the pile driver at 25 feet along Reach 8, and 0.210 inch per second PPV for a vibratory roller at 25 feet along all other reaches), and extrapolating for the distance and attenuation, relative to 25 feet, for each receptor. For example, the nearest receptor along Reach 5 is located 100 feet away. One hundred feet divided by 25 feet equals 4; therefore 0.210 inch per second PPV divided by 4 equals 0.053 inch per second PPV at the receptor 100 feet away). Due to attenuation by distance similar to noise, receptors further from the equipment and activity would experience lower vibration levels. Such worst-case scenarios would likely exist only for short periods at any particular residence on a given day.

Section 3.12.4.1 indicated the following thresholds for determining generation of excessive vibration:

> Vibration levels of 0.5 and 0.1 inch per second PPV for structural damage and annoyance, respectively, for construction activities.

Based on the thresholds, none of the nearest residences along any reach would experience vibration levels in excess of state standards for structural damage, with the exception of receptors along Reach 8, but residences along Reaches 4, 6, 7A, 7B, 8, and 14 would experience vibration levels that exceed state standards for annoyance resulting in a significant impact for channel improvements, excavation and construction of diversion channel, construction of permanent access roads, and installation of reinforced concrete boxes. Even with the implementation of BMP NO-2, which generally requires the SCVWD to conduct work during normal working hours; and limit the arrival and departure of trucks hauling material to the hours of construction, this impact would be significant. To reduce experienced vibration levels from construction, SCVWD will implement Mitigation Measures NOI-2a, NOI-2b, NOI-2c, and NOI-2d T to the extent feasible. Implementation of BMP NO-2 and Mitigation Measures NOI-2a, NOI-2b, NOI-2c, and NOI-2d T would reduce vibration levels from construction equipment and blasting along all reaches; however, due to the distance between work areas where construction would take place and receptors along these reaches, impacts would not be reduced to less than significant levels. Therefore, impacts associated with excessive groundborne vibration for construction activity would remain significant. Other proposed activities such as relocation of structures and utilities would have a less-than-significant impact.

Table 3.12-16 Construction Vibration at Nearest Residential Receptors by Reach (Preferred Alternative)

Reach	Distance	Source Level at 25 Feet (PPV)[1]	Vibration Level at Receptor (PPV)
4	40 feet	0.210	0.131
5	100 feet	0.210	0.053
6	50 feet	0.210	0.105
7A	50 feet	0.210	0.105
7B	40 feet	0.210	0.131
8	25 feet	0.644	0.644
14	85 feet	0.210	0.062

[1] Equipment with the highest vibration levels, used to demonstrate the worst-case scenario, is a vibratory roller.

Operations and Maintenance

Under the Preferred Alternative, operational activities would be limited to typical maintenance procedures, including specific tunnel maintenance procedures such as excavating the sediments in the detention basin at the upstream boundary of the Project in Reach 8 and accessing the box culverts for maintenance in Reach 8, either through major access points with removable panels; through smaller hatches; or through manways. Operational activity proposed for the Project would be considered long-term but would be intermittent because it is performed as-needed, typically for a few days every year in a given location. Maintenance activities are discussed in Section 3.12.4.2.

Maintenance activity would include the use of both mechanized equipment and hand tools. Use of hand tools would not affect the existing vibration levels with the exception of vehicles bringing maintenance workers to and from the site. Maintenance worker vehicles would not be expected to result in a perceptible increase in vibration over vehicles already used for ongoing maintenance under the SMP. Mechanized equipment would be expected to increase vibration in the Project area during the use of the equipment.

Although maintenance activities would likely occur during daytime hours, vibration could still be considered substantially disruptive to residents. However, periods of intrusive vibration exposure would be intermittent and generally temporary. Vibration from maintenance activity could vary significantly on a day-to-day basis, and is dependent on how many pieces of equipment are operating simultaneously. The vibration levels shown in Table 3.12-17 represent a worst-case scenario. Such worst-case scenarios would likely exist only for short periods at any particular residence on a given day.

Maintenance activity would be expected to use the equipment listed in Table 3.12-8. Based on the activities that would be expected for the Preferred Alternative, the equipment with the greatest vibratory levels that may be used often during activity would be an excavator, backhoe, or grader, which would produce vibration levels of 0.044 inch per second PPV at a distance of 25 feet. Table 3.12-17 shows the estimated vibration levels at each receptor along the reaches that would be maintained under the Preferred Alternative. Vibration levels at each receptor were determined by taking the source PPV level for the most vibratory equipment proposed to demonstrate worst-case scenario (0.044 inch per second PPV for an excavator, backhoe, or grader at 25 feet), and extrapolating for the distance and attenuation, relative to 25 feet, for each receptor. For example, the nearest receptor along Reach 5 is located 100 feet away. One hundred feet divided by 25 feet equals 4; therefore 0.044 inch per second PPV divided by 4 equals 0.011 PPV at the receptor 100 feet away). Due to attenuation by distance similar to noise, receptors further from the equipment and activity would experience lower vibration levels.

Section 3.12.4.1 indicated the following thresholds for determining generation of excessive vibration:

> Vibration levels of 0.5 and 0.1 inch per second PPV for structural damage and annoyance, respectively, for construction activities.

Based on the thresholds, none of the nearest residences along any reach would experience vibration levels in excess of state standards for either structural damage or annoyance from maintenance. Impacts would be less than significant.

Table 3.12-17 Maintenance Vibration at Nearest Residential Receptors by Reach (Preferred Alternative)

Reach	Distance	Source Level at 25 Feet (PPV) [1]	Vibration Level at Receptor (PPV)
4	40 feet	0.044	0.028
5	100 feet	0.044	0.011
6	50 feet	0.044	0.022
7A	50 feet	0.044	0.022
7B	40 feet	0.044	0.028
8	25 feet	0.044	0.044
14	85 feet	0.044	0.013

[1] Equipment with the highest vibration levels, used to demonstrate the worst-case scenario, is an excavator, backhoe, or grader.

Best Management Practices (BMPs)

> **NO-2:** Minimize Noise Disturbance to residential neighborhoods.

Mitigation Measures

Mitigation Measures NOI-2a T: Vibration Limits. SCVWD shall incorporate restrictions on controlled detonations into the contract specifications. Ground surface vibration shall be limited to 0.5 in/sec PPV, measured at the nearest residential structure or nearby location of comparable slant distance; if it is not possible to measure at a comparable slant distance, then the vibration should be monitored at several distances to verify the propagation curve and to provide a reliable estimate at the structure. Prior to use of controlled detonations, the contractor shall perform tests to determine the vibration dampening properties of the rock. This information will be used to control the vibration from controlled detonations to within the required PPV limit of 0.5 in/sec. Such tests may include small test blasts in sealed borings to measure vibration attenuation. The contract specifications shall also limit blast overpressure to 0.0145 psi or 134 dB at nearby residences. The contract specifications shall require the contractor to notify neighbors

at the portals within 500 feet of near-surface detonation activity of the construction activity schedule and to advise residents to remove precious and fragile items from walls and shelves. The contract specifications shall require the contractor to notify neighbors within 500 feet slant distance of underground detonation activity (away from the portals) of construction activity schedules.

Mitigation Measures NOI-2b T: Alternate Overnight Accommodations. If construction monitoring indicates that the tunnel excavation would exceed nighttime disturbance (annoyance) criteria and no other feasible mitigation is available, SCVWD shall offer to provide alternate sleeping accommodations for the impacted residents for the nights that the tunneling operations would be within the confirmed impact zone.

Mitigation Measures NOI-2c T: Notify Residents of Pile Driving Activities/Vibratory Compactor Use. Notify residents within 25 feet of any access road or within 200 feet of any impact pile driving or vibratory compactor activities regarding the potential for perceptible vibration. Advise them that vibration from vibratory compactors or impact pile driving activities temporarily operating along nearby haul roads may cause objects on walls and shelves to move and encourage them to move precious and fragile items off walls and shelves.

Mitigation Measures NOI-2d T: Prohibit Vibratory Pile Driving within 200 feet of Residential Structures. SCVWD shall limit the use of vibratory pile driving equipment to greater than 200 feet away from residential structures.

Implementation of BMPs and Mitigation Measure NOI-2a, NOI-2b, NOI-2c, and NOI-2d T would reduce the impacts associated with excessive groundborne vibration, but the impact would remain significant during construction based on the use of equipment with heavy vibratory contributions, and the very close location of nearby receptors along Reaches 4, 6, 7A, 7B, and 8, as shown in Table 3.12-16 above, where vibration levels at the receptors exceed 0.1 inch per second PPV for annoyance criteria from construction activities.

NOI-3 T—Substantial permanent increase in ambient noise levels

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction of tunnel and associated structures	LTS	N/A
Channel improvements (excavation and grading), exhumation of bridges and culvert replacement	LTS	N/A
Excavation and construction of a diversion channel	LTS	N/A
Construction of permanent access roads	LTS	N/A
Installation of reinforced concrete boxes	LTS	N/A
Relocation of some homes, farm structures, and wells within the ROW	LTS	N/A
Relocation of some utility and other public service facilities	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

While the construction period would be a total of six years, construction activity in any location would be temporary since construction work would be spread out over the entire construction footprint and would not result in permanent increases in ambient noise levels. Impacts would be less than significant for

construction of tunnel, channel improvements, excavation and construction of diversion channel, construction of permanent access roads, installation of reinforced concrete boxes, and relocation of structures and utilities. Noise from the tunnel construction along Reach 8 could reach higher levels based on the type of equipment proposed, but would still be temporary, and not result in a permanent increase in ambient noise levels. Temporary noise increases are evaluated under NOI-4 T below.

Operations and Maintenance

As discussed in NOI-1 T above, operational activities would be limited to typical maintenance procedures. Operational activity proposed for the Project would be considered long-term but would be intermittent because it is as needed, typically for a few days every year. Maintenance activities are discussed in Section 3.12.4.2.

Maintenance activity would include the use of both mechanized equipment and hand tools. Use of hand tools would not affect the existing noise environment with the exception of vehicles bringing maintenance workers to and from the site. Maintenance worker vehicles would not be expected to result in a perceptible increase in noise over vehicles already used for ongoing maintenance, as described under the No Project Alternative. Mechanized equipment would be expected to increase noise in the Project area during the use of the equipment.

Although maintenance activities would occur during daytime hours, noise could still be considered substantially disruptive to residents. However, periods of intrusive noise exposure would be intermittent and generally temporary, and similar to existing conditions as described under the No Project Alternative. Noise from maintenance activity would vary on a day-to-day basis, and the noise levels shown in Table 3.12-18 under NOI-1 T represent a worst-case scenario. Such worst-case scenarios would likely exist only for short periods at any particular residence on a given day.

Maintenance activity would be expected to use the equipment listed in Table 3.12-9. Based on the activities proposed for the Preferred Alternative, the equipment with the loudest operating noise level that would be used often during activity would be a grader, which would produce noise levels of 85 dBA at a distance of 50 feet. Table 3.12-18 shows the estimated noise levels at each receptor along the reaches that would be affected under the Preferred Alternative. As discussed in Chapter 2, Description of Alternatives, some residences may be removed or relocated under the Preferred Alternative; however, the nearest receptors may not be those identified for removal/relocation and could be present during maintenance activity and be exposed to the noise generated. Landscape-type equipment for vegetation maintenance is not considered because noise from this equipment would not be discernible over typical residential landscaping and vegetation maintenance noise sources. This is because the type of landscape equipment used and the type of noise generated for vegetation maintenance associated with the Project is not distinguishable from the type of landscape maintenance generated noise in residential areas. However, noise from graders, backhoes, excavators, and trucks would be very different from landscape equipment generating noise, and as such would be much more discernible in residential areas.

Section 3.12.2.1 discusses the existing ambient conditions along the reaches. Table 3.12-18 compares the existing noise levels based on the noise measurements collected in 2011 along each reach with the expected noise levels for maintenance under the Preferred Alternative. The SCVWD will implement BMP NO-2 for all maintenance activities.

Section 3.12.4.1 indicated the following thresholds for determining a substantial permanent noise increase:

> Permanent increase of 5 dBA L_{EQ} as a result of Project operation based on ambient noise levels.

Based on the threshold of a 5-dBA L_{EQ} increase, all of the nearest residences would experience short-term, temporary increase in noise levels above 5 dBA L_{EQ} during maintenance work. It should be noted that noise standards are in dBA L_{EQ} and are compared to values in dBA. As discussed in Section 3.12.1,

L_{EQ} is a calculated single level for a specified duration, which contains the same energy as all of the varying sounds over the measurement period. While not identical to an average, especially when noise fluctuations are great, the L_{EQ} is widely used to represent an average noise level over some period of time. Because of the substantial increase in noise (22.1 dBA and greater) it is clear that noise level increases would exceed a 5-dBA increase. However, based on the intermittent nature of the activity, and the infrequency (a few days every year) the operations and maintenance noise would not be permanent.

Table 3.12-18 Estimated Noise Levels for Operation and Maintenance Activities Compared with Existing Noise Levels (Preferred Alternative)

Reach	Distance	Existing Noise Levels L_{EQ} (dBA) [1]	Noise Level at Receptor (dBA)	Change in Noise Level (dBA)
4	40 feet	60.4	89	+27.6
5	100 feet	52.2	79	+26.8
6	50 feet	60.1	85	+24.9
7A	50 feet	46.3	85	+38.7
7B	40 feet	50.3	89	+37.7
8	25 feet	56.9	91	+34.1
14	85 feet	58.9	81	+22.1

[1] Existing noise levels from 2011 noise measurements converted from dB, as measured, to dBA using average frequency of 500 Hz.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

Impacts related to permanent increases in ambient noise levels would be less than significant.

NOI-4 T—Substantial temporary increase in ambient noise levels

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction of tunnel and associated structures	S	N/A
Channel improvements, exhumation of bridges and culvert replacement	S	N/A
Excavation and construction of a diversion channel	S	N/A
Construction of permanent access roads	S	N/A
Installation of reinforced concrete boxes	S	N/A
Relocation of some homes, farm structures, and wells within the ROW	S	N/A
Relocation of some utility and other public service facilities	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Although construction activities would occur mostly during daytime hours, noise could be considered disruptive to residents due to the distance between the activity and the receptors. However, periods of increased noise exposure would be temporary. Noise from construction activity would vary significantly on a day-to-day basis, and is dependent on how many pieces of equipment are operating simultaneously. The noise levels shown in Table 3.12-19 represent a worst-case scenario. Such worst-case scenarios would likely exist only for short periods at any particular residence on a given day.

Section 3.12.2.1 discusses the existing ambient conditions along the reaches. Table 3.12-19 compares the existing noise levels based on the noise measurements collected in 2011 along each reach with the expected noise levels for construction under the Preferred Alternative. Construction activity would be expected to use equipment listed in Table 3.12-7. Table 3.12-14 shows the estimated noise levels at each receptor along the reaches that would be affected under the Preferred Alternative. As discussed in Chapter 2, Description of Alternatives, some residences may be removed or relocated under the Preferred Alternative; however, the nearest receptors may not be those identified for removal/relocation and could remain during construction activity and be exposed to the noise generated.

Section 3.12.4.1 indicated the following thresholds for determining a substantial temporary noise increase:

> Temporary increase of 5 dBA L_{EQ} as a result of Project construction based on ambient noise levels.

Table 3.12-19 Estimated Noise Levels for Construction Activities Compared with Existing Noise Levels (Preferred Alternative)

Reach	Distance	Existing Noise Levels L_{EQ} (dBA)[1]	Construction Noise Level at Receptor (dBA)[2]	Change in Noise Level (dBA) from Existing
4	40 feet	60.4	92	+31.6
5	100 feet	52.2	84	+31.8
6	50 feet	60.1	89	+27.9
7A	50 feet	46.3	85	+38.7
7B	40 feet	50.3	90	+39.7
8	25 feet	56.9	95	+38.1
14	85 feet	58.9	84	+25.1

[1] Existing noise levels from 2011 noise measurements converted from dB, as measured, to dBA using average frequency of 500 Hz.
[2] Construction noise levels from Table 3.12-14 under NOI-1 T.

Based on the threshold of a 5-dBA L_{EQ} increase, all of the nearest residences along each reach would experience an increase in noise levels above 5 dBA L_{EQ} during construction work, resulting in significant impacts for construction of tunnel, channel improvements, excavation and construction of diversion channel, construction of permanent access roads, installation of reinforced concrete boxes, and demolition/removal of buildings and structures. It should be noted that noise standards are in dBA L_{EQ} and are compared to values in dBA. As discussed in Section 3.12.1, L_{EQ} is a calculated single level for a specified duration, which contains the same energy as all of the varying sounds over the measurement period. While not identical to an average, especially when noise fluctuations are great, the L_{EQ} is widely used to represent an average noise level over some period of time. Because of the substantial increase in noise (25.1 dBA and greater) it is clear that noise level increases would exceed a 5-dBA increase. It should be noted, City of Morgan Hill Municipal Code Chapter 18.48.040 D.1.d exempts public works projects from noise standards and indicates the public works director shall set construction hours for these types of projects. However, even though noise from the Project generated in Morgan Hill would be exempt from the applicable standards, the nearest residences along Reaches 5, 6, 7A, 7B, 8, and 14

would experience noise levels otherwise considered significant. Impacts would be less than significant for relocation of utilities.

The SCVWD's BMP NO-1 would reduce noise produced by construction activities to below applicable noise standards where feasible, while SCVWD's BMP NO-2 will implement the measures in residential areas surrounding work sites. Additionally, Mitigation Measure NOI-1 NRCS would reduce noise levels for construction along all reaches, all of which would reduce temporary noise impacts.

The implementation of BMPs NO-1 and NO-2 and Mitigation Measures NOI-1a, NOI-1b, and NOI-1c T would reduce noise levels from construction equipment along all reaches; however, due to the distance between the construction areas and receptors along these reaches, impacts would not be reduced to less than significant levels because at the distances from the receptors, noise levels from construction equipment would be greater than 5 dBA over existing noise levels. Therefore, impacts associated with temporary noise increases for construction would remain significant. It should be noted that additional measures, such as the construction of sound barriers were considered but rejected by the SCVWD as infeasible due to the large scale of the construction activity covering a distance of nearly 13.5 miles and the fact that the construction would be constantly moving along the channel reaches requiring barriers to be set-up, taken down, and moved along with the work. Installing barriers, removing them, and re-erecting the barriers in new places would have its own effects on noise, visual, and biotic resources. .

Operations and Maintenance

Maintenance activities are described above under Impact NOI-3 T and in Section 2.4.5 of this EIR. Unlike noise generated by Project construction activities, noise from operations and maintenance would not be considered temporary as it would be ongoing over the life of the Project and as such considered permanent. Therefore, impacts would be less than significant for temporary increases in noise due to maintenance activities. Impacts associated with a permanent increase in ambient noise levels related to maintenance activities are evaluated under NOI-3 T above.

Best Management Practices (BMPs)

> **NO-1:** Minimize Noise Pollution.

> **NO-2:** Minimize Noise Disturbance to residential neighborhoods.

BMPs Specific to Tunnel Construction

The SCVWD's BMP NO-1 would reduce noise produced by construction activities to below applicable noise standards where feasible, while SCVWD's BMP NO-2 will implement the measures in residential areas surrounding work sites. Additional Mitigation Measures NOI-1a, NOI-1b, and NOI-1c T would reduce noise levels for construction along all reaches, all of which would reduce temporary noise impacts. BMPs specific to tunnel construction (listed in NOI-1 T above) would also reduce noise impacts.

Mitigation Measures

Mitigation Measure NOI-1a T: Reduce Noise from Construction and Operational Activity.

Mitigation Measure NOI-1b T: Noise and Vibration Control Plan.

Mitigation Measure NOI-1c T: Notify Residents of Construction Work; Implement Noise Complaint Procedure.

Mitigation Measures NOI-1a, NOI-b, and NOI-1c T would reduce noise levels from maintenance and construction equipment along all reaches; however, due to the distance between the maintenance areas and receptors along these reaches, impacts would not be reduced to less than significant levels (see Table 3.12-15, which shows the estimated noise levels at each receptor along the reaches that would be affected under the Preferred Alternative). Therefore, impacts associated with temporary noise increases

for construction would remain significant. It should be noted that additional measures such as the use of sound barriers was considered but rejected by the SCVWD as not feasible (discussed above under construction).

NOI-5 T—Subject construction workers to excessive noise levels from public airport

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction of tunnel and associated structures	LTS	N/A
Channel improvements (excavation and grading), exhumation of bridges and culvert replacement	LTS	N/A
Excavation and construction of a diversion channel	LTS	N/A
Construction of permanent access roads	LTS	N/A
Installation of reinforced concrete boxes	LTS	N/A
Relocation of some homes, farm structures, and wells within the ROW	LTS	N/A
Relocation of some utility and other public service facilities	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The only airport adjacent to the Project is South County Airport, 180 feet from Reach 6 at its closest point and 0.3 mile from Reach 14. The Preferred Alternative would require a workforce to temporarily/intermittently spend time near the airport when working on Reaches 5, 6, and 14, but there would be no introduction of a permanent population in the vicinity of the airport. As shown in Table 3.12-4 above, the average noise level during 24-hour noise measurements along Reach 6 was 55.4 dB, with primary sources of noise during that time noted as airport and traffic. The average noise levels along Reach 14, measured over 24 hours, was 63.6 dB, with the primary noise source noted as traffic. As such, the Preferred Alternative would not expose people working on construction in the Project area to excessive airport-related noise levels. Therefore, impacts would be less than significant for construction of tunnel, channel improvements, excavation and construction of diversion channel, construction of permanent access roads, installation of reinforced concrete boxes, and relocation of structures and utilities.

Operations and Maintenance

The Preferred Alternative would require a workforce to temporarily/intermittently spend time near the airport when working on Reaches 5, 6, and 14, but there would be no introduction of a permanent population in the vicinity of the airport. As shown in Table 3.12-4 above, the average noise level during 24-hour noise measurements along Reach 6 was 55.4 dB, with primary sources of noise during that time noted as airport and traffic. The average noise level along Reach 14, measured over 24 hours, was 63.6 dB, with the primary noise source noted as traffic. As such, the Preferred Alternative would not expose people working on maintenance in the Project area to excessive airport-related noise levels.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

Impacts would be less than significant for creek and tunnel operations and maintenance.

NOI-6 T— Subject construction workers to excessive noise levels from private airstrip

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction of tunnel and associated structures	NI	N/A
Channel improvements (excavation and grading), exhumation of bridges and culvert replacement	NI	N/A
Excavation and construction of a diversion channel	NI	N/A
Construction of permanent access roads	NI	N/A
Installation of reinforced concrete boxes	NI	N/A
Relocation of some homes, farm structures, and wells within the ROW	NI	N/A
Relocation of some utility and other public service facilities	NI	N/A
Stream operation and maintenance activities	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

There are no private-use airports in Santa Clara County and there would be no impact to workers involved in from construction of tunnel, channel improvements, excavation and construction of diversion channel, construction of permanent access roads, installation of reinforced concrete boxes, and relocation of structures and utilities.

Operations and Maintenance

There are no private-use airports in Santa Clara County and there would be no impact to workers involved in from stream and tunnel maintenance.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

There are no impacts related to noise generated by a private airstrip.

3.12.5.3 Natural Resources Conservation Service (NRCS) Alternative

As discussed in Chapter 2, Description of Alternatives, the NRCS Alternative would provide an increased level of flood protection for urban and semi-urban areas and would also protect agricultural land. All reaches would be deepened and widened. As compared with the Preferred Alternative, the NRCS Alternative would have a larger Project footprint in Reach 8, a larger ROW, would require a greater amount of vegetation to be removed and increased excavation would be needed along the existing West Little Llagas channel. It would increase the extent of utilities to be relocated and culvert replacements, which would subsequently result in greater construction-related interference with commercial and residential areas. However, there would be no tunnel construction, including detonation.

NOI-1 NRCS—Noise generation levels in excess of established standards

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements (excavation and grading), exhumation of bridges and culvert replacement	S	N/A
Excavation and construction of a diversion channel and bridges	S	N/A
Construction of permanent access roads	S	N/A
Installation of reinforced concrete boxes	S	N/A
Relocation/removal of some homes and farm structures within the ROW	S	N/A
Relocation of utility and public service facilities	LTS	N/A
Stream operation and maintenance activities	N/A	S

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The most prevalent and representative noise generating construction activities for the NRCS Alternative, as identified in the table above, would include channel improvements, excavation and construction of diversion channel, construction of permanent access roads, and installation of reinforced concrete boxes. Although construction activities would occur mostly during daytime hours, noise could still be considered substantially disruptive to residents due to the distance between the activity and the receptors. However, periods of intrusive noise exposure would be temporary. Noise from construction activity could vary significantly on a day-to-day basis, and is dependent on how many pieces of equipment are operating simultaneously. The noise levels shown in Table 3.12-20 represent a worst-case scenario with the use of the loudest equipment which is a grader (85 dBA at 50 feet) along Reach 7A and a pavement breaker/jackhammer (89 dBA at 50 feet) along the other reaches. Noise levels would reduce 6 dB for every doubling of distance away from the noise source. Such worst-case scenarios would likely exist only for short periods at any particular residence on a given day.

Table 3.12-20 Construction Noise at Nearest Residential Receptors by Reach (NRCS Alternative)

Reach	Distance	Source Level at 50 Feet (dBA)[1]	Noise Level at Receptor (dBA)
4	40 feet	89	92
5	100 feet	89	83
6	50 feet	89	89
7A	50 feet	85	85
7B	40 feet	89	90
8	25 feet	89	95
14	85 feet	89	84

[1] Equipment with the highest noise levels, used to demonstrate the worst-case scenario, is a grader along Reach 7A, and a pavement breaker/jackhammer along the other reaches.

Construction activity would be expected to use equipment listed in Table 3.12-7, which is further differentiated by reach in Chapter 2, Description of Alternatives, Table 2.5-5. Table 3.12-20 shows the estimated noise levels at the nearest receptor along each reach which correspond to the loudest piece of equipment proposed for that reach that would be affected under the NRCS Alternative, used for channel improvements, excavation and construction of diversion channel, construction of permanent access roads, installation of reinforced concrete boxes, and demolition/removal of buildings and structures. As discussed in Chapter 2, Description of Alternatives, some residences may be removed or relocated under the NRCS Alternative; however the nearest receptors may not be those identified for removal/relocation and could remain during construction activities and be exposed to the noise generated.

Section 3.12.4.1 indicated the following thresholds for determining an exceedence of noise standards:

> Noise levels of 75 dBA measured at the lot line in the City of Morgan Hill (for Reaches 5, 6, 7A, 7B, 8, and 14); or

> Noise levels of 80 dB at the residential property line in the County of Santa Clara (for Reach 4).

Based on the thresholds, the nearest residences along all reaches would exceed corresponding noise standards and impacts would be significant. It should be noted that noise standards are in dB for Santa Clara County rather than the A-weighted dBA (see Section 3.12.1), however, 92 dBA would still exceed an 80-dB standard. The SCVWD will implement BMPs NO-1 and NO-2 to reduce noise produced by construction activities to below applicable noise standards where feasible. However, even with implementation of the BMPs, construction noise would still likely exceed the noise standards for Morgan Hill and the county, which is a significant impact.

Mitigation Measure NOI-1a, NOI-1b, and NOI-1c T would reduce noise levels from construction equipment along all reaches; however, due to the distance between the construction areas and receptors along these reaches, impacts may not be reduced to less than significant levels because at the distances from the receptors, noise levels from construction equipment would be than 5 dBA over existing noise levels. Therefore, impacts associated with noise standards exceedance for construction activities would remain significant. It should be noted that the construction of barriers between noise sources and sensitive receptors was considered, but rejected by the SCVWD as infeasible (see discussion of sound barriers under Impact NOI-1 T for the Preferred Alternative).

Other proposed activities such as relocation of utilities would have less than significant impacts. It should be noted, City of Morgan Hill Municipal Code Chapter 18.48.040 D.1.d exempts public works projects from noise standards and indicates the public works director shall set construction hours for these types of projects. However, even though noise from the Project generated in Morgan Hill would be exempt from

the applicable standards, the nearest residences along Reaches 5, 6, 7A, 7B, 8, and 14 would experience noise levels otherwise considered significant.

Operations and Maintenance

Under the NRCS Alternative, operational activities would be limited to typical maintenance procedures, including minor maintenance. Operational activity proposed for the Project would be considered long-term but would be intermittent because it is performed as-needed, typically for a few days every year. Maintenance activities are discussed in Section 3.12.4.2.

Maintenance activity would include the use of both mechanized equipment and hand tools. Use of hand tools would not affect the existing noise environment with the exception of vehicles bringing maintenance workers to and from the site. Maintenance worker vehicles would not be expected to result in a perceptible increase in noise over vehicles already used for ongoing maintenance, as described under the No Project Alternative. Mechanized equipment would be expected to increase noise in the Project area during the use of the equipment.

However, periods of intrusive noise exposure would be intermittent and generally temporary and similar to existing conditions as described under the No Project Alternative. Noise from maintenance activity could vary significantly on a day-to-day basis, and is dependent on how many pieces of equipment are operating simultaneously. The noise levels shown in Table 3.12-21 represent a worst-case scenario used for stream operations and maintenance for the closest receptors (all residential), using the loudest piece of equipment, a grader, at 85 dBA at 50 feet (see Table 3.12-9) and reducing noise by 6 dB for every doubling of distance. Residential and non-residential receptors further away would experience lower noise levels due to attenuation by distance. Table 3.12-12 under the No Project Alternative shows the noise levels that would be expected during maintenance activity at the non-residential receptors, which would be the same for the NRCS Alternative. Such worst-case scenarios would likely exist only for short periods at any particular residence on a given day. Landscape-type equipment for vegetation maintenance is not considered because noise generated from this type of equipment would not be discernible over typical residential landscaping and vegetation maintenance noise sources. This is because the type of landscape equipment used and the type of noise generated for vegetation maintenance associated with the Project is not distinguishable from the type of landscape maintenance generated noise in residential areas. However, noise from graders, backhoes, excavators, and trucks would be very different from landscape equipment generating noise, and as such would be much more discernible in residential areas.

Table 3.12-21 Operation and Maintenance Noise at Nearest Residential Receptors by Reach (NRCS Alternative)

Reach	Distance	Source Level at 50 Feet (dBA) [1]	Noise Level at Receptor (dBA)
4	40 feet	85	89
5	100 feet	85	79
6	50 feet	85	85
7A	50 feet	85	85
7B	40 feet	85	89
8	25 feet	85	91
14	85 feet	85	81

[1] Equipment with the highest noise levels, used to demonstrate the worst-case scenario, is a grader.

Table 3.12-21 shows the estimated noise levels at each receptor along the reaches that would be affected under the NRCS Alternative. As discussed in Chapter 2, Description of Alternatives, some

residences may be removed or relocated under the NRCS Alternative; however, the nearest receptors may not be those identified for removal/relocation and could be present during maintenance activity and be exposed to the noise generated.

Section 3.12.4.1 indicated the following thresholds for determining an exceedence of noise standards:

> Noise levels of 75 dBA measured at the lot line in the City of Morgan Hill (for Reaches 5, 6, 7A, 7B, 8, and 14); or

> Noise levels of 80 dB at the residential property line in the County of Santa Clara (for Reach 4).

Based on the thresholds, the nearest residences along all reaches would exceed corresponding noise standards. Although activities would be intermittent, infrequent, and similar to what is currently occurring, impacts would be significant. It should be noted that noise standards are in dB for Santa Clara County rather than the A-weighted dBA (see Section 3.12.1), however, 89 dBA would still exceed an 80-dB standard.

Best Management Practices (BMPs)

> **NO-1:** Minimize Noise Pollution.

> **NO-2:** Minimize Noise Disturbance to residential neighborhoods.

Mitigation Measures

Mitigation Measure NOI-1a T: Reduce Noise from Construction and Operational Activity.

Mitigation Measure NOI-1b T: Noise and Vibration Control Plan.

Mitigation Measure NOI-1c T: Notify Residents of Construction Work. Implement Noise Complaint Procedure.

Implementation of BMPs NO-1 and NO-2 and Mitigation Measures NOI-1a, NOI-1b, and NOI-1c T would reduce noise levels from construction equipment and operation and maintenance along all reaches, however, due to the distance between work areas and receptors along these reaches, impacts would not be reduced to less than significant levels because noise levels would still exceed established standards. Although construction is temporary and maintenance would be infrequent, when it is required it would exceed the established standards. Therefore, impacts associated with noise standards exceedence for both construction activity and operation and maintenance activities would remain significant. It should be noted that additional measures, such as the construction of barriers, was considered but rejected by the SCVWD as not feasible (see discussion of sound barriers under Impact NOI-1 T for the Preferred Alternative).

NOI-2 NRCS—Generation of excessive groundborne vibration

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements, exhumation of bridges and culvert replacement	S	N/A
Excavation and construction of a diversion channel and bridges	S	N/A
Construction of permanent access roads	S	N/A
Installation of reinforced concrete boxes	S	N/A
Relocation of some homes, farm structures, and wells within the ROW (right-of-way)	LTS	N/A
Relocation of some utility and other public service facilities	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Primary noise generating construction activities for the NRCS Alternative would include channel improvements, excavation and construction of diversion channel, construction of permanent access roads, and installation of reinforced concrete boxes. Although construction activities would mostly occur during daytime hours, vibration could still be considered substantially disruptive to residents. However, periods of intrusive vibration exposure would be intermittent and generally temporary. Vibration from construction activity could vary significantly on a day-to-day basis, and is dependent on how many pieces of equipment are operating simultaneously. The vibration levels shown in Table 3.12-22 represent a worst-case scenario. Vibration levels at each receptor were determined by taking the source PPV level for the most vibratory equipment proposed to demonstrate worst-case scenario (0.210 inch per second PPV for a vibratory roller at 25 feet), and extrapolating for the distance and attenuation, relative to 25 feet, for each receptor. For example, the nearest receptor along Reach 5 is located 100 feet away. One hundred feet divided by 25 feet equals 4; therefore 0.210 inch per second PPV divided by 4 equals 0.053 inch per second PPV at the receptor 100 feet away). Due to attenuation by distance similar to noise, receptors further from the equipment and activity would experience lower vibration levels. Such worst-case scenarios would likely exist only for short periods at any particular residence on a given day.

Table 3.12-22 Construction Vibration at Nearest Residential Receptors by Reach (NRCS Action Alternative)

Reach	Distance	Source Level at 25 Feet (PPV) [1]	Vibration Level at Receptor (PPV)
4	40 feet	0.210	0.131
5	100 feet	0.210	0.053
6	50 feet	0.210	0.105
7A	50 feet	0.210	0.105
7B	40 feet	0.210	0.131
8	25 feet	0.210	0.210
14	85 feet	0.210	0.062

[1] Equipment with the highest vibration levels, used to demonstrate the worst-case scenario, is a vibratory roller.

Section 3.12.4.1 indicated the following thresholds for determining generation of excessive vibration:

> Vibration levels of 0.5 and 0.1 inch per second PPV for structural damage and annoyance, respectively, for construction activities.

Based on the thresholds, none of the nearest residences along any reach would experience vibration levels in excess of state standards for structural damage, but residences along Reaches 4, 6, 7A, 7B, and 8 would experience vibration levels that exceed state standards for annoyance resulting in a significant impact for channel improvements, excavation and construction of diversion channel, construction of permanent access roads, and installation of reinforced concrete boxes. Even with the implementation of BMP NO-2, which generally requires the SCVWD to conduct work during normal working hours; and limit the arrival and departure of trucks hauling material to the hours of construction, this impact would be significant. To reduce experienced vibration levels at adjacent properties, the SCVWD will implement Mitigation Measure NOI-2a T to reduce vibration levels from construction equipment to the extent feasible. Implementation of BMP NO-2 and Mitigation Measure NOI-2a T would reduce vibration levels from construction equipment along all reaches; however, due to the distance between work areas and receptors along these reaches, impacts would not be reduced to less than significant levels. Therefore, impacts associated with excessive groundborne vibration for construction activity would remain significant.

Other proposed activities such as relocation of structures and utilities would have less than significant impacts as equipment proposed would not generate vibrations in excess of standards.

Operations and Maintenance

Estimated maintenance impacts under NOI-2 NRCS are similar to that described under the Preferred Alternative, and Table 3.12-17 shows the worst-case scenario for vibration from operations and maintenance activities. Less sediment removal is expected under the NRCS Alternative than under current conditions as a result of the stable channel design, so maintenance activity would be less frequent, and there would be no tunnel maintenance. Due to the intermittent nature, infrequency of activities, similarity in activities to what is currently occurring, and vibration levels below applicable standards, stream operation and maintenance activities would be less than significant.

Best Management Practices (BMPs)

> **NO-2:** Minimize Noise Disturbance to residential neighborhoods.

Mitigation Measures

Mitigation Measure NOI-2a T: Reduce Vibration from Construction Activity.

Implementation of BMP NO-2 and Mitigation Measure NOI-2a T would reduce vibration levels from construction equipment along all reaches; however, due to the distance between work areas and receptors along these reaches, impacts would not be reduced to less than significant levels along Reaches 4, 6, 7A, 7B, and 8, as shown in Table 3.12-22 above, where vibration levels at the receptors exceed 0.1 inch per second PPV for annoyance criteria from construction activities along those reaches.

Therefore, impacts associated with excessive groundborne vibration for construction activity would remain significant.

NOI-3 NRCS—Substantial permanent increase in ambient noise levels

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements (excavation and grading), exhumation of bridges and culvert replacement	LTS	N/A
Excavation and construction of a diversion channel and bridges	LTS	N/A
Construction of permanent access roads	LTS	N/A
Installation of reinforced concrete boxes	LTS	N/A
Relocation/removal of some homes and farm structures within the ROW	LTS	N/A
Relocation of utility and public service facilities	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction activity would be temporary, a total of 6 years for all construction; but this would be spread out over the entire construction footprint and would not result in permanent increases in ambient noise levels. Impacts would be less than significant for channel improvements, excavation and construction of diversion channel, construction of permanent access roads, installation of reinforced concrete boxes, and relocation of structures and utilities. Temporary noise increases are evaluated under NOI-4 NRCS below.

Operations and Maintenance

As discussed in NOI-1 NRCS operational activities would be limited to typical maintenance procedures, including minor maintenance. Operational activity proposed for the Project would be considered long-term but would be intermittent because it is as needed, typically for a few days every year. Maintenance activities are discussed in Section 3.12.4.2.

Maintenance activity would include the use of both mechanized equipment and hand tools. Use of hand tools would not affect the existing noise environment with the exception of vehicles bringing maintenance workers to and from the site. Maintenance worker vehicles would not be expected to result in a perceptible increase in noise over vehicles already used for ongoing maintenance, as described under the No Project Alternative. Mechanized equipment would be expected to increase noise in the Project area during the use of the equipment.

Although maintenance activities would likely occur during daytime hours, noise could still be considered substantially disruptive to residents. However, periods of intrusive noise exposure would be intermittent and generally temporary, and similar to existing conditions as described under the No Project Alternative. Noise from maintenance activity could vary significantly on a day-to-day basis, and the noise levels shown in Table 3.12-23 represent a worst-case scenario. Such worst-case scenarios would likely exist only for short periods at any particular residence on a given day.

Table 3.12-23 Estimated Noise Levels for Operation and Maintenance Activities Compared with Existing Noise Levels (NRCS Alternative)

Reach	Distance	Existing Noise Levels L_{EQ} (dBA) [1]	Noise Level at Receptor (dBA)	Change in Noise Level (dBA)
4	40 feet	60.4	89	+27.6
5	100 feet	52.2	79	+26.8
6	50 feet	60.1	85	+24.9
7A	50 feet	46.3	85	+38.7
7B	40 feet	50.3	89	+37.7
8	25 feet	56.9	91	+34.1
14	85 feet	58.9	81	+22.1

[1] Existing noise levels from 2011 noise measurements converted from dB, as measured, to dBA using average frequency of 500 Hz.

Maintenance activity would be expected to use the equipment listed in Table 3.12-9. Based on the activities proposed for the NRCS Alternative, the equipment with the loudest operating noise level that would be used often during activity would be a grader, which would produce noise levels of 85 dBA at a distance of 50 feet. Table 3.12-23 shows the estimated noise levels at each receptor along the reaches that would be affected under the NRCS Alternative. As discussed in Chapter 2, Description of Alternatives, some residences may be removed or relocated under the NRCS Alternative; however, the nearest receptors may not be those identified for removal/relocation and could be present during maintenance activity and be exposed to the noise generated. Landscape-type equipment for vegetation maintenance is not considered because the noise levels generated from this type of equipment would not be discernible over typical residential landscaping and vegetation maintenance noise sources. This is because the type of landscape equipment used and the type of noise generated for vegetation maintenance associated with the Project is not distinguishable from the type of landscape maintenance generated noise in residential areas. However, noise from graders, backhoes, excavators, and trucks would be very different from landscape equipment generating noise, and as such would be much more discernible in residential areas.

Section 3.12.2.1 discusses the existing ambient conditions along the reaches. Table 3.12-23 compares the existing noise levels based on the noise measurements collected in 2011 along each reach with the expected noise levels for maintenance under the NRCS Alternative. The SCVWD will implement BMP NO-2 for all maintenance activities.

Section 3.12.4.1 indicated the following thresholds for determining a substantial permanent noise increase:

> Permanent increase of 5 dBA L_{EQ} as a result of Project operation based on ambient noise levels.

Based on the threshold of a 5-dBA L_{EQ} increase, all of the nearest residences would experience an increase in noise levels above 5 dBA L_{EQ} during maintenance work. It should be noted that noise standards are in dBA L_{EQ} and are compared to values in dBA. As discussed in Section 3.12.1, L_{EQ} is a calculated single level for a specified duration, which contains the same energy as all of the varying sounds over the measurement period. While not identical to an average, especially when noise fluctuations are great, the L_{EQ} is widely used to represent an average noise level over some period of time. Because of the substantial increase in noise (22.1 dBA and greater) it is clear that noise level increases would exceed a 5-dBA increase. However, based on the intermittent nature of the activity, and the infrequency (a few days every year) the operations and maintenance noise would not be permanent,

and with the implementation of BMPs impacts would be less than significant for stream operations and maintenance.

Best Management Practices (BMPs)

> **NO-2:** Minimize Noise Disturbance to residential neighborhoods.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

NOI-4 NRCS—Substantial temporary increase in ambient noise levels

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements, exhumation of bridges and culvert replacement	S	N/A
Excavation and construction of a diversion channel and bridges	S	N/A
Construction of permanent access roads	S	N/A
Installation of reinforced concrete boxes	S	N/A
Relocation of some homes, farm structures, and wells within the ROW (right-of-way)	S	N/A
Relocation of some utility and other public service facilities	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Although construction activities would occur mostly during daytime hours, noise could still be considered substantially disruptive to residents due to the distance between the activity and the receptors. However, periods of intrusive noise exposure would be temporary. Noise from construction activity could vary significantly on a day-to-day basis, and is dependent on how many pieces of equipment are operating simultaneously. The noise levels shown in Table 3.12-24 represent a worst-case scenario with the loudest piece of equipment operating, a grader (85 dBA at 50 feet) along Reach 7A and a pavement breaker/jackhammer (89 dBA at 50 feet) along the other reaches. Such worst-case scenarios would likely exist only for short periods at any particular residence on a given day.

Section 3.12.2.1 discusses the existing ambient conditions along the reaches. Table 3.12-24 compares the existing noise levels based on the noise measurements collected in 2011 along each reach with the expected noise levels for construction under the NRCS Alternative. Construction activity would be expected to use equipment listed in Table 3.12-7. Table 3.12-20 shows the estimated noise levels at each receptor along the reaches that would be affected under the NRCS Alternative. As discussed in Chapter 2, Description of Alternatives, some residences may be removed or relocated under the NRCS Alternative; however, the nearest receptors may not be those identified for removal/relocation and could remain during construction activity and be exposed to the noise generated.

Table 3.12-24 Estimated Noise Levels for Construction Activities Compared with Existing Noise Levels (NRCS Alternative)

Reach	Distance	Existing Noise Levels L_{EQ} (dBA)[1]	Construction Noise Level at Receptor (dBA)[2]	Change in Noise Level (dBA) from Existing
4	40 feet	60.4	92	+31.6
5	100 feet	52.2	83	+30.8
6	50 feet	60.1	89	+28.9
7A	50 feet	46.3	85	+38.7
7B	40 feet	50.3	90	+39.7
8	25 feet	56.9	95	+38.1
14	85 feet	58.9	84	+25.1

[1] Existing noise levels from 2011 noise measurements converted from dB, as measured, to dBA using average frequency of 500 Hz.
[2] Construction noise levels from Table 3.12-20 under NOI-1 NRCS.

Section 3.12.4.1 indicated the following thresholds for determining a substantial temporary noise increase:

> Temporary increase of 5 dBA L_{EQ} as a result of Project construction based on ambient noise levels.

Based on the threshold of a 5-dBA L_{EQ} increase, all of the nearest residences along each reach would experience an increase in noise levels above 5 dBA L_{EQ} during construction work, resulting in significant impacts for channel improvements, excavation and construction of diversion channel, construction of permanent access roads, installation of reinforced concrete boxes, and demolition/removal of buildings and structures. It should be noted that noise standards are in dBA L_{EQ} and are compared to values in dBA. As discussed in Section 3.12.1, L_{EQ} is a calculated single level for a specified duration, which contains the same energy as all of the varying sounds over the measurement period. While not identical to an average, especially when noise fluctuations are great, the L_{EQ} is widely used to represent an average noise level over some period of time. Because of the substantial increase in noise (25.1 dBA and greater) it is clear that noise level increases would exceed a 5-dBA increase. It should also be noted, City of Morgan Hill Municipal Code Chapter 18.48.040 D.1.d exempts public works projects from noise standards and indicates the public works director shall set construction hours for these types of projects. However, even though noise from the Project generated in Morgan Hill would be exempt from the applicable standards, the nearest residences along Reaches 5, 6, 7A, 7B, 8, and 14 would experience noise levels otherwise considered significant. Other proposed activities such as relocation of utilities would have less than significant impacts, because the equipment and activities proposed do not generate noise levels greater than applicable standards.

The SCVWD's BMP NO-1 would reduce noise produced by construction activities to below applicable noise standards where feasible, while SCVWD's BMP NO-2 will implement the measures in residential areas surrounding work sites. Additionally, Mitigation Measures NOI-1a, NOI-1b, and NOI-1c T would reduce noise levels for construction along all reaches, all of which would reduce temporary noise impacts.

The implementation of BMPs NO-1 and NO-2 and Mitigation Measure NOI-1a, NOI-1b, and NOI-1c T would reduce noise levels from construction equipment along all reaches; however, due to the distance between the construction areas and receptors along these reaches, impacts would not be reduced to less than significant levels, because at the distances from the receptors, noise levels from construction equipment would be more than 5 dBA over existing noise levels. Therefore, impacts associated with temporary noise increases for construction would remain significant. It should be noted that additional

measures such as the construction of barriers were considered and rejected by the SCVWD as infeasible (see discussion of sound barriers under Impact NOI-1 T for the Preferred Alternative).

Operations and Maintenance

Maintenance activities are described above under Impact NOI-3 NRCS and in section 2.4.5 of this EIR. Unlike noise generated by project construction activities, noise from operations and maintenance would not be considered temporary as it would be ongoing over the life of the project and as such considered permanent. Therefore, impacts would be less than significant for temporary increases in noise due to maintenance activities. Impacts associated with permanent increases in ambient noise levels related to maintenance activities are evaluated under NOI-3 NRCS above.

Best Management Practices (BMPs)

> **NO-1:** Minimize Noise Pollution.

> **NO-2:** Minimize Noise Disturbance to residential neighborhoods.

Mitigation Measures

Mitigation Measure NOI-1a T: Reduce Noise from Construction and Operational Activity.

Mitigation Measure NOI-1b T: Noise and Vibration Control Plan.

Mitigation Measure NOI-1c T: Notify Residents of Construction Work; Implement Noise Complaint Procedure.

Mitigation Measures NOI-1a, NOI-b, and NOI-1c T and BMPs would reduce noise levels from maintenance and construction equipment along all reaches; however, due to the distance between the maintenance areas and receptors along these reaches, impacts would not be reduced to less than significant levels (see Table 3.12-21 which shows the estimated noise levels at each receptor along the reaches that would be affected under the NRCS Alternative). Therefore, impacts associated with temporary noise increases for construction would remain significant. It should be noted that additional measures such as the construction of barriers was considered but rejected by the SCVWD as not feasible (see discussion of sound barriers under Impact NOI-1 T for the Preferred Alternative).

NOI-5 NRCS—Subject construction workers to excessive noise levels from public airport

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements (excavation and grading), exhumation of bridges and culvert replacement	LTS	N/A
Excavation and construction of a diversion channel and bridges	LTS	N/A
Construction of permanent access roads	LTS	N/A
Installation of reinforced concrete boxes	LTS	N/A
Relocation/removal of some homes and farm structures within the ROW	LTS	N/A
Relocation of utility and public service facilities	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

There are five airports in Santa Clara County, including Reid-Hillview Airport, Mineta San Jose International Airport, Palo Alto Airport of Santa Clara County, Moffett Federal Airfield, and South County Airport of Santa Clara County (South County). The airport closest to the Project is South County, 180 feet from Reach 6 at its closest point and 0.3 mile from Reach 14. South County is operated by the county and is open to the public. On average, there are 117 aircraft operations per day on the single runway at this airport (Air Nav 2013).

The NRCS Alternative would require a workforce to temporarily/intermittently spend time near the airport when working on Reaches 5, 6, and 14, but there would be no introduction of a permanent population in the vicinity of the airport. As shown in Table 3.12-4 above, the average noise level during 24-hour noise measurements along Reach 6 was 55.4 dB, with primary sources of noise during that time noted as airport and traffic. The average noise levels along Reach 14, measured over 24 hours, was 63.6 dB, with the primary noise source noted as traffic. As such, the NRCS Alternative would not expose people working on construction in the Project area to excessive airport-related noise levels. Therefore, impacts would be less than significant.

Operations and Maintenance

The NRCS Alternative would require a workforce to temporarily/intermittently spend time near the airport when working on Reaches 5, 6, and 14, but there would be no introduction of a permanent population in the vicinity of the airport. As shown in Table 3.12-4 above, the average noise level during 24-hour noise measurements along Reach 6 was 55.4 dB, with primary sources of noise during that time noted as airport and traffic. The average noise levels along Reach 14, measured over 24 hours, was 63.6 dB, with the primary noise source noted as traffic. As such, the Preferred Alternative would not expose people working on maintenance in the Project area to excessive airport-related noise levels. Impacts would be less than significant for stream operation and maintenance activities.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

Impacts associated with noise generated by a public airport would be less than significant.

NOI-6 NRCS— Subject construction workers to excessive noise levels from private airstrip

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements (excavation and grading), exhumation of bridges and culvert replacement	NI	N/A
Excavation and construction of a diversion channel and bridges	NI	N/A
Construction of permanent access roads	NI	N/A
Installation of reinforced concrete boxes	NI	N/A
Relocation/removal of some homes and farm structures within the ROW	NI	N/A
Relocation of utility and public service facilities	NI	N/A
Stream operation and maintenance activities	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

There are no private-use airports in Santa Clara County and there would be no impact to workers involved in channel improvements, excavation and construction of diversion channel, construction of permanent access roads, installation of reinforced concrete boxes, and relocation of structures and utilities.

Operations and Maintenance

There are no private-use airports in Santa Clara County and there would be no impact to workers involved in maintenance activities.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

There are no private airstrips and therefore no impacts.

3.12.5.4 Culvert/Channel Alternative

The Culvert/Channel Alternative, described in Chapter 2, Description of Alternatives, is similar to the NRCS Alternative, although channel deepening and widening through residential properties would be eliminated in Reach 8 as a results of alterations proposed for existing culverts.

NOI-1 CC—Noise generation levels in excess of established standards

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements, exhumation of bridges and culvert replacement	S	N/A
Excavation and construction of a diversion channel	S	N/A
Construction of permanent access roads	S	N/A
Installation of reinforced concrete boxes	S	N/A
Relocation of some homes, farm structures, and wells within the ROW	S	N/A
Relocation of some utility and other public service facilities	LTS	N/A
Stream operation and maintenance activities	N/A	S

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction activities for the Culvert/Channel Alternative would include channel improvements, excavation and construction of diversion channel, construction of permanent access roads, installation of reinforced concrete boxes, and removal/demolition of buildings and structures. Although construction activities would occur mostly during daytime hours, noise could still be considered substantially disruptive to residents due to the distance between the activity and the receptors. However, periods of intrusive noise exposure would be temporary. Noise from construction activity could vary significantly on a day-to-day basis, and is dependent on how many pieces of equipment are operating simultaneously. The noise levels shown in Table 3.12-20 under NOI-1 NRCS represent a worst-case scenario for NOI-1 CC. While channel deepening and widening is eliminated in Reach 8, a pavement breaker/jackhammer (89 dBA at 50 feet) is still proposed for use for removal/demolition of buildings and structures, which is the same as the NRCS Alternative. Such worst-case scenarios would likely exist only for short periods at any particular residence on a given day.

Construction activity would be expected to use equipment listed in Table 3.12-7, which is further differentiated by reach in Chapter 2, Description of Alternatives, Table 2.5-5. Table 3.12-20 shows the estimated noise levels at each receptor along the reaches which correspond to the loudest piece of equipment proposed for that reach that would be affected under the Culvert/Channel Alternative. As discussed in Chapter 2, Description of Alternatives, some residences may be removed or relocated under the Culvert/Channel Alternative; however the nearest receptors may not be those identified for removal/relocation and could remain during construction activity and be exposed to the noise generated.

Section 3.12.4.1 indicated the following thresholds for determining an exceedence of noise standards:

> Noise levels of 75 dBA measured at the lot line in the City of Morgan Hill (for Reaches 5, 6, 7A, 7B, 8, and 14); or

> Noise levels of 80 dB at the residential property line in the County of Santa Clara (for Reach 4).

Based on the thresholds, the nearest residences along all reaches would exceed corresponding noise standards and impacts would be significant. It should be noted that noise standards are in dB for Santa Clara County rather than the A-weighted dBA (see Section 3.12.1), however, 92 dBA would still exceed an 80-dB standard. It should be noted, City of Morgan Hill Municipal Code Chapter 18.48.040 D.1.d exempts public works projects from noise standards and indicates the public works director shall set

construction hours for these types of projects. However, even though noise from the Project generated in Morgan Hill would be exempt from the applicable standards, the nearest residences along Reaches 5, 6, 7A, 7B, 8, and 14 would experience noise levels otherwise considered significant. Other proposed activities such as relocation utilities would have less than significant impacts.

Operations and Maintenance

Under the Culvert/Channel Alternative, operational activities would be limited to typical maintenance procedures, including minor maintenance. Operational activity proposed for the Project would be considered long-term but would be intermittent because it is performed as-needed, typically for a few days every year. Maintenance activities are discussed in Section 3.12.4.2.

Maintenance activity would include the use of both mechanized equipment and hand tools. Use of hand tools would not affect the existing noise environment with the exception of vehicles bringing maintenance workers to and from the site. Maintenance worker vehicles would not be expected to result in a perceptible increase in noise over vehicles already used for ongoing maintenance as described under the No Project Alternative. Mechanized equipment would be expected to increase noise in the Project area during the use of the equipment.

Although maintenance activities would likely occur during daytime hours, noise could still be considered substantially disruptive to residents. However, periods of intrusive noise exposure would be intermittent and generally temporary and similar to existing conditions as described under the No Project Alternative. Noise from maintenance activity could vary significantly on a day-to-day basis, and is dependent on how many pieces of equipment are operating simultaneously. The noise levels shown in Table 3.12-21 under NOI-1 NRCS represent a worst-case scenario used for stream operations and maintenance. Such worst-case scenarios would likely exist only for short periods at any particular residence on a given day. Landscape-type equipment for vegetation maintenance is not considered because noise generated from this type of equipment would not be discernible over typical residential landscaping and vegetation maintenance noise sources. This is because the type of landscape equipment used and the type of noise generated for vegetation maintenance associated with the Project is not distinguishable from the type of landscape maintenance generated noise in residential areas. However, noise from graders, backhoes, excavators, and trucks would be very different from landscape equipment generating noise, and as such would be much more discernible in residential areas.

Table 3.12-21 shows the estimated noise levels at each receptor along the reaches that would be affected under the Culvert/Channel Alternative. As discussed in Chapter 2, Description of Alternatives, some residences may be removed or relocated under the Culvert/Channel Alternative; however, the nearest receptors may not be those identified for removal/relocation and could be present during maintenance activity and be exposed to the noise generated.

Section 3.12.4.1 indicated the following thresholds for determining an exceedence of noise standards:

> Noise levels of 75 dBA measured at the lot line in the City of Morgan Hill (for Reaches 5, 6, 7A, 7B, 8, and 14); or

> Noise levels of 80 dB at the residential property line in the County of Santa Clara (for Reach 4).

Based on the thresholds, the nearest residences along all reaches would experience noise levels that exceed corresponding noise standards. Although activities would be intermittent, infrequent, and similar to what is currently occurring, impacts would be significant because they exceed noise standards. It should be noted that noise standards are in dB for Santa Clara County rather than the A-weighted dBA (see Section 3.12.1), however, 84 dBA would still exceed an 80-dB standard.

Best Management Practices (BMPs)

> **NOI-1:** Minimized Noise Pollution.

> **NOI-2:** Minimize Noise Disturbance to residential neighborhoods.

The SCVWD's BMP NOI-1 would reduce noise produced by construction activities to below applicable noise standards where feasible, while SCVWD's BMP NOI-2 will implement the measures in residential areas surrounding work sites. Additional Mitigation Measure NOI-1a, NOI-1b, and NOI-1c T would reduce noise levels for construction along all reaches.

Mitigation Measures

Mitigation Measure NOI-1a T: Reduce Noise from Construction and Operational Activity.

Mitigation Measure NOI-1b T: Noise and Vibration Control Plan.

Mitigation Measure NOI-1c T: Notify Residents of Construction Work; Implement Noise Complaint Procedure.

Implementation of BMPs NO-1 and NO-2 and Mitigation Measures NOI-1a, NOI-1b, and NOI-1c T would reduce noise levels from construction equipment along all reaches; however, due to the distance between work areas and receptors along these reaches, impacts would not be reduced to less than significant levels. Therefore, impacts associated with noise standards exceedence for both construction activity and operation and maintenance activity would remain significant.

NOI-2 CC—Generation of excessive groundborne vibration

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements, exhumation of bridges and culvert replacement	S	N/A
Excavation and construction of a diversion channel	S	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	S	N/A
Installation of reinforced concrete boxes	S	N/A
Relocation of some homes, farm structures, and wells within the ROW	LTS	N/A
Relocation of some utility and other public service facilities	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The Culvert/Channel Alternative, described in Chapter 2, Description of Alternatives, is similar to the NRCS Alternative, although channel deepening and widening through residential properties would be eliminated. However, equipment proposed for channel deepening and widening was not the most vibratory equipment proposed, and therefore worst-case noise estimates from the NRCS Alternative (Impact NOI-2 NRCS Table 3.12-22) would apply to the Culvert/Channel Alternative.

Although construction activities would likely occur mostly during daytime hours, vibration could still be considered substantially disruptive to residents. However, periods of intrusive vibration exposure would be intermittent and generally temporary. Vibration from construction activity could vary significantly on a day-to-day basis, and is dependent on how many pieces of equipment are operating simultaneously. The vibration levels shown in Table 3.12-22 represent a worst-case scenario for channel improvements, excavation and construction of diversion channel, construction of permanent access roads, and installation of reinforced concrete boxes. Such worst-case scenarios would likely exist only for short periods at any particular residence on a given day.

Section 3.12.4.1 indicated the following thresholds for determining generation of excessive vibration:

> Vibration levels of 0.5 and 0.1 inch per second PPV for structural damage and annoyance, respectively, for construction activities.

Based on the thresholds, none of the nearest residences along any reach would experience vibration levels in excess of state standards for structural damage, but residences along Reaches 4, 6, 7A, 7B, 8, and 14 would experience vibration levels that exceed state standards for annoyance resulting in a significant impact for channel improvements, excavation and construction of diversion channel, construction of permanent access roads, and installation of reinforced concrete boxes. Other proposed activities, such as relocation of structures and utilities would have less than significant impacts.

Operations and Maintenance

Estimated maintenance impacts under NOI-2 CC are similar to that described under the Preferred Alternative, and Table 3.12-17 shows the worst-case scenario for vibration from operations and maintenance activities. Like the NRCS alternative, less sediment removal is expected under the Culvert/Channel Alternative than under current conditions as a result of the stable channel design, so maintenance activities would be less frequent, and there would be no tunnel maintenance. Due to the intermittent nature, infrequency of activities, and similarity in activities to what is currently occurring, and vibration levels below applicable standards, stream operation and maintenance activities would be less than significant.

Best Management Practices (BMPs)

> **NOI-2:** Minimize Noise Disturbance to residential neighborhoods.

The SCVWD's BMP NOI-2 will implement the following measures in residential areas surrounding work sites that would reduce the impact of vibration (1) conduct work during normal working hours; and (2) limit the arrival and departure of trucks hauling material to the hours of construction.

Mitigation Measures

Mitigation Measure NOI-2a T: Reduce Vibration from Construction Activity.

Implementation of BMP NOI-2 and Mitigation Measure NOI-2a T would reduce vibration levels from construction equipment along all reaches; however, due to the distance between work areas and receptors along these reaches, impacts would not be reduced to less than significant levels along Reaches 4, 6, 7A, 7B, and 8, as shown in Table 3.12-22 (in NRCS) above, where vibration levels at the receptors exceed 0.1 inch per second PPV for annoyance criteria from construction activities along those. Therefore, impacts associated with excessive groundborne vibration for construction activity would remain significant.

NOI-3 CC—Substantial permanent increase in ambient noise levels

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements, exhumation of bridges and culvert replacement	LTS	N/A
Excavation and construction of a diversion channel	LTS	N/A
Construction of permanent access roads	LTS	N/A
Installation of reinforced concrete boxes	LTS	N/A
Relocation of some homes, farm structures, and wells within the ROW	LTS	N/A
Relocation of some utility and other public service facilities	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction activity would be temporary, a total of 6 years for all construction, but this would be spread out over the entire construction footprint and would not result in permanent increases in ambient noise levels. Impacts would be less than significant for channel improvements, excavation and construction of diversion channel, construction of permanent access roads, installation of reinforced concrete boxes, and relocation of structures and utilities. Temporary noise increases are evaluated under NOI-4 CC below.

Operations and Maintenance

As discussed in NOI-1 NRCS, and also applying to the Culvert/Channel Alternative, operational activities would be limited to typical maintenance procedures, including minor maintenance. Operational activity proposed for the Project would be considered long-term but would be intermittent because it is as needed, typically for a few days every year. Maintenance activities are discussed in Section 3.12.4.2.

Maintenance activity would include the use of both mechanized equipment and hand tools. Use of hand tools would not affect the existing noise environment with the exception of vehicles bringing maintenance workers to and from the site. Maintenance worker vehicles would not be expected to result in a perceptible increase in noise over vehicles already used for ongoing maintenance as described under the No Project Alternative. Mechanized equipment would be expected to increase noise in the Project area during the use of the equipment.

Although maintenance activities would likely occur during daytime hours, noise could still be considered substantially disruptive to residents. However, periods of intrusive noise exposure would be intermittent and generally temporary, and similar to existing conditions as described under the No Project Alternative. Noise from maintenance activity could vary significantly on a day-to-day basis, and the noise levels shown in Table 3.12-21 under NOI-1 NRCS represent a worst-case scenario. Such worst-case scenarios would likely exist only for short periods at any particular residence on a given day.

Maintenance activity would be expected to use the equipment listed in Table 3.12-9. Based on the activities proposed for the Culvert/Channel Alternative, the equipment with the loudest operating noise level that would be used often during activity would be a grader, which would produce noise levels of 85 dBA at a distance of 50 feet. Table 3.12-21 shows the estimated noise levels at each receptor along the reaches that would be affected under the Culvert/Channel Alternative. As discussed in Chapter 2, Description of Alternatives, some residences may be removed or relocated under the Culvert/Channel

Alternative; however, the nearest receptors may not be those identified for removal/relocation and could be still be present during maintenance activity and be exposed to the noise generated. Landscape-type equipment for vegetation maintenance is not considered, because noise generated from this type of equipment and would not be discernible over typical residential landscaping and vegetation maintenance noise sources. This is because the type of landscape equipment used and the type of noise generated for vegetation maintenance associated with the Project is not distinguishable from the type of landscape maintenance generated noise in residential areas. However, noise from graders, backhoes, excavators, and trucks would be very different from landscape equipment generating noise, and as such would be much more discernible in residential areas.

Section 3.12.2.1 discusses the existing ambient conditions along the reaches. Table 3.12-23 compares the existing noise levels based on the noise measurements collected in 2011 along each reach with the expected noise levels for maintenance under the Culvert/Channel Alternative.

Section 3.12.4.1 indicated the following thresholds for determining a substantial permanent noise increase:

> Permanent increase of 5 dBA L_{EQ} as a result of Project operation based on ambient noise levels.

Based on the threshold of a 5-dBA L_{EQ} increase, all of the nearest residences would experience an increase in noise levels above 5 dBA L_{EQ} during maintenance work. It should be noted that noise standards are in dBA L_{EQ} and are compared to values in dBA. As discussed in Section 3.12.1, L_{EQ} is a calculated single level for a specified duration, which contains the same energy as all of the varying sounds over the measurement period. While not identical to an average, especially when noise fluctuations are great, the L_{EQ} is widely used to represent an average noise level over some period of time. Because of the substantial increase in noise (22.1 dBA and greater) it is clear that noise level increases would exceed a 5-dBA increase. SCVWD's BMP NOI-2 would reduce noise levels from maintenance equipment along all reaches. Based on the intermittent nature of the activity, and the infrequency (a few days every year) the operations and maintenance noise would not be permanent, and impacts would be less than significant for stream operations and maintenance.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

NOI-4 CC—Substantial temporary increase in ambient noise levels

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements, exhumation of bridges and culvert replacement	S	N/A
Excavation and construction of a diversion channel	S	N/A
Construction of permanent access roads	S	N/A
Installation of reinforced concrete boxes	S	N/A
Relocation of some homes, farm structures, and wells within the ROW	S	N/A
Relocation of some utility and other public service facilities	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Although construction activities would occur mostly during daytime hours, noise could still be considered substantially disruptive to residents due to the distance between the activity and the receptors. However, periods of intrusive noise exposure would be temporary. Noise from construction activity could vary significantly on a day-to-day basis, and is dependent on how many pieces of equipment are operating simultaneously. The noise levels, shown in NOI-1 NRCS Table 3.12-20, represent a worst-case scenario. Such worst-case scenarios would likely exist only for short periods at any particular residence on a given day.

Section 3.12.2.1 discusses the existing ambient conditions along the reaches. Table 3.12-20 compares the existing noise levels along each reach with the expected noise levels for construction under the NRCS Alternative, which would be the same for the Culvert/Channel Alternative. Construction activity would be expected to use equipment listed in Table 3.12-7. Table 3.12-20 shows the estimated noise levels at each receptor along the reaches that would be affected under the Culvert/Channel Alternative. As discussed in Chapter 2, Description of Alternatives, some residences may be removed or relocated under the Culvert/Channel Alternative; however, the nearest receptors may not be those identified for removal/relocation and could remain during construction activity and be exposed to the noise generated.

Section 3.12.2.1 discusses the existing ambient conditions along the reaches. Table 3.12-24 compares the existing noise levels based on the noise measurements collected in 2011 along each reach with the expected noise levels for construction of the NRCS Alternative.

Section 3.12.4.1 indicated the following thresholds for determining a substantial temporary noise increase:

> Temporary increase of 5 dBA L_{EQ} as a result of Project construction based on ambient noise levels.

Based on the threshold of a 5-dBA L_{EQ} increase, all of the nearest residences along each reach would experience an increase in noise levels above 5 dBA L_{EQ} during construction work resulting in significant impacts for channel improvements, excavation and construction of diversion channel, construction of permanent access roads, installation of reinforced concrete boxes, and removal/demolition of buildings and structures. It should be noted that noise standards are in dBA L_{EQ} and are compared to values in dBA. As discussed in Section 3.12.1, L_{EQ} is a calculated single level for a specified duration, which contains the same energy as all of the varying sounds over the measurement period. While not identical

to an average, especially when noise fluctuations are great, the L_{EQ} is widely used to represent an average noise level over some period of time. Because of the substantial increase in noise (25.1 dBA and greater) it is clear that noise level increases would exceed a 5-dBA increase. It should be noted, City of Morgan Hill Municipal Code Chapter 18.48.040 D.1.d exempts public works projects from noise standards and indicates the public works director shall set construction hours for these types of projects. However, even though noise from the Project generated in Morgan Hill would be exempt from the applicable standards, the nearest residences along Reaches 5, 6, 7A, 7B, 8, and 14 would experience noise levels otherwise considered significant. Other proposed activities listed in the table above for NOI-4 CC such as relocation of utilities would have less than significant impacts as noise levels generated from those activities do not exceed applicable thresholds.

Operations and Maintenance

Maintenance activities are described above under Impact NOI-3 CC and in Section 2.4.5 of this EIR. Unlike noise generated by Project construction activities, noise from operations and maintenance would not be considered temporary as it would be ongoing over the life of the Project and as such considered permanent. Therefore, impacts would be less than significant for temporary increases in noise due to maintenance activities. Impacts associated with permanent increases in ambient noise levels related to maintenance activities are evaluated under NOI-3 CC above.

Best Management Practices (BMPs)

> **NO-1:** Minimize Noise Pollution.

> **NO-2:** Minimize Noise Disturbance to residential neighborhoods.

The SCVWD's BMP NO-1 would reduce noise produced by construction activities to below applicable noise standards where feasible, while SCVWD's BMP NO-2 will implement the measures in residential areas surrounding work sites. Additional Mitigation Measure NOI-1 NRCS would reduce noise levels for construction along all reaches, all of which would reduce temporary noise impacts.

In addition to the portion of SCVWD's BMP NO-2 that pertains to maintenance, further mitigation is required to reduce the impact.

Mitigation Measures

Mitigation Measure NOI-1a T: Reduce Noise from Construction and Operational Activity.

Mitigation Measure NOI-1b T: Noise and Vibration Control Plan.

Mitigation Measure NOI-1c T: Notify Residents of Construction Work; Implement Noise Complaint Procedure.

Mitigation Measures NOI-1a T, NOI-b T, and NOI-1c T and BMPs would reduce noise levels from maintenance and construction equipment along all reaches; however, due to the distance between the maintenance areas and receptors along these reaches, impacts would not be reduced to less than significant levels (see Table 3.12-21 under NRCS, which shows the estimated noise levels at each receptor along the reaches that would be affected under the Culvert/Channel Alternative). Therefore, impacts associated with temporary noise increases for construction would remain significant. It should be noted that additional measures such as the construction of barriers is not feasible (see discussion of sound barriers under Impact NOI-1 T for the Preferred Alternative).

NOI-5 CC—Subject construction workers to excessive noise levels from public airport

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements, exhumation of bridges and culvert replacement	LTS	N/A
Excavation and construction of a diversion channel	LTS	N/A
Construction of permanent access roads	LTS	N/A
Installation of reinforced concrete boxes	LTS	N/A
Relocation of some homes, farm structures, and wells within the ROW	LTS	N/A
Relocation of some utility and other public service facilities	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

There are five airports in Santa Clara County, including Reid-Hillview Airport, Mineta San Jose International Airport, Palo Alto Airport of Santa Clara County, Moffett Federal Airfield, and South County Airport of Santa Clara County (South County). The airport closest to the Project is South County, 180 feet from Reach 6 at its closest point and 0.3 mile from Reach 14. South County is operated by the county and is open to the public. On average, there are 117 aircraft operations per day on the single runway at this airport (Air Nav 2013).

The Culvert/Channel Alternative would require a workforce to temporarily/intermittently spend time near the airport when working on Reaches 5, 6, and 14, but there would be no introduction of a permanent population in the vicinity of the airport. As shown in Table 3.12-4 above, the average noise level during 24-hour noise measurements along Reach 6 was 55.4 dB, with primary sources of noise during that time noted as airport and traffic. The average noise levels along Reach 14, measured over 24 hours, was 63.6 dB, with the primary noise source noted as traffic. As such, the Culvert/Channel Alternative would not expose people residing or working in the Project area to excessive airport-related noise levels. Therefore, impacts would be less than significant.

Operations and Maintenance

The Culvert/Channel Alternative would require a workforce to temporarily/intermittently spend time near the airport when working on Reaches 5, 6, and 14, but there would be no introduction of a permanent population in the vicinity of the airport. As shown in Table 3.12-4 above, the average noise level during 24-hour noise measurements along Reach 6 was 55.4 dB, with primary sources of noise during that time noted as airport and traffic. The average noise levels along Reach 14, measured over 24 hours, was 63.6 dB, with the primary noise source noted as traffic. As such, the Culvert/Channel Alternative would not expose people working on maintenance in the Project area to excessive airport-related noise levels. Impacts would be less than significant for stream operation and maintenance activities.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

NOI-6 CC— Subject construction workers to excessive noise levels from private airstrip

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements, exhumation of bridges and culvert replacement	NI	N/A
Excavation and construction of a diversion channel	NI	N/A
Construction of permanent access roads	NI	N/A
Installation of reinforced concrete boxes	NI	N/A
Relocation of some homes, farm structures, and wells within the ROW	NI	N/A
Relocation of some utility and other public service facilities	NI	N/A
Stream operation and maintenance activities	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

There are no private-use airports in Santa Clara County and there would be no impact from excessive noise levels from channel improvements, excavation and construction of diversion channel, construction of permanent access roads, installation of reinforced concrete boxes, and relocation of structures and utilities.

Operations and Maintenance

Estimated maintenance impacts under NOI-6 would be about the same as under the No Project Alternative and there would be no impact to workers from stream operations and maintenance.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

There would be no noise impacts associated with private airstrips.

3.12.5.5 Reach 6 Bypass Alternative

As discussed in Chapter 2, Description of Alternatives, the Reach 6 Bypass Alternative would provide an increased level of flood protection for urban and semi-urban areas, would protect agricultural land, and would construct a high flow bypass channel between Reach 6 of Llagas Creek and Reach 14 of East Little Llagas Creek. The bypass would be designed so that no flood capacity improvements would be needed along Reach 6 or Reach 5 of Llagas Creek downstream of the proposed bypass. Flood conveyance improvements for the upstream reaches would remain the same as that described for the Preferred Alternative. Reach 14 would undergo greater channel widening and culvert modification under this alternative. It would also include construction of hydraulic gates in Reach 6 for the bypass channel, three bridges near U.S. 101, and new maintenance roads.

NOI-1 BY—Noise generation levels in excess of established standards

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction of tunnel, bridge, and hydraulic control structure	S	N/A
Channel improvements, exhumation of bridges and culvert replacement	S	N/A
Excavation and construction of a diversion channel	S	N/A
Construction of permanent access roads	S	N/A
Installation of reinforced concrete boxes	S	N/A
Relocation of some homes, farm structures, and wells within the ROW	S	N/A
Relocation of some utility and other public service facilities	LTS	N/A
Stream, operation and maintenance activities	N/A	S

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction activities for the Reach 6 Bypass Alternative would include tunnel construction (as described under the Preferred Alternative), bridge and hydraulic structure construction, channel improvements, excavation and construction of diversion channel, construction of permanent access roads, and installation of reinforced concrete boxes. Although construction activities would occur mostly during daytime hours, noise could still be considered substantially disruptive to residents due to the distance between the activity and the receptors. However, periods of intrusive noise exposure would be temporary and plans would be implemented such as the blasting plan, described under the Preferred Alternative (Section 3.12.5.3) to reduce noise levels. Noise from construction activity could vary significantly on a day-to-day basis, and is dependent on how many pieces of equipment are operating simultaneously. The noise levels shown in Table 3.12-25 represent a worst-case scenario with the use of the loudest equipment which is a pile driver (101 dBA at 50 feet) for Reaches 6 and 8, and a pavement breaker/jackhammer (89 dBA at 50 feet) along Reaches 4, 7A, 7B, and 14. Noise levels would reduce 6 dB for every doubling of distance away from the noise source. Such worst-case scenarios would likely exist only for short periods at any particular residence on a given day.

Construction activity would be expected to use equipment listed in Table 3.12-7, which is further differentiated by reach in Chapter 2, Description of Alternatives, Table 2.5-5. Table 3.12-25 shows the estimated noise levels at the nearest receptor along each reach which correspond to the loudest piece of equipment proposed for each reach that would be affected under the Reach 6 Bypass Alternative. As discussed in Chapter 2, Description of Alternatives, some residences may be removed or relocated under the Reach 6 Bypass Alternative; however the nearest receptors may not be those identified and could remain during construction activity and be exposed to the noise generated.

Section 3.12.4.1 indicated the following thresholds for determining an exceedence of noise standards:

> Noise levels of 75 dBA measured at the lot line in the City of Morgan Hill (for Reaches 5, 6, 7A, 7B, 8, and 14); or

> Noise levels of 80 dB at the residential property line in the County of Santa Clara (for Reach 4).

Table 3.12-25 Construction Noise at Nearest Residential Receptors by Reach (Reach 6 Bypass Alternative)

Reach [1]	Distance	Source Level at 50 Feet (dBA) [2]	Noise Level at Receptor (dBA)
4	40 feet	89	92
6 (Bypass)	50 feet	101	101
7A	50 feet	89	89
7B	40 feet	89	90
8	25 feet	101	107
14	85 feet	89	84

[1] Reach 5 not included in table as no improvements would be needed along Reach 5 downstream of the proposed bypass.

[2] Equipment with the highest noise levels, used to demonstrate the worst-case scenario, is a pile driver for Reach 6 and 8, and a pavement breaker/jackhammer for all other reaches.

Based on the thresholds, the nearest residences along Reaches 4, 6 (bypass), 7A, 7B, 8, and 14 would exceed corresponding noise standards and impacts would be significant for construction of tunnel, bridge, hydraulic structure, channel improvements, excavation and construction of diversion channel, construction of permanent access roads, installation of reinforced concrete boxes, and relocation/demolition of buildings and structures. Impacts would be less than significant for relocation of utilities as noise generated by these activities would not exceed applicable standards. It should be noted that noise standards are in dB for Santa Clara County rather than the A-weighted dBA (see Section 3.12.1), however, 92 dBA would still exceed an 80-dB standard. It should also be noted, City of Morgan Hill Municipal Code Chapter 18.48.040 D.1.d exempts public works projects from noise standards and indicates the public works director shall set construction hours for these types of projects. However, even though noise from the Project generated in Morgan Hill would be exempt from the applicable standards, the nearest residences along Reaches 5, 6, 7A, 7B, 8, and 14 would experience noise levels otherwise considered significant. The SCVWD will implement BMPs NO-1 and NO-2 to reduce noise produced by construction activities to below applicable noise standards where feasible. However, even with implementation of the BMPs, construction noise would still likely exceed noise standards for Morgan Hill and the county, which is a significant impact.

Mitigation Measures NOI-1a, NOI-1b, and NOI-1c T would reduce noise levels from construction equipment along all reaches; however, due to the distance between the construction areas and receptors along these reaches, impacts may not be reduced to less than significant levels because at the distances from the receptors, noise levels from construction equipment would be than 5 dBA over existing noise levels. Therefore, impacts associated with noise standards exceedance for construction activities would remain significant. It should be noted that the construction of barriers between noise sources and sensitive receptors was considered, but rejected as infeasible by the SCVWD (see discussion of sound barriers under Impact NOI-1 T for the Preferred Alternative).

Operations and Maintenance

Under the Reach 6 Bypass Alternative, operational activities would be limited to typical maintenance procedures similar to the Preferred Alternative, as well as maintenance for the hydraulic gates required for the bypass structure in Reach 6. Operational and maintenance activity proposed for the Project would be considered long-term but would be intermittent because maintenance is performed as-needed, typically for a few days every year in a given locale. Maintenance activities are discussed in Section 3.12.4.2.

Maintenance activity would include the use of both mechanized equipment and hand tools. Use of hand tools would not affect the existing noise environment with the exception of vehicles bringing maintenance workers to and from the site. Maintenance worker vehicles would not be expected to result in a perceptible increase in noise over vehicles already used for ongoing maintenance as described under the No Project Alternative. Mechanized equipment would be expected to increase noise in the Project area during the use of the equipment.

Although maintenance activities would likely occur during daytime hours, noise could still be considered substantially disruptive to residents. However, periods of intrusive noise exposure would be intermittent and generally temporary and similar to existing conditions as described under the No Project Alternative. Noise from maintenance activity could vary significantly on a day-to-day basis, and is dependent on how many pieces of equipment are operating simultaneously. The noise levels shown in Table 3.12-21 under NOI-1 NRCS represent a worst-case scenario used for stream operations and maintenance. Such worst-case scenarios would likely exist only for short periods at any particular residence on a given day. Landscape-type equipment for vegetation maintenance is not considered because noise generated from this type of equipment would not be discernible over typical residential landscaping and vegetation maintenance noise sources. This is because the type of landscape equipment used and the type of noise generated for vegetation maintenance associated with the Project is not distinguishable from the type of landscape maintenance generated noise in residential areas. However, noise from graders, backhoes, excavators, and trucks would be very different from landscape equipment generating noise, and as such would be much more discernible in residential areas.

Table 3.12-21 shows the estimated noise levels at each receptor along the reaches that would be affected under the Reach 6 Bypass Alternative. As discussed in Chapter 2, Description of Alternatives, some residences may be removed or relocated under the Reach 6 Bypass Alternative; however, the nearest receptors may not be those identified for removal/relocation and could be present during maintenance activity and be exposed to the noise generated.

Section 3.12.4.1 indicated the following thresholds for determining an exceedence of noise standards:

> Noise levels of 75 dBA measured at the lot line in the City of Morgan Hill (for Reaches 5, 6, 7A, 7B, 8, and 14); or

> Noise levels of 80 dB at the residential property line in the County of Santa Clara (for Reach 4).

Based on the thresholds, the nearest residences along all reaches would exceed corresponding noise standards. Although activities would be intermittent, infrequent, and similar to what is currently occurring, impacts would be significant. It should be noted that noise standards are in dB for Santa Clara County rather than the A-weighted dBA (see Section 3.12.1), however, 84 dBA would still exceed an 80-dB standard.

Best Management Practices (BMPs)

> **NO-1:** Minimize Noise Pollution.

> **NO-2:** Minimize Noise Disturbance to residential neighborhoods.

BMPs Specific to Tunnel Construction

The SCVWD's BMP NO-1 would reduce noise produced by construction activities to below applicable noise standards where feasible, while SCVWD's BMP NO-2 will implement the measures in residential areas surrounding work sites. BMPs specific to tunnel construction (listed in NOI-1 T above) would also reduce noise impacts.

Implementation of BMPs NO-1 and NO-2 and Mitigation Measure NOI-1 NRCS would reduce noise levels from construction equipment along all reaches; however, due to the distance between work areas and

receptors along these reaches, impacts would not be reduced to less-than-significant levels. Therefore, impacts associated with noise standards exceedence for construction activity would remain significant and unavoidable.

Mitigation Measures

Mitigation Measures NOI-1a T: Reduce Noise from Construction and Operational Activity.

Mitigation Measure NOI-1b T: Noise and Vibration Control Plan.

Mitigation Measure NOI-1c T: Notify Residents of Construction Work; Implement Noise Complaint Procedure.

Implementation of BMPs NO-1 and NO-2, BMPs specific to tunnel construction, Mitigation Measures NOI-1 NRCS, NOI-1a T, and NOI-1b T, the use of sound barriers along Reach 8 work sites, and adherence to the Blasting Plan would reduce construction noise impacts. However, due to the distance between work areas and receptors along all reaches, impacts would not be reduced to less-than-significant levels. Therefore, impacts associated with noise standards exceedence for both construction and operation and maintenance activities would remain significant.

NOI-2 BY—Generation of excessive groundborne vibration

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction of tunnel, bridge, and hydraulic control structure	S	N/A
Channel improvements, exhumation of bridges and culvert replacement	S	N/A
Excavation and construction of a diversion channel	S	N/A
Construction of permanent access roads	S	N/A
Installation of reinforced concrete boxes	S	N/A
Relocation of some homes, farm structures, and wells within the ROW	LTS	N/A
Relocation of some utility and other public service facilities	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Estimated construction impacts under NOI-2 would be about the same as under the Preferred Alternative, including higher vibration levels in Reach 8 from the use of equipment specifically for the portal and tunnel and from the use of blasting. Construction proposed for Reach 6 would also result in higher vibration levels from the use of a pile driver.

Vibration levels associated with blasting are site-specific and are dependent on the amount of explosive used, soil conditions between the blast site and the receptor, and the elevation where blasting would take place (specifically, the below surface elevation where bedrock would be encountered). Blasting below the surface, as is proposed for the Project, would produce lower vibration levels at a receptor due to additional attenuation provided by distance and transmission through soil and rock.

As discussed under NOI-1 T above, controlled detonation would be performed by drilling small holes in a specified pattern in the rock face, packing them with small amounts of explosive and primer and detonating the explosives using a specified time delay between successive detonations. The detonations would sound like a short succession of thunder generally lasting a few seconds. Controlled detonation methods would adhere to stringent state and federal safety requirements and would also be conducted in accordance with local noise ordinances. Typically, less than 20 pounds of explosives per delay would be used.

A Blasting Plan would be prepared for the Project to provide guidelines for the safe use and storage of blasting materials that may be used during construction, and would also provide measures to reduce vibration, including:

> Strict management of blast design;

> Use of proper charge size and detonation sequence in accordance with the SD factor guidelines provided by the OSMRE; and

> Use of seismograph equipment to monitor PPV levels at nearby receptors; and

> Cessation of blasting activity and modification of blasting plan if PPV levels exceed all applicable regulations.

See Section 3.18, Hazards and Hazardous Materials, for further detail on the Blasting Plan.

Although construction activities would likely occur mostly during daytime hours, vibration could still be considered substantially disruptive to residents. However, periods of intrusive vibration exposure would be intermittent and generally temporary. Vibration from construction activity could vary significantly on a day-to-day basis, and is dependent on how many pieces of equipment are operating simultaneously. The vibration levels shown in Table 3.12-16 under NOI-2 T represent a worst-case scenario for the Reach 6 Bypass Alternative. Such worst-case scenarios would likely exist only for short periods at any particular residence on a given day.

Vibration levels at each receptor were determined by taking the source PPV level for the most vibratory equipment proposed to demonstrate worst-case scenario (0.210 inch per second PPV for a vibratory roller at 25 feet for all reaches except Reach 6 which would require pile driving at 0.644 inch per second PPV), and extrapolating for the distance and attenuation, relative to 25 feet, for each receptor. For example, the nearest receptor along Reach 7A is located 50 feet away. Fifty feet divided by 25 feet equals 2; therefore 0.210 inch per second PPV divided by 2 equals 0.105 inch per second PPV at the receptor 50 feet away). Due to attenuation by distance similar to noise, receptors further from the equipment and activity would experience lower vibration levels.

Impacts would be significant for construction of tunnel, channel improvements, excavation and construction of diversion channel, construction of permanent access roads, and installation of reinforced concrete boxes and less than significant for relocation of structures and utilities.

Operations and Maintenance

Estimated maintenance impacts under NOI-2 would be about the same as under the Preferred Alternative with the exception that the Reach 6 Bypass Alternative would necessitate hydraulic gate maintenance for the bypass structure.

Impacts would be less than significant for creek, and tunnel operation and maintenance activities.

Estimated maintenance impacts under NOI-2 BY are similar to that described under the Preferred Alternative, and Table 3.12-17 under NOI-2 T shows the worst-case scenario for vibration from operations and maintenance activities, in addition to maintenance for the bypass channel hydraulic control structure. Due to the intermittent nature, infrequency of activities, and similarity in activities to what is currently

occurring, and vibration levels below applicable standards, stream operation and maintenance activities would be less than significant.

Best Management Practices (BMPs)

> **NO-2:** Minimize Noise Disturbance to residential neighborhoods.

BMPs Specific to Tunnel Construction

The SCVWD's BMP NO-2 will implement the following measures in residential areas surrounding work sites that would reduce the impact of vibration (1) conduct work during normal working hours; and (2) limit the arrival and departure of trucks hauling material to the hours of construction. BMPs specific to tunnel construction (listed in NOI-1 T above) would also reduce vibration through controlled detonation and other measures.

Mitigation Measures

Mitigation Measures NOI-2a T: Vibration Limits.

Mitigation Measures NOI-2b T: Alternate Overnight Accommodations.

Mitigation Measures NOI-2c T: Notify Residents of Pile Driving Activities/Vibratory Compactor Use.

Mitigation Measures NOI-2d T: Prohibit Vibratory Pile Driving within 200 feet of Residential Structures.

In addition to the portion of SCVWD's BMP NOI-2 that would reduce vibration impacts, additional Mitigation Measures NOI-2a through NOI-2d T would reduce vibration levels from construction equipment along all reaches, however, due to the distance between work areas and receptors along these reaches, impacts would not be reduced to less than significant levels. Therefore, impacts associated with excessive groundborne vibration for construction activity would remain significant along Reaches 4, 6, 7A, 7B, and 8, as shown in Table 3.12-16 (Preferred Alternative) above, where vibration levels at the receptors exceed 0.1 inch per second PPV for annoyance criteria from construction activities along those.

The use of controlled detonations for blasting and adherence to the Blasting Plan, would result in less than significant impacts as blasting vibration levels would remain below state and federal requirements. The use of pile driving for the portal, however, would result in excessive vibration levels. Mitigation Measures NOI-2a through NOI-2d T and BMPs would reduce vibration levels along all reaches, but due to the distance between work areas and receptors along these reaches, impacts would not be reduced to less than significant levels. Therefore, impacts associated with excessive groundborne vibration during construction would remain significant as receptors along Reach 8 would experience vibration levels in excess of both structural and annoyance standards during pile driving activity.

NOI-3 BY—Substantial permanent increase in ambient noise levels

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction of tunnel, bridge, and hydraulic control structure	LTS	N/A
Channel improvements, exhumation of bridges and culvert replacement	LTS	N/A
Excavation and construction of a diversion channel	LTS	N/A
Construction of permanent access roads	LTS	N/A
Installation of reinforced concrete boxes	LTS	N/A
Relocation of some homes, farm structures, and wells within the ROW	LTS	N/A
Relocation of some utility and other public service facilities	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction activity would be temporary, a total of 6 years for all construction, but this would be spread out over the entire construction footprint and would not result in permanent increases in ambient noise levels. Impacts would be less than significant for construction of tunnel, bridge, and hydraulic structure, channel improvements, excavation and construction of diversion channel, construction of permanent access roads, installation of reinforced concrete boxes, and relocation of structures and utilities. Temporary noise increases are evaluated under NOI-4 BY below.

Operations and Maintenance

Estimated maintenance impacts under NOI-3 would be about the same as under the NRCS Alternative with the exception that the Reach 6 Bypass Alternative would necessitate additional tunnel and creek maintenance activities for Reach 8 and hydraulic gate maintenance for the bypass structure. Minor maintenance would also be required. Operational activity proposed for the Project would be considered long-term but would be intermittent because it is as needed, typically for a few days every year. Maintenance activities are discussed in Section 3.12.4.2.

Maintenance activity would include the use of both mechanized equipment and hand tools. Use of hand tools would not affect the existing noise environment with the exception of vehicles bringing maintenance workers to and from the site. Maintenance worker vehicles would not be expected to result in a perceptible increase in noise over vehicles already used for ongoing maintenance, as described under the No Project Alternative. Mechanized equipment would be expected to increase noise in the Project area during the use of the equipment.

Although maintenance activities would likely occur during daytime hours, noise could still be considered substantially disruptive to residents. However, periods of intrusive noise exposure would be intermittent and generally temporary, and similar to existing conditions as described under the No Project Alternative. Noise from maintenance activity could vary significantly on a day-to-day basis, and the noise levels shown in Table 3.12-21 under NOI-2 NRCS represent a worst-case scenario. Such worst-case scenarios would likely exist only for short periods at any particular residence on a given day.

Section 3.12.2.1 discusses the existing ambient conditions along the reaches. Table 3.12-21 compares the existing noise levels based on the noise measurements collected in 2011 along each reach with the expected noise levels for maintenance under the NRCS Alternative, which would also apply to the Reach 6 Bypass Alternative.

Section 3.12.4.1 indicated the following thresholds for determining a substantial permanent noise increase:

> Permanent increase of 5 dBA L_{EQ} as a result of Project operation based on ambient noise levels.

Based on the threshold of a 5-dBA L_{EQ} increase, all of the nearest residences would experience an increase in noise levels above 5 dBA L_{EQ} during maintenance work. It should be noted that noise standards are in dBA L_{EQ} and are compared to values in dBA. As discussed in Section 3.12.1, L_{EQ} is a calculated single level for a specified duration, which contains the same energy as all of the varying sounds over the measurement period. While not identical to an average, especially when noise fluctuations are great, the L_{EQ} is widely used to represent an average noise level over some period of time. Because of the substantial increase in noise (18.1 dBA and greater) it is clear that noise level increases would exceed a 5-dBA increase. In addition to the portion of SCVWD's BMP NOI-2 that pertains to maintenance, additional Mitigation Measure NOI-1 NRCS would reduce noise levels from maintenance equipment along all reaches. However, based on the intermittent nature of the activity, and the infrequency (for a few days every year), the operations and maintenance noise would not be permanent, and impacts would be less than significant for creek, and tunnel, bridge, and hydraulic structure operation and maintenance activities.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

Impacts associated with permanent increases in noise would be less than significant.

NOI-4 BY—Substantial temporary increase in ambient noise levels

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction of tunnel, bridge, and hydraulic structure	S	N/A
Channel improvements, exhumation of bridges and culvert replacement	S	N/A
Excavation and construction of a diversion channel	S	N/A
Construction of permanent access roads	S	N/A
Installation of reinforced concrete boxes	S	N/A
Relocation of some homes, farm structures, and wells within the ROW	S	N/A
Relocation of some utility and other public service facilities	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial
N/A = not applicable

Construction

Although construction activities would occur mostly during daytime hours, noise could still be considered substantially disruptive to residents due to the distance between the activity and the receptors. However, periods of intrusive noise exposure would be temporary. Noise from construction activity could vary significantly on a day-to-day basis, and is dependent on how many pieces of equipment are operating simultaneously. The noise levels shown in Table 3.12-25 represent a worst-case scenario. Such worst-case scenarios would likely exist only for short periods at any particular residence on a given day. Noise from the tunnel construction along Reach 8 could reach higher levels based on the type of equipment proposed.

Section 3.12.2.2 discusses the existing ambient conditions along the reaches. Table 3.12-25 compares the existing noise levels along each reach with the expected noise levels for construction under the Reach 6 Bypass Alternative. Construction activity would be expected to use equipment listed in Table 3.12-7. Table 3.12-25 shows the estimated noise levels at each receptor along the reaches that would be affected under the Reach 6 Bypass Alternative. As discussed in Chapter 2, Description of Alternatives, some residences may be removed or relocated under the Reach 6 Bypass Alternative; however, the nearest receptors may not be those identified for removal/relocation and could remain during construction activity and be exposed to the noise generated.

Section 3.12.2.1 discusses the existing ambient conditions along the reaches. Table 3.12-25 compares the existing noise levels based on the noise measurements collected in 2011 along each reach with the expected noise levels for construction of the Reach 6 Bypass Alternative.

Section 3.12.4.1 indicated the following thresholds for determining a substantial temporary noise increase:

> Temporary increase of 5 dBA L_{EQ} as a result of Project construction based on ambient noise levels.

Based on the threshold of a 5-dBA L_{EQ} increase, all of the nearest residences along each reach would experience an increase in noise levels above 5 dBA L_{EQ} during construction work, resulting in significant impacts for construction of tunnel, channel improvements, excavation and construction of diversion channel, construction of permanent access roads, and installation of reinforced concrete boxes. It should be noted that noise standards are in dBA L_{EQ} and are compared to values in dBA. As discussed in Section 3.12.1, L_{EQ} is a calculated single level for a specified duration, which contains the same energy as all of the varying sounds over the measurement period. While not identical to an average, especially when noise fluctuations are great, the L_{EQ} is widely used to represent an average noise level over some period of time. Because of the substantial increase in noise (25.1 dBA and greater) it is clear that noise level would exceed a 5-dBA increase. It should be noted, City of Morgan Hill Municipal Code Chapter 18.48.040 D.1.d exempts public works projects from noise standards and indicates the public works director shall set construction hours for these types of projects. However, even though noise from the Project generated in Morgan Hill would be exempt from the applicable standards, the nearest residences along Reaches 5, 6, 7A, 7B, 8, and 14 would experience noise levels otherwise considered significant. Impacts would be less than significant for relocation of utilities as noise levels generated do not exceed applicable thresholds.

Operations and Maintenance

Noise from operations and maintenance would not be considered temporary as it would be ongoing and considered permanent. Therefore, impacts would be less than significant for temporary increases in noise. Impacts would be significant for permanent noise increases, which are evaluated under NOI-3 BY above.

Maintenance activities are described above under Impact NOI-3 BY and in Section 2.4.5 of this EIR. Unlike noise generated by Project construction activities, noise from operations and maintenance would

not be considered temporary as it would be ongoing over the life of the Project and as such considered permanent. Therefore, impacts would be less than significant for temporary increases in noise due to maintenance activities. Impacts associated with permanent increases in ambient noise levels related to maintenance activities are evaluated under NOI-3 BY, above.

Best Management Practices (BMPs)

> **NO-1:** Minimize Noise Pollution.

> **NO-2:** Minimize Noise Disturbance to residential neighborhoods.

BMPs Specific to Tunnel Construction

The SCVWD's BMP NO-1 would reduce noise produced by construction activities to below applicable noise standards where feasible, while SCVWD's BMP NO-2 will implement the measures in residential areas surrounding work sites. Additional BMPs specific to tunnel construction would reduce noise levels for construction along all reaches, all of which would reduce temporary noise impacts.

Mitigation Measures

Mitigation Measure NOI-1a T: Reduce Noise from Construction and Operational Activity.

Mitigation Measure NOI-1b T: Noise and Vibration Control Plan.

Mitigation Measure NOI-1c T: Notify Residents of Construction Work; Implement Noise Complaint Procedure.

In addition to the portion of SCVWD's BMP NO-2 that pertains to maintenance and BMPs specific to tunnel construction, additional Mitigation Measures NOI-1a, NOI-1b, and NOI-1c T would reduce noise levels from maintenance and construction equipment along all reaches, however, due to the distance between the maintenance areas and receptors along these reaches, impacts would not be reduced to less than significant levels (see Table 3.12-21 under NRCS, which shows the estimated noise levels at each receptor along the reaches that would be affected under the Reach 6 Bypass Alternative). Therefore, impacts associated with temporary noise increases for construction would remain significant. It should be noted that additional measures such as the construction of sound barriers was considered but determined to not be feasible (see discussion of sound barriers under Impact NOI-1 T for the Preferred Alternative).

NOI-5 BY—Subject construction workers to excessive noise levels from public airport

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction of tunnel, bridge, and hydraulic control structure	LTS	N/A
Channel improvements, exhumation of bridges and culvert replacement	LTS	N/A
Excavation and construction of a diversion channel	LTS	N/A
Construction of permanent access roads	LTS	N/A
Installation of reinforced concrete boxes	LTS	N/A
Relocation of some homes, farm structures, and wells within the ROW	LTS	N/A
Relocation of some utility and other public service facilities	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

There are five airports in Santa Clara County, including Reid-Hillview Airport, Mineta San Jose International Airport, Palo Alto Airport of Santa Clara County, Moffett Federal Airfield, and South County Airport of Santa Clara County (South County). The airport closest to the Project is South County, 180 feet from Reach 6 and 0.3 mile from Reach 14. South County is operated by the county and is open to the public. On average, there are 117 aircraft operations per day on the single runway at this airport (Air Nav 2013).

The Reach 6 Bypass Alternative would require a workforce to temporarily/intermittently spend time near the airport when working on Reaches they bypass channel from Reach 6 and on Reach 14, but there would be no introduction of a permanent population in the vicinity of the airport. As shown in Table 3.12-4 above, the average noise level during 24-hour noise measurements along Reach 6 was 55.4 dB, with primary sources of noise during that time noted as airport and traffic. The average noise levels along Reach 14, measured over 24 hours, was 63.6 dB, with the primary noise source noted as traffic. As such, the Reach 6 Bypass Alternative would not expose people residing or working in the Project area to excessive airport-related noise levels. Therefore, impacts would be less than significant.

Operations and Maintenance

The Reach 6 Bypass Alternative would require a workforce to temporarily/intermittently spend time near the airport when working on Reaches 5, 6, and 14, but there would be no introduction of a permanent population in the vicinity of the airport. As shown in Table 3.12-4 above, the average noise level during 24-hour noise measurements along Reach 6 was 55.4 dB, with primary sources of noise during that time noted as airport and traffic. The average noise levels along Reach 14, measured over 24 hours, was 63.6 dB, with the primary noise source noted as traffic. As such, the Reach 6 Bypass Alternative would not expose people working on maintenance in the Project area to excessive airport-related noise levels. Impacts would be less than significant for stream operation and maintenance activities.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

Impacts associate with noise generated by a public airport would be less than significant.

NOI-6 BY— Subject construction workers to excessive noise levels from private airstrip

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction of tunnel, bridge, and hydraulic control structure	NI	N/A
Channel improvements, exhumation of bridges and culvert replacement	NI	N/A
Excavation and construction of a diversion channel	NI	N/A
Construction of permanent access roads	NI	N/A
Installation of reinforced concrete boxes	NI	N/A
Relocation of some homes, farm structures, and wells within the ROW	NI	N/A
Relocation of some utility and other public service facilities	NI	N/A
Stream operation and maintenance activities	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

There are no private-use airports in Santa Clara County and there would be no impact from excessive noise levels for channel improvements, excavation and construction of diversion channel, construction of permanent access roads, installation of reinforced concrete boxes, and relocation of structures and utilities.

Operations and Maintenance

Estimated maintenance impacts under NOI-6 would be about the same as under the No Project Alternative and there would be no impacts from stream operations and maintenance.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

There would be no impacts associate with noise generated by a public airstrip.

3.12.6 Summary of Impacts to Noise

Construction of the Project would result in temporary noise and vibration impacts adjacent to active work areas. Even with proposed mitigation, impacts would remain significant, primarily due to the limited distance from the work areas to the nearest sensitive receptors, for construction and operations and maintenance under all action alternatives for exceedance of noise standards, for construction under all action alternatives for groundborne vibration, and for construction of all action alternatives for temporary noise increases. All other applicable impacts would be less than significant. Table S-1 summarizes the impacts determined for the Project.

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3.13 Aesthetic Resources

3.13.1 Introduction

This section evaluates potential impacts on visual resources (aesthetics) from implementation of the alternatives identified for the Project. The environmental setting presents an overview of the visual character of the regional landscape; a detailed description of visual character along the Project reaches; and contains federal, state, and local ordinances and regulations that are applicable to the Project. Results of the evaluation are provided in Section 3.13.6.

Visual resources are the physical characteristics of a landscape that determine its scenic quality. These characteristics are both natural and human-made features that make up a specific landscape scene. Natural features include landform, water surfaces, and vegetation. Human modifications include structures, roads, transmission lines, levees, etc. Since scenic quality is a measure of human sensory experience, the visual resources most important are those within the "seen area" of areas accessible to people (roadways, recreational areas, and human developments).

This visual assessment relies partly on the visual assessment methodology established by the Federal Highway Administration (FHWA) as described in the FHWA Visual Assessment Methodology manual. The aesthetic value of an area is a measure of its visual character and quality, combined with the viewer response to the area (Federal Highway Administration 1988). Viewer response is a combination of viewer exposure and viewer sensitivity. Viewer exposure is a function of the number of viewers, number of views seen, distance of the viewers, and viewing duration. Viewer sensitivity relates to the extent of the public's concern for a particular viewshed. These terms and criteria are described in detail below.

3.13.2 Study Area

The study area for this visual resources analysis encompasses the Project site encompassing the area covered by all the action alternatives, as well as those portions of the adjacent residential and rural areas that are visible in the line of site of the Project alternatives and related activities. This would constitute a long narrow band running paralleling either side of Upper Llagas Creek through most of the creek reaches.

Visual Character

Both natural and artificial landscape features make up the character of a view. Character is influenced by geologic, hydrologic, botanical, wildlife, recreational, and urban features. Urban features include aspects of landscape settlement and development, such as roads, utilities, structures, earthworks, and the results of other human activities. The perception of visual character can vary significantly among viewers depending on their level of sensitivity and interest. Among sensitive viewers, perception can vary seasonally and even hourly as weather, light, shadow, and the elements that compose the viewshed change. Form, line, color, and texture are the basic components used to describe visual character and quality for most visual assessments. The appearance of the viewshed is described in terms of the dominance of each of these components.

Visual Quality

Visual quality is evaluated using an approach to visual analysis adopted by FHWA, which employs the concepts of vividness, intactness, and unity, as defined below:

> *Vividness* is the visual power or memorability of landscape components, as they combine in striking or distinctive visual patterns.

> *Intactness* is the visual integrity of the natural and human built landscape and its freedom from encroaching elements; this factor can be present in well-kept urban and rural landscapes, as well as in natural settings.

> *Unity* is the visual coherence and compositional harmony of the landscape considered as a whole; it frequently attests to the careful design of individual components in the artificial landscape.

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

Viewer Exposure and Sensitivity

The measure of the quality of a view is also correlated to the overall sensitivity of the viewer. Viewer sensitivity or concern is based on the visibility of resources in the landscape, proximity of viewers to the visual resource, elevation of viewers relative to the visual resource, frequency, and duration of views, number of viewers, and type and expectations of individuals and viewer groups. The importance of a view is related in part to the position of the viewer relative to the resource; therefore, visibility and visual dominance of landscape elements depend on their placement within the viewshed. To identify the importance of views of a resource, a viewshed is broken into zones of foreground, middleground, and background. Generally, the closer a resource is to the viewer, the more dominant it is and the greater its importance to the viewer. It is important to note that zones in a viewshed may also vary between different geographic regions or types of terrain.

Visual sensitivity depends on the number and type of viewers and the frequency and duration of views. Visual sensitivity is also modified by viewer activity, awareness, and visual expectations in relation to the number of viewers and viewing duration. For example, visual sensitivity is generally higher for views seen by people who are driving for pleasure and people engaging in recreational activities, such as hiking, biking or camping, and homeowners. It can also be inferred that sensitivity tends to be lower for views seen by people commuting to and from work or as part of their work. Commuters and non-recreational travelers typically have fleeting views and tend to focus on commute traffic, not on surrounding scenery; therefore, they are generally considered to have low visual sensitivity due to the transient nature of their viewing experience. Residential viewers typically have extended viewing periods and are concerned about changes in the views from their homes; therefore, they are generally considered to have high visual sensitivity. Viewers using recreation trails and areas, scenic highways, and scenic overlooks are usually assessed as having high visual sensitivity. The same landform or visual resource appearing in different geographic areas could have a different degree of visual quality and sensitivity in each setting. For example, a small hill may be a significant visual element on a flat landscape but have very little significance in mountainous terrain.

3.13.2.1 Environmental Setting

The Project area is located along the Upper Llagas Creek corridor in southern Santa Clara County running through the City of Morgan Hill to the north and south through San Martin and south to the City of Gilroy. In the Project area, Upper Llagas Creek, East and West Little Llagas Creek run generally parallel on the west and east of U.S. 101. The Project area landscape contains agricultural and low intensity land uses in the south and primarily urban in nature running north through portions of densely populated and commercial areas. Currently, much of the Project vicinity is urbanized or is farmed.

3.13.2.2 Project Area Overview

An overview of visual conditions within the Project area is provided below, followed by the existing visual character and conditions by Project reach.

The major topographical features of Santa Clara County include the Santa Clara Valley, the Diablo Range to the east, and Santa Cruz Mountains to the west. Santa Clara Valley is ringed by rolling hills and runs the entire length of the county from north to south. The Diablo Range covers the entire eastern half of the county. It consists mainly of grasslands, brush and oak savannah, due mostly to sparse rainfall (Santa Clara 1994). The Project area is located in Santa Clara Valley near the foothills of the Santa Cruz Mountains. From view corridors, visual elements in the Project area include views of farmlands, both the Santa Cruz Mountains and Diablo Range in the background and wandering creeks in the middleground. The City of Morgan Hill is the most urbanized portion of the Project area along U.S. 101, with agricultural lands surrounding the city limits.

There are no officially designated scenic highways in the Project area.

Reach 4

Reach 4 is in the southern most extent of the Project area and contains an intermittent stream channel that winds through agricultural and suburban areas. Accessible views of the Reach 4 creek corridor are available from the bridges crossing over the creek, such as at Buena Vista Avenue, Rucker Avenue, and Masten Avenue, as well as some roads that run parallel to the creek.

Reach 5

Reach 5 is a short 0.4 mile segment connecting Reaches 6 and 14 and crossing under U.S. 101 in an east-west direction. Land use to the north and south is agricultural, with a lesser degree of urban development to the south. Views of this reach are available from U.S. 101 and an agricultural road just north of the reach that runs parallel to the creek corridor.

Reach 6

Upper Llagas Creek flows through the Reach 6 channel in a southerly direction on the west side of U.S. 101. The channel is composed of gravel, sand, and silt. The southwestern portion of Reach 6 is adjacent to several SCVWD percolation ponds and the southeastern portion or Reach 6 is adjacent to greenhouses and agricultural fields. The middle portion of Reach 6 traverses through agricultural fields, small corporation yards, and suburbanized areas with South County Airport of Santa Clara County located between Reach 6 and U.S. 101. Portions of this reach are adjacent to paved roads. The northern portion of Reach 6 passes through an industrialized area and waste treatment facilities. Views of the Reach 6 creek corridor are available from the bridges crossing over the creek, such as at Church Avenue and East San Martin Avenue. The creek corridor is also visible from paths within Silveira Park.

Reach 7A and Reach 7B

Reach 7A does not contain a creek channel. The southern half of Reach 7A is a topographically flat section of land with a combination of heavy agricultural use (plowed fields) or fallow land that has been converted to annual non-native grassland. The northern half of Reach 7A runs through a residential neighborhood and ends to the north at the intersection of West Little Llagas Creek and Reach 7B. Reach 7A runs through a suburban area offering accessible views, including views from John Wilson Way at Oakwood Country School looking west.

Reach 7A covers flat, undeveloped, grassland south of Watsonville Road surrounded by residential and commercial development. Reach 7A exhibits a more rural character south of Watsonville Road, while the northern portion of this reach has a suburban character.

Views of Reach 7A are available from bridges crossings, such as at Monterey Road, West Middle Avenue, Watsonville Road, La Crosse Drive, which also intersects with Reach 7B.

Reach 7B is in a suburban area with residences to the west and commercial uses to the east. Morgan Hill Community Park is directly west of Reach 7B to the north of West Edmundson Avenue. Views of the

Reach 7B creek corridor are available from the bridges crossing over the creek, such as La Crosse Drive, West Edmundson Avenue, and West Dunne Avenue, which also intersects with Reach 8. Views of Reach 7B from Morgan Hill Community Park are screened by intervening vegetation.

Reach 8

Reach 8 contains an intermittent stream (West Little Llagas Creek). The channel transects a heavily urbanized area with businesses, residential areas, and roads abutting many portions of the top of the channel bank.

Reach 8 passes through urban residential and commercial neighborhoods in Morgan Hill, where Llagas Creek runs underground in channelized culverts and occasionally comes to the surface. The aboveground sections of the creek in this reach are bordered by riparian or ruderal vegetation. The remaining open channels in Reach 8 can be seen from some sidewalks, road sides, and bridges along Monterey Road, along Hale Avenue, and other streets in downtown Morgan Hill.

Reach 14

Reach 14 consists of an engineered flood channel east of and parallel to U.S. 101. Reach 14 does not have a clearly defined riparian corridor, but some scattered trees and bushes are present along this reach. Areas beyond the roads on each side of the channel consist of agricultural fields or are heavily suburbanized. Expansive irrigated croplands line Reach 14, allowing the channel to be clearly seen from nearby roads, including Church Avenue and San Martin Avenue.

Creek corridor views are available at bridges crossing the creek corridor, including at Church Avenue, East San Martin Avenue, and Sycamore Avenue, as well as some roads (e.g., Amistad Lane) and agricultural areas on either side.

Key Observation Points

To capture the baseline visual setting of the Project area as seen by viewers in the area, eight key observation points were identified in the visual simulations (Figures 3.13-1a–h). These key observation points were assessed to determine, which would be the most representative of the Project's potential effects on the viewshed. Each visual simulation contains the name of the reach and the alternative it represents. Many of the visual simulations are representative of all the action alternatives since they are the same in many of the reaches. Some of the key differences between alternatives are also represented in these simulations.

Hale Avenue looking south (Viewpoint 1)



Visual Simulation of Proposed Project

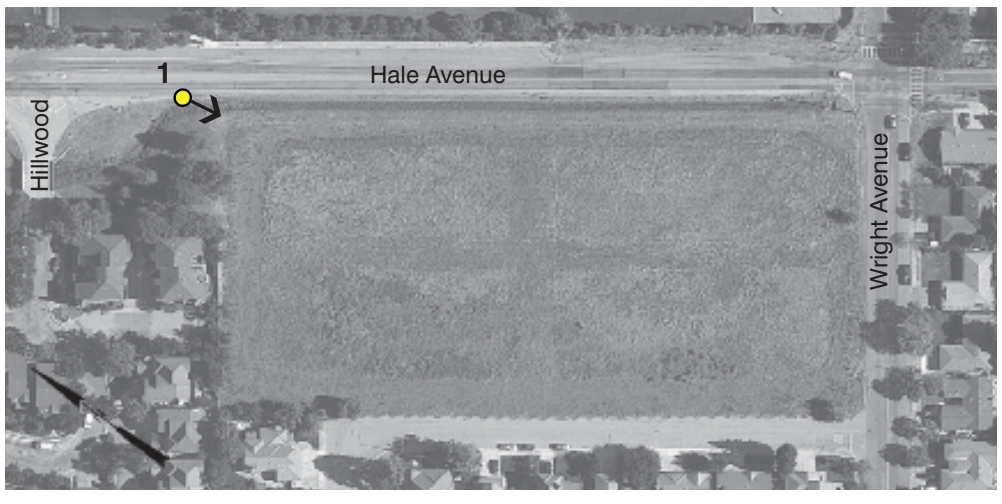


FIGURE 3.13-1a

Hale Avenue
Existing View and Visual Simulation
Reach 8-Preferred Alternative and Reach 6 Bypass Alternative
Location of Sediment Basin/Weir Structure

Upper Llagas Creek Flood Protection Project
Santa Clara Valley Water District

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Monterey Road at 4th Street looking west (Viewpoint 2)



Visual Simulation of NRCS Alternative



FIGURE 3.13-1b

Monterey Road
Existing View and Visual Simulation
Reach 8 - NRCS Alternative

Upper Llagas Creek Flood Protection Project
Santa Clara Valley Water District

ENVIRONMENTAL VISION
041113



Spring Avenue looking northwest (Viewpoint 3)



Visual Simulation of Proposed Project

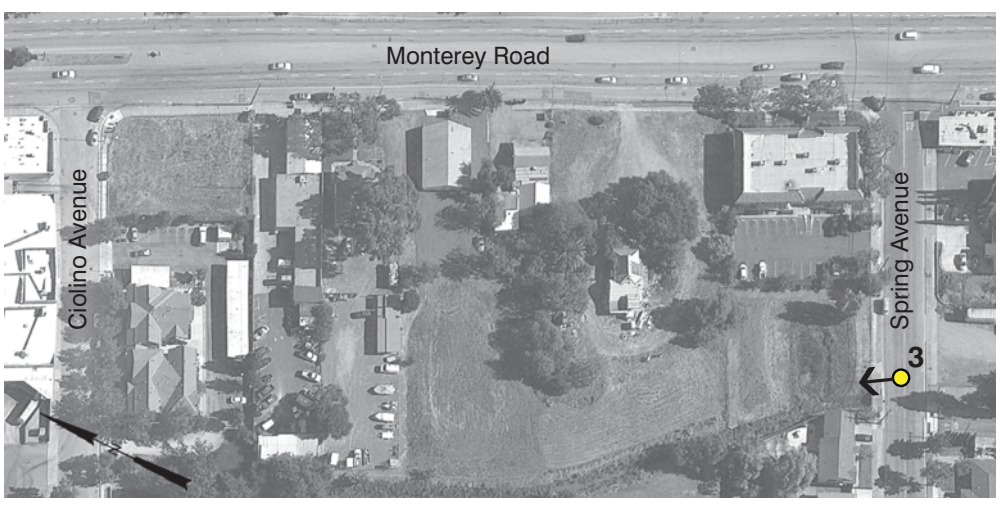


FIGURE 3.13-1c

Spring Avenue
Existing View and Visual Simulation
Reach 7B - All Action Alternatives

Upper Llagas Creek Flood Protection Project
Santa Clara Valley Water District

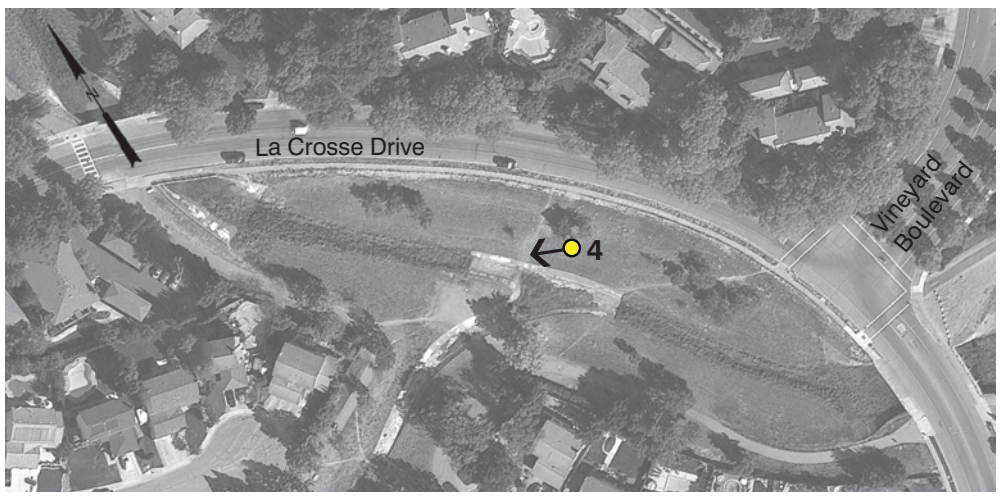
ENVIRONMENTAL VISION
060313



Near La Crosse Drive looking northwest toward Llagas and Edmundson creeks (Viewpoint 4)



Visual Simulation of Proposed Project



ENVIRONMENTAL VISION
041113

FIGURE 3.13-1d

La Crosse Drive
Existing View and Visual Simulation
Lower Reach 7B - All Action Alternatives

Upper Llagas Creek Flood Protection Project
Santa Clara Valley Water District



Trail near La Jolla Drive looking southeast (Viewpoint 5)



Visual Simulation of Proposed Project



FIGURE 3.13-1e

La Jolla Drive
Existing View and Visual Simulation
Reach 7A - All Action Alternatives

Upper Llagas Creek Flood Protection Project
Santa Clara Valley Water District

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Highway 101 looking east (Viewpoint 6)



Visual Simulation of Proposed Project



FIGURE 3.13-1f

Highway 101
Existing View and Visual Simulation
Reach 5 - All Action Alternatives except
Reach 6 Bypass Alternative

Upper Llagas Creek Flood Protection Project
Santa Clara Valley Water District

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051613



Rucker Avenue near Borges Court looking east (Viewpoint 7)



Visual Simulation of Proposed Project

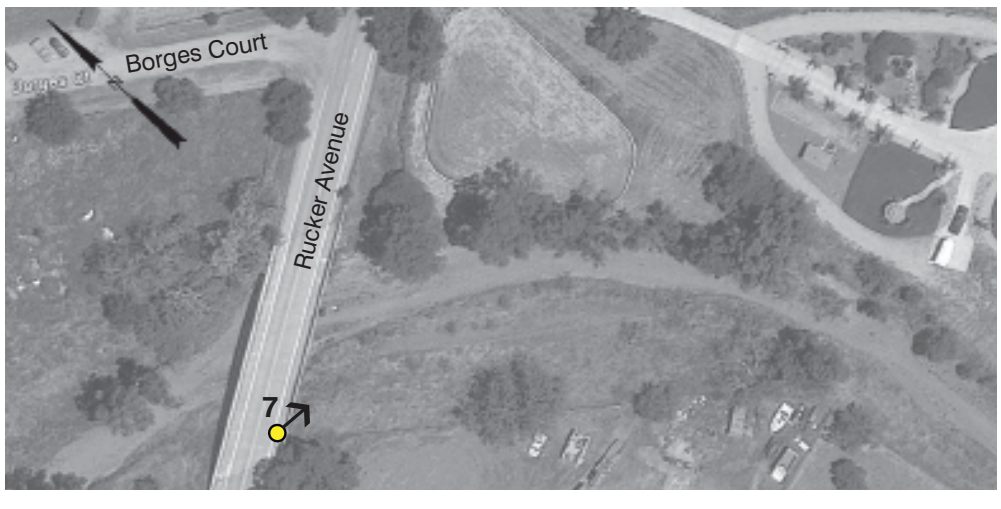


FIGURE 3.13-1g

Rucker Avenue
Existing View and Visual Simulation
Reach 4 - All Action Alternatives

Upper Llagas Creek Flood Protection Project
Santa Clara Valley Water District

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051613



Church Avenue near Amistad Lane looking north at Reach 14 (Viewpoint 8)



Visual Simulation of Proposed Project

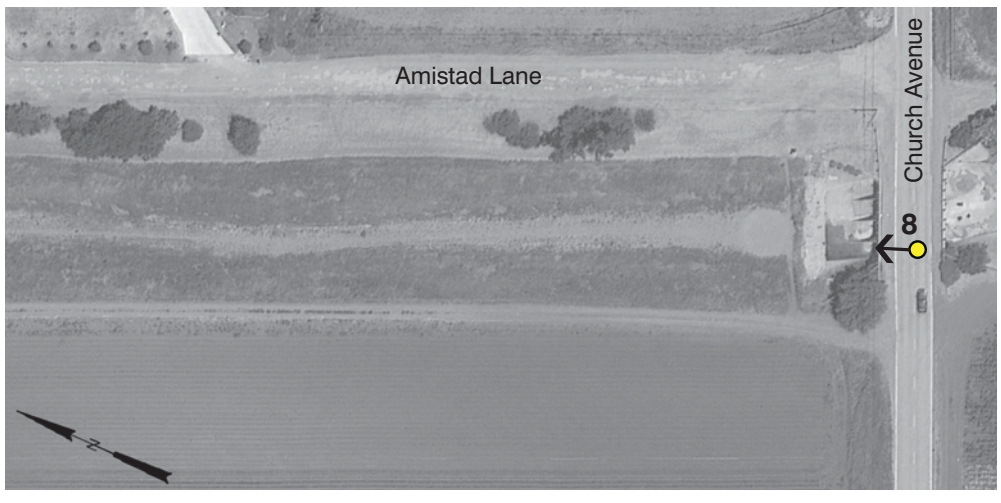


FIGURE 3.13-1h

Church Avenue
Existing View and Visual Simulation
Reach 14 - All Action Alternatives

Upper Llagas Creek Flood Protection Project
Santa Clara Valley Water District

ENVIRONMENTAL VISION
060313

3.13.3 Regulatory Environment

The following federal, state, regional, and local requirements for the Project are described below.

3.13.3.1 Federal

Under the National Scenic Byways Program, implemented by the FHWA, roadways are designated as National Scenic Byways or All American Roads based upon their scenic, historic, recreational, cultural, archeological, or natural intrinsic qualities. A road must significantly meet criteria for at least one of the above six intrinsic qualities to be designated a National Scenic Byway. No roadways in or near the Project area are designated in federal plans as scenic highways or routes worthy of protection for maintaining and enhancing scenic viewsheds.

No Wild and Scenic River corridors lie within the Project area.

3.13.3.2 State

California Scenic Highway Program

The California Scenic Highway Program, governed by the Streets and Highways Code, §260 et seq., was created in 1963 to preserve and protect highway corridors in areas of outstanding natural beauty from changes that would diminish the aesthetic value of the adjacent lands. Caltrans designates highways as scenic based on how much of the landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which views are compromised by development. There are no state-designated scenic highways in the Project area.

3.13.3.3 Local

The following local policies were identified to apply to the Project in terms of preserving aesthetic values within and near creek corridors throughout local applicable jurisdictions.

Santa Clara County General Plan, 1995–2010

The following countywide policies apply to the Proposed Project. Portions of the Project, not within the boundaries of the cities of Gilroy and Morgan Hill, are located in unincorporated portions of Santa Clara County where the following policies would apply:

> *C-RC 27.* Habitat types and biodiversity within Santa Clara County and the region should be maintained and enhanced for their ecological, functional, aesthetic, and recreational importance.

> *C-PR 37.* The natural scenery along many of Santa Clara County's highways should be protected from land uses and other activities, which would diminish its aesthetic beauty.

> *C-PR 38.* Land use should be controlled along scenic roads so as to relate to the location and functions of these roads and should be subject to design review and conditions to assure the scenic quality of the corridor.

> *C-PR 43.* New structures should be located where they will not have a negative impact on the scenic quality of the area, and in rural areas they should generally be set back at least 100 feet from scenic roads and highways to minimize their visual impact.

> *C-PR-45.* Activities along scenic highways that are of a substantially unsightly nature, such as equipment storage or maintenance, fuel tanks, refuse storage, or processing and service yards, should be screened from view.

> *C-RC 61.* Public and private development and infrastructure located in areas of special scenic significance should not create major, lasting adverse visual impacts.

> *C-RC 62.* Urban parks and open spaces, civic places, and public common areas should be designed, developed and maintained such that the aesthetic qualities of urban settings are preserved and urban livability is enhanced. Natural resource features and functions within the urban environment should also be enhanced.

Rural Unincorporated Area

> *R-RC 95.* The scenic and aesthetic qualities of both the natural and built environments should be preserved and enhanced for their importance to the overall quality of life for Santa Clara County.

> *R-RC 96.* The general approach to scenic resource preservation for the rural unincorporated areas consists of the following strategies:

  – Minimize scenic impacts in rural areas through control of allowable development densities

  – Limit development impacts on highly significant scenic resources, such as ridgelines, prominent hillsides, streams, transportation corridors, and county entranceways.

> *R-RC 98.* Hillsides, ridgelines, scenic transportation corridors, major county entryways, stream environments, and other areas designated as being of special scenic significance should receive utmost consideration and protection due to their prominence, visibility, and overall contribution to the quality of life in Santa Clara County.

> *R-RC 101.* Roads, building sites, structures, and public facilities shall not be allowed to create major or lasting visible scars on the landscape.

City of Morgan Hill General Plan

> *Action 4.1.* Apply floodplain zoning to all flood prone areas to maximize life safety, reduce property loss, and preserve natural vegetation, wildlife, and scenic beauty.

> *Policy 4a.* Support the continuation of adopted County land use policies for the unincorporated areas in order to: a) promote a productive, primarily agricultural rural area; and b) balance the needs of rural residents and landowners and the needs for effective natural resource management, enhanced rural scenic quality, and lands for planned urban growth, rural activities, and long-term open space (SCJAP 17.01).

> *Policy 4e.* Natural streamside and riparian areas should be left in their natural state in order to preserve their value as percolation and recharge areas, natural habitat, scenic resources, recreation corridors, and for bank stabilization (SCJAP 15.08).

> *Policy 5d.* Retain natural streamside and riparian areas in their natural state in order to preserve their value as percolation and recharge areas, natural habitat, scenic resources, recreation corridors, and for bank stabilization (SCJAP 15.08).

> *Policy 14a.* Enhance the visual integrity of the gateways to the city, such as the Madrone area north of Cochrane Road, the Cochrane Road / Monterey Road intersection, Monterey Road south of Watsonville Road, the Cochrane, Dunne and Tennant freeway interchanges, and the railroad station.

> *Policy 14b.* Protect the visual integrity of the scenic gateways to the South County (Pacheco Pass, Hecker Pass, Route 101 south of Gilroy, and the Coyote greenbelt area north of Morgan Hill) (SCJAP 16.06).

City of Gilroy General Plan

> *Policy 1.11.* Community Beautification. Actively promote the beautification of Gilroy by acquiring easements or development rights for open space, planting street trees, and landscaping public rights-of-way.

> *Policy 6.03.* U.S. 101 Landscaping and View Protection. Work with Caltrans and the County to provide additional landscaping along the Highway 101 right-of-way to enhance its attractiveness, recognizing that it is the primary "visitor-serving" traffic artery in the Planning Area. Also, encourage new developments facing Highway. 101 to provide landscape screening and to protect and enhance existing views of farmland and surrounding hills.

> *Goal 20.* Open Space and Habitat Areas. Preservation, protection, and maintenance of Gilroy's natural open space resources (including creeks, meadows, hills, woodlands, and vistas) for their watershed protection, habitat preservation, recreation, and aesthetic value, ensuring that they retain their natural qualities and beauty in perpetuity.

> *Policy 20.02.* Creek Protection. Protect the ecological, aesthetic and recreational value of the creeks that flow through the Gilroy Planning Area from urban encroachment and degradation. Ensure that new development preserves the function of natural drainages, including small canyons and seasonal creeks. The easements and setbacks adjacent to these creeks shall be maintained in open space. Access to creeks should be of sufficient width to accommodate trails, flood control access, and protection of riparian habitat.

> *Policy 25.21.* Multiple Use of Flood Control Projects. Design flood control measures and drainage channel improvements as part of an overall community improvement program with provision for multiple use, including recreational open space, trails, bikeways, groundwater recharge, protection and restoration of riparian vegetation and wildlife habitats, and enhancement of scenic qualities.

> *Policy 25.22.* Drainage Channel Design. Design new drainage channels with gently sloping and curving banks to maximize safety, ease of maintenance, and natural appearance. To the greatest extent feasible, use riparian vegetation to stabilize the banks and to landscape the channels in a manner that is natural in character and easy to maintain, creating a scenic asset for the enjoyment of City residents.

3.13.4 Impact Analysis

3.13.4.1 Significance Criteria

The Project is considered to have a significant impact on visual resources if it were to:

> Permanently and substantially alter or degrade the visual character or quality of the site or surrounding area due to:

  – Major natural landform alteration;

  – Removal of major stands of vegetation or trees that are a visually prominent feature of the landscape, as seen from public areas; or

  – Removal of visually prominent rock outcroppings.

> Result in permanent structural development within 0.5 mile of a designated scenic highway in a way that detracts from the existing scenic quality and character of the corridor;

> Permanently and substantially obstruct or block any scenic vista or view corridor that is designated on local plans as significant or important;

> Conflict with local plans and policies on protecting visual and aesthetic resources; and,

> Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

No officially designated scenic highways occur in the Project area. The nearest officially designated scenic highway (Highway 9 in Los Gatos) is over 20 miles to the north of the Project. Consequently, the

significance criteria related to effects from the Project within 0.5 mile of a designated scenic highway is not considered further in this impact analysis. Each impact discussion includes a summary table identifying the level of impact associated with the individual Project elements, followed by text analysis.

3.13.4.2 Approach to Analysis

Impacts related to aesthetics are determined by comparing existing visual conditions to Project conditions by Project alternatives during construction and operations and maintenance. Impacts are evaluated based on implementation of constructions and operation and maintenance activities for each alternative as a whole rather than by individual reaches. Viewers in the area primarily include local residents, recreational users, merchants, and visitors in the urban areas, such as Morgan Hill, and passing motorists.

Viewer Groups and Viewer Responses

Viewer groups in the vicinity of the Project area and their sensitivity to visual changes are characterized below. Viewers in the Project area include motorists traveling on roads that intersect or parallel the Upper Llagas Creek and West and East Little Llagas creeks. Additionally, the key observation points, described in Figures 3.13-1a–h, which visual simulations located along Upper Llagas Creek would also be affected by changes in the visual environment. Motorists typically view the area only for short periods, but recreational users and residents would experience the views for longer periods. Viewer groups who have visual access to the Project area were divided into the categories of residents, workers, and motorists, described in more detail below.

Residents

Residents are individuals whose homes are in proximity to the Project area. Viewer sensitivity is moderately high amongst residents, because they are likely to value their local visual resources highly, appreciate the visual experience, and be more sensitive to changes in views.

Workers

Workers are individuals whose place of employment is in proximity to the Project area, or who may come into contact with construction and maintenance locations as part of their work activities (e.g., delivery persons). Viewer sensitivity is moderate among workers.

Motorists

Motorists use roadways at varying speeds; normal highway and roadway speeds differ based on the traveler's familiarity with the route and roadway conditions (e.g., presence/absence of rain). Single views typically are of short duration, except on straighter stretches where views last slightly longer. Motorists who frequently travel these routes generally possess low to moderate visual sensitivity to their surroundings. The passing landscape becomes familiar to these viewers, and their attention typically is not focused on the passing views but on the roadway, roadway signs, and surrounding traffic. Motorists who travel local routes for sightseeing purposes generally possess a higher visual sensitivity to their surroundings, because they are likely to respond to the natural environment with higher regard and as a holistic visual experience.

Viewer sensitivity is moderately low among most roadway travelers anticipated to view Upper Llagas Creek in this area. The passing viewshed becomes familiar to frequent viewers; further, at standard roadway speeds, views are of short duration and roadway users are fleetingly aware of surrounding traffic, road signs, their immediate surroundings within the automobile, and other visual features.

Project Assumptions

The following analysis on potential impacts to aesthetics from the implementation of the Project, and alternatives assumes the following:

> The primary issue related to aesthetics during construction would be vegetation removal. Riparian corridors can be viewed from a distance since they contain stands of tall trees and, therefore, views are afforded by the public at a distance and from a wider viewing area.

> The analysis primarily considers aesthetics related impacts from public views. Physical channel improvements, such as widening and deepening, would not be very visible from public viewing points with the exception of very few areas, such as bridges along the alignments of the Project alternatives. Views from bridges and trails may be from those in cars, bikes, and pedestrians who would only have brief and transient viewing opportunities either while driving, walking, or biking on these bridges or trails. Therefore, channel modifications are not considered a primary visual change from implementation of Project alternatives.

> Post construction would involve revegetation efforts. After construction is complete, the area will appear less dense due to vegetation removal; however, after the planted trees and other vegetation mature over time, the area will likely exceed pre-Project densities.

> The primary issue related to aesthetics during operations and maintenance would be vegetation management

For this analysis, the construction period for the Project includes active construction, as well as implementation and 5 years of monitoring that may be required after construction for elements, such as re-vegetation and restoration. During the operations period, maintenance activities related to aesthetics will primarily center around the need for vegetation management, which is anticipated to have more of a visual aspect to it than other maintenance activities, therefore, the operations and maintenance discussion focus primarily on vegetation management activities.

3.13.5 Impacts and Mitigation Measures

3.13.5.1 No Project Alternative

Under the No Project Alternative, the Project would not be built, and no new land purchases or construction activities would occur. Flooding in the residential areas of Morgan Hill and San Martin would still continue. Storm runoff would continue through the West Little Llagas Creek, East Little Llagas Creek, and Llagas Creek channel reaches. The bypass channel in Reach 7A would not be constructed under the No Project Alternative, and channel bank erosion would likely continue. Maintenance of the Upper Llagas Creek facilities would be conducted in accordance with the guidelines established in the Steam Maintenance Program Update 2012–2022 (SCVWD 2011).

AES-1 NP—Substantially degrade the visual character or quality of the site or surrounding area

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	N/A	N/A
Operations and Maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

There would be no construction involved with the No Project Alternative; therefore, no construction-related impacts would occur.

Operations and Maintenance

The No Project Alternative assumes that existing maintenance activities established by the SCVWD, which include a SMP, would continue. The SMP establishes procedures for routine maintenance of stream channels involving sediment removal, vegetation management, bank protection, and associated minor activities.

Vegetation management is the primary component of the SMP that may affect visual resources in the Project area. Vegetation has the ability to restrict hydraulic capacity and impede flow conveyance, and create fire hazards due to high fuel loads. Non-native vegetation may also have negative ecological impacts as it can out-compete more desirable native species, resulting in habitat alteration and reduced biodiversity. Vegetation management activities include pruning, hand removal, herbicide, mowing, and discing activities.

Impacts related to vegetation management include changes in visual character from thinning of vegetation from activities, such as pruning, discing, mowing, herbicide use, and vegetation removal, as part of the SMP. Maintenance activities would result in less-than-significant impacts.

Best Management Practices (BMPs) (from SCVWD SMP)

The SMP includes BMPs regularly implemented as part of the program that help to reduce visual impacts as follows:

> **GEN-4:** Minimize the Area of Disturbance.

> **GEN-9:** Avoid Impacts to Special-status Plant Species and Sensitive Natural Vegetation Communities.

> **GEN 19:** Work Site Housekeeping.

> **REVEG-1:** Seeding.

> **REVEG-2:** Planting Material.

Impacts related to the implementation of the SMP were also previously analyzed in the environmental document prepared for the SMP. There are no impacts from implementation of the No Project Alternative.

AES-2 NP—Permanently and substantially obstruct or block any scenic vista or view corridor that is designated on local plans as significant or important

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	N/A	N/A
Operations and Maintenance	N/A	N/A

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

There would be no construction involved with the No Project Alternative; therefore, no construction-related impacts would result.

Operations and Maintenance

Vegetation management is the primary component of the SMP that may affect visual resources in the Project area. Impacts related to vegetation management include changes in visual character from thinning of vegetation from activities, such as pruning, discing, mowing, herbicide use, and vegetation removal, as part of the SMP. There are no designated scenic resources along the Upper Llagas Creek alignments subject to this Project.

Implementation of the No Project Alternative is anticipated to have no impacts. Also see discussion for AES-1 NP.

Best Management Practices (BMPs)

None applicable

AES-3 NP—Conflict with local plans and policies on protecting visual and aesthetic resources

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	N/A	N/A
Operations and Maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

There is no construction involved with the No Project Alternative; therefore, no construction-related impacts would result.

Operations and Maintenance

Vegetation management is the primary component of the SMP that may affect visual resources in the Project area. Impacts related to vegetation management include changes in visual character from thinning of vegetation from activities, such as pruning, discing, mowing, herbicide use, and vegetation removal, as part of the SMP. Implementation of the SMP does not conflict with local plans and policies related to visual and aesthetic resources, therefore, continued implementation of the No Project Alternative is anticipated to have no conflicts with local plans or policies. Impacts are less than significant. Also see discussion for AES-1 NP.

Best Management Practices (BMPs)

None applicable

AES-4 NP—Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	N/A	N/A
Operations and Maintenance	N/A	N/A

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

There is no construction involved with the No Project Alternative; therefore, no construction-related impacts would result.

Operations and Maintenance

Continued implementation of the SMP under the No Project Alternative would have no impacts related to new sources of light and glare since maintenance is done during the daytime hours and lighting is not typically required to perform these activities.

Best Management Practices (BMPs)

None applicable

3.13.5.2 Tunnel Alternative (Preferred Alternative)

The SCVWD considered and developed the Preferred Alternative, because there was an opportunity to reduce the Project footprint associated with the NRCS Alternative in Reach 8. Within Reach 8, the Preferred Alternative would require a smaller ROW; reduce the amount of vegetation to be removed along the existing West Little Llagas channel; reduce the extent of utilities to be relocated; reduce the culvert replacements required, which would result in less construction-related interference with commercial and residential areas. Additionally, the existing channel would remain through downtown Morgan Hill. The channel will contain a sediment basin/weir structure that would allow low flows to continue through the existing creek that goes through downtown Morgan Hill. The high flows would be diverted through the new tunnel through the Nob Hill area. The Preferred Alternative would be the same throughout the Project reaches, as described in Chapter 2.

AES-1 T—Substantially degrade the visual character or quality of the site or surrounding area

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operations and Maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction of the Preferred Alternative has the potential to degrade the existing visual character and quality of the Project area and surroundings for viewer groups; because construction would require

staging of materials and large construction equipment, physical reshaping of channels and the removal of large quantities of vegetation within the construction footprint as demonstrated in Figures 3.13-1a and Figures 3.13-1c–h.

Table 3.4-4, in Section 3.4, Botanical Resources, includes a summary of trees to be removed under the Preferred Alternative. Overall, approximately 65 percent of the trees within the Project construction limits are proposed for removal. The proposed tree removals would change the visual character of each reach immediately following tree removals. Trees would be removed in phases, since construction of all reaches would not happen simultaneously. The tree removals would create more filtered and broader views through fewer trees, which in some areas are currently more narrowed and focused along the channel corridor by the number and density of the existing larger mature vegetation.

It is anticipated that immediately after tree removals and prior to full establishment after revegetation (Mitigation Measure BOT-1c T), the area would appear less densely vegetated and the tree canopy would be reduced. This change would be short term and temporary in that revegetation and establishment of replanted trees may take years to reach pre-Project densities; but would eventually recover, thereby changing the general visual character and quality of all reaches within the Project area. Therefore, the overall visual character would temporarily change with the thinning of vegetation and tree canopy across all reaches; however, this change is expected to be temporary.

The view simulation (Figure 3.13-1f) in Reach 4 provides an example that illustrates that although mature trees would be removed in some areas, overall many areas of the riparian corridor would eventually be more vegetated than prior to the Project because of revegetation, which is proposed for mitigation, including areas that were previously minimally covered. The view simulation (Figure 3.13-1g) in Reach 14 also illustrates the more dense cover after revegetation. Over the long-term, revegetation would allow for recovery and growth of disturbed and removed vegetation, which in turn would allow for improved visual character after construction in areas visible to viewer groups. Therefore, impacts immediately following tree removals would be temporary and significant; however, with implementation of the Mitigation Measure BOT-1c T, impacts would be reduced to less than significant.

The temporary presence of construction equipment in the Project area and in staging areas, in addition to construction personnel, would temporarily change the general visual character and/or impede views of the creek during construction activities. Removal of structures related to channel widening and realignment during construction, as discussed in Table 2.4-1, would change the general visual character in all reaches where removal or relocation is necessary. Removal of structures involves all reaches, except Reach 7A and Reach 8 for the Preferred Alternative. However, structure removal would be kept to a minimum and only select structures are slated for removal or relocation. Removal and relocation of structures would not dramatically affect the visual character of the Project area since there are very few proposed for removal as compared to the existing structures in the area and, therefore, impacts would be less than significant.

New access roads are proposed to be constructed along most reaches. Clearing and grubbing of vegetation (as necessary) prior to road construction would constitute a slight visual change to viewers in the area; however, the roads are flat and linear and not easily visible throughout all reaches. Therefore, impacts would be less than significant.

New temporary staging areas would also constitute new visual features along the Project reaches. Staging areas would contain staged construction equipment and materials not typically there. Staging areas would be used both during the duration of construction during both daytime and nighttime. Staging areas are anticipated, however, to be temporary in nature and not contribute to a permanent change in visual character in the Project area.

The permanent changes to visual character include channel widening, vegetation removal, additional access roads, and removal/relocation of structures within the Project footprint along most of the reaches, with the exception of Reach 8. For example, in Figure 3.13-1c, which depicts Spring Avenue looking

northwest in Reach 7B, the visual character changes from a more urban impression to a more formalized water feature with the channel being re-routed and a new access road being located along the channel. Vegetation would also be cleared and an existing structure would be removed, opening up the area to views, as well. The general visual character would change slightly, as the viewer's focus would be a water feature as compared to existing conditions. The visual quality also would generally improve, since the site is more open and clear and the new focus of the site would be a water feature. Overall visual changes to the Project would be increased visual quality, while at the same time involving a general change to visual character. Views to the site can be obtained from Spring Avenue and from local residences. Similar changes are expected for most other reaches for the Preferred Alternative.

The Preferred Alternative would result in reduced visual impacts compared to the NRCS and Culvert/Channel alternatives as it relates to commercial and residential areas in Reach 8 due to the subsurface construction of a tunnel while leaving the existing creek channel in its current configuration through downtown Morgan Hill. Construction activities under the Preferred Alternative would result in reduced disturbance along the existing West Little Llagas Creek channel. Another feature that is part of the Preferred Alternative, but not included in the NRCS Alternative, is the construction of a sediment basin/weir structure at Wright Avenue and Hale Avenue in Reach 8. Figure 3.13-1a shows a visual simulation of the proposed sediment basin/weir structure in Reach 8. Currently, there is a detention basin as part of the adjacent housing development on the site of the proposed sediment detention basin for the Preferred Alternative. The Preferred Alternative would involve construction of a sediment basin/weir structure, and a maintenance access road on top of the side-slopes of the detention basin. The channel and detention basin would be located in an area that could be viewed by travelers on Hale Road and adjacent residences. The general visual character of the area in Reach 8 would not substantially change since it would still remain in use as part of the water course with associated features, as shown in Figure 3.13-1a.

Overall, with the combination of tree removal, removal and relocation of structures, and general construction activity the visual character and quality of the area during construction has the potential to substantially change; and impacts during construction would be temporary and significant. However, after construction has been completed and with implementation of the Mitigation Measure BOT-1c T, which includes re-vegetation of the Project area, long-term impacts would be less than significant.

Operations and Maintenance

During the operations phase of the Preferred Alternative, the primary visual changes would involve the permanent change in visual character of the area due to the flood control improvements along all reaches. Once the Project is constructed, over time vegetation density would increase and flexibility of woody riparian species may decrease as the vegetation matures and becomes well established. This would cause the hydraulic roughness of the channel to increase beyond that originally designed, necessitating thinning or removal of vegetation to maintain the reduction of flood risk. During routine maintenance activities, such as vegetation management, there would be visual changes from removal of vegetation required as part of flood risk management. However, these changes would be intermittent and site specific. Additionally, large trees would not be removed as part of the maintenance program. Therefore, impacts from maintenance would be less than significant.

The lack of modification to the existing creek channel, as compared to the NRCS and Culvert/Channel alternatives where channel widening and deepening, as well as culvert replacement would occur, would result in decreased visual impacts in Reach 8, because the existing vegetation would remain and no construction would occur through a very visibly accessible area in downtown Morgan Hill. No maintenance is proposed for the existing creek channel in Reach 8, thereby reducing long-term visual impacts to the area as compared to the NRCS and Culvert/Channel alternatives.

The proposed sediment basin in Reach 8 would function to capture sediments from the drainage upstream of the Project, thereby reducing the need to conduct sediment maintenance in downstream

reaches, including the culverts and tunnel sections in Reach 8. To maintain the function of the basin, it would periodically need to be excavated and the removed sediments would be end-hauled off-site. The basin would be a new feature in Reach 8 and would be located next to existing residences. A smaller detention basin is being constructed in this area as part of new residential development adjacent to Reach 8. The Preferred Alternative would require enlarging the existing detention basin, which would be a visual impact for residences that have views of the detention basin in the area. However, the creek would not be a new visual feature in the area and the visual character would generally remain the same and impacts would be less than significant.

Best Management Practices (BMPs)

The SCVWD has a standard list of BMPs they implement on all projects. The following are the BMPs that apply to this impact and are not considered mitigation, because they are identified as part of the Project implementation. The detailed activities associated with each BMP are discussed in Chapter 2.

> **BI-4:** Minimize Access Impacts.

> **BI-5:** Remove Temporary Fills as Appropriate.

> **BI-10:** Minimize Impacts to Vegetation From Clearing and Trimming.

> **BI-13:** Choose Local Ecotypes Of Native Plants and Appropriate Erosion-Control Seed Mixes.

> **WQ-18:** Maintain Clean Conditions at Work Sites.

Mitigation Measures

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

Implementation of the above BMPs and mitigation measure would reduce impacts to less than significant.

AES-2 T—Permanently and substantially obstruct or block any scenic vista or view corridor that is designated on local plans as significant or important

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	NI	N/A
Operations and Maintenance	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

There are no designated scenic vistas or view corridors in the Project area. The Project area is flat and views primarily consist of rolling hills and agricultural lands to the east and views of the Santa Cruz Mountains to the west. Site-specific views of the creek from public access areas, such as trails are provided along the Upper Llagas Creek corridor. The Preferred Alternative would result in lessened construction-related effects to commercial and residential areas in Reach 8 as compared to the NRCS and Culvert/Channel alternatives.

Construction of the Preferred Alternative would involve tree removals, channel widening, channel realignment, staging of materials and large construction equipment, and other flood improvement activities, which may change the general appearance of Upper Llagas Creek at public viewing points (Figures 3.13-1a and Figures 3.13-1c- h). As discussed in Impact AES-1 T, a revegetation plan would be implemented to revegetate and restore the creek corridor to natural conditions. While the revegetated

areas recover from Project construction, they may temporarily appear sparsely vegetated and bare; however, as the plants and trees mature, the overall long-term change would remain in line with the visual character of Upper Llagas Creek corridor. The Project will not obstruct or block any scenic vista or view corridor that is designated on local plans; therefore, no impacts would occur from construction of the Project.

Operations and Maintenance

During routine maintenance activities, such as vegetation management, there may be visual changes from removal of vegetation required as part of flood risk management. However, these changes would be intermittent and site specific. Additionally, large trees would not be removed as part of the maintenance program and no designated scenic vistas or view corridors would be blocked by the operations; therefore, no impacts would occur related to obstructing view corridors.

Best Management Practices (BMPs)

The SCVWD has a standard list of BMPs they implement on all projects. The following are the BMPs that apply to this impact and are not considered mitigation, because they are identified as part of the Project implementation. The detailed activities associated with each BMP are discussed in Chapter 2.

> **BI-4:** Minimize Access Impacts.

> **BI-5:** Remove Temporary Fills as Appropriate.

> **BI-10:** Minimize Impacts to Vegetation From Clearing and Trimming.

> **BI-13:** Choose Local Ecotypes Of Native Plants and Appropriate Erosion-Control Seed Mixes.

> **WQ-18:** Maintain Clean Conditions at Work Sites.

Mitigation Measures

None required

There would be no impact to scenic vistas or view corridors, because none are designated within the Project area.

AES-3 T—Conflict with local plans and policies on protecting visual and aesthetic resource

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operations and Maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

In terms of policies related to aesthetics, those that are relevant to the Project, are primarily associated with protection and minimizing disturbances to creek corridors to maintain aesthetic values. Staging of materials and equipment would change the visual character of the creek corridor; but this impact would be short-term during construction and, therefore, would not create a permanent conflict with local policies.

The City of Gilroy's Policy 6.03 (U.S. 101 Landscaping and View Protection) states that projects within the city should work with Caltrans and the county to provide additional landscaping along the U.S. 101 ROW to enhance its attractiveness, recognizing that it is the primary "visitor-serving" traffic artery in the planning

area. Also, encourage new developments facing U.S. 101 to provide landscape screening and to protect and enhance existing views of farmland and surrounding hills. The nearest portions of Reach 4, which parallel U.S. 101, are approximately 0.25 mile away and within the City of Gilroy's SOI[1]. Views of Reach 4 along U.S. 101 may be obscured because of the distance from passing motorists whose views are also transient in nature. The existing composite roughness characteristics of the channel (n-values) would not substantially change in those reaches where there is some riparian vegetation, particularly Reaches 4, 5, and 6 (see Table 2.4-5 and Figure 3.13-1f). This indicates that the overall change in vegetative cover and character would be small. Therefore, impacts would be less than significant.

The City of Morgan Hill states in Policy 14a that the city should enhance the visual integrity of the gateways to the city, such as Monterey Road south of Watsonville Road, which falls within Reach 7A. Policy 14b also states that the city should protect the visual integrity of the scenic gateways to the South County.

Some native shrubs and hardwood trees would be removed to allow for channel widening on one side of the channel leaving one natural bank. These excavated areas would be revegetated using native species. Revegetation is discussed as part of Mitigation Measure BOT-1c T in Section 3.4, Botanical Resources.

West Little Llagas Creek Trail (Reaches 7A and 7B) lies on land owned by SCVWD. Section 3.15, Recreation Resources, discusses the trail in additional detail. The West Little Llagas Trail would be replaced by the maintenance road, which would decrease the visual sensitivity of the area by reducing opportunities for public access. Revegetation would allow for recovery and growth of disturbed and removed species, which in turn would allow for improved visual character in areas visible from scenic roads and gateways identified by the cities of Morgan Hill and Gilroy. As the vegetation recovers after implementation of the revegetation plan, as shown in Figure 3.13-1d for Reach 7B, the disturbed areas may appear sparsely vegetated and bare. However, in the long term, revegetation would return the general visual character of the Upper Llagas creek corridor and the removal of the trail would decrease the visual sensitivity over the short term and, therefore, impacts would be less than significant.

The Preferred Alternative would result in fewer construction-related effects to commercial and residential areas in Reach 8 compared with the other alternatives since a portion of the existing creek channel would not be modified. With implementation of Mitigation Measure BOT-1c T, impacts would be less than significant.

Operations and Maintenance

Maintenance activities related to vegetation management, such as thinning, pruning, and small tree removal, would affect the visual character of the riparian corridor. However, the effect would be minor in nature since views from passing motorists are considered of lower visual sensitivity and the overall view of the riparian corridor would remain intact since maintenance activities would not occur every year, but approximately every five years (except for Reach 6, which may need to occur annually since there is perennial water and the likelihood of increased vegetation growth due to the presence of perennial water) and are generally site specific in nature. Vegetation maintenance would not include aggressive vegetation removal or removal of large trees along large stretches of creek.

Overall, operations and maintenance would comply with local policies related to protection of visual resources and with the implementation of the BMPs, listed below. No conflicts with local policies would occur during operations and maintenance of the Preferred Alternative and impacts are less than significant.

[1] SOI refers to "*boundaries for all agencies within its jurisdiction, indicating the physical boundary and service area each agency is expected to serve*". (Santa Clara County 2006)

Best Management Practices (BMPs)

The SCVWD has a standard list of BMPs they implement on all projects. The following are the BMPs that apply to this impact and are not considered mitigation, because they are identified as part of the Project implementation. The detailed activities associated with each BMP are discussed in Chapter 2.

> **BI-4:** Minimize Access Impacts.

> **BI-5:** Remove Temporary Fills as Appropriate.

> **BI-10:** Minimize Impacts to Vegetation From Clearing and Trimming.

> **BI-13:** Choose Local Ecotypes Of Native Plants and Appropriate Erosion-Control Seed Mixes.

> **WQ-18:** Maintain Clean Conditions at Work Sites.

Mitigation Measures

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

With the implementation of the above BMPs and mitigation measure, conflicts with local policies are reduced to less than significant.

AES-4 T—Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operations and Maintenance	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction would take place Monday through Friday from 7:00 a.m. to 8:00 p.m. and Saturdays 9:00 a.m.to 6:00 p.m., but with the potential for construction work in the evenings until 10:00 p.m. outside of residential areas, although in rare instances, could be later. Construction activities are not anticipated to result in new sources of light or glare during the daytime. Nighttime construction may be required to avoid interruptions during peak traffic periods on heavily used roads or to address utilities relocation when utilized less in the evenings. Temporary lighting may be used when necessary; however, this would be temporary in nature. Additionally, with incorporation of Mitigation Measure WILD-2e T, illumination beyond the immediate work area will be minimized and all required lights would be shielded and pointing downward to control light beyond the immediate work area. With implementation of Mitigation Measure WILD-2e T, impacts are considered to be less than significant.

Operations and Maintenance

Construction of new bridges at Watsonville Road and West Middle Avenue would not result in new lighting along bridges in areas where lighting did not previously exist. Therefore, no operations related impacts would occur. Maintenance activities would occur during daytime hours and would not result in new sources of light or glare in the Project area. No impacts would occur.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure WILD-2e T: Minimize Nightwork Disruption to Wildlife.

With implementation of the above BMPs and mitigation measure, conflicts with local policies are reduced to less than significant.

3.13.5.3 Natural Resources Conservation Service (NRCS) Alternative

The NRCS Alternative would include widening and deepening the channel in all Project reaches.

AES-1 NRCS—Substantially degrade the visual character or quality of the site or surrounding area

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operations and Maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Impacts would be similar to AES-1 T with the exception of additional impacts in Reach 8. Construction of the NRCS Alternative has the potential to degrade the existing visual character and quality in downtown Morgan Hill with the proposed improvements along West Little Llagas is Reach 8. For other reaches construction would require staging of materials and large construction equipment and the removal of large quantities of vegetation within the construction footprint as demonstrated in Figures 3.13-1b through 3.13-1h.

Table 3.4-4, in Section 3.4, Botanical Resources, includes a summary of trees to be removed under the Preferred Alternative. Tree removal for the NRCS Alternative would be the same as in the Preferred Alternative with the exception of Reach 8. In Reach 8, the NRCS Alternative would involve removal of additional trees found along 2,775 feet of the existing West Little Llagas Creek channel where above-ground construction would take place, which would be avoided by the Preferred Alternative. Overall, approximately 65 percent of the trees within the Project construction limits are proposed for removal.

The proposed tree removals would change the visual character of each reach immediately following tree removals. Trees would be removed in phases, since construction of all reaches would not happen simultaneously. The tree removals would create more filtered and broader views through fewer trees, which in some areas are currently more narrowed and focused along the channel corridor by the number and density of the existing larger mature vegetation.

It is anticipated that immediately after tree removals and prior to full establishment after revegetation (Mitigation Measure BOT-1c T), the area would appear less densely vegetated and the tree canopy would be reduced. This change would be short term and temporary in that revegetation and establishment of replanted trees may take years to reach pre-Project densities, but would eventually recover, thereby changing the general visual character and quality of all reaches within the Project area. Therefore, the overall visual character would temporarily change with the thinning of vegetation and tree canopy across all reaches; however, this change is expected to be temporary.

The view simulation (Figure 3.13-1f) in Reach 4 illustrates that although mature trees would be removed in some areas, overall many areas of the riparian corridor would eventually be more vegetated than prior to the Project because of revegetation, which is proposed for mitigation, including areas that were

previously minimally covered. The view simulation (Figure 3.13-1g) in Reach 14 also illustrates the more dense cover after revegetation. Over the long-term, revegetation would allow for recovery and growth of disturbed and removed vegetation, which in turn would allow for improved visual character after construction in areas visible to viewer groups. Therefore, impacts immediately following tree removals would be temporary and significant; however, with implementation of the Mitigation Measure BOT-1c T, impacts would be reduced to less than significant.

The temporary presence of construction equipment in the Project area and in staging areas, in addition to construction personnel, may change the general visual character and/or impede views of the creek during construction activities. Removal of structures related to channel widening and realignment during construction, as discussed in Table 2.5-1, have the potential to change the general visual character in all reaches where removal or relocation is necessary. Removal of structures involves all reaches, except Reach 7A for the NRCS Alternative. However, structure removal would be kept to a minimum and only select structures are slated for removal or relocation. Removal and relocation of structures would not dramatically affect the visual character of the Project area, and impacts would be less than significant.

New access roads are proposed to be constructed along most reaches. Clearing and grubbing of vegetation (as necessary) prior to road construction would constitute a slight visual change to viewers in the area, however, the roads are flat and linear and not easily visible throughout all reaches; therefore, impacts would be less than significant.

New temporary staging areas would also constitute new visual features along the Project reaches. Staging areas would contain staged construction equipment and materials not typically there. Staging areas would be used both during the duration of construction during both daytime and nighttime. Staging areas are anticipated, however, to be temporary in nature and not contribute to a permanent change in visual character in the Project area.

The permanent changes to visual character include channel widening, vegetation removal, additional access roads, and removal/relocation of structures within the Project footprint. For example, in Figure 3.13-1c, which depicts Spring Avenue looking northwest in Reach 7B, the visual character changes from a more urban impression to a more formalized water feature with the channel being re-routed and a new access road being located along the channel. Vegetation would also be cleared and an existing structure would be removed, opening up the area to views, as well. The general visual character would change slightly, as the viewer's focus would be a water feature as compared to existing conditions. The visual quality also would generally improve, since the site is more open and clear and the new focus of the site would be a water feature. Overall visual changes to the Project would be increased visual quality, while at the same time involving a general change to visual character. Views to the site can be obtained from Spring Avenue and from local residences. Similar changes are expected for most reaches for the NRCS Alternative.

Overall, with the combination of tree removal, removal and relocation of structures, and general construction activity, the visual character and quality would substantially change during construction, and impacts during construction would be temporary and significant. However, after construction has been completed and with implementation of the Mitigation Measure BOT-1c T, long-term impacts would be less than significant.

Operations and Maintenance

During the operations phase of the Project, the primary visual changes would involve the permanent change in visual character of the area due to the flood control improvements along all reaches. Once the Project is constructed, over time vegetation density may increase and flexibility of woody riparian species may decrease as the vegetation matures and becomes well established. This could cause the hydraulic roughness of the channel to increase beyond that originally designed, necessitating thinning, or removal of vegetation to maintain the reduction of flood risk. During routine maintenance activities, such as

vegetation management, there may be visual changes from removal of vegetation required as part of flood risk management. However, these changes would be intermittent and site specific. Additionally, large trees would not be removed as part of the maintenance program. Therefore, impacts from maintenance would be less than significant.

Best Management Practices (BMPs)

The SCVWD has a standard list of BMPs they implement on all projects. The following are the BMPs that apply to this impact and are not considered mitigation, because they are identified as part of the Project implementation. The detailed activities associated with each BMP are discussed in Section 2.4 of Chapter 2, Description of the Alternatives.

> **BI-4:** Minimize Access Impact.

> **BI-5:** Remove Temporary Fills as Appropriate.

> **BI-10:** Minimize Impacts to Vegetation From Clearing and Trimming.

> **BI-13:** Choose Local Ecotypes Of Native Plants and Appropriate Erosion-Control Seed Mix.

> **WQ-18:** Maintain Clean Conditions at Work Sites.

Mitigation Measures

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

Implementation of the above BMPs and mitigation measures would reduce impacts to less than significant.

AES-2 NRCS—Permanently and substantially obstruct or block any scenic vista or view corridor that is designated on local plans as significant or important

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	NI	N/A
Operations and Maintenance	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

There are no designated scenic vistas or view corridors of importance within the Project area. Construction of the NRCS Alternative would involve tree removals, channel widening, channel realignment, staging of materials and large construction equipment, and other flood improvement activities, which may change the general appearance of Upper Llagas Creek at public viewing points (Figures 3.13-1b–h). As discussed in AES-2 NRCS, a revegetation plan would be implemented to revegetate and restore the creek corridor to natural conditions. While the revegetated areas recover from NRCS construction, they may temporarily appear sparsely vegetated and bare; however, as the plants and trees mature, the overall long-term change would remain in line with the visual character of Upper Llagas Creek corridor. The NRCS Alternative would not obstruct or block any scenic vista or view corridor that is designated on local plans. Therefore, no impacts would occur from construction of the NRCS Alternative.

Operations and Maintenance

During routine maintenance activities, such as vegetation management, there may be visual changes from removal of vegetation required as part of flood risk management. However, these changes would be intermittent and site specific. Additionally, large trees would not be removed as part of the maintenance program and no scenic vistas or view corridors would be blocked by the operation. Therefore, no impacts would occur from operations and maintenance related to implementation of the NRCS Alternative.

Best Management Practices (BMPs)

The SCVWD has a standard list of BMPs they implement on all projects. The following are the BMPs that apply to this impact and are not considered mitigation, because they are identified as part of the Project implementation. The detailed activities associated with each BMP are discussed in Chapter 2.

> **BI-4:** Minimize Access Impacts.

> **BI-5:** Remove Temporary Fills as Appropriate.

> **BI-10:** Minimize Impacts to Vegetation From Clearing and Trimming.

> **BI-13:** Choose Local Ecotypes of Native Plants and Appropriate Erosion-Control Seed Mixes.

> **WQ-18:** Maintain Clean Conditions at Work Sites.

Mitigation Measures

None required

There would be no impact to scenic vistas or view corridors, because none are designated within the Project area.

AES-3 NRCS—Conflict with local plans and policies on protecting visual and aesthetic resources

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operations and Maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

In terms of issues related to aesthetics, policies relevant to the Project are primarily associated with protection and minimizing disturbances to creek corridors to maintain aesthetic values. Staging of materials and equipment would change the visual character of the creek corridor, but this impact would be short-term during construction and, therefore, would not create a permanent conflict with local policies. The City of Gilroy's Policy 6.03 (U.S. 101 Landscaping and View Protection) states that projects within the city should work with Caltrans and the county to provide additional landscaping along the U.S. 101 ROW to enhance its attractiveness, recognizing that it is the primary "visitor-serving" traffic artery in the planning area. Also, encourage new developments facing U.S. 101 to provide landscape screening and to protect and enhance existing views of farmland and surrounding hills. The nearest portions of Reach 4, which

parallel U.S. 101, are approximately 0.25 mile away and within the City of Gilroy's SOI[2]. Views of Reach 4 along U.S. 101 may be obscured because of the distance from passing motorists whose views are also transient in nature. The existing composite roughness characteristics of the channel (n-values) would not substantially change in those reaches where there is some riparian vegetation, particularly Reaches 4, 5, and 6 (see Table 2.4-5 and Figure 3.13-1f). This indicates that the overall change in vegetative cover and character would be small. Therefore, impacts would be less than significant.

The City of Morgan Hill states in Policy 14a that the city should enhance the visual integrity of the gateways to the city, such as Monterey Road south of Watsonville Road, which falls within Reach 7A. Policy 14b also states that the city should protect the visual integrity of the scenic gateways to the South County.

Some native shrubs and hardwood trees would be removed to allow for channel widening on one side of the channel leaving one natural bank. These excavated areas would be revegetated using native species. Revegetation is discussed as part of Mitigation Measure BOT-1c T.

West Little Llagas Creek Trail (Reaches 7A and 7B) lies on land owned by SCVWD. Section 3.15, Recreation Resources, discusses the trail in additional detail. The West Little Llagas Trail would be replaced by the maintenance road, which would decrease the visual sensitivity of the area. Revegetation would allow for recovery and growth of disturbed and removed species, which in turn will allow for improved visual character in areas visible from scenic roads and gateways identified by the cities of Morgan Hill and Gilroy. As the vegetation recovers after implementation of the revegetation plan, as shown in Figure 3.13-1d for Reach 7B, the disturbed areas may appear sparsely vegetated and bare; however, in the long-term, revegetation would return the general visual character of the Upper Llagas creek corridor and the removal of the trail would decrease the visual sensitivity over the short-term. With implementation of Mitigation Measure BOT-1c T, impacts would be less than significant.

Operations and Maintenance

Maintenance activities related to vegetation management, such as thinning, pruning, and small tree removal, may generally affect the visual character of the riparian corridor. However, the effect is expected to be minor in nature since views from passing motorists are considered of lower visual sensitivity. Additionally, the overall view of the riparian corridor would remain intact since maintenance activities associated with shrubs and trees at a given location would not occur every year but on average approximately every 5 years, except for the perennially flowing segment of Reach 6, which is estimated to likely require riparian vegetation maintenance on a more frequent, 3-year average cycle due to the potential for increased vegetation growth.

Overall, operations and maintenance would comply with local policies related to protection of visual resources and with the implementation of the BMPs listed below. No conflicts with local policies would occur during operations and maintenance of the NRCS Alternative and impacts would be less than significant.

Best Management Practices (BMPs)

The SCVWD has a standard list of BMPs they implement on all projects. The following are the BMPs that apply to this impact and are not considered mitigation, because they are identified as part of the Project implementation. The detailed activities associated with each BMP are discussed in Chapter 2.

> **BI-4:** Minimize Access Impacts.

> **BI-5:** Remove Temporary Fills as Appropriate.

[2] SOI refers to "*boundaries for all agencies within its jurisdiction, indicating the physical boundary and service area each agency is expected to serve*". (Santa Clara County 2006)

> **BI-10:** Minimize Impacts to Vegetation From Clearing and Trimming.

> **BI-13:** Choose Local Ecotypes Of Native Plants and Appropriate Erosion-Control Seed Mixes.

> **WQ-18:** Maintain Clean Conditions at Work Sites.

Mitigation Measures

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

With the implementation of the above BMPs and mitigation measure, conflicts with local policies are to less than significant.

AES-4 NRCS—Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operations and Maintenance	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction would take place Monday through Friday from 7:00 a.m. to 8:00 p.m. and Saturdays 9:00 a.m.to 6:00 p.m. but with the potential for construction work in the evenings until 10:00 p.m. outside of residential areas, although, in rare instances, could be later. Construction activities are not anticipated to result in new sources of light or glare during the daytime. Nighttime construction may be required to avoid interruptions during peak traffic periods on heavily used roads or to address utilities relocation when utilized less in the evenings. Temporary lighting may be used when necessary; however, this would be temporary in nature. Additionally, with incorporation of Mitigation Measure WILD-2eT, illumination beyond the immediate work area will be minimized and all required lights would be shielded and pointing downward to control light beyond the immediate work area. With implementation of Mitigation Measure WILD-2eT (Section 3.5.5.2), impacts are considered to be less than significant.

Operations and Maintenance

Construction of new bridges at Watsonville Road and West Middle Avenue would not result in new lighting along bridges in areas where lighting did not previously exist. Therefore, no operations related impacts would occur. Maintenance activities would occur during daytime hours and would not result in new sources of light or glare in the Project area; therefore, no impacts would occur.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure WILD-2e T: Minimize Nightwork Disruption to Wildlife.

Implementation of the above mitigation measure would reduce night time construction impacts to less than significant.

3.13.5.4 Culvert/Channel Alternative

The SCVWD considered and developed the Culvert/Channel Alternative, because there was an opportunity to reduce the Project footprint associated with the NRCS Alternative in Reach 8. This alternative would require a smaller ROW; reduce the amount of vegetation to be removed along the existing West Little Llagas channel; and would allow easier maintenance access, relative to the NRCS Alternative. The key feature of the Culvert/Channel Alternative is elimination of the need for channel deepening and widening through residential properties, as proposed for the NRCS Alternative between West Main Avenue and West 2nd Street in Reach 8.

AES-1 CC—Substantially degrade the visual character or quality of the site or surrounding area

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operations and Maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Impacts are similar to AES-1 NRCS. However, the Culvert/Channel Alternative would result in lessened construction-related effects to aesthetics in residential areas in Reach 8, because of the installation of the culverts would occur through athletic fields and along Del Monte Road to West 2nd Street, rather than through a section of residential homes between West Main Avenue and West 2nd Street. For other project reaches, visual simulations are shown in Figures 3.13-1b–h. With implementation of BOT-1c T: Prepare a Revegetation Plan, impacts would be less than significant.

Operations and Maintenance

Impacts are similar to AES-1 NRCS. For most reaches, once the Project is constructed, over time vegetation density would increase and flexibility of woody riparian species would decrease as the vegetation matures and becomes well established. This would cause the hydraulic roughness of the channel to increase beyond that originally designed, necessitating thinning, or removal of vegetation to maintain the reduction of flood risk. During routine maintenance activities, such as vegetation management, there would be visual changes from removal of vegetation required as part of flood risk management. However, these changes would be intermittent and site specific. Additionally, large trees would not be removed as part of the maintenance program.

In Reach 8, there would be reduced removal of vegetation for the Culvert/Channel Alternative; therefore, reduced visual impacts overall from this alternative, since no maintenance is proposed in the areas that would not require vegetation removal. Therefore, impacts from maintenance would be less than significant.

Best Management Practices (BMPs)

The SCVWD has a standard list of BMPs they implement on all projects. The following are the BMPs that apply to this impact and are not considered mitigation, because they are identified as part of the Project implementation. The detailed activities associated with each BMP are discussed in Chapter 2.

> **BI-4:** Minimize Access Impacts.

> **BI-5:** Remove Temporary Fills as Appropriate.

> **BI-10:** Minimize Impacts to Vegetation From Clearing and Trimming.

> **BI-13:** Choose Local Ecotypes Of Native Plants and Appropriate Erosion-Control Seed Mixes.

> **WQ-18:** Maintain Clean Conditions at Work Sites.

Mitigation Measures

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

Implementation of the above BMPs and mitigation measure would reduce impacts to less than significant.

AES-2 CC—Permanently and substantially obstruct or block any scenic vista or view corridor that is designated on local plans as significant or important

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	NI	N/A
Operations and Maintenance	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Impacts are similar to AES-2 NRCS. However, the Culvert/Channel Alternative would result in lessened construction-related effects to creek corridor views in residential areas in Reach 8. An 800-foot segment of the double 10-foot-wide box culverts in the NRCS design would be realigned parallel to Hale Avenue through the Britton School athletic fields up to Del Monte Avenue and continuing the double box culvert under Del Monte Avenue approximately 900 feet to West 2nd Street.

From West 2nd Street to West Dunne Avenue the same channel widening and deepening, along with culvert replacements at 2nd, 3rd, 4th, and 5th streets, as described for the NRCS Alternative, would be performed in Reach 8. The upstream-most portion of the Culvert/Channel Alternative from Llagas Road then along Hale Avenue would remain the same as the NRCS Alternative. All other reaches would have exactly the same design, as previously described for the NRCS Alternative. Since there are no designated scenic resources in the NRCS Project area, no impacts would occur.

Operations and Maintenance

Impacts are similar to AES-2 NRCS. There are no designated scenic resources in the Project area; therefore, no impacts would occur.

Best Management Practices (BMPs)

The SCVWD has a standard list of BMPs they implement on all projects. The following are the BMPs that apply to this impact and are not considered mitigation, because they are identified as part of the Project implementation. The detailed activities associated with each BMP are discussed in Chapter 2.

> **BI-4:** Minimize Access Impacts.

> **BI-5:** Remove Temporary Fills as Appropriate.

> **BI-10:** Minimize Impacts to Vegetation From Clearing and Trimming.

> **BI-13:** Choose Local Ecotypes Of Native Plants and Appropriate Erosion-Control Seed Mixes.

> **WQ-18:** Maintain Clean Conditions at Work Sites.

Mitigation Measures

None required

There would be no impact to scenic vistas or view corridors, because none are designated within the Project area.

AES-3 CC—Conflict with local plans and policies on protecting visual and aesthetic resources

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operation and Maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Impacts are similar to AES-3 NRCS. However, the Culvert/Channel Alternative would result in lessened construction-related effects aesthetics in residential areas in Reach 8. With implementation of Mitigation Measure BOT-1c T, impacts would be less than significant.

Operations and Maintenance

Impacts are similar to AES-3 NRCS. Overall, operations and maintenance would comply with local policies related to protection of visual resources and with the implementation of the BMPs, listed below. Impacts related to conflicts with local policies would occur during operations and maintenance of the Culvert/Channel Alternative would be less than significant.

Best Management Practices (BMPs)

The SCVWD has a standard list of BMPs they implement on all projects. The following are the BMPs that apply to this impact and are not considered mitigation, because they are identified as part of the Project implementation. The detailed activities associated with each BMP are discussed in Chapter 2.

> **BI-4:** Minimize Access Impacts.

> **BI-5:** Remove Temporary Fills as Appropriate.

> **BI-10:** Minimize Impacts to Vegetation From Clearing and Trimming.

> **BI-13:** Choose Local Ecotypes Of Native Plants and Appropriate Erosion-Control Seed Mixes.

> **WQ-18:** Maintain Clean Conditions at Work Sites.

Mitigation Measures

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

Implementation of the above BMPs and mitigation measure would reduce impacts to less than significant.

AES-4 CC—Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operations and Maintenance	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction would take place primarily Monday through Friday from 7:00 a.m. to 8:00 p.m. and Saturdays 9:00 a.m.to 6:00 p.m., but with the potential for construction work in the evenings until 10:00 p.m. outside of residential areas, although in emergencies, it could be later. Construction activities are not anticipated to result in new sources of light or glare during the daytime. Nighttime construction may be required to avoid interruptions during peak traffic periods on heavily used roads or to address utilities relocation when utilized less in the evenings, temporary lighting may be used when necessary; however, this would be temporary in nature. Additionally, with incorporation of Mitigation Measure WILD-2e T, illumination beyond the immediate work area will be minimized and all required lights would be shielded and pointing downward to control light beyond the immediate work area. With incorporation of Mitigation Measure WILD-2e T (Section 3.5.5.2), impacts are less than significant.

Operations and Maintenance

Construction would not result in new lighting along bridges in areas where lighting did not previously exist and maintenance would not occur after sunset. Therefore, no operations related impacts would occur. Maintenance activities would occur during daytime hours and would not result in new sources of light or glare in the Project area.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure WILD-2e T: Minimize Nightwork Disruption to Wildlife.

Implementation of the above mitigation measure would reduce night time construction impacts to less than significant.

3.13.5.5 Reach 6 Bypass Alternative

The Reach 6 Bypass Alternative would construct a high-flow bypass channel between Reach 6 of Llagas Creek and Reach 14 of East Little Llagas Creek. The bypass would be designed so that no flood capacity improvements would be needed along Reach 6 or Reach 5 of Llagas Creek downstream of the proposed bypass. Additionally, in Reach 8, through the City of Morgan Hill, the Project would be exactly the same as the Preferred Alternative. Flood conveyance improvements for the upstream Project Reaches 7A and 7B and for the downstream Reach 4 would remain the same as that described for the NRCS Alternative. Reach 14 would also be wider and deeper compared to other alternatives.

AES-1 BY—Substantially degrade the visual character or quality of the site or surrounding area

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operations and Maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Impacts are similar to AES-1 T in most reaches, except along the existing channel in Reach 5 and most of Reach 6, which would require no construction; and, therefore, no tree removals in either reach. However, there would be additional construction of a new bypass channel, which would connect Reach 6 to Reach 14 by passing under Murphy Avenue and then under U.S. 101 with new bridges. However this proposed bypass area is currently an undeveloped, open field that has low visual sensitivity, because the viewers are commuters and non-recreational travelers along U.S. 101 or along Murphy Avenue. The constructed earthen bypass channel banks would be vegetated, but the channel itself would be dry most of the time, except during rainfall events that briefly generate high flow runoff. Although the empty field would hold a new channel feature, the aesthetic character would not substantially change, as the landscape would remain earthen, natural materials, the same view-shed would remain intact (nothing would obstruct existing views) and the landscape would remain pastoral in character. As such, the visual quality to the area would not be negatively affected, because it would not be out of context with the existing surrounding visual character. Visual simulations depicting most Project reaches for the Reach 6 Bypass Alternative are demonstrated in Figures 3.13-1a and Figures 3.13-1c–h. Figure 3.13-1f depicts both the existing setting and the visual simulation with channel modifications in Reach 5. Since no modifications are proposed in Reach 5 for the Reach 6 Bypass Alternative, this existing view would remain the same as shown in the top photograph of this figure. With implementation of a revegetation plan as part of Mitigation Measure BOT-1c T, impacts would be less than significant.

Operations and Maintenance

Impacts are similar to AES-1 T in most reaches. However, during operations and maintenance of the Reach 6 Bypass Alternative, no channel modifications would occur in Reach 5 and portions of Reach 6. Therefore, long-term visual effects, as a result of Project operations and maintenance would be less along those reaches compared with the Preferred Alternative.

Maintenance activities, such as vegetation management would still occur along Reach 5 and portions of 6. With regards to the new bypass channel proposed for construction under this alternative, it would be dry most of the year and revegetation would primarily involve grasses and low-growing xeric shrubs, which would require minimal maintenance. The maintenance associated with the newly constructed channel segments would result in periodic and temporary reduction in the density of vegetation to maintain channel capacity; however, these changes would be subtle and would not degrade the overall visual quality of the Project area. Impacts are less than significant.

Best Management Practices (BMPs)

The SCVWD has a standard list of BMPs they implement on all projects. The following are the BMPs that apply to this impact and are not considered mitigation, because they are identified as part of the Project implementation. The detailed activities associated with each BMP are discussed in Chapter 2.

> **BI-4:** Minimize Access Impacts.

> **BI-5:** Remove Temporary Fills as Appropriate.

> **BI-10:** Minimize Impacts to Vegetation From Clearing and Trimming.

> **BI-13:** Choose Local Ecotypes Of Native Plants and Appropriate Erosion-Control Seed Mixes.

> **WQ-18:** Maintain Clean Conditions at Work Sites.

Mitigation Measures

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

Implementation of the above BMPs and mitigation measure would reduce impacts to less than significant.

AES-2 BY—Permanently and substantially obstruct or block any scenic vista or view corridor that is designated on local plans as significant or important

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	NI	N/A
Operations and Maintenance	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Impacts are similar to AES-2 T. The Reach 6 Bypass Alternative would, however, result in less construction-related visual effects in Reach 5 and most of Reach 6, although construction of the bypass channel would introduce new construction not proposed under the Preferred Alternative. There would be additional construction-related visual effects due to construction of a new Bypass channel under Murphy Avenue and U.S. 101 to connect Reach 14 to Reach 6. There are no designated scenic vistas or view corridors in the Project area. Therefore, no impacts will occur to designated scenic vistas or view corridors.

Operations and Maintenance

Impacts are similar to AES-2 T. However, during operations and maintenance of the Reach 6 Bypass Alternative, no channel modifications would occur in Reach 5 and a portion of Reach 6; therefore, related effects on visual resources would be reduced along those reaches. Other than vegetation maintenance, operations would not alter the view or impact the visual quality of the Project area. The existence of a new bypass under U.S. 101 would be a new permanent visual change in the area. Additionally, a tunnel would be constructed similar to the Preferred Alternative in Reach 8, which would reduce visual impacts from above-ground locations compared to channel deepening and widening that would occur under the NRCS Alternative.

Maintenance activities, such as vegetation management, would still occur along Reach 5 and portions of 6 and 8. The bypass channel would be dry most of the year, so revegetation would primarily consist of grasses and xeric shrubs, which would require minimal maintenance. Maintenance would result in periodic and temporary reduction in the density of vegetation to maintain channel capacity; however, these changes would be subtle and would not degrade the overall visual quality of the Project area. Additionally, there are no designated scenic vistas or view corridors in the Project area; therefore, no impacts would occur.

The SCVWD has a standard list of BMPs they implement on all projects. The following are the BMPs that apply to this impact and are not considered mitigation, because they are identified as part of the Project implementation. The detailed activities associated with each BMP are discussed in Chapter 2.

Best Management Practices (BMPs)

> **BI-4:** Minimize Access Impacts.

> **BI-5:** Remove Temporary Fills as Appropriate.

> **BI-10:** Minimize Impacts to Vegetation From Clearing and Trimming.

> **BI-13:** Choose Local Ecotypes Of Native Plants and Appropriate Erosion-Control Seed Mixes.

> **WQ-18:** Maintain Clean Conditions at Work Sites.

Mitigation Measures

None required

There would be no impact to scenic vistas or view corridors, because none are designated within the Project area.

AES-3 BY—Conflict with local plans and policies on protecting visual and aesthetic resources

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operations and Maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Impacts are similar to AES-3 T. However, the Reach 6 Bypass Alternative would result in a reduced construction footprint, since there is no construction in Reach 5 and most of Reach 6 but would result in additional construction of a new Bypass connection under Murphy Avenue and U.S. 101 to connect Reach 14 to Reach 6. Construction activities would not conflict with local plans and policies on protecting visual and aesthetic resources with implementation of Mitigation Measure BOT-1c T, impacts would be less than significant.

Operations and Maintenance

Impacts are similar to AES-3 T. For operations and maintenance of the Reach 6 Bypass Alternative, no channel modifications would occur in Reach 5 and most of Reach 6; therefore, visual related effects would not occur along those reaches. Other than vegetation maintenance, operations would not alter the view or impact the visual quality of the Project area.

Maintenance activities, such as vegetation management, would still occur along the existing segments of channel in Reach 5 and portions of 6 and 8, where no construction would occur under this alternative. The Reach 6 Bypass Channel would be dry most of the year, so revegetation would primarily consist of grasses and xeric shrubs, which would require minimal maintenance. Where new construction occurs under this alternative, maintenance would result in periodic and temporary reduction in the density of vegetation to maintain channel capacity; however, these changes would be subtle and would not change the overall visual character or quality of the Project area. Operation and maintenance activities would not

conflict with local plans and policies on protecting visual and aesthetic resources; therefore, impacts will be less than significant.

The SCVWD has a standard list of BMPs they implement on all projects. The following are the BMPs that apply to this impact. They are not considered mitigation, because they are already included as part of the Project implementation. The detailed activities associated with each BMP are discussed in Chapter 2.

Best Management Practices (BMPs)

> **BI-4:** Minimize Access Impacts.

> **BI-5:** Remove Temporary Fills as Appropriate.

> **BI-10:** Minimize Impacts to Vegetation From Clearing and Trimming.

> **BI-13:** Choose Local Ecotypes Of Native Plants and Appropriate Erosion-Control Seed Mixes.

> **WQ-18:** Maintain Clean Conditions at Work Sites.

Mitigation Measures

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan.

With the implementation of the above BMPs and mitigation measure, conflicts with local policies are to less than significant.

AES-4 BY—Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Construction Activities	LTSM	N/A
Operations and Maintenance	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction would take place Monday through Friday from 7:00 a.m. to 8:00 p.m. and Saturdays 9:00 a.m.to 6:00 p.m., but with the potential for construction work in the evenings until 10:00 p.m. outside of residential areas. Construction activities are not anticipated to result in new sources of light or glare during the daytime. Nighttime construction may be required to avoid interruptions during peak traffic periods on heavily used roads or to address utilities relocation when utilized less in the evenings, temporary lighting may be used when necessary; however, this would be temporary in nature. Additionally, with incorporation of Mitigation Measure WILD-2e T, illumination beyond the immediate work area will be minimized and all required lights would be shielded and pointing downward to control light beyond the immediate work area. Therefore, with incorporation of Mitigation Measure WILD-2e T (Section 3.5.5.2), impacts are considered to be less than significant.

Operations and Maintenance

Construction would not result in new lighting along bridges in areas where lighting did not previously exist. Therefore, no operations related impacts would occur. Maintenance activities would occur during daytime hours and would not result in new sources of light or glare in the Project area.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure WILD-2e T: Minimize Nightwork Disruption to Wildlife.

Implementation of the above mitigation measure would reduce night time construction impacts to less than significant.

3.13.6 Summary of Impacts to Aesthetic Resources

A summary of visual impacts is presented in Summary Table S-1. Although impacts are less than significant for each of the Alternatives, the level of impacts vary in intensity and extent as discussed below.

No Project Alternative

No construction is proposed as part of the No Project Alternative. Continued implementation of the maintenance activities as part of the SMP would not have long-term aesthetic impacts. No significant aesthetics related impacts would occur as a result of implementing the No Project Alternative.

Preferred Alternative

Aesthetics impacts from the Preferred Alternative would involve tree removals, channel widening, channel realignment, staging of materials and large construction equipment, and other flood improvement activities, which would change the general appearance of Upper Llagas Creek at public viewing points. However, construction activities would be temporary and disturbed areas would be revegetated according to a revegetation plan as part of Mitigation Measure BOT-1c T. This would be implemented to revegetate and restore the creek corridor to natural conditions. Immediately after tree removals, and prior to full establishment after initial revegetation efforts, the Project area would appear less densely vegetated and the tree canopy would be reduced. This change would be temporary, but revegetation and establishment of replanted trees would take place following tree removals, and in the long term vegetation would eventually reach pre-Project densities.

Maintenance activities after construction would be subtle and would not change the overall visual character or quality of the Project area.

Overall aesthetic impacts would be less than the NRCS Alternative in that there would be no modifications to the channel in Reach 8 through downtown Morgan Hill with construction of a tunnel, which has high public viewing opportunities.

NRCS Alternative

Aesthetics impacts would be similar to the Preferred Alternative but would be increased with the proposed channel improvements in Reach 8. The proposed tree removals, as part of construction for all action alternatives, would change the visual character and visual quality of each reach and would be considered a significant impact since more than half of the existing trees within the construction limits would be removed.

As compared to the other alternatives, the NRCS Alternative would have the most visual impacts from construction and operations and maintenance since channel modifications are proposed for every reach.

Culvert/Channel Alternative

The Culvert/Channel Alternative would have impacts very similar to the NRCS Alternative, except that through a portion of Reach 8, the amount of vegetation to be removed along the existing West Little

Llagas channel near downtown City of Morgan Hill would be reduced, thereby, reducing the extent of impacts compared to the NRCS Alternative. The Culvert/Channel Alternative would result in more aesthetics impacts than the Preferred Alternative and the Reach 6 Bypass Alternative due to the longer length of channel modifications in Reach 8 near downtown.

Reach 6 Bypass Alternative

The Reach 6 Bypass Alternative is most similar to the Preferred Alternative, but requires the construction of a new bypass channel under U.S.101, which would involve construction and operations related visual effects in the bypass channel area. However, the bypass channel area has low visual quality and visual sensitivity since it is part of an urbanized area near a busy interstate freeway. Additionally, there would be no construction in Reach 5 and portions of Reach 6; and a tunnel would be constructed in Reach 8, leaving the existing creek channels in these reaches unmodified. The Reach 6 Bypass Alternative would reduce the overall need for vegetation removal and channel modifications and would have the least amount of aesthetic related impacts as compared to the other alternatives.

3.14 Utilities and Public Services

3.14.1 Introduction

In this section, the potential for the alternatives to affect utilities or increase demand for various public services is assessed. Utilities considered in this section include electricity and natural gas, water, sewer and wastewater, landfills, stormwater drainage, as well as telecommunications and cable. Public services considered in the section include fire and police services, and schools. Potential impacts to parks are considered in Section 3.15, Recreation Resources. Public services are delivered by cities, counties, and special districts located in the vicinity of the study area, while utilities are delivered by both public and private entities. In general, the various alternatives are not expected to increase demand for utilities and public services in the study area, because the Project is not anticipated to increase population in the region (see Section 3.16, Population and Housing). In addition, operations and maintenance of the various alternatives is not anticipated to increase demand for these services. Therefore, the focus of the section is on how utilities and public services may be affected by the various alternatives; and this section will not focus on the potential for the Project to increase growth and, therefore, increase demand for the various utilities. The SCVWD will comply with all regulations associated with the management of solid waste and would do so under each alternative.

The major resource documents used to complete this section are listed here:

> California Department of Water Resources (DWR) and U.S. Army Corp of Engineers (USACE). 2013. *California's Flood Future: Recommendations for Managing the State's Flood Risk (Public Review Draft).* Sacramento, California.

> City of Gilroy Water Department. 2011. *Annual Water Quality Report – 2011.* Gilroy, California.

> City of Gilroy. 2013. *South County Regional Wastewater Authority.* Available online at: http://www.cityofgilroy.org/cityofgilroy/city_hall/community_development/bles/industrial_waste/default.aspx. Accessed on February 16, 2013.

> City of Gilroy, City of Morgan Hill, Santa Clara County. 2009. *Draft Regional Storm Water Management Plan.* Santa Clara County, California.

> City of Morgan Hill. 2010b. *City Council Policy Briefing: Solid Waste Management and Recycling*. Morgan Hill, California.

> Santa Clara Local Agency Formation Commission (LAFCO). 2006. *Santa Clara LAFCO Service Reviews and Sphere of Influence Recommendations for the South Central Santa Clara County Area*. San Jose, California.

> Santa Clara Local Agency Formation Commission (LAFCO). 2010. *2010 Countywide Fire Service Review.* San Jose, California.

> Santa Clara Local Agency Formation Commission (LAFCO). 2011. *Countywide Water Service Review.* San Jose, California.

> Santa Clara Valley Water District (SCVWD). 2012d. *Where does our water come from? South County.* San Jose, California.

3.14.2 Study Area

The study area is within Morgan Hill and unincorporated Santa Clara County (including the community of San Martin). The southern extent of the study area is less than 1 mile from the City of Gilroy, although it lies within Gilroy's SOI as determined by LAFCO (see discussion in Section 3.8, Land Use and Planning). The northern portion (Reaches 8, 7B, and portions of 7A) is within the City of Morgan Hill; a portion of 7A is within unincorporated Santa Clara County, but within Morgan Hill's SOI. Reaches 6, 5, and 14 are

within the San Martin planning area while a portion (north of Masten Avenue) of Reach 4 is also in the San Martin planning area. The southern portion of Reach 4 is within unincorporated Santa Clara County and within the City of Gilroy's SOI.

A small special district, Lions Gate Community Services, lies southwest of San Martin and west of the Project. The district provides sewage collection, wastewater treatment, and potable water services for residents within the service area. The district is outside of the study area and is not discussed in this section. Also, the study area lies within the Santa Clara County Open Space Authority; a discussion of this special district is provided in Section 3.15, Recreation Resources.

3.14.2.1 Environmental Setting

In this section, utility providers are first discussed, and then a summary of public service providers is included. Table 3.14-1 provides a list of providers of utilities and public services in the study area. Each service is discussed later in the section.

Table 3.14-1 Summary of Utility and Public Service Providers

Utility/Public Service	Provider(s)	Notes
Electricity and Natural Gas	Pacific Gas & Electric	
Water	City of Morgan Hill San Martin County Water District Numerous Mutual Water Companies	
Sewer and Wastewater	City of Morgan Hill City of Gilroy * South County Regional Wastewater Authority (SCRWA) Septic tanks are used in unincorporated areas	The treatment facility is operated by SCRWA (a Joint Powers Authority). *City of Gilroy is listed because wastewater system is operated in cooperation with Morgan Hill.
Stormwater Drainage	City of Morgan Hill Santa Clara County	
Solid Waste	Recology South Valley GreenWaste	Several landfills serve the study area.
Telecommunications	Verizon AT&T	
Cable	Charter Communications	
Fire Protection	South County Fire District Cal Fire City of Gilroy Fire Department **	**Listed due to mutual aid agreements.
Police Protection	City of Morgan Hill Police Department Santa Clara County Sheriff's Department City of Gilroy Police Department ***	***Listed due to mutual aid agreements.
Schools	Morgan Hill Unified School District Gilroy Unified School District	
Parks	See Section 3.15, Recreation Resources	

3.14.2.2 Utilities

In this section, the providers and service areas of the various utilities within the study area are described. No information is provided on the capacities of the various utilities, because the various alternatives are not anticipated to create additional demand for these resources. The facilities, including above- and below-ground lines (e.g., electricity, natural gas, sewer, water, stormwater drainage, cable, telecommunications including fiber-optic lines, etc.) managed by the various utilities are widespread in the study area and within the Project footprint and these facilities would be affected under the various alternatives.

Electricity and Natural Gas

PG&E provides electricity and natural gas service in the study area (California Energy Commission 2007).

Water

The City of Morgan Hill provides water service to residents and businesses within the city limits (Santa Clara LAFCO 2006). Morgan Hill also provides water to the unincorporated Holiday Lakes Subdivision west of Anderson Reservoir. The source of the water is groundwater from the Coyote Valley within the Santa Clara Subbasin and the Llagas Subbasin (within the Gilroy-Hollister Basin). The San Martin County Water District (SMCWD), an independent special district, serves a portion of the unincorporated community of San Martin (Santa Clara LAFCO 2011); the SMCWD draws groundwater from the Llagas Subbasin for delivery to their customers. In addition to the service provided by Morgan Hill and the SMCWD, several mutual water companies each serve relatively small number of customers (generally less than 100) in and around the study area. Just outside of the study area, the City of Gilroy uses nine wells to extract groundwater from the Llagas Subbasin to provide water for city residents (City of Gilroy Water Department 2011). Management of groundwater resources in the vicinity of the study area is the responsibility of SCVWD. Three sources are used to replenish groundwater in the groundwater basins: (1) percolation of local rainfall; (2) water captured in local reservoirs released to creeks and recharge ponds; and (3) water imported from the Delta (SCVWD 2012d). In fact, the Church Street Percolation ponds along Reach 6, divert water from Llagas Creek into SCVWD recharge ponds.

Figure 3.14-1 shows the location of 11 wells that are within 500 feet of the Project area. There is one well each along or near both Reaches 8 and 7B. There are three wells along Reach 14 while six of the wells are along or near Reach 6. The SCVWD operates four of the wells, three of which are close to the recharge ponds along Reach 6. The other SCVWD well is along Reach 7B. The other seven wells are operated by private entities for the purposes of water supply and/or irrigation wells.

Sewer and Wastewater

The City of Morgan Hill maintains a sewer system within the city and some unincorporated areas adjacent to the city (City of Morgan Hill 2013a). The effluent is sent via an interceptor sewer line to the wastewater treatment facility near Gilroy. Also, the City of Gilroy maintains a sewer system for residents within the city limits, and the wastewater is sent through the system for treatment (City of Gilroy 2013). Wastewater from within the cities of Morgan Hill and Gilroy is treated at the South County Regional Wastewater Authority (a joint powers authority) in Gilroy. The waste treatment facility is co-located with a recycled water facility (operated in cooperation with the SCVWD). Sewer service is not provided throughout much of the unincorporated areas, including San Martin, where residences use septic systems.

Stormwater Drainage

The Llagas Creek channel is the primary stormwater infrastructure feature within the study area. The City of Morgan Hill maintains laterals and drains to West Little Llagas Creek within the city limits. The county is responsible for stormwater drainage within the unincorporated portions of the study area. Recently, the cities of Gilroy and Morgan Hill, along with the county implemented a stormwater management plan

(City of Gilroy, City of Morgan Hill, and Santa Clara County 2009). The primary goal of the plan is to provide a framework for Phase II of the National Pollutant Discharge Elimination System (NPDES) Stormwater Discharge Permit compliance.

Solid Waste

Garbage, recycling, and organic waste is collected by Recology South Valley in Gilroy, Morgan Hill, and parts of unincorporated San Martin. Whereas, GreenWaste provides pick up for other unincorporated areas within the study area. Both Recology and GreenWaste are private companies operating on contract with the local jurisdictions. Recology also maintains a transfer station in San Martin where construction and demolition debris are accepted with the exception of dirt, rock, concrete, and brick. The San Martin Transfer station is adjacent to the Project footprint. As of 2011, Santa Clara County reported that the county has greater than 15 years of landfill capacity remaining (Cal Recycle 2011).

Telecommunications and Cable

The primary provider of phone service in Gilroy and Morgan Hill is Verizon, while the San Martin unincorporated area is served by AT&T (California Public Utilities Commission 2007). Charter Communication provides cable service within the study area (Federal Communications Commission 2013).

3.14.2.3 Public Services

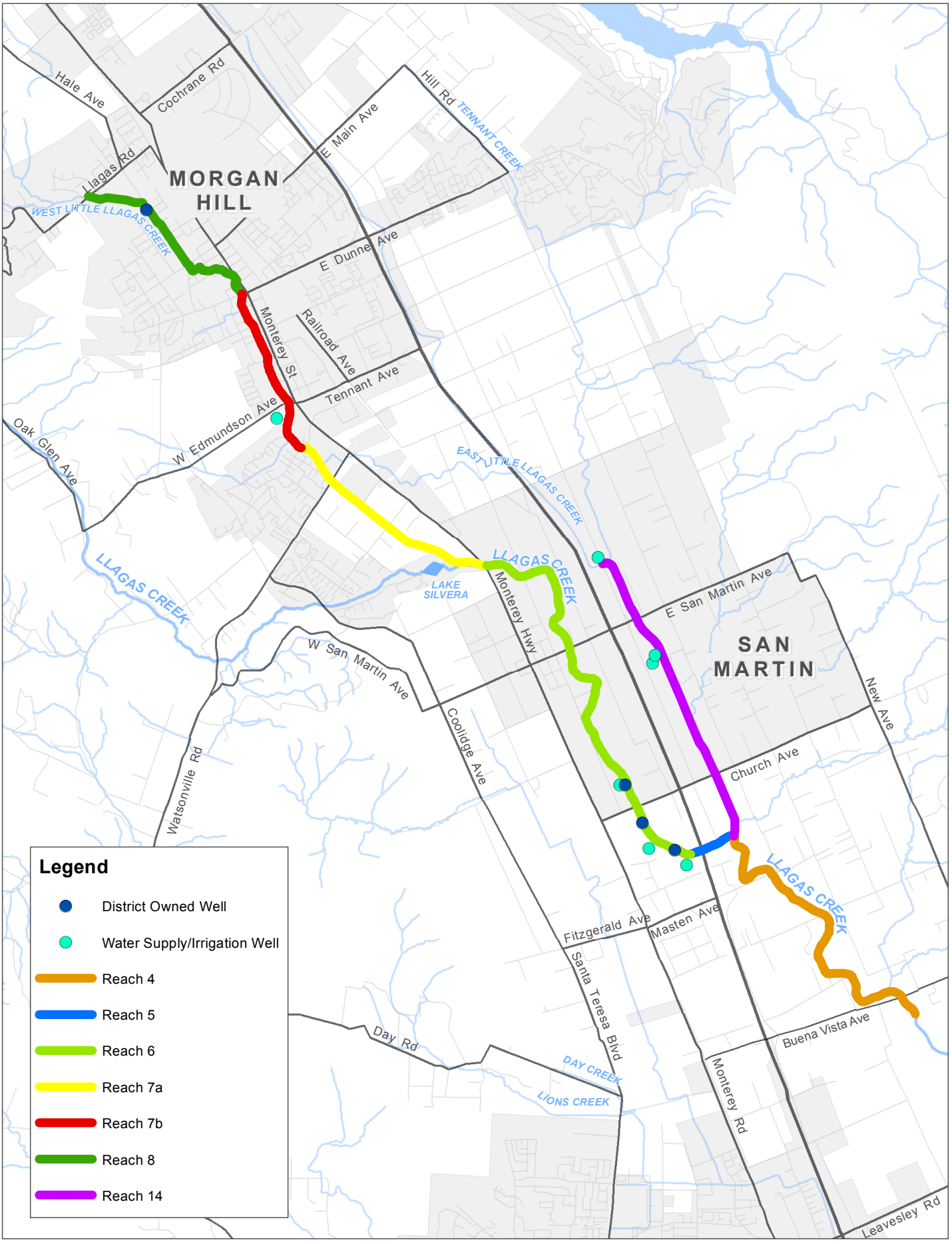
Fire Protection

Although the various agencies have defined jurisdictions, mutual aid agreements make it possible that agencies will respond to incidents outside of their jurisdictions. A countywide mutual aid agreement exists in Santa Clara County (Santa Clara LAFCO 2010).

As of early 2013, the City of Morgan Hill commenced a 5-year agreement with Cal Fire to provide fire protection within the city limits (CBS – San Francisco Bay Area 2013). The Santa Clara County Fire District had provided fire protection for Morgan Hill for the previous 17 years. Currently, Cal Fire employs an additional 22 in-line firefighters, along with two battalion chiefs in Morgan Hill. Cal Fire is contracted by the South Santa Clara Fire Protection District to provide fire protection for unincorporated areas in the vicinity of the study area. In total, CAL Fire operates five fire stations in the study area. Fire protection services within the City of Gilroy are provided by the city's fire department. The city maintains three fire stations. Although the study area is outside of the city limits, mutual aid agreements provide the possibility that the Gilroy Fire Department could respond to a fire in the southern extent of the study area. No fire stations are within the Project footprint.

Police Protection

Police services are provided by multiple agencies in the vicinity of the study area (Santa Clara LAFCO 2006). Within the city limits of Morgan Hill, police services are provided by the Police Department. The department is approved to have 36 fulltime sworn officers. The Sheriff has primary jurisdiction for police services in the unincorporated portions in the study area. Currently, there is 586 fulltime, sworn badge staff and the headquarters in San Jose. Along with providing police services for the unincorporated portions of the county, the communities of Cupertino, Los Altos Hills, and Saratoga are also served by the Sheriff. The Sheriff maintains a sub-station in unincorporated San Martin; other communities served by this sub-station include Rucker and Uvas Canyon, as well as unincorporated areas around Morgan Hill and Gilroy. The Gilroy Police Department has 65 sworn officers and has primary jurisdiction within the city limits. The study area does not fall within the city limits of Gilroy, but is within 1 mile. Mutual aid agreements are managed both at a countywide and regional level. The police stations and sheriff station are outside of the Project footprint.



Upper Llagas Creek Project EIS

FIGURE 3.14-1

Wells within 500 feet of Upper Llagas Creek Project

Cardno ENTRIX

Schools

The entire Project is within Santa Clara County and there are 31 total school districts (6 unified, 5 high school, and 21 elementary) in the county. Two school districts, Morgan Hill Unified School District and Gilroy Unified School District, serve the study area.

The Morgan Hill Unified School District serves the areas within the city limits of Morgan Hill, a small area in South San Jose and unincorporated areas in the county south of Bernal Avenue to Church Avenue in San Martin (Morgan Hill Unified School District 2013). The district has 14 schools and an enrollment of 8,700 students. Britton Middle School is adjacent to the Project footprint; in fact, the ball fields adjacent to the school would be within the construction zone under the Culvert/Channel Alternative. This is discussed in greater detail in Section 3.15, Recreation Resources. The Gilroy Unified School District (2013) serves the southernmost regions within the county including the City of Gilroy and unincorporated areas. The southern extent of the study area (south of Church Avenue) is within this district. There are 16 schools in the district serving over 11,000 students.

Parks

Information on potential impacts to parks is addressed in Section 3.15, Recreation Resources.

3.14.3 Regulatory Environment

The following federal, state, regional, and local requirements for the Project are described below.

3.14.3.1 Federal

There are no federal regulations applicable to this section.

3.14.3.2 State

California Integrated Waste Management Act of 1989 and Solid Waste Per Capita Disposal Act

The California Integrated Waste Management Act of 1989 (AB939) was signed into law in 1989. The Act requires each city and county in California to divert 25 percent of its waste by 1995, and 50 percent by 2000. In 2008, the state changed the reporting system from a diversion rate to per capita waste. The goal for Morgan Hill was 6.1 pounds per day per person. The city was in compliance, producing 4.0 pounds per day per person; this equals a 67 percent diversion rate (City of Morgan Hill 2010b). The goal for unincorporated Santa Clara County is 4.0 pounds per day per person and the goal was achieved at 3.7 pounds per person per day.

Utility Notification Requirements

The California Code of Regulations requires excavators to request utilities identify the location of below surface utilities prior to excavation.

3.14.3.3 Local

There are no applicable local regulations for this section.

3.14.4 Impact Analysis

3.14.4.1 Significance Criteria

Implementation of an alternative would have a significant impact on utilities if it were to:

a. Disrupt utility service by damaging or displacing infrastructure.

b. Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs.

Implementation of an alternative would have a significant impact on public services if it would result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

a. Fire protection

b. Police protection

c. Schools

d. Other public facilities

Note: Parks will be considered in Section 3.15, Recreation Resources.

3.14.4.2 Approach to Analysis

The Project is not expected to increase demand for utility or public services, as an increase in population attributable to the various alternatives is not anticipated (Section 3.16, Population and Housing). Therefore, the focus of the analysis is on how the Project may affect the utilities infrastructure. Potential impacts to utilities due to ground disturbing activity, such as construction, are assessed. The various alternatives are also analyzed to assess the potential effect on public services in the Project area. Also, the potential for the alternatives to impact the delivery of public services, such as increasing the overall emergency response times, is considered; although, the net change in timing would vary depending on location, type of emergency, weather, and time of day. For the purpose of comparing the alternatives' impacts on solid waste facilities, Table 3.14-2 shows the estimate of net disposal volume of materials associated with excavation by alternative. The SCVWD will comply with all regulations associated with the management of solid waste under all alternatives.

Table 3.14-2 Disposal Volumes by Alternative in Bank Cubic Yards (bcy) [1]

	No Project Alternative	NRCS Alternative	Tunnel Alternative (Preferred Alternative)	Culvert/Channel Alternative	Reach 6 Bypass Alternative
Disposal (bcy)	0	1,339,500	1,332,500	1,342,000	986,030

[1] Table shows disposal (total excavation less the estimated amount to be used on-site for fill). More detailed data is shown in the Project Description.

3.14.5 Impacts and Mitigation Measures

3.14.5.1 No Project Alternative

The No Project Alternative, in general, is not expected to lead to direct impacts to public services and/or utilities within the study area. However, compared to the action alternatives, this alternative does subject urbanized portions of Morgan Hill (Reaches 7A, 7B, and 8) to increased flood risk. Flooding, in turn, may disrupt or damage existing infrastructure, including utilities.

UPS-1 NP—Disrupt utility service by damaging or displacing infrastructure

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Existing condition	NI	S

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No construction would occur; therefore, the No Project Alternative would not damage or displace any utility infrastructure, and no impact would result.

Operations and Maintenance

Maintenance activities would continue as under existing conditions. However, future flooding of the creek could damage or disrupt utility services and other infrastructure (DWR and USACE 2013), as there is no additional protection from 100-year flooding. This can be especially damaging in a populated area where the concentration of commercial and residential areas is greater and more utility infrastructure is present. Under existing conditions, a substantial portion of the urbanized portion of Morgan Hill, including areas in and around downtown, is susceptible to flooding under the 100-year flood scenario. Under this scenario, existing utility infrastructure would likely be damaged during an extreme flood event and would constitute a significant impact.

Best Management Practices (BMPs)

None applicable

The potential existing utility infrastructure damage due to flood susceptibility would constitute a significant impact.

UPS-2 NP—Served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Existing condition	NI	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

The No Project Alternative would not include construction related activities and, therefore, no additional waste would be created. Therefore, the alternative would have no impact.

Construction

No construction would occur; therefore, the No Project Alternative would not impact landfill capacity.

Operations and Maintenance

Maintenance activities would continue as under existing conditions. The No Project Alternative would have no new impact on landfill capacity.

Best Management Practices (BMPs)

None applicable

UPS-3 NP—Implementation of an alternative would have a significant impact on one or more of the following public services: (a) Fire protection; (b) Police protection; (c) Schools; (d) Other public facilities

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Existing condition	NI	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

This action is not anticipated to change the level of public service need in proximity to the study area and, therefore, no impact is anticipated.

Construction

With no construction there would be no impact on public services.

Operations and Maintenance

Maintenance would continue under the existing SMP. There would be no impact to public services.

Best Management Practices (BMPs)

None applicable

3.14.5.2 Tunnel Alternative (Preferred Alternative)

UPS-1 T—Disrupt utility service by damaging or displacing infrastructure

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All activities	LTSM	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

A network of underground and overhead utility lines providing water, gas, electricity, telecommunications (including fiber-optic lines), sewer, water, and stormwater drainage, among other utilities identified in Section 2.4.4, exists within the study area. The construction of the Preferred Alternative would require the abandonment and/or relocation of some of the utility lines within the Project footprint. These utilities would be protected in place if they were not removed. Prior to construction, other utilities would be relocated to maintain service levels currently provided. Sewer lines and storm drainage facilities may be relocated prior to construction. Seven wells, not operated by SCVWD, are within 500 feet of the Project area. There is the possibility that wells providing water for households, industrial, or agricultural users within or near the Project footprint could be impacted by interruption to their water service. The interruption of water service attributable to construction activities is a potentially significant impact but would be reduced to less than significant with mitigation.

Operations and Maintenance

The operations and maintenance of the Preferred Alternative would not damage or displace existing utility infrastructure, because removing these utilities is not necessary to operate or maintain the Proposed Project under this alternative.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure UPS-1 T: Well Replacement. The SCVWD will identify wells, if any, that may be impacted by construction and will make a new well operable or provide an equally reliable source of water to the current well owner or operator prior to the construction activities that would interrupt the service of the original well.

Implementation of Mitigation Measure UPS-1 T would reduce impacts to utility infrastructure to less than significant.

UPS-2 T—Served by a landfill with insufficient permitted capacity to accommodate the Project's solid waste disposal needs

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All activities	LTS	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The construction and excavation under this alternative is expected to produce about 1.3 million bcy of spoil (see Table 2.4-3). To the extent possible, excavated materials would be used on-site where fill or soil materials are needed and for existing or planned projects where fill is necessary. For example, fill would be needed at Lake Silveira and the majority of materials would be delivered to Anderson Dam for later use in a SCVWD earthquake retrofit project, Section 2.4.3.3 provides additional detail about use of excavated materials and quantities. A small portion of construction-related earth materials, that may not be suitable for use in the Anderson Dam retrofit project, would go to local landfills. The exact amount going to the landfill would depend on the construction specifications for both the Proposed Project and the Anderson Dam Project neither of which has been defined at the time. Currently, landfills serving Santa Clara County have sufficient capacity to accept the remaining amount of non-reusable spoil that assumed to be transferred to a landfill as there will be 46,814,938 tons of surplus capacity in the year 2020, assuming a middle growth scenario (Cal Recycle 2013). Assuming 10 percent of total Project-generated excavation spoils, about 130,000 bcy (162,000 tons) would go to a landfill, the waste input from the Preferred Alternative would be 0.3 percent of the space available and, therefore, the impact is less than significant.

Operations and Maintenance

The operations and maintenance of the Preferred Alternative would not impact landfills, because the amount of waste would be minimal because the channel design will be more stable than existing conditions and historically maintenance has been infrequent as described in Section 2.3. Sediment

maintenance has occurred as frequent as once every 4–10 years and vegetation would be chipped or composted landfills serving Santa Clara County currently have sufficient capacity.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

Currently, landfills serving Santa Clara County have sufficient capacity to accept the remaining amount of spoil that may be transferred to a landfill and, therefore, the impact is less than significant.

UPS-3 T—Implementation of an alternative would have a significant impact on one or more of the following public services: (a) Fire protection; (b) Police protection; (c) Schools (d) Other public facilities

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All activities	LTSM	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction of the Project would not require the construction of additional public service facilities or impact existing physical resources used to deliver these public services. The Project would not substantively increase permanent population, increase the demand for protective service, education facilities or services, and would not be growth inducing because the Project would not substantively increase permanent population, increase the demand for protective service, education facilities or services, and would not be growth inducing (Section 3.16, Population and Housing). However, construction activities would be in the proximity of electric utility lines and underground pipelines. Even with the implementation of safety procedures, construction activities increase the probability of rupture and even an explosion especially if natural gas lines were damaged. If this were to occur, demand for emergency services, including police and fire, would likely be needed. Additionally, potential temporary road closures associated with Project construction have the possibility of increasing response times for emergency services, including police and fire. Both of these factors would result in a significant impact on public services but would be reduced to less than significant with mitigation.

Operations and Maintenance

The operations and maintenance of the Preferred Alternative would not impact public services in the Project area, because no operations would be interfering with utilities or emergency services due to the availability of maintenance roads after construction.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure UPS-3 T: Emergency Response Plan and Notification. The SCVWD will develop an emergency response plan, which would include:

> A map of all underground and above ground utilities;

> A response plan for potential damage to infrastructure including identification of other close proximity utilities; and

> A detailed construction schedule with locations of construction and alternative routes identified for emergency responders.

This plan will be developed in consultation with emergency responders prior to construction and the implementation of the response plan. The response plan will determine if the road closures may affect emergency response times and SCVWD will work with local police, sheriff, and fire protection services to address their concerns, if any. The plan will be updated if construction schedules change to reduce response time delays that could result from lack of information of construction on arterial or collector roads used by emergency response.

Implementation of Mitigation Measure UPS-3 T would reduce impacts to utility infrastructure to less than significant.

3.14.5.3 Natural Resources Conservation Service (NRCS) Alternative

The activities, impacts, and mitigation measures under the NRCS Alternative (UPS-1 through UPS-3) are expected to be similar to the Preferred Alternative. However, this alternative would result in a greater impact to utilities compared to the Preferred Alternative, because the Project footprint is larger within Reach 8.

UPS-1 NRCS—Disrupt utility service by damaging or displacing infrastructure

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All activities	LTSM	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation B = beneficial; N/A = not applicable

Construction

A network of underground and overhead utility lines providing water, gas, electricity, telecommunications (including fiber-optic lines), sewer, water, and stormwater drainage, among other utilities identified in Section 2.4.4, exists within the study area. The construction of this alternative would require the abandonment and/or relocation of some of the utility lines within the Project footprint. The amount of utilities affected by this alternative would be greater than the Preferred Alternative, because the Project footprint within Reach 8 is larger. These utilities would be protected in place if they were not removed. Other utilities would be relocated to maintain service levels currently provided. Seven wells, not operated by SCVWD, are within 500 feet of the Project area. There is the possibility that wells providing water for households, industrial, or agricultural users within or near the Project footprint could be impacted by interruption to their water service. The interruption of water service attributable to construction activities is a potentially significant impact. Potential impacts to utilities would be mitigated to a less-than-significant impact through the implementation of Mitigation Measure UPS-1 T, which requires the replacement of affected wells.

Operations and Maintenance

The operations and maintenance of the Preferred Alternative would not damage or displace existing utility infrastructure, because removing these facilities is not necessary to operate or maintain the facilities under this alternative.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure UPS-1 T: Well Replacement.

Implementation of Mitigation Measure UPS-1 T would reduce impacts to utility infrastructure to less than significant.

UPS-2 NRCS—Served by a landfill with insufficient permitted capacity to accommodate the Project's solid waste disposal needs

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Excavation activities	LTS	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The construction and excavation of the NRCS Alternative is expected to produce about 1.3 million bcy of spoil (see Table 2.4-3). To the extent possible, excavated materials would be used on site where fill or soil materials are needed and for existing or planned projects where fill is necessary. For example, fill material would be needed at Lake Silveira and materials would be delivered to Anderson Dam for later use in a SCVWD earthquake retrofit project. Section 2.4.3.3 provides additional detail about use of excavated materials and quantities. A small portion of construction-related earth materials, that may not be suitable for use in the Anderson Dam retrofit project, will go to local landfills. Currently, landfills serving Santa Clara County have sufficient capacity to accept the remaining amount of non-reusable spoil that is assumed to be transferred to a landfill as there will be 46,814,938 tons of surplus capacity in the year 2020 assuming a middle growth scenario (Cal Recycle 2013). As discussed in UPS-2 T, the input of waste from the NRCS Alternative to landfills in Santa Clara County would be less than 0.5 percent and, therefore, the impact is less than significant.

Operations and Maintenance

The operations and maintenance of the NRCS Alternative would not impact landfills, because the amount of waste would be minimal because the channel design would be more stable than existing conditions and historically maintenance has been infrequent as described in Section 2.3. Sediment maintenance has occurred as frequent as once every 4–10 years and vegetation would be chipped or composted. Additionally, landfills serving Santa Clara County currently have sufficient capacity.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

Currently, landfills serving Santa Clara County have sufficient capacity to accept the remaining amount of spoil that may be transferred to a landfill and, therefore, the impact is less than significant.

UPS-3 NRCS—Implementation of an alternative would have a significant impact on one or more of the following public services: (a) Fire protection; (b) Police protection; (c) Schools (d) Other public facilities

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All activities	LTSM	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction of the Project would not require the construction of additional public service facilities or impact existing physical resources used to deliver these public services. The Project would not substantively increase permanent population, increase the demand for protective service, education facilities or services, and would not be growth inducing (Section 3.16, Population and Housing). However, construction activities would be in the proximity of electric utility lines and underground pipelines. Even with the implementation of safety procedures, construction activities increase the probability of rupture and even an explosion, especially if natural gas lines were damaged. If this were to occur, demand for emergency services, including police and fire, would likely be needed. Additionally, potential temporary road closures associated with Project construction have the possibility of increasing response times for emergency services, including police and fire. Both of these factors would result in a significant impact on public services but would be reduced to less than significant with mitigation.

Operations and Maintenance

The operations and maintenance of the NRCS Alternative would not impact public services in the study area, because no operations would be interfering with utilities or emergency services due to the availability of maintenance roads after construction.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure UPS-3 T: Emergency Response Plan and Notification.

Implementation of Mitigation Measure UPS-3 T would reduce impacts to public services to less than significant.

3.14.5.4 Culvert/Channel Alternative

The impacts and mitigations under the Culvert/Channel Alternative (UPS-1 through UPS-3) are expected to be similar to the Preferred Alternative, although the Project footprint is reduced within Reach 8. Additionally, this alternative would place a box culvert below a school field, so below ground utilities, if any, in the vicinity of the ball fields may be impacted.

UPS-1 CC—Disrupt utility service by damaging or displacing infrastructure

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All activities	LTSM	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

A network of underground and overhead utility lines providing water, gas, electricity, telecommunications (including fiber-optic lines), sewer, water, and stormwater drainage, among other utilities, exists within the study area. Construction conducted under this alternative would require the abandonment and/or relocation of some of the utility lines within the Project footprint. These utilities would be protected in place if they were not removed. Prior to construction, other utilities would be relocated to maintain service levels currently provided. Seven wells, not operated by SCVWD, are within 500 feet of the Project area. There is the possibility that wells providing water for households, industrial, or agricultural users within or near the Project footprint could be impacted by interruption to their water service. The interruption of water service attributable to construction activities is a potentially significant impact. Potential impacts to utilities would be mitigated to a less-than-significant impact through the implementation of Mitigation Measure UPS-1 T, which requires the replacement of affected wells.

Operations and Maintenance

The operations and maintenance of the Culvert/Channel Alternative would not damage or displace existing utility infrastructure, because removing these utilities is not necessary to operate or maintain the Proposed Project under this alternative.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure UPS-1 T: Well Replacement.

Implementation of Mitigation Measure UPS-1 T would reduce impacts to utility infrastructure to less than significant.

UPS-2 CC—Served by a landfill with insufficient permitted capacity to accommodate the Project's solid waste disposal needs

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All activities	LTS	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The construction and excavation under this alternative is expected to produce about 1.4 million bcy of spoil (see Table 2.4-3). To the extent possible, excavated materials would be used on site where fill or

soil materials are needed and for existing or planned projects where fill is necessary. For example, fill would be needed at Lake Silveira and materials would be delivered to Anderson Dam for later use in a SCVWD earthquake retrofit project. Section 2.4.3.3 provides additional detail about use of excavated materials and quantities. A small portion of construction-related earth materials, that may not be suitable for use in the Anderson Dam retrofit project, will go to local landfills. Currently, landfills serving Santa Clara County have sufficient capacity to accept the remaining amount of non-reusable spoil that is assumed to be transferred to a landfill as there will be 46,814,938 tons of surplus capacity in the year 2020 assuming a middle growth scenario (Cal Recycle 2013). As discussed in UPS-2 T, the input of waste from the Culvert/Channel Alternative to landfills in Santa Clara County would be less than 0.5 percent and, therefore, the impact is less than significant.

Operations and Maintenance

The operations and maintenance of the Culvert/Channel Alternative would not impact landfills, because the amount of waste would be minimal because the channel design would be more stable than existing conditions and historically maintenance has been infrequent as described in Section 2.3. Sediment maintenance has occurred as frequent as once every 4–10 years and vegetation would be chipped or composted. Additionally, landfills serving Santa Clara County currently have sufficient capacity.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

Currently, landfills serving Santa Clara County have sufficient capacity to accept the remaining amount of spoil that may be transferred to a landfill and, therefore, the impact is less than significant.

UPS-3 CC—Implementation of an alternative would have a significant impact on one or more of the following public services: (a) Fire protection; (b) Police protection; (c) Schools (d) Other public facilities

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All activities	LTSM	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The construction of the Culvert/Channel Alternative would not impact public services in the Project area. The Project would not require the construction of additional public service facilities or impact existing physical resources used to deliver these public services, the Project would not substantively increase permanent population, increase the demand for protective service, education facilities or services and would not be growth inducing (Section 3.16, Population and Housing). The Project would temporarily limit access to the ball fields, adjacent to Britton Middle School; however, this is not anticipated to impact the school itself. The impact to the ball fields is addressed in detail in Section 3.15, Recreation Resources. However, construction activities would be in the proximity of electric utility lines and underground pipelines. Even with the implementation of safety procedures, construction activities increase the probability of rupture and even an explosion, especially if natural gas lines were damaged. Under this scenario, demand for emergency services, including police and fire, would likely be needed. Additionally,

potential temporary road closures associated with Project construction have the possibility of increasing response times for emergency services, including police and fire. Both of these factors would result in a significant impact on public services but would be reduced to less than significant with mitigation.

Operations and Maintenance

The operations and maintenance of the Culvert/Channel Alternative would not impact public services in the Project area, because no operations would be interfering with utilities or emergency services due to the availability of maintenance roads after construction.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure UPS-3 T: Emergency Response Plan and Notification.

Implementation of Mitigation Measure UPS-3 T would reduce impacts to public services to less than significant.

3.14.5.5 Reach 6 Bypass Alternative

The impacts and mitigation measures under the Reach 6 Bypass Alternative (UPS-1 through UPS-3) are expected to be similar to the Preferred Alternative. However, compared with the Preferred Alternative, there is no construction along Reach 5 and limited construction along Reach 6, so that utilities along these reaches, and the potential extent of related impacts would be less compared with the Preferred Alternative. For example, six wells along Reach 6, potentially impacted under the other alternatives, would not be affected under this alternative; three of these wells are SCVWD-owned while the other three are water supply/irrigation wells. Therefore, there are four wells, not owned by SCVWD, potentially impacted under this alternative.

UPS-1 BY—Disrupt utility service by damaging or displacing infrastructure

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All activities	LTSM	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

A network of underground and overhead utility lines providing water, gas, electricity, telecommunications (including fiber-optic lines), sewer, water, and stormwater drainage, among other utilities, exists within the study area. Construction conducted under this alternative would require the abandonment and/or relocation of some of the utility lines within the Project footprint. However, the amount of utilities removed under this alternative would be less than under the Preferred Alternative. These utilities would be protected in place if they were not removed. Prior to construction, other utilities would be relocated to maintain service levels currently provided. There is the possibility that wells providing water for households, industrial, or agricultural users within or near the Project footprint could be impacted by interruption to their water service. The interruption of water service attributable to construction activities is a potentially significant impact. Potential impacts to utilities would be mitigated through the implementation of Mitigation Measure UPS-1 T, which requires the replacement of affected wells.

Operations and Maintenance

The operations and maintenance of the Reach 6 Bypass Alternative would not damage or displace existing utility infrastructure, because removing these utilities is not necessary to operate or maintain the Proposed Project under this alternative.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure UPS-1 T: Well Replacement.

Implementation of Mitigation Measure UPS-1 T would reduce impacts to utility infrastructure to less than significant.

UPS-2 BY—Served by a landfill with insufficient permitted capacity to accommodate the Project's solid waste disposal needs

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All activities	LTS	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The construction and excavation under this alternative is expected to produce less than 1.0 million bcy of spoil (see Table 2.4-3). To the extent possible, excavated materials would be used onsite where fill or soil materials are needed and for existing or planned projects where fill is necessary. For example, fill would be needed at Lake Silveira and materials would be delivered to Anderson Dam for later use in a SCVWD earthquake retrofit project. Section 2.4.3.3 provides additional detail about use of excavated materials and quantities. A small portion of construction-related earth materials, that may not be suitable for use in the Anderson Dam retrofit project, will go to local landfills. Currently, landfills serving Santa Clara County have sufficient capacity to accept the remaining amount of non-reusable spoil that is assumed to be transferred to a landfill as there will be 46,814,938 tons of surplus capacity in the year 2020 assuming a middle growth scenario (Cal Recycle 2013). As discussed in UPS-2 T, the input of waste from the Reach 6 Bypass Alternative to landfills in Santa Clara County would be less than 0.5 percent and, therefore, the impact is less than significant.

Operations and Maintenance

The operations and maintenance of the Reach 6 Bypass Alternative would not impact landfills, because the amount of waste would be minimal because the channel design would be more stable than existing conditions and historically maintenance has been infrequent as described in Section 2.3. Sediment maintenance has occurred as frequent as once every 4–10 years and vegetation would be chipped or composted. Additionally, landfills serving Santa Clara County currently have sufficient capacity.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

Currently, landfills serving Santa Clara County have sufficient capacity to accept the remaining amount of spoil that may be transferred to a landfill and, therefore, the impact is less than significant.

UPS-3 BY—Implementation of an alternative would have a significant impact on one or more of the following public services: (a) Fire protection; (b) Police protection; (c) Schools (d) Other public facilities

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All activities	LTSM	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Construction of the Project would not require the construction of additional public service facilities or impact existing physical resources used to deliver these public services, the Project would not substantively increase permanent population, increase the demand for protective service, education facilities or services and would not be growth inducing (Section 3.16, Population and Housing) However, construction activities would be in the proximity of electric utility lines and underground pipelines. Even with the implementation of safety procedures, construction activities increase the probability of rupture and even an explosion, especially if natural gas lines were damaged. If this were to occur, demand for emergency services, including police and fire, would likely be needed. Additionally, potential temporary road closures associated with Project construction have the possibility of increasing response times for emergency services, including police and fire. Both of these factors would result in a significant impact on public services but would be reduced to less than significant with mitigation.

Operations and Maintenance

The operations and maintenance of the Reach 6 Bypass Alternative would not impact public services in the study area, because no operations would be interfering with utilities or emergency services due to the availability of maintenance roads after construction.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure UPS-3 T: Emergency Response Plan and Notification.

Implementation of Mitigation Measures UPS-3 T would reduce impacts to public services to less than significant.

3.14.6 Summary of Impacts to Utilities and Public Services

Two less-than-significant impacts with proposed mitigations were identified for each of the action alternatives. The first impact relates to the potential for wells to be decommissioned as a result of Project construction. The mitigation requires replacement with operating wells. Second, a significant impact was identified in relation to potential utility rupture associated with Project construction and the possibility that public services, such as police and fire, may be impacted due to delays in response time. The impact is

reduced to less than significant with mitigation by requiring the development of an emergency response plan and notification.

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3.15 Recreation Resources

3.15.1 Introduction

In this section, recreation resources and providers within the vicinity of the study area are discussed, and then the alternatives are reviewed for potential impacts. The completion of the Project would not create additional demand at existing local or regional parks, nor is it anticipated that the Project would require the completion of additional parks that would adversely affect the environment. Therefore, the focus of this section is to assess if the alternatives have the potential to physically impact existing recreational resources in the study area, such as parks or trails located within the Project footprint, which may be impacted by construction.

3.15.2 Study Area

The Project is within Morgan Hill, and unincorporated areas within the county (including the community of San Martin). The northern portion (Reaches 8, 7B and portions of 7A) is within the City of Morgan Hill; a portion of Reach 7A is within unincorporated Santa Clara County, but within Morgan Hill's SOI.[1] Reaches 6, 5, and 14 are within the San Martin planning area, while a portion (north of Masten Avenue) of Reach 4 is also in the San Martin planning area. The southern portion of Reach 4 is within unincorporated Santa Clara County and within the City of Gilroy's SOI. Public recreation opportunities in the vicinity of the study area are delivered by the following providers: City of Morgan Hill Parks and Recreation, Santa Clara County Parks, the City of Gilroy's Community Services, and the Santa Clara County Open Space Authority.

The City of Morgan Hill provides a wide range of recreational opportunities from small neighborhood parks to larger parks with sports fields, as well as special use facilities such as an aquatic center and a skate and bicycle motocross (BMX) Park. Generally, the region has a fair amount of natural resource based recreational opportunities including hiking, mountain biking, camping, and nature study, as Santa Clara County Parks and Santa Clara County Open Space Authority maintain parks and open spaces throughout South Santa Clara County. These opportunities are generally outside of the study area, but accessible to the local population, in the hills and peaks of the Santa Cruz Mountains (to the west) and Diablo Range (to the east). In addition, a large State Park, Henry W. Coe, is about 15 miles east of Morgan Hill. Figure-3.15-1 shows the location of recreational resources pertinent to this section.

3.15.2.1 Environmental Setting

Santa Clara County Parks

Santa Clara County Parks (2013) maintains 45,000 acres of urban and undeveloped parks and trails throughout the county. Several parks are in the general vicinity of the study area including the following with acreages:

> Anderson Lake (3,109 acres)

> Chesbro Reservoir (216 acres)

> Coyote Lake – Harvey Bear Ranch (4,595 acres)

> Uvas Reservoir (626 acres)

[1] The SOI for SCVWD is coterminous with its boundary and County's boundary. The SOI for the SCVWD was last reviewed in 2007 and no changes were made at that time.

These facilities serve residents in the vicinity of the study area but are not within the Project footprint and are not expected to be impacted by the various alternatives.

Santa Clara County Parks maintains 125 miles of bike trails (both paved and for mountain bikes) throughout the county and numerous trails designated for hiking. Close to the study area, Coyote Creek Parkway is a paved 15-mile-long trail from Coyote Heller County Park to Cochrane Road in the northern part of Morgan Hill. The trail is multipurpose for both hikers and bikers.

Santa Clara Open Space Authority

The Santa Clara Open Space Authority, a special district, preserves open space throughout much of the county, including 548-acre Coyote Ridge north of Morgan Hill and 5,575-acre Upper Coyote, and an assortment of lands and easements obtained over a 10-year period, in the hills east of Morgan Hill and Gilroy. These facilities are not within the Project footprint.

Santa Clara Valley Water District (SCVWD)

The West Little Llagas Creek Trail (Reaches 7A and 7B) is on SCVWD-owned land. The trail was recently upgraded in cooperation with the City of Morgan Hill. The trail provides opportunities for walking, biking and other trail related activities. The trail runs along the creek from Spring Avenue (about 0.25 mile south of downtown) through Watsonville Road. The trail is on both sides of the channel from La Crosse Drive south to Watsonville Road. The trail is within the Project footprint and would be impacted by the action alternatives. This route is paved and includes some small areas of landscaping and several benches. The trail is operated in conjunction with the City of Morgan Hill, per a Joint Use Agreement. The City of Morgan Hill is responsible for maintenance and upkeep, such as trash and graffiti removal. Under the Joint Use Agreement, it is noted that the trail should not "unreasonably interfere" the SCVWD's goal of using these lands for flood protection. The agreement also states that any trail improvements as installed by the City of Morgan Hill are subject to removal if the area is deemed necessary for flood protection, as is the case for the action alternatives.

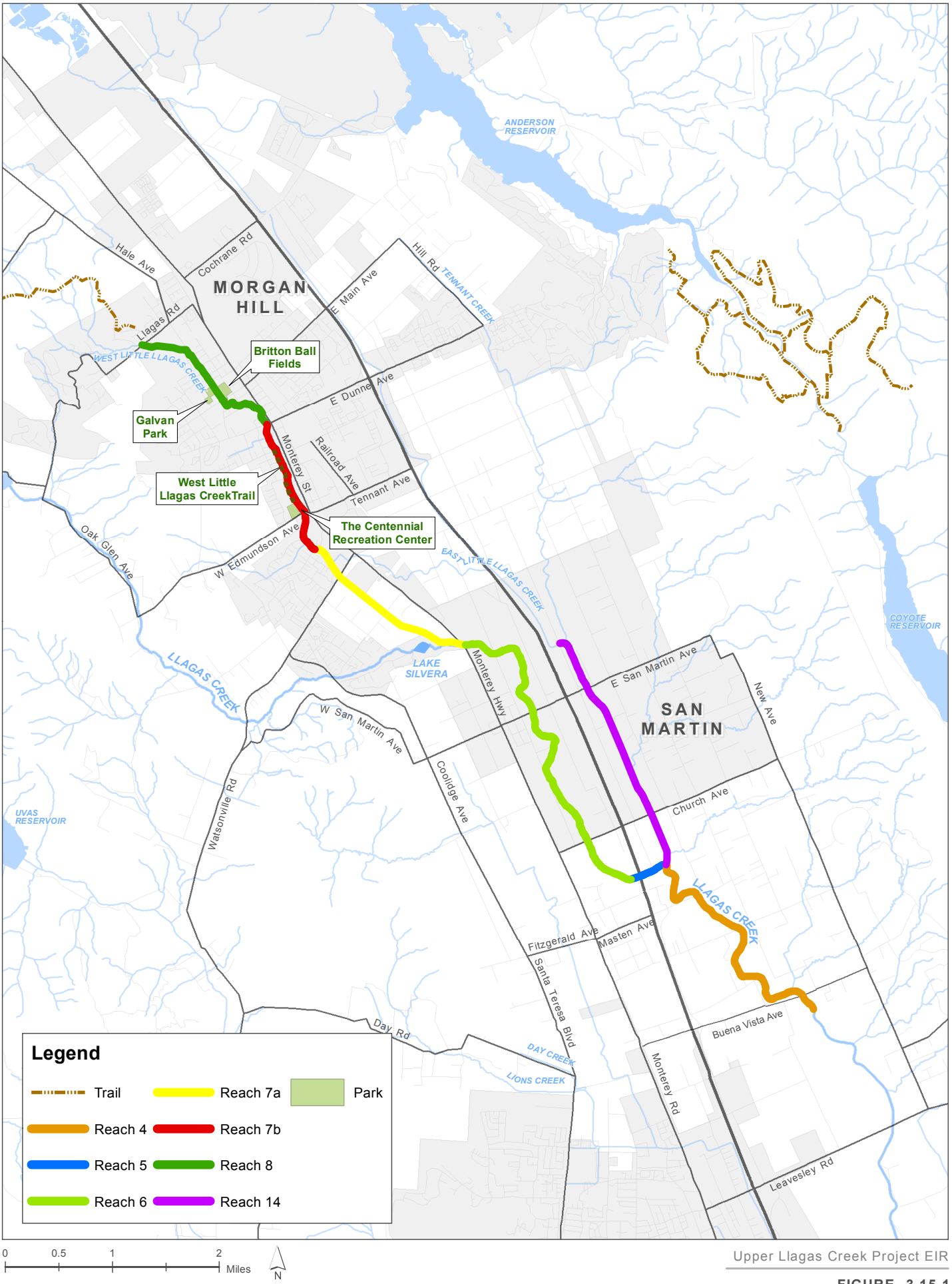
City of Morgan Hill

The City of Morgan Hill maintains parks and recreational facilities in the city. According to Santa Clara LAFCO, the City maintains over 100 acres of parks with the inclusion of the outdoor sports center (LAFCO 2006). These include neighborhood parks, sports fields, an aquatic center, and a skate and BMX park, among other facilities. The City seeks to maintain a variety of park types and experiences by developing different classifications for the parks and the varied recreational experiences. The City classifies and maintains the following park types: mini park (< 1.5 acre); neighborhood park (3–10 acres); community park and community/school park (10 acres minimum); trails/linear parks (no acreage limit); sports park (20 acres minimum), and special use facilities (City of Morgan Hill 2006). In total, the department lists 26 parks or facilities within the city limits. Additional facilities are available adjacent to, and in cooperation with, Morgan Hill Unified Schools.

A review of a park map reveals that the Centennial Recreation Center is very close to the Project footprint. The Centennial Recreation Center operates in cooperation with the Mount Madonna YMCA. The 54,000-square-foot facility has workout facilities, an indoor pool, and facilities for teen and senior programs. The facility is adjacent to the West Llagas Trail just north of Edmondson Avenue.

Also, the Project footprint is close to Galvan Park and Britton Field ball fields, adjacent to Britton Middle School (both along Reach 8). In fact, the Culvert/Channel Alternative would cross under the ball fields.

In 2008, the City produced a Bikeways Master Plan (2008) update to both track progress from the 2001 plan and to develop future goals. This section focuses on what the City designates as Class I: Bike Paths and paths that are separated from automobile roadways and not on trails with features (such as bike lanes) available along roads. The 2008 master plan shows four Class 1 trails in the city.



Upper Llagas Creek Project EIR

FIGURE 3.15-1
Recreational Facilities in Close Proximity to Project Footprint

Cardno ENTRIX

City of Gilroy

The City of Gilroy Community Services maintains over 125 acres of developed parklands and 129 acres of preserve land (Santa Clara LAFCO 2006). The City of Gilroy does not maintain any parks outside of the city limits; therefore, there are no parks within or near the Project footprint.

Other Recreational Facilities

Lake Silveira, located near Reach 7A, currently receives recreation use along informal trails in and around the lake. However, Lake Silveira is not a sanctioned recreation site and public access is not formally allowed; people do currently recreate near the lake. The lake is within the Project footprint, as it would be altered as part of restoration of the creek in all action alternatives for the Project.

3.15.3 Regulatory Environment

Federal, state, regional, and local regulations applicable to the various alternatives are described below.

3.15.3.1 Federal

There are no federal regulations applicable to this section.

3.15.3.2 State

There are no state regulations applicable to this section.

3.15.3.3 Local

Santa Clara County General Plan

The Park and Recreation Element of the Santa Clara County General Plan, 1995–2010 (1994), provides strategies, policies and implementation to meet future recreational demand and to maintain the county's natural resources. The following policy and strategy statements, along with implementation recommendations, are included in the plan:

> *Parks and Recreation Policy C-PR 16.* The provision of neighborhood, community, and citywide parks and recreational facilities should be the responsibility of the cities and other appropriate agencies.

> *Parks and Recreation Strategy #6.* Facilitate Inter-Jurisdictional Coordination. The discussion states: "Within the urban areas, most of the proposed trails run alongside major streams, thus making the Santa Clara Valley Water District an important agency in the implementation of these trails."

> *Parks and Recreation Policy C-PR 33.5.* Public improvement projects, such as road widenings, bridge construction, and flood control projects that may affect existing or proposed trails should be designed to facilitate shared use.

> *Implementation Recommendation C-PR(i) 19.12.* Develop agreements for funding, interagency planning, acquisition, development, and maintenance of countywide trails and trail segments with cities where the city has adopted relevant provisions of the countywide master plan and commits to implement and maintain a priority trail route.

South County Joint Area Plan Policies

The South County Joint Area Policies were developed in 1989 and are part of the Santa Clara County General Plan, 1995–2010 (1994). The plan was developed to provide regional planning guidance for the south Santa Clara County. The following policies apply to the Project:

> *Open Space and Recreation SC 16.10.* Riparian systems, streamsides, and floodways should be maintained in open space or related open space uses, such as wildlife habitat, recreation, or

agriculture. Designating Llagas and Uvas creeks as major streamside park chains should be actively promoted.

> *Open Space and Recreation SC 16.12.* Proposed trails along Llagas, Uvas, and Pacheco creeks and the Pajaro River should be implemented and connected to the rest of the countywide trail system.

City of Morgan Hill General Plan

The City of Morgan Hill's General Plan (2010a) addresses parks and recreation facilities and services with the goal to provide, "*Useful, accessible, and high quality park, recreation and trail facilities and programs"*. The following policies apply to the alternatives:

> *Policy 18k.* Encourage the development of trails along creeks and drainage channels, connecting parks, regional trails, schools, library, and other community facilities.

> *Policy 18l.* Coordinate trails, parks, and recreation facilities with a citywide bikeways system to include bicycle paths, lanes, and routes.

> *Policy 18u.* Trails and linear parkways along creeks and drainage ways shall be coordinated with development to ensure protection and restoration of natural resources.

Also, the following action applies to the alternatives considered in this section:

> *Action 18.5.* Work in partnership with the Santa Clara Valley Water District to establish easements and develop trails and linear parks along creeks and drainage channels.

3.15.4 Impact Analysis

3.15.4.1 Significance Criteria

The Project would have a significant impact on recreation resources if it were to:

> Disrupt access to or diminish quality of existing recreational resources, such as parks or trails; or

> Displace recreational users to outlying or other regional facilities and physically deteriorate these areas.

3.15.4.2 Approach to Analysis

Impacts attributable to construction activities, such as potentially diminishing access to recreational opportunities, are considered. For this analysis, the proximity of the Project footprint to recreational resources is considered; and if a park or other recreational resource is within the footprint, the potential for an impact exists. Therefore, an additional impact category (Location of Project Features) is added for each action alternative to account for areas where there is the possibility of Project features permanently replacing existing features such as, in this case, parklands or trails.

In general, the park facilities within the Project footprint are along Reaches 7A, 7B, and 8. A facility impacted by the Project may negatively affect the users' experience or result in users choosing to visit another facility in the region and potentially adversely impact the outlying locations. Impacts to the West Little Llagas Creek Trail is considered in light of the Joint Use Agreement between the City of Morgan Hill and the SCVWD.

Lake Silveira would be partially filled as part of Project and be converted into wetlands. This would change the conditions at the lake; however, Lake Silveira is not currently a sanctioned recreation facility and access is only provided informally. Changes at Lake Silveira are not discussed in the impact analysis for each alternative, as the changes would be the same under each action.

3.15.5 Impacts and Mitigation Measures

3.15.5.1 No Project Alternative

This alternative would not affect recreational resources within the study area. The only concern would be recreational resources within the City of Morgan Hill would be at a greater risk of damage due to flooding compared with the action alternatives; however, any impact would be temporary.

REC-1 NP—Disrupt access to or diminish existing recreational resources, such as parks or trails

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All Project activities close to or within current recreational resources	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

There will not be any construction activities under the No Project Alternative and, thus, the alternative would not disrupt access to recreational resources in the study area.

Operations and Maintenance

Periodic maintenance activities, conducted with implementation of SCVWD BMPs, would continue along streamside trails and, at times, trail access would be temporarily affected as maintenance occurs under the existing SMP. Maintenance activities under the No Project Alternative would not permanently disrupt access to recreational resources in the study area; therefore, due to short-term interruptions the impact would be less than significant. There is the possibility that recreational facilities could be inundated as a result of flooding. This impact would be temporary and is not likely to physically deteriorate recreational resources. The potential impact is less than significant.

Best Management Practices (BMPs) (from SCVWD SMP)

Two BMPs apply to temporary trail closures for maintenance activities. In general, the goal of the two BMPs is to minimize the impact to recreationists while routine maintenance occurs.

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

Implementation of BMPs would reduce impacts to less than significant.

REC-2 NP—Displace recreational users to outlying and/or other regional facilities and physically deteriorate these areas

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
All Project activities close to or within current recreational resources	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

There would not be construction activities under the No Project Alternative and, thus, the alternative would not result in the displacement of potential recreational users.

Operations and Maintenance

Maintenance activities under the No Project Alternative would not result in the displacement of potential recreational users. However, there is the possibility that park and trail users could be displaced from areas within the flood inundation zone as a result of flooding. This impact would be temporary and is not likely to physically deteriorate other existing recreational resources. Therefore, the impact would be less than significant

Best Management Practices (BMPs)

None applicable

3.15.5.2 Tunnel Alternative (Preferred Alternative)

Construction activities associated with the Preferred Alternative would create temporary impacts to recreation resources due to noise, visual quality issues, or traffic attributable to construction related activities. Additionally, this alternative has the potential to impact parklands and trails if construction occurs on or around these facilities given the proximity of the Project to recreational facilities along Reaches 7A, 7B, and 8.

REC-1 T—Disrupt access to or diminish quality of existing recreational resources, such as parks or trails

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Location of Project Features	Operation/Maintenance Impact Level
All potentially disruptive activities close to or within existing recreational resources	LTSM	LTSM	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The West Little Llagas Creek Trail, on land owned by SCVWD, would be inaccessible during times of construction. However, the trail currently operates under a Joint Use Agreement that states that the purpose of the trail is secondary to flood management activities and the understanding is the trail could be affected by these activities. Also, use of maintenance roads, although unpaved, would be available after the Project construction is complete. This alternative also has the potential to impact parklands if construction occurs on or around these facilities given the proximity of the Project to recreational facilities along Reaches 7A, 7B, and 8. Parklands that are both not owned by SCVWD and in close proximity to the Project footprint, include the Centennial Recreation Center, Galvan Park, and the Britton ball fields. The possibility exists that Project construction would impact these parklands and constitutes a significant impact. These impacts would be reduced to less than significant with the incorporation of Mitigation Measures REC-1a, REC-1b, and REC-1c T.

Location of Project Features

Recreational facilities (Centennial Recreation Center and Galvan Park) are very close to the Project footprint, as are the ballpark fields adjacent to Britton Middle School; however, recreational facilities, not under the jurisdiction of the SCVWD, would not be permanently converted to nonrecreational uses. The

West Little Llagas Creek Trail is also within the Project footprint. The paved trail and landscaping would be removed, as flood management activities would occur in these areas. Although after construction, maintenance roads could continue to provide access for recreational trail users in and around Llagas Creek. Given the possibility that the trail would be converted to an aggregate base road, this would have a significant impact to recreational resources, however the impact would be reduced to the less than significant with the incorporation of Mitigation Measure REC-1a T

Operations and Maintenance

Periodic maintenance activities would lead to short periods where the maintenance roads used as trails are inaccessible, as occurs under the existing SMP. The operations and maintenance of this alternative would have a less-than-significant impact on recreational resources due to these short-term and temporary interruptions in recreation availability.

Best Management Practices (BMPs)

Two BMPs apply to temporary trail closures. In general, the goal of the two BMPs is to minimize the impact to recreationists while routine maintenance occurs.

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles and Pedestrians.

Mitigation Measures

Mitigation Measure REC-1a T: Trail Detour. SCVWD will work with the City of Morgan Hill to determine an alternate route for the trail through city streets until the city decides that they will re-establish the paved trail in the future. The detour trail would be on sidewalks and city streets with signage and markings to delineate the detour.

Mitigation Measure REC-1b T: Recreational Facility Protection. Public recreational lands or facilities within or close to the Project footprint should be avoided during construction, if possible. If a public recreational facility is impacted during construction, SCVWD will return the facility to equal or better condition after construction is completed. If parking areas are impacted during or after Project construction, alternative parking will be provided. If a facility is completely closed due to Project construction, SCVWD will, to the best extent possible, limit the amount of time of the closure or target the closure for times of lower park use. If it is determined that parklands or parking areas would need to be closed for an extended time period, the viability of developing a temporary opportunity in lieu of the closed facility should be considered and provided, if possible. This mitigation measure would not apply to SCVWD owned lands, including the West Llagas Trail.

Mitigation Measure REC-1c T: Public Outreach. If a park or trail is impacted during construction, an outreach plan will be developed to inform the public before the closure or access limitation. Outreach will be conducted by posting flyers or informational boards at parks or other public spaces, posting information on pertinent websites or in a newspaper. The outreach information will inform residents and park visitors about the purpose of the construction, the length of time expected to complete the Project, and of similar recreational opportunities in the vicinity of the study area.

This impact would be less than significant with mitigation.

REC-2 T—Displace recreational users to outlying and/or other regional facilities and physically deteriorate these areas

Impact Determination: less than significant

Project Activity	Construction Impact Level	Location of Project Features	Operation /Maintenance Impact Level
Project related activities displaces potential visitors to other recreational opportunities	LTS	LTS	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Visitors may choose to visit other recreational opportunities in the region to avoid the temporary impact due to construction. However, the region has ample regional recreational opportunities and the impact to facilities outside of the Project footprint would not expected to be significant.

Location of Project Features

Recreationists visiting other locations due to changes in the Project footprint are expected be minimal, because the main feature to change is the West Little Llagas Trail would be unpaved. Furthermore, there are ample regional recreational opportunities, as described in Section 3.15.2.1 and shown on Figure 3.15-1. The amount of additional use, if any, at outlying recreational areas would be negligible compared to the available area for recreation. Therefore, the impact would be less than significant.

Operations and Maintenance

The operations and maintenance of this alternative would require periodic closures to trails. However, these closures would be temporary and be incorporated with trail management-related BMPs. Therefore, the impact to recreational resources would be less than significant and would not require mitigation.

Best Management Practices (BMPs)

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles and Pedestrians.

Implementation of BMPs would reduce impacts to less than significant.

Mitigation Measures

None required

3.15.5.3 Natural Resources Conservation Service (NRCS) Alternative

Construction activities associated with the NRCS Alternative would create temporary impacts to recreation resources due to noise, visual quality issues, or traffic attributable to construction related activities. Additionally, this alternative has the potential to impact parklands and trails if construction occurs on or around these facilities given the proximity of the Project to recreational facilities along Reaches 7A, 7B, and 8. This alternative would widen and deepen the creek along Reach 8.

REC-1 NRCS—Disrupt access to or diminish quality of existing recreational resources, such as parks or trails

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Location of Project Features	Operation/Maintenance Impact Level
All activities	LTSM	LTSM	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The West Little Llagas Creek Trail, on land owned by SCVWD, would be inaccessible during construction in portions of Reaches 7A and 7B. However, the trail currently operates under a Joint Use Agreement that states that the purpose of the trail is secondary to flood management activities and the understanding is the trail could be affected by these activities. Also, access to maintenance roads, although unpaved, would be available after the Project construction is complete.

Additionally, this alternative also has the potential to impact parklands if construction occurs on or around these facilities given the proximity of the Project to existing recreational facilities along Reaches 7A, 7B, and 8. Parklands that are both not owned by SCVWD and in close proximity to the Project footprint, include the Centennial Recreation Center, Galvan Park, and the Britton ball fields. The possibility exists that Project construction could impact these parklands and constitutes a significant impact.

These impacts would be reduced to less than significant with the incorporation of Mitigation Measures REC-1a, REC-1b T b, and REC-1c T.

Location of Project Features

Recreational facilities (Centennial Recreation Center and Galvan Park) are very close to the Project footprint, as are the ballpark fields adjacent to Britton Middle School; however, recreational facilities, not under the jurisdiction of the SCVWD, would not be permanently converted to nonrecreational uses. The West Little Llagas Creek Trail is also within the Project footprint. The paved trail and landscaping would be removed, as flood management activities would occur in these areas. Although after construction, maintenance roads could continue to provide access for recreational trail users in and around Llagas Creek. Given that the trail would be converted to an aggregate base road, this would have a significant impact to recreational resources, however the impact would be reduced to the less than significant with the incorporation of Mitigation Measure REC-1a T.

Operations and Maintenance

Periodic maintenance activities would lead to short periods where the maintenance roads used as trails are inaccessible, as occurs under the existing SMP. The operations and maintenance of this alternative would have a less-than-significant impact on recreational resources due to these short-term and temporary interruptions in recreation availability.

Best Management Practices (BMPs)

Two BMPs apply to temporary trail closures. In general, the goal of the two BMPs is to minimize the impact to recreationists while routine maintenance occurs.

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

Mitigation Measures

Mitigation Measure REC-1a T: Trail Detour.

Mitigation Measure REC-1b T: Recreational Facility Protection.

Mitigation Measure REC-1c T: Public Outreach.

This impact would be less than significant with mitigation.

REC-2 NRCS—Displace recreational users to outlying and/or other regional facilities and physically deteriorate these areas

Impact Determination: less than significant

Project Activity	Construction Impact Level	Location of Project Features	Operation /Maintenance Impact Level
Project related activities displaces potential visitors to other recreational opportunities	LTS	LTS	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Visitors may choose to visit other recreational opportunities in the region to avoid the temporary impacts due to construction. However, the region has ample regional recreational opportunities, as shown in Section 3.15.2.1, and the impact to facilities outside of the Project footprint would not expected to be significant.

Location of Project Features

Recreationists visiting other locations due to changes in the Project footprint would be minimal, because the main feature to change is the West Little Llagas Trail would be unpaved. Furthermore, there are ample regional recreational opportunities as described in Section 3.15.2.1 and shown on Figure 3.15.1.The amount of additional use, if any, at nearby recreational facilities would be negligible compared to the amount of available recreational area. Therefore, the impact would be less than significant.

Operations and Maintenance

The operations and maintenance of this alternative would require periodic closures to trails, as occurs under baseline conditions. These closures would be temporary and be incorporated with trail management-related BMPs. Therefore, the impact to recreational resources would be less than significant and would not require mitigation.

Best Management Practices (BMPs)

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

3.15.5.4 Culvert/Channel Alternative

In general, the impacts and mitigation measures under the Culvert/Channel Alternative, REC-1 and REC-2 CC, would be similar as under the Preferred Alternative, with the exception that the impact to the ballpark fields near Britton Middle School would likely be more substantial and of a longer duration to account for burying the culvert under the field.

REC-1 CC—Disrupt access to or diminish quality of existing recreational resources, such as parks or trails

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Location of Project Features	Operation/Maintenance Impact Level
All activities	LTSM	LTSM	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The West Little Llagas Creek Trail, on land owned by SCVWD, would be inaccessible during times of construction. However, the trail currently operates under a Joint Use Agreement that clearly states that the purpose of the trail is secondary to flood management activities and the understanding is the trail could be affected by these activities. Also, access to maintenance roads, although unpaved, would be available after the Project construction is complete. This alternative also has the potential to impact parklands if construction occurs on or around these facilities given the proximity of the Project to recreational facilities along Reaches 7A, 7B, and 8. Parklands that are both not owned by SCVWD and in close proximity to the Project footprint, include the Centennial Recreation Center, Galvan Park, and the Britton ball fields. Construction would occur within the Britton ball fields, resulting in a disruption to its availability. There would be some time, likely, required to re-plant the affected area of the ballfield; however, this impact would be short term and temporary. The Project construction could impact these parklands and constitutes a significant impact; however, these impacts would be reduced to less than significant with the incorporation of Mitigation Measures REC-1a, REC-1b, and REC-1c.

Location of Project Features

Recreational facilities (Centennial Recreation Center and Galvan Park) are very close to the Project footprint, as are the ballpark fields adjacent to Britton Middle School; however, recreational facilities, not under the jurisdiction of the SCVWD, would not be permanently converted to nonrecreational uses. The West Little Llagas Creek Trail is also within the Project footprint. The paved trail and landscaping would be removed, as flood management activities would occur in these areas. Although after construction, maintenance roads could continue to provide access for recreational trail users in and around Llagas Creek. Given the possibility that the trail would be converted to an aggregate base road, this would have a significant impact to recreational resources, however the impact would be reduced to the less than significant with the incorporation of Mitigation Measure REC-1a T.

Operations and Maintenance

Periodic maintenance activities would lead to short periods where the maintenance roads used as trails are inaccessible, as occurs under the existing SMP. The operations and maintenance of this alternative would have a less-than-significant impact on recreational resources due to these short-term and temporary interruptions in recreation availability.

Best Management Practices (BMPs)

Two BMPs apply to temporary trail closures. In general, the goal of the two BMPs is to minimize the impact to recreationists while routine maintenance occurs.

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

Mitigation Measures

Mitigation Measure REC-1a T: Trail Detour.

Mitigation Measure REC-1b T: Recreational Facility Protection.

Mitigation Measure REC-1c T: Public Outreach.

This impact would be less than significant with mitigation.

REC-2 CC—Displace recreational users to outlying and/or other regional facilities and physically deteriorate these areas

Impact Determination: less than significant

Project Activity	Construction Impact Level	Location of Project Features	Operation /Maintenance Impact Level
Project related activities displaces potential visitors to other recreational opportunities	LTS	LTS	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Visitors may choose to visit other recreational opportunities in the region to avoid the temporary impact due to construction. However, the region has ample regional recreational opportunities, as shown in Section 3.15.2.1, and the impact to facilities outside of the Project footprint would not expected to be significant.

Location of Project Features

Recreationists visiting other locations due to changes in the Project footprint are expected be minimal, because the main feature to change is the trail would be unpaved. Furthermore, there are ample regional recreational opportunities, as discussed in Section 3.15.2.1 and shown on Figure 3.15-1. The amount of additional use, if any, at outlying recreational areas would be negligible compared to the area available for recreation. Therefore, the impact is less than significant.

Operations and Maintenance

The operations and maintenance of this alternative would be similar to the NRCS Alternative and would require periodic closures to trails. However, these closures would be temporary and be incorporated with trail management-related BMPs. Therefore, the impact to recreational resources would be less than significant and would not require mitigation.

Best Management Practices (BMPs)

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

3.15.5.5 Reach 6 Bypass Alternative

The impacts and mitigation measures under the Reach 6 Bypass Alternative would be similar as under the Preferred Alternative, because the recreational facilities are located on reaches that would undergo the same construction activities for both alternatives. There are no recreational facilities in the footprint or adjacent to the Reach 6 bypass channel.

REC-1 BY—Disrupt access to or diminish quality of existing recreational resources, such as parks or trails

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Location of Project Features	Operation/Maintenance Impact Level
All activities	LTSM	LTSM	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The West Little Llagas Creek Trail, on land owned by SCVWD would be inaccessible during times of construction. However, the trail currently operates under a Joint Use Agreement that states that the purpose of the trail is secondary to flood management activities and the understanding is the trail could be affected by these activities. Also, access to maintenance roads, although unpaved, would be available after the Project construction is complete. This alternative also has the potential to impact parklands if construction occurs on or around these facilities given the proximity of the Project to recreational facilities along Reaches 7A, 7B, and 8. Parklands that are both owned by SCVWD and in close proximity to the Project footprint, include the Centennial Recreation Center, Galvan Park, and the Britton ball fields. The possibility exists that project construction could impact these parklands and constitutes a significant impact.

These impacts would be reduced to less than significant with the incorporation of Mitigation Measures REC-1a, REC-1b, and REC-1c T.

Location of Project Features

Recreational facilities (Centennial Recreation Center and Galvan Park) are very close to the Project footprint, as are the ballpark fields adjacent to Britton Middle School; however, it is not anticipated that recreational facilities not under the jurisdiction of the SCVWD would be permanently converted. The West Little Llagas Creek Trail is also within the Project footprint. The paved trail and landscaping would be removed, as flood management activities would occur in these areas. Although after construction, maintenance roads could continue to provide access for recreational trail users in and around Llagas Creek. Given the possibility that the trail would be converted to an aggregate base road, this would have a significant impact to recreational resources, however the impact would be reduced to the less than significant with the incorporation of Mitigation Measure REC-1a T.

Operations and Maintenance

Periodic maintenance activities would lead to short periods where the maintenance roads used as trails are inaccessible, as occurs under the existing SMP. The operations and maintenance of this alternative

would have a less-than-significant impact on recreational resources due to these short-term and temporary interruptions in recreation availability.

Best Management Practices (BMPs)

Two BMPs apply to temporary trail closures. In general, the goal of the two BMPs is to minimize the impact to recreationists while routine maintenance occurs.

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

Mitigation Measures

Mitigation Measure REC-1a T: Trail Detour.

Mitigation Measure REC-1b T: Recreational Facility Protection.

Mitigation Measure REC-1c T: Public Outreach.

This impact would be less than significant with mitigation.

REC-2 BY—Displace recreational users to outlying and/or other regional facilities and physically deteriorate these areas

Impact Determination: less than significant

Project Activity	Construction Impact Level	Location of Project Features	Operation /Maintenance Impact Level
Project related activities displaces potential visitors to other recreational opportunities	LTS	LTS	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

Visitors may choose to visit other recreational opportunities in the region to avoid the temporary impact due to construction. However, the region has ample regional recreational opportunities, as shown in Section 3.15.2.1, and the impact to facilities outside of the Project footprint would not expected to be significant.

Location of Project Features

Recreationists visiting other locations due to changes in the Project footprint would be minimal. Furthermore, there are ample regional recreational opportunities, as discussed in Section 3.15.2.1 and shown on Figure 3.15-1, and the amount of additional use, if any, at outlying recreational areas would be negligible in comparison to the amount of available recreational area. Therefore, the impact would be less than significant.

Operations and Maintenance

The operations and maintenance of this alternative would require periodic closures to trails. However, these closures would be temporary and be incorporated with trail management-related BMPs. It should be noted that closures and subsequent displacement of recreationists is likely to be even less for this alternative compared to the other action alternatives, because fewer maintenance roads would be built as a part of this Alternative. Therefore, the impact to recreational resources would be less than significant and would not require mitigation.

Best Management Practices (BMPs)

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

Mitigation Measures

None required

Implementation of BMPs would reduce impacts to less than significant.

3.15.6 Summary of Impacts to Recreation Resources

Impacts to recreational resources under all of the action alternatives were identified in association with construction, and location of Project features. Mitigation measures would reduce all of the potentially significant impacts to less than significant (see Summary Table S-1). Three mitigation measures (a trail detour, recreational facility protection, and public outreach) were identified to reduce the impacts to less than significant..

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3.16 Population and Housing

3.16.1 Introduction

In this section, existing conditions related to population and housing in the vicinity of the study area are provided and the potential impacts of the various alternatives are assessed.

The major resource documents used to complete this section are listed here:

> Association of Bay Area Governments and Metropolitan Transportation Commission. 2013. *Selected Census Data for the San Francisco Bay Area*.

> City of Gilroy. 2011. *2007–2014 Housing Element (Public Review Draft)*. Gilroy, California.

> City of Morgan Hill. 2010c. *Draft Housing Element*. Morgan Hill, California.

> Santa Clara County. 2010. *County of Santa Clara Housing Element Update 2009–2014*. Adopted by the Board of Supervisors, August 2. San Jose, California.

> State of California, Department of Finance. 2013. *Report P-1 (County): State and County Total Population Projections, 2010–2060*. Sacramento, California.

> U.S. Census Bureau. 1992. *1990 Census of Population: General Population Characteristics - California*. Section 3 of 3. Washington D.C.

3.16.2 Study Area

The study area is entirely within Santa Clara County including parts of the City of Morgan Hill and unincorporated areas within the county. The study area is not within the city limits of Gilroy, but is within the SOI[1] as determined by LAFCO.

3.16.2.1 Environmental Setting

Generally, the study area is suburban and agricultural. The Project area has experienced a continuing transition of agricultural lands being converted for residential and commercial development and the population has increased substantially since the 1970s. The northern portion (Reaches 8, 7B, and portions of 7A) of the study area lies within the City of Morgan Hill; a portion of Reach 7A is within unincorporated Santa Clara County, but within Morgan Hill's SOI. Reaches 6, 5, and 14 are within the San Martin planning area; in addition, a part of Reach 4 (north of Masten Avenue) is also in the San Martin planning area. The southern extent of Reach 4 is within unincorporated Santa Clara County and within the City of Gilroy's SOI.

3.16.2.2 Population

Table 3-16.1 provides census data for communities in close proximity to the study area. In general, population has increased rapidly within Santa Clara County (67%) from 1970–2010. Morgan Hill and Gilroy have grown at even a greater rate over the same time period; although, some growth is attributable to annexation of unincorporated areas. San Martin is within unincorporated Santa Clara County and is a Census Designated Place (CDP). Population totals are provided for San Martin since 1990, the first census where CDPs were delineated from county-level data. Similar to Morgan Hill and Gilroy, the San Martin CDP has increased substantially since 1990.

[1] SOI refers to "boundaries for all agencies within its jurisdiction, indicating the physical boundary and service area each agency is expected to serve". Source: Santa Clara County 2006.

Table 3.16-1 Population Trends for Communities in the Vicinity of Study Area [1, 2]

City / Community	1970	1980	1990	2000	2010	Increase 1970–2010
Santa Clara County	1,064,714	1,295,071	1,497,577	1,682,585	1,781,642	67%
Morgan Hill	6,485	17,060	23,928	33,556	37,822	483%
Gilroy	12,665	21,641	31,487	41,464	48,821	285%
San Martin (CDP)	Census tracts were not delineated		1,713 [2]	4,230	7,027	--

[1] Association of Bay Area Governments and Metropolitan Transportation Commission (2013)

[2] U.S. Census Bureau (1992)

In general, the rate of growth is anticipated to decrease substantially within Santa Clara County over the next several decades. The California Department of Finance provides population projections by county (Table 3.16-2). When comparing the 2010 census figure listed in the previous table with the projected 2060 population, the increase is expected to be 23 percent over the time period.

Table 3.16-2 Population Projections for Santa Clara County [1]

City / Community	2020	2030	2040	2050	2060	Projected Increase 2010–2060
Santa Clara County	1,889,898	1,986,545	2,083,710	2,152,199	2,198,503	23%

[1] California Department of Finance (2013)

Housing

In general, there are some differences in the household characteristics of the three communities (Morgan Hill, Gilroy, and San Martin) compared to Santa Clara County as a whole. Table 3.16-3 presents housing related data for Santa Clara County and for the communities in close proximity to the study area. Both Morgan Hill and Gilroy have vacancy rates close to the average for the county as a whole, while San Martin's vacancy rate is substantially higher. Compared to the county, all three communities have a lower percentage of multi-unit structures, a higher percentage of owner occupied units, and a larger average household size.

Table 3.16-3 Population Projections for Communities in the Vicinity of Study Area [1]

City / Community	Housing Units	Vacant Units	% of Units in Multi Unit Structures	Owner Occupied	Renter Occupied	Average Household Size
Santa Clara County	579,329	2.3%	32.8%	59.8%	40.2%	2.92
Morgan Hill	11,091	2.2%	15.5%	72.5%	27.5%	3.05
Gilroy	12,152	2.3%	24.9%	75.9%	24.1%	3.46
San Martin (CDP)	2,122	6.1%	6.3%	65.7%	34.3%	3.46

[1] Association of Bay Area Governments and Metropolitan Transportation Commission (2013)

3.16.3 Regulatory Environment

The following federal, state, regional, and local requirements for the Project are described below.

3.16.3.1 Federal

There are no federal regulations applicable to this section.

3.16.3.2 State

There are no state regulations applicable to this section.

3.16.3.3 Local

Santa Clara County General Plan (Housing Element 2009–2014 Update)

The housing element of the General Plan was updated by Santa Clara County (2010) to address housing needs in unincorporated Santa Clara County. The plan follows up on goals and strategies developed for the 2001 plan. Importantly, the plan recognizes the need for more affordable housing countywide. The plan discusses the following strategies and sub-strategies:

> *Strategy #1.* Increase the Supply of Affordable Housing:
  - Plan for Balanced Housing
  - Promote Residential Development
  - Provide Financial Assistance for Low to Moderate Income Housing
  - Remove Fiscal Barriers to Housing
> *Strategy #2.* Ensure Equal Access to Housing.
> *Strategy #3.* Provide for Special Needs Housing.
> *Strategy #4.* Conserve the Existing Housing Stock.

The plan also included two strategies specifically focused on rural areas:

> Maintain and Expand Special Needs Housing.
> Maintain and Expand the Supply of Farm Worker Housing.

City of Morgan Hill General Plan – Housing Element

As a part of the city's General Plan, Morgan Hill (2010a) developed a draft Housing Element. The housing element is the city's comprehensive statement about its housing needs and goals. The following goals are cited in the report:

> Adequate New Housing To Meet Future Community Housing Needs.
> Preservation of Existing Housing Supply.
> Adequate Housing for Groups with Special Needs.

City of Gilroy General Plan Housing Element

The southern portion of the Project lies within the SOI of the City of Gilroy. The city (2011) released a public review draft of their housing element update for 2007–2014. Five topics are the focus of the city's housing policy:

> Housing Production

> Housing Rehabilitation

> Housing Preservation and Conservation

> Housing Access

> Expanding Outreach

3.16.4 Impact Analysis

3.16.4.1 Significance Criteria

Implementation of an alternative would have a significant impact on population and housing if it were to:

a. Induce substantial population growth in an area, either directly (i.e., by proposing new homes and businesses) or indirectly (i.e., through extension of roads or other infrastructure); or

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

3.16.4.2 Approach to Analysis

The implications to population and housing resources are evaluated for each of the alternatives are considered. The analysis also includes potential impacts due to both construction and operations and maintenance activities. For population growth, the anticipated new long-term employment opportunities are the focus of the analysis. Most of the new construction related employment would be filled by existing construction workers within Santa Clara County and its adjacent counties (see Section 3.17.5.2 and Table 3.17.11). For the purpose of analyzing population growth, these jobs have been assumed to be filled by individuals new to the region. Long-term operations and maintenance employment opportunities would be filled by existing employees performing existing SMP work. Based on the information presented in Chapter 2 (see Tables 2.4-2 and 2.4-4), Table 3.16-4a lists the maximum annual construction employment by alternative. For population and housing, the potential displacement of housing and individuals living in the Project footprint is the focus of the analysis. Table 3.16-4b lists the number of residences to be moved or removed by alternative.

Table 3.16-4a Project-related construction employment (Maximum/year) [1,2]

Construction Year	No Project Alternative	Tunnel Alternative (Preferred Alternative)	NRCS Alternative	Culvert/Channel Alternative	Reach 6 Bypass Alternative
1	0	107	107	107	107
2	0	261	245	245	261
3	0	256	240	240	256
4	0	159	143	143	201
5	0	112	96	96	154
6	0	48	48	48	0

[1] Excavation and non-excavation construction occupations.

[2] These estimates reflect maximum annual construction employment, because Table 2.4-4 counts the same employee in each reach where the employee is required regardless if construction phases are overlapping and the same employee may work in multiple reaches simultaneously. While these estimates do not include the laborers required for the Lake Silveira portion of the Project (estimates have not been developed at this time), labor needs for construction and restoration activities are expected to be a small fraction of the construction labor required for the channel widening/deepening and infrastructure modifications portion and would not vary among the action alternatives.

Table 3.16-4b Residential Structures Located Within Project Footprint

Reach	No Project Alternative	Tunnel Alternative (Preferred Alternative)	NRCS Alternative	Culvert/Channel Alternative	Reach 6 Bypass Alternative
4	0	2	2	2	2
5	0	0	0	0	0
6	0	3	3	3	0
7A	0	0	0	0	0
7B	0	1	1	1	1
8	0	0	6	4	0
14	0	0	0	0	0
Total by Action	**0**	**6**	**12**	**10**	**3**

3.16.5 Impacts and Mitigation Measures

3.16.5.1 No Project Alternative

POP-1 NP—Induce substantial population growth in an area

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Existing condition	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

The No Project Alternative would not result in changed conditions related to housing and population in the study area. As it is, population has been growing steadily within the general vicinity of the Project regardless of the existing flood management conditions. It appears that population growth within the study area is influenced more by employment opportunities linked to the Silicon Valley rather than risk associated with flooding. Therefore, the No Project Alternative is not expected to induce population growth within the study area, and there is no impact.

Construction

The No Project Alternative would not induce population growth.

Operations and Maintenance

Stream maintenance would continue under the SCVWD's SMP. Since this is an ongoing program and no new workers would be needed to continue this work there would be no impact to population and housing under this alternative.

Best Management Practices (BMPs)

None applicable

The No Project Alternative would not impact population growth.

POP-2 NP—Displace substantial numbers of existing housing and/or people

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Existing condition	N/A	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

There would be no construction associated with this alternative and no residences or individuals would be displaced. However, compared to the other alternatives, the risk to flooding within the urbanized portion of Morgan Hill would be higher. However, this would not directly result in the permanent displacement of housing or people in close proximity to the study area. The No Project Alternative would not displace housing and subsequently no people.

Construction

The No Project Alternative would not displace housing or people.

Operations and Maintenance

Stream maintenance would continue under the SCVWD's SMP. Maintenance activities would not displace housing, because the removal of homes is not necessary to complete these activities

Best Management Practices (BMPs)

None applicable

There would be no impact because No Project Alternative would not displace housing or people.

3.16.5.2 Tunnel Alternative (Preferred Alternative)

The Preferred Alternative would employ a maximum of approximately 260 construction workers, 157 per year on average.

POP-1 T—Induce substantial population growth in an area

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Reducing areas subject to flooding induces population growth	NI	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The number of workers who may relocate to the area is not expected to induce substantial population growth (see section 3.16.4.2 for workforce information). Many of the workers would likely already live in the general vicinity of the Project (see Section 3.17.5.2 and Table 3.17.11). Even if all 260 workers and their family members moved into the study area, the population growth would be less than 1 percent of the 2010 population in the combined Morgan Hill, Gilroy, and San Martin area. One aspect of the Project is to reduce the area subject to flood, suggesting that additional areas may be open to residential development. However, the amount of land potentially protected by the Project is relatively small compared to the undeveloped or existing agricultural lands in south Santa Clara County. Additionally,

population growth in the region is driven more by regional factors, such as job creation in the Silicon Valley. Therefore, this alternative is not expected to induce substantial population growth and there is no impact.

Operations and Maintenance

Since Project-related operations and maintenance would be similar to the ongoing program, no new workers would be needed. Therefore, the operations and maintenance of the Project under the Preferred Alternative is not expected to induce substantial population growth, resulting in no impact.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

There would be no population growth and therefore no impact.

POP-2 T—Displace substantial numbers of existing housing and/or people

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
The construction of the Project would displace houses and people in Reaches 4, 6, and 7B.	LTS	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

This alternative is expected to displace six residences and, subsequently, the residents within the households. Local General Plans (Housing Elements) call for the maintenance of the existing housing stock, suggesting that removing households could be an impact. However, the total number of impacted residences represents less than 0.1 percent of the total households in the combined Morgan Hill, Gilroy, and San Martin area. The owners of the residences would be compensated at fair market value for their property and would be able to acquire a replacement residence. This impact would be less than significant.

Operations and Maintenance

Since Project-related operations and maintenance would be similar to the ongoing program, no new workers would be needed. Further, the operations and maintenance of the Project under the Preferred Alternative is not expected to displace existing housing or people, because housing will not be removed with these actions; therefore, no impact would result.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

The Preferred Alternative would not displace housing or people, so there would not be an impact.

3.16.5.3 Natural Resources Conservation Service (NRCS) Alternative

The NRCS Alternative would result in the displacement of individuals who live in 12 residences. This is more than the other action alternatives. However, impacts under this alternative would generally be the same as under the Preferred Alternative.

The NRCS Alternative would employ a maximum of approximately 245 construction workers, 147 per year on average.

POP-1 NRCS—Induce substantial population growth in an area

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Reducing areas subject to flooding induces population growth	NI	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The number of workers who may relocate to the area is not expected to induce substantial population growth. Many of the workers would likely already live in the general vicinity of the Project (see Section 3.17.5.2 and Table 3.17.11). Even if all 245 workers and their family members moved into the study area, the population growth would be less than 1 percent of the 2010 population in the combined Morgan Hill, Gilroy, and San Martin area. One aspect of the Project is to reduce the area subject to flood, suggesting that additional areas may be open to residential development. However, the amount of land potentially protected by the Project is relatively small compared to the undeveloped or existing agricultural lands in south Santa Clara County. Population growth in the region is driven more by regional factors, such as job creation attributable to Silicon Valley based companies. Therefore, this alternative is not expected to induce substantial population growth, and there is no impact.

Operations and Maintenance

Since Project-related operations and maintenance would be the same as the ongoing program, no new workers would be needed. Therefore, the operations and maintenance of the NRCS Alternative is not expected to induce substantial population growth, resulting in no impact.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

The NRCS Alternative would not cause population growth, so there would not be an impact.

POP-2 NRCS—Displace substantial numbers of existing housing and/or people

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
The construction of the Project would displace houses and people in Reaches 4, 6, 7B, and 8.	LTS	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

This alternative is expected to displace 12 residences and, subsequently, the residents within the households. Local General Plans (Housing Elements) call for the maintenance of the existing housing stock, suggesting that removing households could be an impact. However, the total number of impacted residences represents less than 0.1 percent of the total households in the combined Morgan Hill, Gilroy, and San Martin area. The owners of the residences would be compensated at fair market value for their property. This impact would be less than significant.

Operations and Maintenance

Since Project-related operations and maintenance would be the same as the ongoing program, no new workers would be needed. Further, the operations and maintenance of the NRCS Alternative is not expected to displace existing housing or people, because the removal of homes is not necessary to complete these activities; therefore, no impact would result.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

The NRCS Alternative would not displace housing or people, so there would not be an impact.

3.16.5.4 Culvert/Channel Alternative

Impacts under the Culvert/Channel Alternative would generally be the same as the Preferred Alternative, as 10 residences would be removed. This is less than the NRCS Alternative but more the Preferred Alternative and the Reach 6 Bypass Alternative. The Culvert/Channel Alternative would employ a maximum of approximately 245 construction workers, 147 per year on average.

POP-1 CC—Induce substantial population growth in an area

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Reducing areas subject to flooding induces population growth	NI	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The number of workers who may relocate to the area is not expected to induce substantial population growth. Many of the workers would likely already live in the general vicinity of the Project (see Section 3.17.5.2 and Table 3.17.11). Even if all 245 workers and their family members moved into the study area, the population growth would be less than 1 percent of the 2010 population in the combined Morgan Hill, Gilroy, and San Martin area. One aspect of the Project is to reduce the area subject to flood, suggesting that additional areas may be open to residential development. However, the amount of land potentially protected by the Project is relatively small compared to the undeveloped or existing agricultural lands in south Santa Clara County. Additionally, population growth in the region is driven more by regional factors, such as job creation in the Silicon Valley. Therefore, this alternative is not expected to induce substantial population growth, and there is no impact.

Operations and Maintenance

Since Project-related operations and maintenance would be the same as the ongoing program, no new workers would be needed. Therefore, the operations and maintenance of the Project under the Culvert/Channel Alternative is not expected to induce substantial population growth, resulting in no impact.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

The Culvert/Channel Alternative would not cause population growth, so there would not be an impact.

POP-2 CC—Displace substantial numbers of existing housing and/or people

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
The construction of the Project would displace houses and people in Reaches 4, 6, 7B, and 8.	LTS	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

This alternative is expected to displace 10 residences and, subsequently, the residents within the households. This is the same number as in the NRCS Alternative. It is consistent with the local General Plans (Housing Elements) to maintain the existing housing stock, suggesting that removing households could be an impact. However, the total number of impacted residences represents less than 0.1 percent of the total households in the combined Morgan Hill, Gilroy, and San Martin area. The owners of the residences would be compensated at fair market value for their property. This impact would be less than significant.

Operations and Maintenance

Since Project-related operations and maintenance would be the same as the ongoing program, no new workers would be needed. Further, the operations and maintenance of the NRCS Alternative is not

expected to displace existing housing or people, because the removal of homes is not necessary to complete these activities; therefore, no impact would result.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

The Culvert/Channel Alternative would not displace housing or people, so there would not be an impact.

3.16.5.5 Reach 6 Bypass Alternative

The impacts under the Reach 6 Bypass Alternative are expected to be similar to the other alternatives. However, the Reach 6 Bypass Alternative would displace three residences due to construction, less than the other action alternatives. The Reach 6 Bypass Alternative would employ a maximum of approximately 260 construction workers, 163 per year on average.

POP-1 BY—Induce substantial population growth in an area

Impact Determination: no impact

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Reducing areas subject to flooding induces population growth	NI	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

The number of workers who may relocate to the area is not expected to induce substantial population growth. Many of the workers would likely already live in the general vicinity of the Project (see Section 3.17.5.2 and Table 3.17.11). Even if all 260 workers and their family members moved into the study area, the population growth would be less than 1 percent of the 2010 population in the combined Morgan Hill, Gilroy, and San Martin area. One aspect of the Project is to reduce the area subject to flood, suggesting that additional areas may be open to residential development. However, the amount of land potentially protected by the Project is relatively small compared to the undeveloped or existing agricultural lands in south Santa Clara County. Additionally, population growth in the region is driven more by regional factors such as job creation in the Silicon Valley. Therefore, this alternative is not expected to induce substantial population growth, and there is no impact.

Operations and Maintenance

Since Project-related operations and maintenance would be the same as the ongoing program, no new workers would be needed. Therefore, the operations and maintenance of the Project under the Reach 6 Bypass Alternative is not expected to induce substantial population growth, resulting in no impact.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

The Reach 6 Bypass Alternative would not cause population growth, so there would not be an impact.

POP-2 BY—Displace substantial numbers of existing housing and/or people

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
The construction of the Project would displace houses and people along Reaches 4 and 7B.	LTS	NI

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

This alternative is expected to displace three residences and, subsequently, the residents within the households. It is consistent with the local General Plans (Housing Elements) to maintain the existing housing stock, suggesting that removing households could be an impact. However, the total number of impacted residences represents less than 0.1 percent of the total households in the combined Morgan Hill, Gilroy, and San Martin area. The owners of the residences would be compensated at fair market value for their property. This impact would be less than significant.

Operations and Maintenance

Since Project-related operations and maintenance would be the same as the ongoing program and no new workers would be needed. Further, the operations and maintenance of the NRCS Alternative is not expected to displace existing housing or people, because the removal of homes is not necessary to complete these activities; therefore, no impact would result.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

The Reach 6 Bypass Alternative would not displace housing or people, so there would not be an impact.

3.16.6 Summary of Impacts to Population and Housing

One less-than-significant impact was identified for each of the action alternatives. The less-than-significant impact is associated with the removal of residences, and the subsequent displacement of the residents due to construction of the various proposed Project features. The Preferred Alternative would result in the displacement of individuals who live in six residences. This is less than the NRCS and Culvert/Channel alternatives but more than the Reach 6 Bypass Alternative.

3.17 Socioeconomic Resources

This section analyzes potential impacts of the Proposed Project on social and economic (socioeconomic) resources within the study area. Impacts to specific components of socioeconomic characteristics including population, housing, land use, recreation, and public utilities are addressed in other section of the EIR. Impacts to employment, income, taxes, and similar socioeconomic factors associated with each of the Project alternatives are identified and assessed in this section relative to the existing condition of the potentially affected socioeconomic resources. A set of criteria is developed for evaluating the significance of each impact and potential mitigation measures are identified for any impacts determined significant.

3.17.1 Introduction

The Proposed Project is located in southern Santa Clara County along 13 miles of Upper Llagas Creek bisecting the City of Morgan Hill, the San Martin CDP, and the City of Gilroy. The Project area spans seven reaches of Upper Llagas Creek (8, 7B, 7A, 6, 5, 4, and 14) and encompasses approximately 300 acres. By design, the Proposed Project would increase flood capacity in the upper reaches, while ensuring no induced flooding in the lower reaches.

Socioeconomic resources considered in this impact analysis include population and housing; components of the economic base, such as employment, income, economic output, and fiscal resources; and land use. Cardno ENTRIX staff compiled baseline information on these socioeconomic resources by searching databases of social, demographic and economic data, and indices reported for various geographic levels of detail within and around the study area. The primary sources for this study include:

> U.S. Department of Commerce, Bureau of Census. 2011. *American Community Survey 5-Year Estimates, 2007–2011*.

> U.S. Department of Commerce, Bureau of Census. 2009. *American Community Survey 1-Year Estimates, 2009*.

> U.S. Department of Commerce, Bureau of Census. 2010a. *ZIP Code Business Patterns (ZBP)*.

> U.S. Department of Commerce, Bureau of Census. 2000. *DP-3 Median Value (Dollars) For All Owner-Occupied Housing Units, 2000*.

> U.S. Department of Labor, Bureau of Labor Statistics. 2011b. *Occupational Employment Statistics (OES) Survey*, *May 2011*.

> Minnesota Impact Analysis for Planning (IMPLAN) Group, Inc. 2013. *Total Output by Industry, Santa Clara County, California, 2010*.

> State of California Board of Equalization. 2011. *2010–11 Annual Report, Statistical Appendix*.

These data sources are widely utilized by social scientists and many are frequently referenced in reports by the general media. Section 3.17.6 is a complete list of the sources referenced in preparing this analysis.

3.17.2 Study Area

The study area for the socioeconomic impacts analysis is the area formed collectively by the City of Morgan Hill, the San Martin CDP, and the City of Gilroy. These cities are located in southern Santa Clara County along U.S. 101, approximately 25 miles southeast of San Jose. These cities contain the entire Project area and the primary socioeconomic resources potentially subject to direct and indirect impacts. While the demand for construction labor may indirectly impact socioeconomic resources in additional nearby population centers, this impact analysis focuses on the jurisdictions in and nearby the Project

area. Figure 3.17-1 displays the socioeconomics study area with reference to various geographic reporting units for the social, demographic, and economic data informing this analysis.

3.17.2.1 Environmental Setting

This section describes the existing condition of the socioeconomic resources within the study area. These existing conditions were used to conduct qualitative and quantitative analysis of potential impacts of the various Project alternatives. Although this section relies on the latest available data for each intended demonstrative table available at the time of the study, much of the data pre-dates 2012 and certain economic indicators in the study area may have since changed.

Socioeconomic resources in the study area are described at the city/community level of detail, where available or estimated, with county level data presented for context. While other sections describe the subject resource by river reach, much of the key economic data sources are not of sufficient geographic detail. Further, evaluations of economic resources may be distorted if conducted for highly detailed geographies that do not approximate the true geographic extent of the relevant market or accounting unit for the resource.[1] Table 3.17-1 provides general correspondence between the cities in the study area, ZIP codes, and the reaches of Upper Llagas Creek forming the Project area.[2]

Table 3.17-1 Geography of the Socioeconomics Study Area

City / Community	Corresponded to:		
	ZIP Code	Census Tracts	Reach
Morgan Hill	95037	5123.05, 5123.07, 5123.08, 5123.09, 5123.10, 5123.11, 5123.12, 5123.13, 5123.14	8, 7A, 7B
San Martin (CDP)	95046	5124.01, 5124.02	6, 5, 14
Gilroy	95020	5124.01, 5125.03, 5125.05, 5125.06, 5125.08, 5125.09, 5125.10, 5126.02, 5126.03, 5126.04	4*

ZIP code, Census Tract, and reach are corresponded to the majority city/community by acreage.

* Reach 4 does not physically extend into the City of Gilroy but it is the nearest reach to this jurisdiction.

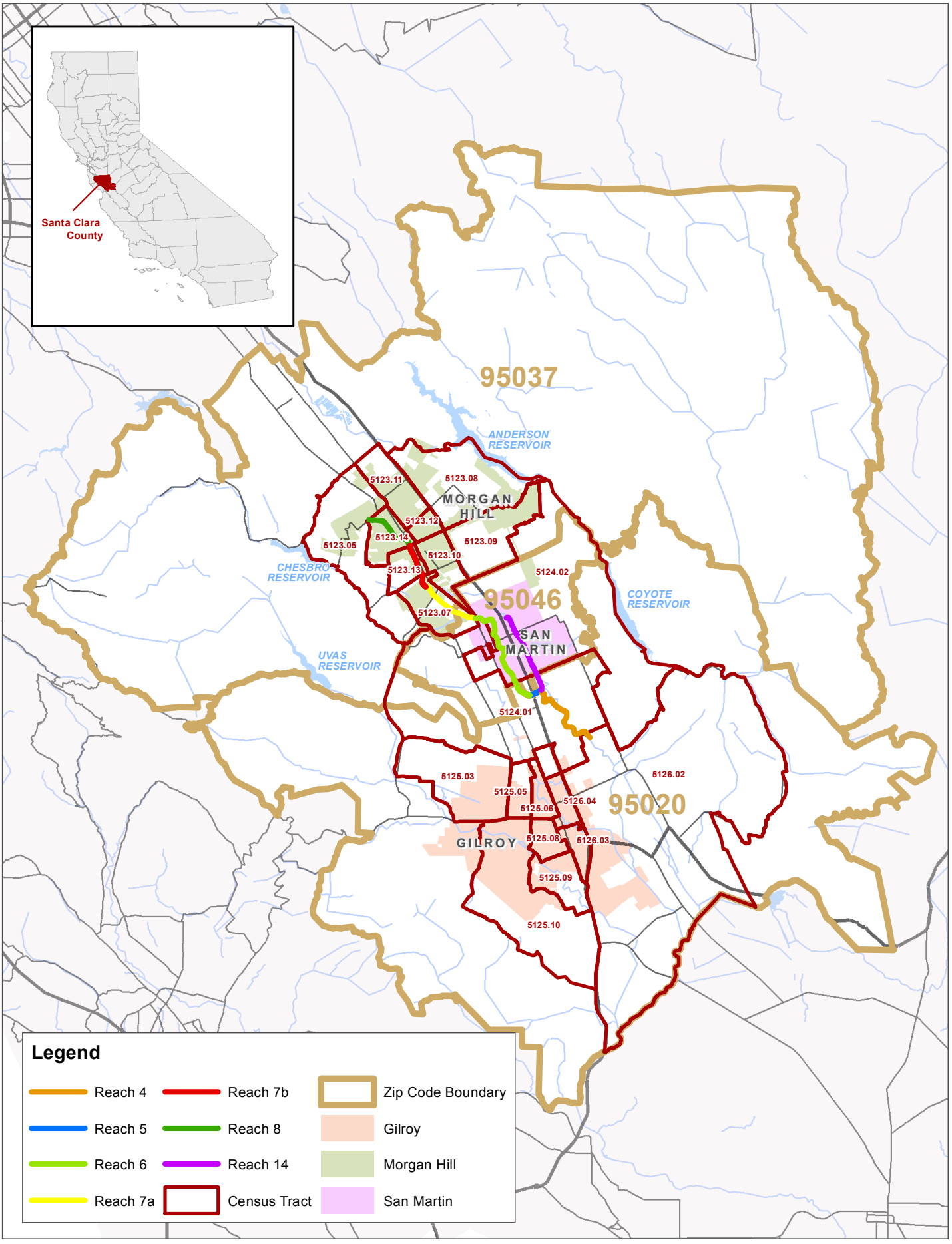
Population and Housing

Section 3-16, Population and Housing, presents historic and current population levels and detailed housing characteristics for communities within the study area and Santa Clara County. Many of the following statistics are directly reported in Section 3.16, or are derived from the statistics reported therein.

As of 2010, the population of the study area was 93,670 people: 37,822 in Morgan Hill, 7,027 in San Martin, and 48,821 in Gilroy. The study area has been characterized by substantial population growth in recent history. Population within the study area increased 63 percent between 1990 and 2010 (3.2% annually) compared with a 17 percent increase (0.9% annually) throughout the remainder of Santa Clara County. Access via U.S. 101 to the expanding high-tech job base in Silicon Valley has been largely responsible for population growth in the study area, particularly Morgan Hill, which is known as a bedroom community for the high-tech industry. Over the next 20 years the rate of population growth in Santa Clara County is expected to be slower than in the previous 20 years.

1 For example, although available for individual Census Tracts closely corresponding to individual river reaches, the cumulative housing stock in and around the Project area is the relevant baseline metric for evaluating potential impacts associated with in-migration of construction labor. In the case of flood protection afforded by the Project, socioeconomic resources potentially affected may extend outside the physical area nearby the river reach.

2 ZIP Code Business Patterns data published by the U.S. Census Bureau are utilized to describe business establishments within the study area. As reflected in Table 3.17-1, this study assumes ZIP code 95037 to represent Morgan Hill, ZIP code 95046 to represent the San Martin CDP, and ZIP code 95020 to represent Gilroy.



Upper Llagas Creek Project EIR

FIGURE 3.17-1

Socioeconomic Resources Study Area

Cardno ENTRIX

As of 2010, there were approximately 25,000 housing units within the study area. This accounts for just 4 percent of all housing units in Santa Clara County. Aside from San Martin, housing availability within the study area is somewhat limited. Vacant units account for approximately 2 percent of all housing units in Morgan Hill, Gilroy (approximately 523 units), and Santa Clara County compared with 6 percent in San Martin. San Martin accounts for less than 10 percent of the housing units in the study area.

Owner-occupancy is more prevalent in the study area than in Santa Clara County as a whole. Owners occupy approximately 75 percent of the housing units in Morgan Hill and Gilroy compared with 60 percent in Santa Clara County. Additionally, single-family units are more prevalent in the study area (80%) relative to Santa Clara County as a whole (67%). Within the study area, multi-family units are more prevalent in Gilroy (25% of units), relative to Morgan Hill (15% of units) and San Martin (6% of units).

Whether a person owns or rents, housing costs are the major component of living expenses for most of the United States population. Housing comprises 29 percent of living costs nationwide (CCER 2010). At the same time, a home can represent a family's most valuable real asset over the long term. The cost of housing in the San Jose-Sunnyvale-Santa Clara Metropolitan Statistical Area (MSA) is among the highest in the nation.

As of 2009, the median home value in the study area was just over $500,000, 17 percent below the Santa Clara County median home value (Table 3.17-2). Even in light of the recent housing crisis, the value of homes in the study area appreciated by 13 percent between 2000 and 2009. With typical loan terms, a prospective homeowner in the study area can expect to face approximately $2,400 in monthly mortgage principal, interest, taxes, and insurance. Rental housing in the study area costs approximately half as much as homeownership. Median rents ranged from $1,222 (Gilroy) to $1,485 (Morgan Hill), increasing while moving south to north through the study area toward Silicon Valley (U.S. Census Bureau 2012). Rental rates in Morgan Hill are higher than in Santa Clara County as a whole; this is due, in part, to larger supply of rental housing as a proportion of total housing in the rest of Santa Clara County.[3]

Table 3.17-2 Median Home Value, 2000 to 2009

Median Home Value (2009 dollars)	2000	2009	Percentage Change
Gilroy/Morgan Hill Urbanized Area	$473,694	$536,500	13.3%
Santa Clara County	$526,244	$645,500	22.7%

Source: U.S. Census Bureau: Census 2000; U.S. Census Bureau: ACS 2009 1-Year Estimates

Land Use

Land is a factor of production and, thus, an important socioeconomic resource. Land use is constrained by both social (e.g., community connectivity, safety) and economic development criteria. Flood protection objectives also inform land use planning. Section 3.8, Land Use and Planning, describes the land use patterns within the Project footprint and the 1-percent flood extent along Upper Llagas Creek.[4]

[3] No analysis of the comparability of rental units (e.g., size, # bedrooms) between the areas was conducted for the purpose of this study.

[4] While not congruent with the full extent of the socioeconomics study area, information on land use in the 1-percent flood extent is useful for informing the specific significance criteria developed to evaluate potential socioeconomic impacts of the Project.

Project Footprint

At approximately 300 acres, the Project footprint comprises 2 percent of acreage within the boundaries of the cities/communities forming the socioeconomics study area (not including roads).[5] Land designated as Residential and Open Space comprises the majority of the Project footprint (80%), followed by Agriculture (16%).Table 3.17-3 describes the land use within the Project footprint in and around the cities and community forming the socioeconomics study area. Much of the Project footprint in Open Space use near Reaches 8, 7A, and 7B is Llagas Creek itself (Section 3.8, Land Use and Planning; Figure 3.8-1a, Land Use in the Project Vicinity).

Table 3.17-3 Land Use Within the Project Footprint

City / Community	Reach	Land Use
Morgan Hill	8, 7A, 7B	**Open Space (61%)**; Residential (27%); Roads (7%); Commercial (10%)
San Martin (CDP)	6, 5, 14	**Residential (90%)**; Open Space (9%)
Gilroy	4	**Agriculture (74%)**; Residential (26%)

Existing 1-percent Flood Extent

At approximately 3,000 acres, the existing 1-percent flood extent comprises approximately 19 percent of the acreage within the boundaries of the cities/communities forming the socioeconomics study area (not including roads) (Section 3.8, Land Use and Planning*;* Table 3.8-5, Acres of Land Uses Flooded Under the Various Alternatives).[6] Land designated for residential use and agricultural use comprise approximately 21 and 53 percent of the flood extent, respectively, for a total of 74 percent. Another 11 percent of the flood extent is comprised of open space, while utilities infrastructure, roads and commercial land comprise much of the remaining 15 percent.

Economic Base

Employment

Employment is the means by which people earn income. High unemployment is an indicator of a weak economy. Table 3.17-4 describes the employment characteristics of the study area. The labor force is the number of persons living in the area with employment or who are actively seeking employment. The labor force residing in the study area averaged 47,809 during 2007–2011, comprising 5 percent of Santa Clara County's total labor force. Over the same period, unemployment among the labor force in the study area averaged 10.3 percent, compared to 8.6 percent in Santa Clara County, 9.6 percent in California, and 7.6 percent in the United States (Bureau of Labor Statistics 2012).

[5] A portion of the 1-percent flood extent covers unincorporated areas of Santa Clara County within the study area whereas city acreage is calculated based on the boundary lines of the incorporated areas.

[6] *Ibid*

Table 3.17-4 Labor Force and Unemployment, 2007–2011

Area	Labor Force	Unemployment Rate
Morgan Hill	19,439	9.3%
San Martin	3,792	13.0%
Gilroy	24,578	10.9%
Santa Clara County	931,510	8.6%

Source: U.S. Census Bureau, 2007-2011 American Community Survey

The industry composition of the employed population residing within the study area is presented in Table 3.17-5. The top five industry sectors, by number employed, comprised 65 percent of total employment in the study area. These sectors include: Education and Health Services, 18.7 percent; Manufacturing, 15.4 percent; Retail Trade, 11.5 percent; Professional, Management and Administrative (private), 11.2 percent; and Construction, 8.5 percent. Although with different composition, the same five industry sectors comprise the top five by number employed for the resident labor force of each of the three communities within the study area and Santa Clara County.

In the context of assessing socioeconomic impacts of the Proposed Project, it is important to recognize that not everyone who lives in the study area also works in the study area.[7] Approximately 50 percent of the labor force within the study area commutes 30 minutes or longer to work, with 24 percent commuting 45 minutes or longer (U.S. Census Bureau 2011). Table 3.17-6 presents estimates of the number of persons employed at establishments in each industry sector within the study area, regardless of where they reside.[8] The top five industry sectors by number employed comprise 72 percent of the employment located within the study area. These industries are: Retail Trade, 19.9 percent; Manufacturing 14.8 percent; Education and Health Services 14.3 percent; Arts, Entertaining and Food Services, 13.1 percent; and Professional, Management and Administrative (private), 10.7 percent.

Future employment within the study area is uncertain. For the San Jose-Sunnyvale-Santa Clara MSA, which covers San Benito and Santa Clara counties, the projections show a 21.6 percent increase in total employment from 2010 to 2020 (California Employment Development Department 2011).[9] The Information sector is projected to have the largest growth at 45.6 percent. Construction has the second highest projected growth at 34.5 percent.

7 Employment statistics based on place of residence may provide a misleading picture of the industry sectors active within the study area, especially in smaller less populated geographic units. For example, in California and in other states where counties are relatively large, presenting data on employment by county of residence is likely to accurately reflect the industry sectors active within the area.

8 Employment by industry, based on place of work, is published by the Bureau of Economic Analysis for counties and MSAs. Data are not available for individual cities and towns. An estimate of employment by industry within the communities forming the study area was derived using ZIP Code Business Patterns data published by the U.S. Census Bureau. The ZIP Code Business Patterns data provides the number of private establishments by size, as determined by a range of number of employees (e.g., 1-4 employees, 5–9 employees, etc.). Additionally, the data provides the total number of paid employees for a sample pay period. To estimate the number of employees by industry, the midpoint of each firm size range was computed. For each industry, the number of firms in each size range was multiplied by the midpoint number of employees in the size range. The estimated number of employees by firm size was then totaled for each industry, summed across industries, and the percent of the estimated total was computed for each industry. The estimated percent of employees in each industry was then used to allocate the total number of paid employees reported for the sample pay period across industries.

9 The California Employment Development Department publishes employment projections for MSAs covering one or more counties, but not for cities and towns within the county.

Table 3.17-5 Employment by Place of Residence

Industry Sector	Morgan Hill		San Martin		Gilroy		Study Area Total		Santa Clara County	
	#	%	#	%	#	%	#	%	#	%
Farming	94	0.5	55	1.6	138	0.6	287	0.7	1,692	0.2
Agriculture, forestry, fishing and hunting, and mining	267	1.5	123	3.7	1,082	4.9	1,472	3.4	4,425	0.5
Construction	1,194	6.7	422	12.6	2,033	9.2	3,649	8.5	47,005	5.5
Wholesale trade	573	3.2	84	2.5	498	2.3	1,155	2.7	20,252	2.4
Information	490	2.8	15	0.4	389	1.8	894	2.1	32,627	3.8
Other services, except public administration	1,173	6.6	134	4.0	1,306	5.9	2,613	6.1	36,330	4.3
Public administration	911	5.1	66	2.0	942	4.3	1,919	4.5	22,421	2.6
Manufacturing	3,025	17.1	705	21.0	2,920	13.3	6,650	15.4	167,034	19.6
Retail trade	1,319	7.4	347	10.3	3,301	15.0	4,967	11.5	81,918	9.6
Transportation and Utilities	378	2.1	272	8.1	477	2.2	1,127	2.6	23,578	2.8
FIRE	1,033	5.8	107	3.2	1,021	4.6	2,161	5.0	44,015	5.2
Professional, Management, and Administrative	2,415	13.6	331	9.9	2,069	9.4	4,815	11.2	152,960	17.9
Education and Health Services	3,691	20.8	391	11.7	3,996	18.1	8,078	18.7	157,349	18.5
Arts, Entertainment, and Food Services	1,162	6.6	302	9.0	1,846	8.4	3,310	7.7	60,638	7.1
Total	**17,725**	**100.0**	**3,354**	**100.0**	**22,018**	**100.0**	**43,097**	**100.0**	**852,244**	**100.0**

FIRE stands for Finance, Insurance and Real Estate.

Source: U.S. Census Bureau, 2007–2011 American Community Survey; U.S. Department of Agriculture, National Agricultural Statistics Service: 2007 Census of Agriculture.

Table 3.17-6 Employment by Place of Work

Industry Sector	Morgan Hill		San Martin		Gilroy		Study Area Total		Santa Clara County	
	#	%	#	%	#	%	#	%	#	%
Farming	94	0.7	55	4.7	138	0.9	287	0.9	1,692	0.2
Agriculture (support), forestry, fishing and hunting, and mining	9	0.1	4	0.3	64	0.4	77	0.2	222	0.0
Construction	867	6.0	154	13.2	1,397	8.6	2,418	7.6	34,068	4.0
Wholesale trade	1,770	12.3	61	5.2	644	4.0	2,475	7.8	86,564	10.2
Information	450	3.1	5	0.4	180	1.1	635	2.0	64,073	7.6
Other services, except public administration	518	3.6	27	2.3	630	3.9	1,175	3.7	26,796	3.2
Manufacturing	3,191	22.1	188	16.1	1,307	8.1	4,686	14.8	89,570	10.6
Retail trade	1,605	11.1	89	7.6	4,630	28.6	6,324	19.9	76,686	9.1
Transportation and Utilities	43	0.3	34	2.9	301	1.9	378	1.2	11,556	1.4
FIRE	633	4.4	39	3.3	526	3.3	1,198	3.8	38,005	4.5
Professional, Management, and Administrative	1,708	11.8	191	16.4	1,504	9.3	3,403	10.7	213,956	25.3
Education and Health Services	1,976	13.7	26	2.2	2,540	15.7	4,542	14.3	129,133	15.2
Arts, Entertainment, and Food Services	1,551	10.8	294	25.2	2,303	14.2	4,148	13.1	76,423	9.0
Total	**14,415**	**100.0**	**1,167**	**100.0**	**16,164**	**100.0**	**31,746**	**100.0**	**847,052**	**100.0**

FIRE stands for Finance, Insurance and Real Estate.

Source: U.S. Census Bureau, 2010 Zip Code Business Patterns; Author's Calculations

Income and Earnings

Income is a key indicator of a population's economic well-being. Income earned by the population through employment is recirculated throughout the local economy through expenditures on goods and services and tax revenue. Typical measures of income include annual income per person (per-capita income) and annual income per household (typically reported for the median household). The poverty rate measures the proportion of individuals within a given geographic area with incomes lower than the threshold identified as the poverty line for individuals or households with similar family characteristics (Section 3.19, Environmental Justice).

Income data for the study area are presented in Table 3.17-7. Annual income of the median household in Morgan Hill averaged $94,301 during 2007–2011. This was as much as 25 percent higher than the median household elsewhere in the study area and 6 percent higher than that of Santa Clara County. Despite this household income disparity, per-capita income in Morgan Hill and San Martin were similar,

but substantially higher than in Gilroy. The poverty rate is similar throughout the study area, at approximately 11 percent, and higher than the 9.2 percent poverty rate prevailing for Santa Clara County. The data imply that one out of every ten households in the study area live on income below the poverty line.

Table 3.17-7 Income and Poverty, 2007–2011

Area	Per-Capita Income	Median Household Income	Poverty Rate
Morgan Hill	$39,433	$94,301	11.0%
San Martin	$37,094	$77,188	11.9%
Gilroy	$28,719	$75,483	11.0%
Santa Clara County	$40,698	$89,064	9.2%

Source: U.S. Census Bureau, 2007–2011 American Community Survey

Data on earnings and wages by industry sector indicate the importance of individual sectors to income generation and the quality of jobs within the area. Earnings and wage data are reported for counties and MSAs, but not for individual communities. Table 3.17-8 presents total earnings in Santa Clara County by industry sector during 2010. Total earnings amounted to $101,805 million. Earnings in the Manufacturing sector total $26,784.1 million (26.3%) followed by $23,022.8 million in earnings within the Professional, Management, and Administrative sector (22.6%). Earnings by the Education and Health Services ($10,214.5 million) and Information ($11,056.6 million) combined to account for another 20 percent of earnings countywide.

Table 3.17-8 Earnings by Industry, Santa Clara County 2010

Industry Sector	$ (millions)	%
Farming	$107.2	0.1%
Agriculture (support), forestry, fishing and hunting, and mining	$79.4	0.1%
Construction	$3,269.6	3.2%
Manufacturing	$26,784.1	26.3%
Wholesale trade	$4,968.7	4.9%
Retail trade	$4,265.5	4.2%
Transportation and Utilities	$1,158.8	1.1%
Information	$11,056.6	10.9%
FIRE	$4,347.2	4.3%
Professional, Management, and Administrative	$23,022.8	22.6%
Education and Health Services	$10,214.5	10.0%
Arts, Entertainment, and Food Services	$2,521.6	2.5%
Other services, except public administration	$2,089.2	2.1%
Government/ Public Administration	$7,919.8	7.8%
Total	**$101,805.1**	**100.0%**

Source: U.S. Bureau of Economic Analysis 2010

Economic Output

Total Industry Output (TIO) reflects the value of intermediate and final goods and services produced. It can be measured from either the demand side (purchases) or the supply side (outlays plus value added). When reported by industry, output measures indicate the relative economic importance of each industry. TIO estimates for Santa Clara County are presented in Table 3.17-9. At $122,190.3 million, the Manufacturing sector accounts for nearly half the value of economic output in Santa Clara County. Together, industry sectors Financial, Insurance, and Real Estate (FIRE); Professional, Management and Administrative; and Information combine to account for another 34 percent of total output. It is worth noting that these patterns do not adequately represent the industry composition of Gross Regional Product (GRP) within the study area. In particular, there are major differences between the type of manufacturing in Silicon Valley and the manufacturing activities in the study area.[10]

Table 3.17-9 Total Industry Output, Santa Clara County 2010

Industry Sector	$ (millions)	%
Farming	$247.7	0.1%
Agriculture (support), forestry, fishing and hunting, and mining	$728.5	0.3%
Construction	$7,389.9	2.8%
Manufacturing	$122,190.3	45.5%
Wholesale trade	$9,058.1	3.4%
Retail trade	$8,071.9	3.0%
Transportation and Utilities	$3,140.8	1.2%
Information	$23,587.7	8.8%
FIRE	$33,981.4	12.7%
Professional, Management, and Administrative	$34,001.5	12.7%
Education and Health Services	$15,491.2	5.8%
Arts, Entertainment, and Food Services	$6,276.9	2.3%
Other services, except public administration	$4,278.1	1.6%
Total	**$268,443.9**	**100.0%**

FIRE stands for Finance, Insurance and Real Estate.

Source: Minnesota IMPLAN Group 2013; USDA/Santa Clara County Agricultural Commissioner.

Fiscal Resources (Property and Sales Taxes)

Property Taxes

Property taxes are a tax levied on the assessed value of land, buildings, and improvements. Counties, cities, schools, and special districts in California depend on the property tax as a primary source of revenue, which can be used for multiple purposes.

In Fiscal Year (FY) 2010–2011, the locally assessed value of county-assessed property in Morgan Hill and Gilroy was $6.2 billion and $5.6 billion, respectively (State of California, Board of Equalization 2011a). This resulted in approximately $68.6 million in tax revenues for Gilroy and $73.9 million in tax

[10] The North American Industry Classification System (NAICS) code for Manufacturing includes 300 distinct industries ranging from Fruit and Vegetable Canning, to Sawmills, to Semiconductor and Related Device Manufacturing.

revenues for Morgan Hill[11]. The net taxable assessed value of property in Santa Clara County was $297.3 billion and tax revenues generated from property tax assessments totaled over $3.5 billion in Santa Clara County (State of California, Board of Equalization 2011b).

Sales Taxes

Sales taxes are levied on the consumption of goods and services and are calculated as a percentage of the sales price. The base 2013 sales tax rate in California is 7.5 percent, of which 0.25 percent is apportioned to the local county transportation funds and 0.75 percent is apportioned to the local cities and county as operation funds percent (State of California, Board of Equalization 2013a).

The effective sales tax rate in any area can be higher due to local assessments. In 2013, the sales tax rate in Santa Clara County and the entire study area was 8.625 percent (State of California, Board of Equalization 2013b). In FY 2010–2011, Santa Clara County received a total of $235.4 million in sales tax revenues, of which $4.3 million was distributed to Morgan Hill and $9.3 million was distributed to Gilroy (State of California, Board of Equalization 2011c).

Economic Resources Subject to Flooding Addressed by the Proposed Project

Flood events can have tremendous direct impacts on socioeconomic resources located within the extent of the outflow, as well as indirect economic impacts throughout the region and elsewhere. Incremental flood protection afforded to socioeconomic resources typically improves local and regional economic conditions relative to existing conditions.

The Proposed Project is designed to increase flood capacity of Reaches 8, 7B, and 7A to contain the 1-percent flood event (100-year flow) and of Reach 14 to contain the 10-percent flood event. Project activities, including channel widening/deepening and infrastructure modifications along Reaches 6, 5, and 4, are designed to ensure modifications upstream do not induce incremental flooding downstream.

Reaches 8, 7B, and 7A bisect Morgan Hill and the flood flows from the area expand into northern San Martin. This area has flooded several times in recent history, including 1997 and 1998 and as recently as 2008 and 2009:

> Morgan Hill and San Martin sustained $350,000 (by local estimates) in damages from floods along the Upper Llagas Creek during 1997 and 1998.

> The January 4, 2008 storm inundated Morgan Hill's downtown as local officials declared an emergency and opened their Emergency Operations Center to deal with the widespread flooding. As of 2010, associated damages had not been monetized.

> Downtown Morgan Hill was again flooded on October 13, 2009. Storm waters entered homes and businesses, families were displaced, and roads closed. Much of the downtown was inundated with several inches of water causing businesses to shutter for days.[12]

Comments made during the public scoping meeting for this Project echoed concerns about continued flooding of downtown Morgan Hill (Reaches 8 and 7B) causing a detriment to its future economic growth. As reported in Table 3.17-10, downtown Morgan Hill is home to at least 109 different commercial business establishments of various types.

[11] Calculation assumes the Santa Clara County average property tax rate of 1.191% (State of California, Board of Equalization 2011b).

[12] No estimates of the economic impacts appear to be available in the public domain.

Table 3.17-10 Business Establishments in Downtown Morgan Hill

Type of Establishment	Number of Establishments
Restaurant	25
Retail	18
Professional	37
Services	23
Recreation	6

Source: Morgan Hill Downtown Association 2013.

Reaches 7B and 7A are characterized by residential, commercial, and industrial areas. Types of businesses in these reaches include major retail shopping outlets, mixed-use commercial centers, a major self-storage facility, schools (private and public), gas stations, crop production, nursery production, a food processing plant, and developable land, among others.

Approximately 550 acres of the 1-percent flood extent was planted with crops or left fallow in 2013. A significant portion of this acreage is like to be Important Farmland (see Table 3.7-6, Acres of Williamson Act and Important Agricultural Lands Flooded Under 1-Percent Flood Scenario by Alternative).[13] The Project is projected to protect approximately 370 acres, comprised mainly of vegetables including peppers, leafy greens, celery, cabbage, and bok choy (31%); oats and hay (28%); outdoor flowers (2%); and acreage to a mix of these crops (39%) (see Table 3.7-6; Santa Clara County Department of Agriculture 2013)[14].

In addition to commercial, industrial, and agricultural operations, approximately 16,000 people live in 5,200 housing units within the Census Tracts bisected by Reaches 8, 7B, and 7A (5123.14, 5123.13, 5123.07) in and around the flood extent. Housing units and population in the area has steadily increased over the years in spite of historical and contemporaneous flood events.

While the Project would virtually remove this entire area from the existing 1-percent flood extent, the associated economic value to the region is unknown. The NRCS's analysis of Alternative F in the 1982 EIS/EIR estimated the Project would protect 1,123 residential structures, 65 mobile homes, 463 commercial establishments, 24 industrial buildings, and 1,300 acres of agricultural land. By the NRCS's estimate, avoided flood damages afforded by the entire Project would amount to approximately $2.3 million annually (adjusting for inflation only).[15] However, the substantial population growth and shifts in land use patterns within the area since the 1980s, and the fact that portions of the Project along Lower Llagas Creek have since been completed, render the NRCS's estimate obsolete. No update of the original NRCS study was available to inform this study.

[13] Important Farmland: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance. The data source for specific planted and fallowed acreage is different from the data source identifying Important Farmland.

[14] Crop distribution on protected acreage computed by Cardno ENTRIX GIS staff from cited data sources

[15] Alternative F in the 1982 EIS/EIR is reflected closely by the NRCS Alternative in this EIR. Annual benefits associated with Alternative F were estimated at $941,100. This estimate was inflated to 2012 price levels using the Consumer Price Index (CPI) for all items published by the U.S. Bureau of Labor Statistics for the San Francisco-Oakland-San Jose area. Portions of the Project along Lower Llagas Creek have been completed since the original study was conducted in 1982.

3.17.3 Regulatory Environment

The following federal, state, regional, and local requirements for the Project are described below.

3.17.3.1 Federal

Eminent Domain

Under federal law, governments (including states and local municipalities) have the right to use "eminent domain" to appropriate private property for public use; the purpose of which is to promote the community's health, safety, and welfare. The SCVWD may be required to acquire structures in the ROW of the Project alternatives (see Section 2.4.1, Table 2.4-1, Structures Located within Project Construction Footprint, for additional details on proposed easements). The SCVWD has made clear its intention to work directly with the affected property owners in order to avoid invoking eminent domain (Public Scoping Meeting, October 25, 2012). If negotiations are unsuccessful, SCVWD could invoke eminent domain and acquire the land necessary to complete the ROW. As required by the Fifth Amendment of the U.S. Constitution, property owners would be compensated. These lands would be officially surveyed and appraised for purposes of determining fair compensation consistent with Section 1.3.12 of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. The property owners could then petition the county to lower their tax assessment based on the removal of a portion of the property.

3.17.3.2 State

There are no California state regulations for social and economic factors applicable to the Project.

3.17.3.3 Local

Santa Clara County General Plan (Economic Well-Being Chapter)

The Santa Clara County (2010) General Plan presents an economic well-being chapter. This chapter identifies a number of strategies and policies relating broadly to economic well-being and development in the county. Strategy #6 "Plan, Provide and Maintain Urban Infrastructure" specifically recognizes the importance of adequate public infrastructure for a healthy economy. Key components supported by the Project are:

- *C-EC 11.* Local governments should adequately plan for infrastructure improvements needed to accommodate planned growth.
- *C-EC 12.* Infrastructure improvement plans should be consistent with local growth management and land use plans.
- *C-EC 13.* Existing infrastructure should be adequately maintained.
- *C-EC(i) 17.* Capital improvement plans for the construction and maintenance of community infrastructure should be prepared and periodically reviewed and updated to assure consistency with anticipated growth and with local land use plans and policies. (Implementers: Public agencies)

This strategy speaks to the need for the Project itself, and the Project is consistent with these components of the strategy. Infrastructure improvements accomplished by the Project are necessary to ensure flood management infrastructure is adequate for accommodating planned economic growth within the county, particularly within downtown Morgan Hill.

City of Morgan Hill General Plan (Economic Development Element)

The City of Morgan Hill (2010a) drafted an Economic Development Element as one component of the City's General Plan. The element states three broad economic development goals:

- A strong, stable and diverse economic base.
- Additional, adequate job opportunities for local residents.
- A viable tourist industry.

None of these goals directly influences Project design or implementation, but the Project is consistent with each of them. Increased flood protection provided to downtown Morgan Hill preserves the area as a home to a diverse business base, a source of local jobs, and a tourist destination within the city.

City of Gilroy General Plan- Economic Development Element

The City of Gilroy (2002) presents an Economic Development Element in the city's 2002–2020 General Plan. The element states three general policies and related action items addressing the following topics:

- Jobs and Revenues
- Economic Development Activities
- Commercial and Industrial Design Standards

None of these policies or related action items influences Project design or implementation. However, the Project is consistent with expanding jobs and revenues in Gilroy. In particular, the Project may be a source of construction jobs for Gilroy residents and a source of revenues in the form of expenditures by construction laborers commuting into the area or by contractors on raw materials needed for construction.

3.17.4 Impact Analysis

This section presents the analysis of Project impacts on socioeconomic resources.

3.17.4.1 Significance Criteria

State and federal regulations provide no specific guidance for evaluating whether potential socioeconomic impacts of a given project would be significant. Potential impacts to socioeconomic resources within the study area were developed based on the Project's potential to impact supply of and demand for housing, employment levels, real property, economic output, and fiscal resources; the CEQA Guidelines (Appendix G); and comments raised during the public scoping meeting for this EIR (held October 25, 2012).

Based on this guidance, the Project could result in impacts to socioeconomic resources if it were to:

- Create a housing shortage, whether by inducing population growth, depleting the housing stock, or constraining future housing development.
- Result in substantial loss of real property, whether physically or by sustained diminution in value.
- Substantially reduce employment or income levels.
- Displace or substantially disrupt business operations.
- Substantially reduce the supply of fiscal resources to local jurisdictions through property assessments and taxable sales.

Project features and activities evaluated as a potential source of the socioeconomic impacts include:

- Acquisitions required for securing Project ROW.
- Contracting/hiring Project labor.

- Construction activity including excavation, tunneling, channel modification, bridge/culvert replacement, grade control structure installation, maintenance roads, staging areas, and utility relocation.
- Operations and maintenance of the altered stream channels and infrastructure improvements, resulting in increased flood capacity.

3.17.4.2 Approach to Analysis

Impacts on socioeconomics resources were evaluated by determining whether and how Project activities and features are likely to affect stocks, flows, and values of social and economic assets in the study area and comparing any changes to existing conditions of those parameters. Effects on socioeconomic resources can be direct, as in reductions in the stock of available housing, and indirect, as in the cost of housing, which can increase over the long-term if population growth continues but the housing stock is not replaced or if future development is constrained by the Project. While quantifiable metrics and estimates were formed for parts of the evaluation, constraints on data availability, and detail of available data resulted in a mostly qualitative analysis using the application of economic theory and principles.

It is important to understand that some features of the Project can accrue beneficial impacts to socioeconomic resources. An economic analysis of flood protection benefits prepared by the USACE in 1982 estimated annual flood damage reduction on the order of $2 to 2.5 million in present value dollars. The valuation is based on avoided property damage or destruction, and avoided destruction or damage to businesses including commercial agriculture. It is likely an understatement of the value of the project given the substantial population growth and changes in land use patterns in the study area since the time of the USACE study. Expenditures on construction labor, materials, and supporting goods and services from businesses within the study area will stimulate the local economy. While the dollar amounts of these beneficial impacts are not quantified in this study, it can be concluded that these benefits will not accrue under the No Project Alternative.

3.17.5 Impacts and Mitigation Measures

This section presents the socioeconomics analysis for the No Project Alternative and each of the Project alternatives. Potential impacts of construction and operations and maintenance are analyzed separately. Due to the nature of many socioeconomic resources (e.g., income generated by spending within the local economy), it is intractable to associate potential impacts with specific Project activities, (e.g., such as channel widening); and, as such, there are no Project activity tables within the following sections. This is in direct contrast to other resources with a physical presence, such as species habitat, where the destruction of such habitat can be assessed with direct reference to the physical extents of specific Project activities.

3.17.5.1 No Project Alternative

ECON-1 NP—Create a housing shortage, whether by inducing population growth, depleting the housing stock, or constraining future housing development

Impact Determination: no impact

Construction

There would be no impact from construction. No construction activity would occur; thus, there would be no demand for short-term labor housing. No acquisitions would be necessary to secure Project ROW; thus, there is no potential to deplete the housing stock to the point of causing a housing shortage. Flood capacity in the upper reaches would remain unchanged and intermittent flood events would continue to occur. There is no evidence suggesting substantial portions of the housing stock have been destroyed

during past flood events without replacement; thus, there is no basis to conclude continued flooding would create a housing shortage. This is particularly true given the population growth and housing development experienced in the area over in spite of flooding. However, it is worth noting, the largest flood on record was a 33-year flood event in 1955 before the recent flooding in 2008 thought to be a 60-year event (flood damages have not been finalized).

Operations and Maintenance

The nature of existing operations and maintenance of Upper Llagas Creek is such that there is no potential to deplete the housing stock or induce population growth.

Best Management Practices (BMPs)

None applicable

ECON-2 NP—Result in substantial losses of real property, whether physically or by sustained diminution in value

Impact Determination: less than significant

Construction

Without construction and associated acquisitions for Project ROW, there is no potential for physical loss of real property. Although intermittent flood events would continue, there is no evidence of substantial physical loss of real property during historical flooding (although property damage has occurred). However, without the Project, properties in the upper reaches would remain in the flood plain and will continue depressed property values relative to those of similar properties outside of the flood plain (Bin and Polasky 2004; MacDonald, Murdoch, and White 1987). No original study was conducted for this EIR to quantify the dollar amount of property value diminution of properties located within the flood plain along the upper reaches.

Operations and Maintenance

The nature of existing operations and maintenance of Upper Llagas Creek is such that there is no potential for substantial loss of real property. It is assumed existing operations are optimal and the existing channel adequately maintained. Therefore, flood capacity of the existing channel is expected to be the source of continued intermittent flooding, rather than operations and maintenance.

Best Management Practices (BMPs)

None applicable

ECON-3 NP—Substantially reduce employment or income

Impact Determination: less than significant

Construction

There would be no impact from construction. No construction would occur and no construction jobs would be supported. No spending on goods, services, and raw materials by construction laborers and the Project would occur and, thus, no jobs or income would be indirectly supported. Flood capacity would remain unchanged and intermittent flooding would occur. While businesses have closed during previous

flood events, no data support that historical flooding has substantially reduced employment or income within the study area.[16]

Operations and Maintenance

The nature of existing operations and maintenance of Upper Llagas is such that there is no potential for substantial reductions in employment or income. It is assumed existing operations are optimal and the existing channel adequately maintained. Therefore, flood capacity of the existing channel is expected to be the source of continued intermittent flooding, rather than operations and maintenance.

Best Management Practices (BMPs)

None applicable

ECON-4 NP—Displace or substantially disrupt business operations

Impact Determination: significant

Construction

The impact from no construction would be significant and unavoidable. Even though no construction would occur, no structures are in the Project ROW, and there is no potential to close businesses, flood capacity would remain unchanged and intermittent flooding would continue. Evidence from recent flooding suggests that business operations in an around Reach 8 were closed, preventing the sale of goods and services in the interim. Closure or destruction of businesses, including crop loss, will continue without increased flood protection.

Operations and Maintenance

The nature of existing operations and maintenance of Upper Llagas Creek is such that there is no potential for displacement of substantial disruption of business operations. It is assumed existing operations are optimal and the existing channel adequately maintained. Therefore, flood capacity of the existing channel is expected to be the source of continued intermittent flooding, rather than operations and maintenance.

Best Management Practices (BMPs)

None applicable

ECON-5 NP—Substantially reduce the supply of fiscal resources to local jurisdictions through property assessments and taxable sales

Impact Determination: less than significant

Construction

The impact from no construction would be less than significant. Since no construction activity would occur and no existing residential, commercial, and agricultural structures would be acquired, there would be no potential for reductions in taxable sales revenue or taxable property values. However, flood capacity would remain unchanged and intermittent flood events would continue. Properties in the upper reaches would remain in the flood plain, experiencing depressed property values relative to similar properties

[16] Reports indicate business in an around downtown Morgan Hill shuttered for days during recent flooding during 2008 and 2009 (SCVWD 2010). This may have resulted in reduced income for hourly employments and some level of reduced spending within the economy, but not likely a substantial reduction when taken in the context of Morgan Hill generally or the rest of the study area.

outside the flood plain. Flooding would continue to result in forgone sales tax revenue, as businesses in and around the upper reaches would continue to shutter due to encroaching flood waters.

Operations and Maintenance

The nature of existing operations and maintenance of Upper Llagas Creek is such that there is no potential for reductions in the supply of fiscal resources. It is assumed existing operations are optimal and the existing channel adequately maintained. Therefore, flood capacity of the existing channel is expected to be the source of continued intermittent flooding, rather than operations and maintenance.

Best Management Practices (BMPs)

None applicable

3.17.5.2 Tunnel Alternative (Preferred Alternative)

ECON-1 T—Create a housing shortage, whether by inducing population growth, depleting the housing stock, or constraining future housing development

Impact Determination: no impact

Construction

Construction would have no impact. As described in Section 3.16, Population and Housing, Table 3.16-4b, the 6 residential homes in the Project ROW for this alternative represent a very small percentage of overall housing stock in the communities of Morgan Hill, San Martin and Gilroy (a combined value of 25,365 units as of 2010). In addition, the vacancy rate of these communities (2.6% for the combined areas as of 2010) indicates that there are an estimated 653 available units; therefore, the loss of 6 units would not substantially affect the vacancy rate.

Construction labor would be expected to be sourced locally within the study area or in nearby population centers within a reasonable daily commute, or to locate in extended-stay lodging facilities. The demand for Project construction labor for the Preferred Alternative would vary over the estimated 6-year construction period, averaging approximately 157 laborers annually and approximately 260 at peak construction during year 2 (see Table 3.16-4a).[17] This includes construction laborers, foremen, managers, superintendents, office staff, skilled construction machinery operators, carpenters, road workers, landscapers, arborists, and truck drivers. The San Jose-Sunnyvale-Santa Clara MSA employs relevant Project construction labor occupations anywhere from 27 to 102 percent of the national average (BLS 2011b).[18] However, this would partly be a function of industry characteristics and labor demand in the region and does not necessarily identify a labor shortage.

Table 3.17.11 displays estimates of the Project construction labor force in the study area and nearby population centers well within the range of a typical daily commute.[19] In total, there are 1,629 persons in

[17] This estimate and those for following action alternatives should be viewed as an upper-bound on estimated construction labor required at any time during the Project, as they do not explicitly account for the same employee working to fill the same job requirement in multiple reaches simultaneously when construction phases overlap (see notes in Table 3.16-4a). This estimate does not include the laborers required for the Lake Silveira portion of the Project, as estimates have not been developed at this time. However, labor needs for Lake Silveira construction and restoration activities are expected to be a small fraction of the labor required for the channel widening/deepening and infrastructure modifications, and would not vary by action alternative.

[18] Occupations listed in the work crew estimate provided RMC Water and Environment correspond to Bureau of Labor Statistics Occupational Category Codes: 11-9021, 37-3011, 43-6014, 47-1011, 47-2031, 47-2061, 47-2071, 43-2073, 47-4051, and 53-3032. The percentages reflect the range of location quotients reported by the Bureau of Labor Statistics for these individual occupational categories.

[19] San Jose, CA, Salinas, CA, and Hollister, CA range from 16 to 39 miles one-way (32 to 78 miles round-trip) to the cities/communities within the study area. San Jose is closest to Morgan Hill at 22 miles and furthest from Gilroy at 32 miles.

the study area employed in a construction labor occupation considered relevant for the Project; 127 employed in truck driving occupations considered relevant to the Project and 164 employed in other occupations considered relevant to the Project. Within 40 miles one-way from the study area, there are an additional 15,371 persons employed in relevant construction occupations, 1,974 employed in relevant truck driving occupations, and 2,568 employed in other relevant occupations. At its peak, the Project would require approximately 11 percent of the relevant construction labor force within the study area and just 1 percent of the relevant construction labor force within the study area and nearby population centers. Similarly, the Project would require 40 percent of the relevant truck driving labor force and 23 percent of the relevant labor force in other occupations in the study area, while requiring only 3 percent of the relevant truck driving labor force and 1 percent of the relevant labor force in other occupations in the study area and nearby population centers. The current and future utilization of the existing labor force is unknown. Further, data show that employment in occupations relevant to Project construction in the San Jose-Sunnyvale-Santa Clara MSA is expected to increase between 2010 and 2020, with annual increases ranging from 1 to 3 percent. Taking these facts together, there is not likely to be labor shortages within the study area by meeting demand for Project labor, and certainly not when considering the labor force in nearby population centers.[20]

Table 3.17.11 Estimates of the Project Construction Labor Force in the Study Area and Nearby Population Centers

Area	Number Employed in Occupations Considered Relevant for the Proposed Project		
	Construction	Truck Driving	Other
Study Area			
Morgan Hill	533	42	82
San Martin	188	31	11
Gilroy	908	54	71
Subtotal	*1,629*	*127*	*164*
Nearby Population Centers			
San Jose	13,135	1,658	2,350
Hollister	522	59	38
Salinas	1,715	257	180
Subtotal	*15,371*	*1,974*	*2,568*
Total	**17,001**	**2,101**	**2,732**

Source: U.S. Census Bureau, 2007-11 American Community Survey; Bureau of Labor Statistics, May 2011 Occupational Employment Survey.

Although the degree of Project labor in-migration is unknown, it is not expected to create a housing shortage. For the purpose of making this determination, it was assumed all laborers at peak construction and their families relocate into the study area. At the average family size of 3.3, this would amount to an

Hollister, located in northern San Benito County, is closest to Gilroy at 16 miles and furthest from Morgan Hill at 26 miles. Salinas, located in Monterey County, is closest to Gilroy at 29 miles and furthest from Morgan Hill at 39 miles (Google Maps™).

20 Each of the calculated proportions is an upper bound. First, the analysis uses the peak labor requirement, not the average annual labor. Second, the number of workers required for the Project used for the calculation is not the number of unique individuals, because the data reported in Table 2.4-4 does not identify unique individuals but rather job requirements in each reach, regardless of whether one individual may work in multiple reaches simultaneously during the Project.

influx of approximately 860 people, requiring approximately 260 housing units.[21] This potential worst-case demand could be readily accommodated in the existing study area housing stock, which has about 650 vacant housing units.[22]

Increased flood capacity resulting from Project construction would not induce population growth to the point of causing a housing shortage. Population growth in the study area is determined more by job opportunities in the Silicon Valley in northern Santa Clara County and the relative affordability of housing in the study area. The population of the study area has increased substantially in recent decades, despite intermittent flooding and in particular the severe floods of 1997 and 1998, after which the population continued to grow substantially (Section 3.15.5.2; Table 3.16-1, Population Trends for Communities in the Vicinity of Study Area). Further, flood protection created by the Project would largely protect existing residential land use (60%) and land designated as open space (20%). As a result, the potential for additional housing development within and around Reaches 8, 7A, and 7B is limited (Section 3.8, Land Use; Table 3.8-5, Land Use Designations Flooded under the Various Alternatives (Acres); Figure 3.8-1a, Land Use in the Project Vicinity). Even if undeveloped land were developed as a result of flood protection, the number of housing units added would by nature determine the population growth that could be supported.

Operations and Maintenance

No new permanent workers would be required to operate the Project, and routine maintenance activities would be relatively short in duration; therefore, operation and maintenance activities would not impact the demand for housing. Thus, there is no potential for operations and maintenance to contribute to a housing shortage.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

ECON-2 T—Result in substantial losses of real property, whether physically or by diminution in value

Impact Determination: less than significant

Construction

The impact from construction would be less than significant.

Acquisition of Project ROW would displace 43 structures; 6 residential homes, 11 greenhouses, 21 outbuildings, and 5 structures of unknown type (see Table 2.4-1). In addition, some amount of currently undeveloped land that is zoned for residential use or conversion to higher density residential use would not be available for development over time. The affected structures and presently undeveloped acreage comprise a very small portion of real property in the study area. The SCVWD would obtain

[21] 261 laborers at peak construction each having the average family size of 3.3 persons is 861 persons total. At the average family size per housing unit, 3.3, the number of housing units required is the same as the number of laborers, 261.

[22] This analysis does not account for the incremental Project labor required for the Lake Silveira portion of the Project. Although estimates of labor requirements for Lake Silveira are not available at this time, it is not expected that Lake Silveira will contribute to a housing shortage. As the aforementioned analysis shows the vacant housing units in the Study Area could absorb more than double the in-migration of labor required for the channel widening/deepening and infrastructure modifications portion of the Project.

property appraisals and compensate affected owners in an amount reflecting fair market value of the property.

Potential impacts to property values associated with construction activities would be less than significant. Construction activities would not be expected to substantially reduce the quantity of real property in the study area. Staging areas for construction activities are completely within SCVWD ROW. In theory, construction activities could reduce property values if indirect effects, such as noise, traffic, or air quality degradation, are sufficient to reduce the demand for occupancy. Changes in these parameters would not be expected to substantially reduce property values in the study area, because Project construction would be temporary and dynamic throughout the Project area. Further, evidence suggests these parameters are not major determinants in the demand for housing or business location decisions, as temporary infrastructure construction projects are commonplace throughout the San Francisco Bay Area where property values are driven mainly by supply of housing and the demand created by income generated by employment in the area and where hundreds of thousands of business locate.

The long-term increased flood capacity resulting from the Project would be beneficial to property values. Although this study has not determined the dollar value of this benefit, the entire area in and around Reaches 8, 7B, and 7A would be virtually removed from the 1-percent flood extent. As with other infrastructure and public safety improvements, reductions in flood risk to existing residential property can increase property values over the long-term. In addition, property ownership costs associated with insurance supplements paid to the FEMA would likely be reduced (Public Scoping Meeting 2012). Reductions in flood risk can reduce constraints on developable land, and if developed over the long term, property values in the area are likely to increase. Increased investment in business and industry can also raise property values in the study area.

Operations and Maintenance

Operation and maintenance activities (Chapter 2, Alternatives Analysis and Project Description) are not expected to result in loss of real property. Operations and maintenance of the Project is a necessary component of achieving and maintaining increased flood protection created by the Project, resulting in a beneficial impact.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

ECON-3 T—Substantially reduce employment or income levels

Impact Determination: no impact

Construction

Construction would have a beneficial impact on employment and income levels. Although complete details on Project labor requirements are unknown at this time, it is estimated construction will directly support approximately 157 jobs (on average) and associated income. During construction, laborers in the area would spend money within the local economy. This direct spending ripples backward through industry sectors within the local economy, indirectly supporting jobs and income and inducing spending and hiring. The benefits may be incremental if the laborers spending money would otherwise not be fully employed, or if they commute into the study area from nearby population centers. Additionally, raw materials and support services of an unknown sum necessary for construction would be sourced with

local businesses, if available. This spending would support local jobs and provide income to local proprietors that would circulate through the economy.

The impact level associated with increased flood capacity would be considered beneficial, assuming that reductions in flood risk spur investment and economic growth in Morgan Hill. This conclusion is based on the recognition of flood protection as one of the determining factors in the future economic development of Morgan Hill. It is noted that this study forms no formal economic model of employment to determine whether any increases in economic growth would exist and the level of employment supported.

Operations and Maintenance

No new permanent workers would be required to operate the Project, and routine maintenance activities would be relatively short in duration; therefore, operation and maintenance activities would not impact employment or income levels.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

ECON-4 T—Displace or substantially disrupt business operations

Impact Determination: less than significant

Construction

The impact from construction would be less than significant.

Acquisition of Project ROW would displace 11 greenhouses in San Martin and Gilroy near Reaches 4 (1 greenhouse), 6 (9 greenhouses), and 14 (1 greenhouse). At over $80 million annually, greenhouse nursery production is the highest gross value crop in Santa Clara County. While these displacements are not expected to be substantially disruptive of business within the study area as a whole, they could result in substantial disruptions to individual operations and owners. Relocation efforts, complying with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, would ensure the business operations are not significantly affected and owners are appropriately compensated for the disruption during relocation. Any business closure associated with relocation would be temporary. As a result, no additional mitigation is required beyond compliance with the Act.

Total productive crop acreage in the Project footprint subject to permanent conversion was approximately 21 acres in 2013 (see Table 3.7-4, Summary of Crops Grown in Project Footprint Subject to Permanent Conversion (2013)). As noted in Section 3.7.2.1, Agricultural and Forestry Resources, this estimate does not include organic crops, fallow acreage, crops otherwise not treated with pesticides, or multiple crops within a season. However, even with these caveats, this acreage represents only a fraction of 1 percent of the $260.8 million value of agricultural production in Santa Clara County during 2012[23]. The displacement of productive agricultural acres and associated assets are not expected to be substantially disruptive of agricultural business within the study area as a whole; however, they could result in substantial disruptions to individual agricultural operations and owners. The SCVWD will compensate the affected landowners for conversion of crop acreage.

[23] Assumes county average value per acre

Potential short-term impacts to local businesses due to construction activities would be less than significant. A qualitative analysis is provided here, because estimates of lost operational hours over the course of the Project have not been quantified for this study. Direct sources of business disruption can include utility relocation, which forces shutdown or partial shutdown of an operation, resulting in reduced production or patronage. Potential indirect impacts include reduced distribution capabilities or patronage induced by traffic, noise, road closures, and detours. Specific examples of business disruption could include:

> Location of a staging area on 0.38 acre near the Nature Quality Inc., food-processing plant, where construction traffic would be located near the plant.

> Utility relocation at the Nature Quality Inc., food-processing plant, requiring parking structures to be relocated.

> Worker vehicle and construction equipment (traffic) near businesses.

The SCVWD BMP TR-2 includes features that would help mitigate unintended consequences of Project traffic on local business.[24]

The potential long-term impacts to local businesses associated with increased flood capacity would be beneficial. Historical flooding in and around Reaches 8, 7B, and 7A have caused businesses to shut-down and prevented access to those remaining open. The dollar value associated with this impact has not been determined for this study. However, flood protection is recognized as one of the determining factors in the quality and pace of future economic development in downtown Morgan Hill (City of Morgan Hill 2009).

Operations and Maintenance

Operation and maintenance activities (Chapter 2, Alternatives Analysis and Project Description) would not be expected to result in closure of any businesses, particularly given their nature and location within the stream channel. Operations and maintenance of the Project would be a necessary component of achieving and maintaining increased flood protection created by the Project. A beneficial impact would result.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

[24] Item 1 states "*Work will be staged and conducted in a manner that maintains two-way traffic flow on public roadways in the vicinity of the work site. If temporary lane closures are necessary, they will be coordinated with the appropriate jurisdictional agency and scheduled to occur outside of peak traffic hours (7:00–10:00 a.m. and 3:00–6:00 p.m.) to the maximum extent practicable. Any lane closures will include advance warning signage, a detour route and flaggers in both directions*".

ECON-5 T—Substantially reduce the supply of fiscal resources to local jurisdictions through property assessments and taxable sales

Impact Determination: less than significant

Construction

The impact from construction is expected to be less than significant.

The potential impacts to local fiscal resources (primarily, property tax revenue and sales tax revenue) due to the acquisition of Project ROW would be minor in the context of the overall socioeconomics study area. Approximately 300-acre of land would be changed in use as a result of project construction see Table 3.8-1. This total acreage within the Project footprint comprises 2 percent of acreage within the boundaries of the cities/communities forming the socioeconomics study area. No substantial reduction in sales tax revenue would be expected, as the displaced population would be very small relative to the study area as is the total amount of taxable sales, which could potentially be relocated out of the study area.

Potential impacts to local fiscal resources associated with the demand for Project construction labor would have no impact on property tax revenue and beneficial impact on sales tax revenue. Project labor would be expected to be sourced locally within the study area or at most within an acceptable daily commute. As explained in under ECON-1 for the Preferred Alternative, even under the worst case assumption of relocation, laborers would occupy available vacant units within the study area, which are currently being assessed for property taxes, irrespective of the vacancy rates. As explained under ECON-3 for the Preferred Alternative, Project construction workers would also spend money on food and other services, thus, increasing sales tax revenue. Construction would require raw materials and other services. A portion of these materials would be purchased from local business and industry to the extent possible. This increased spending, as a result of non-labor construction activities, could increase sales tax revenue.

The potential long-term impacts to local fiscal resources associated with increased flood protection would be beneficial. Increased flood protection would benefit both property and sales tax revenue through support of increase of property values, reductions in business interruption (closure), and support of economic growth initiatives for downtown Morgan Hill.

Operations and Maintenance

Operations and maintenance of the Project would not cause substantial reduction in the supply of property and sales tax revenue. Impacts of Project operations and maintenance may be beneficial when considering operations and maintenance is required to maintain increased flood capacity created by the Project.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

3.17.5.3 Natural Resources Conservation Service (NRCS) Alternative

Potential impacts of the NRCS Alternative are similar to the Preferred Alternative, except that more acres of urban land would be required for flood protection; and 6 more residential homes (all within Reach 8) would be acquired, for a total of 12, compared to the Preferred Alternative. Potential impacts to businesses and employment would be the same as for the Preferred Alternative, as the same number of greenhouses and other structures would be displaced. Although construction duration would not differ

from the Preferred Alternative, the NRCS Alternative would require approximately 10 fewer construction workers per year on average (147 workers) compared to the Preferred Alternative (157 workers). Further, peak construction for the NRCS Alternative would be 245 workers, compared to 261 workers for the Preferred Alternative.

ECON-1 NRCS—Create a housing shortage, whether by inducing population growth, depleting the housing stock, or constraining future housing development

Impact Determination: no impact

Construction

As in the Preferred Alternative, construction would have no impact. Although 6 more residential homes would be acquired than in the Preferred Alternative (12 instead of 6), the total number of homes acquired for the NRCS Alternative amounts to a fraction of 1 percent of the existing housing stock (as of 2010) and the same number of vacant units would remain to absorb any potential long-term construction employment. While the duration of construction is the same as in the Preferred Alternative, even fewer construction workers would be required for the NRCS Alternative. Taken together, this indicates even less of a possibility that in-migration of construction labor would occur to a degree resulting in a housing shortage than in the Preferred Alternative (ECON-1 T).

Operations and Maintenance

No new permanent workers would be required to operate the Project, and routine maintenance activities would be relatively short in duration; therefore, operation and maintenance activities would not impact the housing supply. Thus, there is no potential for operations and maintenance to contribute to a housing shortage.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

ECON-2 NRCS—Result in substantial losses of real property, whether physically or by diminution in value

Impact Determination: less than significant

Construction

As in the Preferred Alternative, the impact from construction would be less than significant. The NRCS Alternative would be displace 49 structures, 6 more than in the Preferred Alternative, but property owners would be compensated the fair market value. Potential impacts to property values associated with construction activities would be similar to the Preferred Alternative, as the nature of construction activities under the NRCS Alternative are similar to that of the Preferred Alternative and of the same duration. The long-term increased flood capacity resulting from the Project would be beneficial to the same degree as in the Preferred Alternative, as the NRCS Alternative achieves the same end result in terms of increased flood protection.

Operations and Maintenance

Operation and maintenance activities (Chapter 2, Alternatives Analysis and Project Description) would reduce the loss of real property by reducing the frequency and extent of flooding. Operations and

maintenance of the Project is a necessary component of achieving and maintaining increased flood protection created by the Project. The impact would be beneficial.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

ECON-3 NRCS—Substantially reduce employment or income levels

Impact Determination: no impact

Construction

As in the Preferred Alternative, construction would have a beneficial impact on employment and income levels, although to a slightly lesser degree. While duration of Project construction is the same, the NRCS Alternative would require fewer workers per year on average than the Preferred Alternative. At this time, there is insufficient information about the expenditures of raw materials within the local economy to determine whether the beneficial impact of expenditures on construction under the NRCS Alternative would differ in degree relative to the Preferred Alternative.

Operations and Maintenance

No new permanent workers would be required to operate the Project, and routine maintenance activities would be relatively short in duration; therefore, operation and maintenance activities would not impact employment and income levels.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

ECON-4 NRCS—Displace or substantially disrupt business operations

Impact Determination: less than significant

Construction

As in the Preferred Alternative, the impact from construction would be less than significant. The NRCS Alternative would displace the same number of greenhouses (commercial agricultural operations) and same amount of productive crop acreage as the Preferred Alternative. Any displacement or acquisitions would be done under the guidelines of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.

Potential direct (e.g., staging areas, utility relocation) and indirect (e.g., traffic) impacts to local businesses, including production agricultural operations due to construction activities are more than in the Preferred Alternative, due to the avoidance of work through downtown Morgan Hill in the Preferred Alternative.

The potential long-term impacts to local businesses associated with increased flood capacity are beneficial to same degree as that of the Preferred Alternative, as the NRCS Alternative achieves the same end result in terms of increased flood protection.

Operations and Maintenance

Operation and maintenance activities (Chapter 2, Alternatives Analysis and Project Description) would not result in any business interruption, particularly given their nature and location within the stream channel. Operations and maintenance of the Project would be a necessary component of achieving and maintaining increased flood protection created by the Project. A beneficial impact would be to the same degree as in the Preferred Alternative.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

ECON-5 NRCS—Substantially reduce the supply of fiscal resources to local jurisdictions through property assessments and taxable sales

Impact Determination: less than significant

Construction

As in the Preferred Alternative, the impact from construction would be less than significant.

The long-term impact on the property tax base is somewhat greater than under the Preferred Alternative, as 12 instead of 6 residential homes would be acquired under the NRCS Alternative. The same number of greenhouses would be acquired under the NRCS and Preferred alternatives.

As explained in ECON-1 NRCS (referencing ECON-1 T), under worst case housing demand in-migration of construction labor would occupy existing housing, thus, having no impact on the property tax base. While the duration of construction is the same, the NRCS Alternative would require fewer construction workers per year on average than the Preferred Alternative, thus the beneficial impact on sales tax revenue through expenditures within the local economy would be somewhat less than in the Preferred Alternative. As explained in ECON-3 NRCS, at this time at this time it cannot be determined whether the beneficial impact of expenditures on construction would differ in degree from the Preferred Alternative.

The potential long-term impacts to local fiscal resources associated with increased flood protection would be beneficial to the same degree as in the Preferred Alternative, as the NRCS Alternative achieves the same end result in terms of increased flood protection.

Operations and Maintenance

Operations and maintenance of the Project would not cause substantial reduction in the supply of property and sales tax revenue. Impacts of Project operations and maintenance may be beneficial when considering operations and maintenance is required to maintain increased flood capacity created by the Project.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

3.17.5.4 Culvert/Channel Alternative

Potential impacts of the Culvert/Channel Alternative are similar to the Preferred Alternative, except that more acres of urban land would be required for flood protection; and 4 residential homes within Reach 8 would be displaced compared to none in the Preferred Alternative. Potential impacts to businesses and employment would be the same as for the Preferred Alternative, as the same number of greenhouses and other structures would be displaced. Although construction duration would not differ from the Preferred Alternative, the Culvert/Channel Alternative would require approximately 10 fewer construction workers per year on average (147 workers) compared to the Preferred Alternative (157 workers). Further, peak construction for the Culvert/Channel Alternative would be 245 workers, compared to 261 workers for the Preferred Alternative.

ECON-1 CC—Create a housing shortage, whether by inducing population growth, depleting the housing stock, or constraining future housing development

Impact Determination: no impact

Construction

As in the Preferred Alternative, construction would have no impact. Although four more residential homes would be acquired than in the Preferred Alternative (10 instead of 6), the total number of homes acquired for the Culvert/Channel Alternative amounts to a fraction of 1 percent of the existing housing stock (as of 2010) and the same number of vacant units would remain to absorb any potential long-term construction employment. While the duration of construction is the same as in the Preferred Alternative, even fewer construction workers would be required for the Culvert/Channel Alternative. Taken together, this indicates even less of a possibility that in-migration of construction labor would occur to a degree resulting in a housing shortage than in the Preferred Alternative (ECON-1 T).

Operations and Maintenance

No new permanent workers would be required to operate the Project, and routine maintenance activities would be relatively short in duration; therefore, operations and maintenance activities would not impact the housing supply. Thus, there is no potential for operations and maintenance to contribute to a housing shortage.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

ECON-2 CC—Result in substantial losses of real property, whether physically or by diminution in value

Impact Determination: less than significant

Construction

As in the Preferred Alternative, the impact from construction would be less than significant. The Culvert/Channel Alternative would displace 47 structures, 4 more than in the Preferred Alternative, but property owners would be compensated the fair market value. Potential impacts to property values associated with construction activities would be similar to the Preferred Alternative, as the nature of construction activities under the Culvert/Channel Alternative are similar to that of the Preferred Alternative and of the same duration. The long-term increased flood capacity resulting from the Project would be

beneficial to the same degree as in the Preferred Alternative, as the Culvert/Channel Alternative achieves the same end result in terms of increased flood protection.

Operations and Maintenance

Operations and maintenance activities (Chapter 2, Alternatives Analysis and Project Description) would not result in loss of real property. Operations and maintenance of the Project is a necessary component of achieving and maintaining increased flood protection created by the Project. A beneficial impact would occur.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

ECON-3 CC—Substantially reduce employment or income levels

Impact Determination: no impact

Construction

As in the Preferred Alternative, construction would have a beneficial impact on employment and income levels, although to a slightly lesser degree. While duration of Project construction is the same, the Culvert/Channel Alternative would require fewer workers per year on average than the Preferred Alternative. At this time, there is insufficient information about the expenditures of raw materials within the local economy to determine whether the beneficial impact of expenditures construction under the Culvert/Channel Alternative would differ in degree relative to the Preferred Alternative.

Operations and Maintenance

No new permanent workers would be required to operate the Project, and routine maintenance activities would be relatively short in duration; therefore, operation and maintenance activities would not impact employment and income levels.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

ECON-4 CC—Displace or substantially disrupt business operations

Impact Determination: less than significant

Construction

As in the Preferred Alternative, the impact from construction would be less than significant. The Culvert/Channel Alternative would displace the same number of greenhouses (commercial agricultural operations) and convert the same productive crop acreage as the Preferred Alternative. Any displacement or acquisitions would be done under the guidelines of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.

The potential long-term impacts to local businesses associated with increased flood capacity would be beneficial to same degree as that of the Preferred Alternative, as the Culvert/Channel Alternative achieves the same end result in terms of increased flood protection.

Operations and Maintenance

Operation and maintenance activities (Chapter 2, Alternatives Analysis and Project Description) would not result in any business interruption, particularly given their nature and location within the stream channel. Operations and maintenance of the Project would be a necessary component of achieving and maintaining increased flood protection created by the Project. A beneficial impact would occur to the same degree as in the Preferred Alternative.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

ECON-5 CC—Substantially reduce the supply of fiscal resources to local jurisdictions through property assessments and taxable sales

Impact Determination: less than significant

Construction

As in the Preferred Alternative, the impact from construction would be less than significant.

The long-term impact on the property tax base would be somewhat greater than in the Preferred Alternative, as 47 structures would be acquired under the Culvert/Channel Alternative.

As explained in ECON-1 CC (referencing ECON-1 T), under worst case housing demand in-migration of construction labor would occupy existing housing, thus, having no impact on the property tax base. While the duration of construction is the same, the Culvert/Channel Alternative would require fewer construction workers per year on average than the Preferred Alternative, thus the beneficial impact on sales tax revenue through expenditures within the local economy would be somewhat less than in the Preferred Alternative. As explained in ECON-3 CC, at this time it cannot be determined whether the beneficial impact of expenditures on construction would differ in degree from the Preferred Alternative.

The potential long-term impacts to local fiscal resources associated with increased flood protection would be beneficial to the same degree as in the Preferred Alternative, as the Culvert/Channel Alternative achieves the same end result in terms of increased flood protection.

Operations and Maintenance

Operations and maintenance of the Project would not cause substantial reduction in the supply of property and sales tax revenue. Impacts of Project operations and maintenance may be beneficial when considering operations and maintenance is required to maintain increased flood capacity created by the Project.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

3.17.5.5 Reach 6 Bypass Alternative

Potential impacts of the Reach 6 Bypass Alternative would be similar to the Preferred Alternative. The Reach 6 Bypass Alternative would require a shorter overall construction duration than the Preferred Alternative (5 years instead of 6 years); and the bypass segment and Reach 14 construction would span 3 years (730 days total) instead of spanning 2 years in the other action alternatives (345 days total). In addition, there would be no construction required in Reaches 5 and 6. However, as discussed in Section 3.10, this alternative would also necessitate significant highway construction on U.S. 101 to facilitate the flow diversion to Reach 14; this long-term construction element would likely result in substantial traffic impacts and business disruption, both locally and regionally, although businesses would not close as a result of induced traffic.

ECON-1 BY—Create a housing shortage, whether by inducing population growth, depleting the housing stock, or constraining future housing development

Impact Determination: no impact

Construction

As in the Preferred Alternative, construction would have no impact. Three fewer residential homes will be acquired than in the Preferred Alternative (3 instead of 6). The duration of construction is shorter than in the Preferred Alternative. Taken together, this indicates even less of a possibility that in-migration of construction labor would occur to a degree resulting in a housing shortage than in the Preferred Alternative (ECON-1 T).

Operations and Maintenance

No new permanent workers would be required to operate the Project, and routine maintenance activities would be relatively short in duration; therefore, operation and maintenance activities would not impact the housing supply. Thus, there is no potential for operations and maintenance to contribute to a housing shortage.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

ECON-2 BY—Result in substantial losses of real property, whether physically or by diminution in value

Impact Determination: less than significant

Construction

As in the Preferred Alternative, the impact from construction would be less than significant. The Reach 6 Bypass Alternative would displace 12 structures, 31 fewer than in the Preferred Alternative. Potential impacts to property values associated with construction activities would be similar to the Preferred Alternative, as the nature of construction activities under the Reach 6 Bypass Alternative would be similar to that of the Preferred Alternative, although shorter in duration. The long-term increased flood capacity resulting from the Project would be expected to be beneficial to the same degree as in the Preferred Alternative, as the Reach 6 Bypass Alternative achieves the same end result in terms of increased flood protection.

Operations and Maintenance

Operation and maintenance activities (Chapter 2, Alternatives Analysis and Project Description) would not result in loss of real property. Operations and maintenance of the Project is a necessary component of achieving and maintaining increased flood protection created by the Project. A beneficial impact would occur.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

ECON-3 BY—Substantially reduce employment or income levels

Impact Determination: less than significant

Construction

As in the Preferred Alternative, the impact of construction would be less than significant. Substantial construction near U.S. 101 would result in traffic conditions that ultimately act as deterrent to those in the greater San Francisco Bay Area who would normally travel south on U.S. 101 to shop at the Gilroy Premium Outlets or dine at restaurants in downtown Morgan Hill. The degree to which employment and income would be impacted depends on reactions to reductions in patronage and the actual degree of reduced spending in the local and regional economy. As explained in ECON-5 BY, since the impact would be temporary and U.S. 101 would be restored following the 250-day construction period to construct new bridges for the bypass channel. There would be no closures of any lanes or interchanges on U.S. 101 during the period when the detour would be in place to allow construction of the new bridges. Consequently, there would be no impact on access to businesses from U.S. 101, so that the impacts on jobs and income would be less than significant.

The duration of construction is shorter relative to the Preferred Alternative, indicating the benefit of spending by construction laborers would be less than in the Preferred Alternative.

Operations and Maintenance

No new permanent workers would be required to operate the Project, and routine maintenance activities would be relatively short in duration; therefore, operation and maintenance activities would not impact employment and income levels.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

ECON-4 BY—Displace or substantially disrupt business operations

Impact Determination: less than significant

Construction

As with the Preferred Alternative, the impact from construction would be less than significant.

The Reach 6 Bypass Alternative would displace 9 fewer greenhouses (2 instead of 11) (commercial agricultural operations) than the Preferred Alternative. Any displacement or acquisitions would be done under the guidelines of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. Given that substantially fewer greenhouses would be required to be acquired, the impacts to local farming operations would be smaller under the Reach 6 Bypass Alternative than under the Preferred Alternative. The same amount of productive crop acreage as under the Preferred Alternative would be converted for Project ROW, thus the impact to commercial crop production would be the same as in the Preferred Alternative.

Potential direct (e.g., staging areas, utility relocation) impacts to local businesses would likely be the same as under the Preferred Alternative.

The potential for indirect impacts to local business resulting from traffic induced by Project construction are substantially greater than in the Preferred Alternative. A unique feature of the Reach 6 Bypass Alternative would be the need to construct bridges over U.S. 101. Constructing the bridges would take 250 days and require temporary traffic detour roads. The traffic detour roads would be expected to cause delays and congestion along U.S. 101. This would be a temporary and significant impact on the regional roadway network (Alta Planning and Design 2013: Section 4.3.1.3). These conditions would act as a deterrent to consumers who travel south from the greater San Francisco Bay Area. Particular attractions for non-resident consumers include downtown Morgan Hill and the Gilroy Premium Outlets (City of Morgan Hill 2013b; Simon Malls 2012). Business disruption would not be sustained over the long-term, as U.S. 101 would be restored once bridge construction would be complete within 9 months; and no business would close as a result of induced traffic on U.S. 101. As discussed above, interchange access on and off U.S. 101 would be maintained through the Project area. The impact is less than significant.

The potential long-term impacts to local businesses associated with increased flood capacity would be beneficial to same degree as that of the Preferred Alternative, as the Reach 6 Bypass Alternative achieves the same end result in terms of increased flood protection.

Operations and Maintenance

Operation and maintenance activities (Chapter 2, Alternatives Analysis and Project Description) would not result in any business interruption, particularly given their nature and location within the stream channel. Operations and maintenance of the Project would be a necessary component of achieving and maintaining increased flood protection created by the Project. A beneficial impact would be to the same degree as in the Preferred Alternative.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

ECON-5 BY—Substantially reduce the supply of fiscal resources to local jurisdictions through property assessments and taxable sales

Impact Determination: less than significant

Construction

As in the Preferred Alternative, the impact from construction would be less than significant.

The long-term impact on the property tax base would be less than under the Preferred Alternative, as 12 instead of 43 structures would be acquired under the Reach 6 Bypass Alternative.

As described in ECON-1 BY (referencing ECON-1 T), under worst case housing demand in-migration of construction labor would occupy existing housing; thus, having no impact on the property tax base. While the duration of construction is shorter, the Reach 6 Bypass Alternative would require more construction workers per year on average than the Preferred Alternative, thus it cannot be determined whether the beneficial impact on sales tax revenue through expenditures within the local economy would differ in degree from the Preferred Alternative. As explained in ECON-3 BY, at this time it cannot be determined whether the beneficial impact of expenditures on construction would differ in degree from the Preferred Alternative.

The potential for substantial short-term business interruption as a result of traffic delays stemming from construction of bridges for U.S. 101 as part of the bypass would be a less than significant impact on sales tax revenue, as no businesses would close (ECON-5 BY).

The potential long-term impacts to local fiscal resources associated with increased flood protection would be beneficial to the same degree as in the Preferred Alternative, as the Reach 6 Bypass Alternative achieves the same end result in terms of increased flood protection.

Operations and Maintenance

Operations and maintenance of the Project would not cause substantial reduction in the supply of property and sales tax revenue. Impacts of Project operations and maintenance may be beneficial when considering operations and maintenance is required to maintain increased flood capacity created by the Project.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

3.17.6 Summary of Impacts to Socioeconomic Resources

The No Project Alternative would impose a significant and unavoidable impact on socioeconomic resources because intermittent flooding of Upper Llagas Creek would continue in the absence of the Project, resulting in sustained business closures and property damages.

The action alternatives would result in less than significant impacts to socioeconomic resources within the study area. A few of the specific Project features would result in beneficial impacts to many of the area's socioeconomic resources, particularly the end product of increased flood protection.

Table S-1 summarizes the significance of potential impacts to socioeconomic resources across the Project alternatives, including the No Project Alternative. While the NRCS, Culvert/Channel, and Reach 6 Bypass alternatives vary somewhat in the details, the socioeconomic impact determinations do not differ from those determined for the Preferred Alternative.

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3.18 Hazards and Hazardous Materials

This section describes the existing environment and assesses potential impacts related to hazards and hazardous materials for the Project. Potential hazards addressed in this section include issues related to hazardous materials in soil and groundwater, releases of hazardous materials during construction, fires, and interference with an adopted emergency response or emergency evacuation plan. If Project-related impacts are found to exceed thresholds of significance, mitigation measures are identified.

Information on potential soil and groundwater contamination hazards in the Project area was drawn primarily from a Hazardous Materials Assessment Report titled *Draft Memorandum Presenting Findings of Hazardous Materials Assessment Reports Review for Upper Llagas Creek Flood Protection Project*, prepared by Weiss Associates (Weiss), dated November 15, 2011. Weiss compiled existing conditions information on hazards and hazardous materials in the Project area based on review of Phase I Environmental Site Assessment (Phase I ESA) reports, Phase II Environmental Site Assessment (Phase II ESA) reports, and database searches.

3.18.1 Introduction

The potential environmental concerns identified in the study area include pesticides and fertilizers, nitrates, fecal coliform, potentially hazardous chemicals, petroleum hydrocarbons, heavy metals, naturally-occurring asbestos, asbestos-containing building materials, lead-based paint, and polychlorinated biphenyl- (PCB)-containing lighting fixtures.

This section describes potential hazards and hazardous materials by Project reach, as described in Chapter 2. In general, the following potential Constituents of Concern (COCs) were identified for all reaches:

> Pesticides and fertilizers from prior or ongoing agricultural activities;

> Asbestos and lead-based paint from buildings constructed prior to 1978; and

> Naturally-occurring asbestos in soil.

3.18.2 Study Area

The Project is located in southern Santa Clara County, approximately 25 miles southeast of San Jose, in the communities of Morgan Hill, San Martin, and Gilroy (Figure 1.1-1, Regional Area Map). From south to north, the Project passes through rural residential areas in Gilroy and San Martin before entering rural areas again, then residential areas, and finally through the main commercial district of Morgan Hill. The Project consists of the upper seven reaches (4, 5, 6, 7A, 7B, 8, and 14) of Llagas Creek, East Little Llagas Creek, and West Little Llagas Creek from just downstream of Buena Vista Avenue (Figure 2.1-1, Upper Llagas Creek Project Area Reaches). Weiss determined that the study area for the hazardous materials assessment comprises nearly 400 discrete parcels. The study area generally represents a 25-foot buffer from the top of bank.

All potential COCs are identified in the specific reach descriptions, below.

3.18.2.1 Environmental Setting

Reach 4

Reach 4 is an intermittent stream channel that winds through agricultural and suburban areas. According to Weiss, a previous Phase I ESA identified an oil stain in a Reach 4 parcel that could indicate the presence of petroleum hydrocarbons in the soil. Other potential COCs in Reach 4 include the following:

> Residual pesticides and fertilizers (from prior and ongoing nearby agricultural uses);

> Nitrate;

> Fecal coliform;

> Asbestos and lead paint;

> Non-friable asbestos in buildings;

> Total petroleum hydrocarbons (TPH);

> Tetrachloroethylene (PCE) in groundwater (source unknown); and

> Polychlorinated Biphenyls (PCBs) from transformers.

Reach 5

Reach 5 is a short 0.4-mile segment connecting Reaches 6 and 14 that averages 15 feet wide at the OHWM. Land use is heavy agricultural to the north and urbanized to the south. Potential COCs include:

> Residual pesticides and fertilizers (from prior and ongoing nearby agricultural uses);

> Asbestos and lead-based paint; and

> Non-friable asbestos from building materials.

Reach 6

Upper Llagas Creek flows through the Reach 6 channel in a southerly direction. The channel is composed of gravel, sand, and silt. The southwestern portion of Reach 6 is adjacent to several SCVWD percolation ponds. The southeastern portion or Reach 6 is adjacent to greenhouses and agricultural fields. The middle portion of Reach 6 traverses through agricultural fields, small corporation yards, and suburbanized areas. Portions of this central reach are adjacent to paved roads. The northern portion of Reach 6 passes through an industrialized area and waste treatment facilities including a former waste transfer station. Potential COCs in Reach 6 include the following:

> Residual pesticides and fertilizers (from prior and ongoing nearby agricultural uses);

> Non-friable asbestos from building materials;

> Asbestos and lead-based paint;

> VOCs, Semi-volatile Organic Compounds (SVOCs) and metals from activities related to a food processing, landfill and junk yard;

> Fecal coliform and nitrate from a septic tank and leach field; and

> Excess nutrients from a food processing waste holding tank area and/or holding pond sediment.

Reach 7A and Reach 7B

Reach 7 is divided into two sections, Reaches 7A and 7B. Reach 7A is the southern reach and Reach 7B is the northern reach. The southern portion of Reach 7A is a topographically flat section of land (there is no channel) with a combination of heavy agricultural use (plowed fields) or fallow land that has been converted to annual non-native grassland. The northern half of Reach 7A runs through a residential neighborhood and ends to the north at the intersection of West Little Llagas Creek and Reach 7B.

Reach 7B contains West Little Llagas Creek; and the channel is composed of gravel, sand, silt, and clay. The stream channel transects a suburban area. The banks and the non-disturbed areas beyond the top of the bank contain annual grassland species. In the northern portion, the stream channel is adjacent to small businesses and is in an underground culvert for the last 650 feet on the north end.

Concentrations of arsenic, cobalt, nickel, and vanadium were reported to exceed screening levels in Phase II ESAs for Reaches 7A and 7B. According to Weiss, these metals may be naturally occurring, but it is unclear whether soil concentrations of these metals are elevated across the entire Project area or only in Reaches 7A and 7B.

Potential COCs specific to Reach 7A include the following:

> Pesticides, herbicides, metals, petroleum hydrocarbons, VOCs, SVOCs, and nitrates from agricultural activities, potential COCs from an automobile junk yard and large manure pile;

> Pesticides, metals, PCBs, SVOCs, and TPH potentially from a fuel tank; and

> Asbestos and lead based paint in structures.

Potential COCs identified specific to Reach 7B include the following:

> VOCs, SVOCs, metals, and methyl tertiary butyl ether (MTBE)

> Asbestos and lead based paint in structures;

> Non-friable asbestos in buildings;

> Unknown stored chemicals potentially sourced to a garage with no secondary containment, poor housekeeping, or an unlabeled 55-gallon drum; and

> Lube oil and kitchen grease from 55-gallon drums.

Reach 8

Reach 8 contains an intermittent stream (West Little Llagas Creek). The channel is composed of gravel, sand, silt, and clay and averages 12 feet in width. The channel transects a heavily urbanized area with businesses, residential areas, and roads abutting many portions of the top of the channel bank. The channel runs underground for 250 feet.

Potential COCs specific to Reach 8 include the following:

> PCBs in soil from a small electrical substation;

> Residual pesticides and fertilizers;

> Non-friable asbestos in buildings; and

> Potential releases from the Union 76 service station that is adjacent to a Reach 8 parcel.

Reach 14

Reach 14 is a wide channel with several portions that were excavated in 2011. The areas beyond the roads on each side of the channel consist of agricultural fields or are heavily suburbanized. Potential hazardous materials include:

> Residual pesticides and fertilizers from row crops and orchards; and

> Perchlorate may be present in groundwater underlying Reach 14.

Weiss identified two sites near Reach 14 with potential COCs, a scrap metal recycling facility and a school (Table 3.18-1).

Potential Releases of Hazardous Materials

The Olin site, less than 1 mile from the study area at 425 Tennant Avenue, was known to have affected groundwater quality underlying parcels in Reaches 4, 5, and 6. This site has been identified as having a

previous significant release of Perchloroethylene (PCE) (Piers 2003 as cited in Weiss 2011). Other sites, listed in Table 3.18-1, had previous releases of hazardous materials, as discussed below.

Table 3.18-1 Summary of Sites Identified in Geotracker and Envirostor Databases

Reach	Sites within Study Area	Site Near Study Area	Cleanup Status	Potential COC	Medium
4	None Identified	None Identified	N/A	N/A	N/A
5	None Identified	None Identified	N/A	N/A	N/A
6	None Identified	San Martin Auto Wreckers, 14155 Llagas Ave., San Martin, CA (~600 feet)	Closed as of 2011	Arsenic, copper, diesel, nickel, other metals, waste oil: motor, hydraulic lubricating	Soil, aquifer used for drinking water
	--	San Martin Closed Landfill, 14070 Llagas Ave., Gilroy, CA (overlaps with SCVWD ROW)	Closed with Deed Restriction	Landfill waste	Soil
	--	Air and Auto Salvage Services, 13895 A Llagas Ave., San Martin, CA (~200 feet)	Closed as of 1988	LUST cleanup site	Soil
	--	Western Refrigeration, 13805 Llagas Ave., San Martin, CA (~100 feet)	Closed as of 1987	LUST cleanup site	Soil
7A	Royal Oak Mushroom, 15480 Watsonville Rd., Morgan Hill, CA 95037	--	Closed as of 1996	LUST cleanup site	Soil
	--	Lico Distributing, 14245 Monterey Road	Closed as of 2002	LUST cleanup site	Groundwater, aquifer used for drinking water
7B	Morgan Hill Corporation Yard, 105 Edes Court, Morgan Hill, CA 95037	--	Remediation OPEN	LUST cleanup site: benzene, fuel oxygenates, gasoline, toluene, xylene	Soil, surface water, aquifer used for drinking water supply
	--	Word Oil, 16720 Monterey, Morgan Hill, CA 95037 (~200 feet)	Site assessment OPEN	LUST cleanup site: gasoline	Aquifer used for drinking water supply
	--	Olin Corporation[2], 425 Tennant Avenue, Morgan Hill, CA 95037	Remediation as of April 2004 OPEN	Cleanup program site: perchlorate	Aquifer used for drinking water supply, well used for drinking water supply

Table 3.18-1 Summary of Sites Identified in Geotracker and Envirostor Databases

Reach	Sites within Study Area	Site Near Study Area	Cleanup Status	Potential COC	Medium
8	Don Love Auto, 17090 Monterey Hwy, Morgan Hill, CA 95037	--	Closed as of 1988	LUST cleanup site	Soil
	--	Unocal, 17015 Monterey St., Morgan Hill, CA 95037 (~100 feet)	Closed as of 1996	LUST cleanup site	Soil
	--	Monterey Mushroom Inc., 642 Hale Ave., Unincorporated, CA	Closed as of 2001	LUST cleanup site	Soil
14[1]	None Identified	Winston Chan Property (recycling scrap metal) 14735 Monterey Highway, San Martin, CA	Cleanup completed 1986. No further action.	DDE, DDT, DDD	Soil
	--	Barrett Avenue Elementary School. The nearest surface water is 1.1. miles to the south, Llagas Creek. 10 acre site was formerly an orchard and was used since 1987 to raise flowers.	Voluntary cleanup completed 2003.	Dieldrin and toxaphene. No metals or herbicides were found.	Soil

Unless otherwise noted, data obtained from Geotracker database at http://geotracker.swrcb.ca.gov, accessed August–September 2011. Sites "near study area" are defined as within approximately 500 feet, except for the Olin site, which is approximately 2000 feet from Reach 7B.

[1] Data obtained from Envirostor database, accessed August to September 2011.

[2] Data obtained from GeoTracker database, accessed February 2013.

Abbreviations:

COC = Constituent of Concern

DDD = metabolite of dichlorodiphenyldichloroethane

DDE = dichlorodiphenyldichloroethylene

DDT = dichlorodiphenyltrichloroethane

LUST = leaking underground storage tank

N/A = not applicable

Source: Weiss 2011, GeoTracker database (SWRCB 2013)

Geologic and Hydrogeologic Conditions

Soil borings obtained during Phases II ESAs conducted in 1997 and 2004 showed shallow alluvial soils that are generally coarse-grained with a high sand content. The borings also show that fine-grained sediment content increases with depth and soils at depths greater than 10 feet are generally sandy to silty clays. In Reaches 7A and 7B, groundwater was encountered in many borings at depths of 14 to 26 feet during the 2011 study (Weiss 2011). In other reaches, the depth to groundwater was not reported, because only surface sampling was conducted (Weiss 2011).

Naturally Occurring Asbestos

Local geographic information suggests that serpentinite, an ultramafic rock, is not present in the study area. However, there is a slight possibility that it could be inadvertently discovered during construction of the Project as discussed in Impact HAZ-2. Section 3.1, Geology and Soils, contains additional discussion of the location of ultramafic rocks outside the Project Area.

Comparison with Screening Levels

Weiss compared analytical data for soil and groundwater samples obtained from Phase II ESAs with the following environmental and human health screening levels:

> Environmental screening levels (ESLs) from the California Regional Water Quality Control Board – San Francisco Bay Region (RWQCB-SF).

> California Human Health Screening Levels (CHHSLs) from California Department of Toxic Substances Control (DTSC).

> Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites from the Environmental Protection Agency.

> Maximum Contaminant Limit (MCLs) for Drinking Water Contaminants set by the USEPA under the National Primary Drinking Water Regulations.

Soil data were compared with screening values applicable to residential land use. Weiss then compared constituent concentrations that exceeded screening levels with maximum background values.

Reported concentrations of arsenic in soil samples from Reaches 7A and 7B exceeded all screening levels, with the highest concentration reported at 14 mg/kg. Reported concentrations of thallium in deep soil (deeper than three meters below ground surface [bgs]) samples from Reach 7A exceeded all screening levels, with the highest concentration at 13 mg/kg. Nickel concentrations exceeded ESLs in shallow soil (0–3 meters bgs) in Reach 7A, with the highest concentrations reported at 300 mg/kg, but did not exceed the CHHSLs or RSLs. Reported concentrations of vanadium in soil in Reach 7A exceeded the ESL, with the highest concentration of 110 mg/kg, but did not exceed the CHHSLs or RSLs. One soil sample in Reach 7A was reported to have a concentration of mercury of 5.3 mg/kg, exceeding the ESL, but not exceeding the CHHSLs or RSLs. Reported antimony concentrations exceeded all screening levels in one soil sample in Reach 7A at a concentration of 210 mg/kg. Reported cobalt concentrations in shallow and deep soil samples from Reach 7A exceeded the RSL, with the highest concentration of 36 mg/kg.

Reported pesticide concentrations exceeded the screening levels in four shallow soil samples (< 3 meters bgs): dieldrin was reported at 0.0029 mg/kg in one soil sample from Reach 4 and at 0.0034 mg/kg in one soil sample from Reach 5, and endosulfan I was reported at 0.008 mg/kg in one sample from Reach 4 and at 0.021 mg/kg in one sample from Reach 5.

Nearly all herbicide results were reported at concentrations below the detection limit. No ESLs exist for these constituents. No detections of PCBs, VOCs, or SVOCs exceeding the screening levels were reported in soil samples from Reaches 7A or 7B. Fecal coliform was reported at concentrations below the detection limit in samples collected in Reach 4.

In Reaches 7A and 7B, groundwater was encountered at depths 14 to 26 feet (Weiss 2011); groundwater samples were analyzed for a range of contaminants in these reaches. Reported concentrations of arsenic, barium, beryllium, chromium, cobalt, copper, lead, mercury, nickel, selenium, silver, vanadium, and zinc in groundwater samples from Reach 7A exceeded groundwater ESLs. Reported concentrations of Total Petroleum Hydrocarbons as Diesel (TPH-D) exceeded the ESL in groundwater samples collected in Reach 7A, but they were not detected above the ESLs in soil in the same area. Reported concentrations of arsenic, barium, cadmium, chromium, and mercury exceeded MCLs in samples collected from Reach 7A.

Nitrate concentrations reported in groundwater samples collected in Reach 7A exceeded the MCL. Reported concentrations of 4,4'- Dichlorodiphenyldichloroethylene (DDE) and heptachlor exceeded their respective ESLs in groundwater samples from Reach 7A.

Vector-Borne Disease Hazards

The principal vector-borne disease concern in the Project area relates to diseases spread by mosquitoes. West Nile Virus (WNV) has had a serious impact upon the health of humans, horses, and wild birds throughout the state. Mosquito-borne viruses belong to a group of viruses commonly referred to as arboviruses (for arthropod-borne). Although 12 mosquito-borne viruses are known to occur in California, only WNV, western equine encephalomyelitis virus (WEE), and St. Louis encephalitis virus (SLE) are significant causes of human disease. Since 2004, there have been 16 human cases of WNV in Santa Clara County and no deaths (SCVCD 2011). In 2012, there were 471 WNV human cases in the state; however, none of these 2012 cases occurred in Santa Clara County (California Department of Public Health 2013).

Mosquito Breeding

Many mosquitoes lay their eggs on the surface of fresh or stagnant water. A body of standing water represents a potential breeding habitat for mosquitoes, including water in cans, barrels, horse troughs, ornamental ponds, swimming pools, puddles, creeks, ditches, or marshy areas (SCVCD 2011). Within cities and developed areas, runoff from landscape watering, car washing, and storms often collects in retention ponds or catch basins long enough to produce mosquitoes. Mosquito larvae can develop anywhere water stands for at least 5 days (California Department of Health Services 2005).

Mosquito Control

In California, local vector control agencies have the authority to conduct surveillance for vectors, prevent the occurrence of vectors, and abate production of vectors (California Codes: Health and Safety Code Section 2040). Vector control agencies also have authority to review, comment, and make recommendations for projects with respect to their potential vector production (California Health and Safety Code Section 2041). Vector control agencies utilize a combination of mosquito abatement procedures tailored to the period in the mosquito life cycle and specific habitat conditions. Mosquito control methods may include the use of biological agents (e.g., mosquitofish), microbial control agents (e.g., Bacillus thuringiensis israelensis and B. sphaericus), pesticides, and source reductions (i.e., emptying containers holding water that could produce mosquitoes) (California Department of Health Services 2005). The entire Project area is within the jurisdiction of the Santa Clara County Vector Control District. The Santa Clara County Mosquito-borne virus Response and Operations Plan provides an overview of procedures and strategies for surveillance and operational response to mosquito-borne viruses in the county, outlines risk assessment models, and prompts surveillance and control activities. The document is based on the California Mosquito-Borne Virus Surveillance and Response Plan that provided statewide guidelines (SCVCD 2011).

Wildfire Hazards

The combination of highly flammable fuel, long dry summers, and steep slopes creates a significant natural hazard of large wildland fires in many areas of Santa Clara County. A wildland fire is a fire in which the primary fuel is natural vegetation. Wildland fires can consume thousands of acres of vegetation, timber, and agricultural lands. Fires ignited in wildland areas can quickly spread, if unabated, to areas where residential or commercial structures are intermingled with wildland vegetation. Fires that start in urbanized areas can grow into wildland fires. Wildland/urban interface fire hazards are especially pronounced in areas of high structure densities adjacent to undeveloped open space areas with dense vegetation (Santa Clara County 2008).

Wildfire behavior is based on three primary factors: weather, topography, and fuel. Wildland fire season in Santa Clara County spans the months after the last spring rains have fallen and until the first fall or winter rains occur. The months of August, September, and October have the greatest potential for wildland fires as vegetation dries out and humidity levels fall.

Each city in Santa Clara County is responsible for its fire protection either by utilizing its own resources or contracting with the California Department of Forestry and Fire Protection (CAL FIRE), a fire district, or adjacent municipal service. The unincorporated area is the primary responsibility of CAL FIRE, along with some fire protection districts and volunteer fire companies.

Wildfires can be caused by natural events, such as lightning or high winds. However, most wildland fires are human caused. Campfires, careless smokers, electrical sparks, and arson cause most wildland and wildland/urban interface fires. In Santa Clara County, electrical equipment, such as power lines and transformers, have caused numerous fires. Fires started by the use of mowing and power equipment around very dry vegetation are also cause for concern.

Santa Clara County's fire agencies have signed a countywide mutual aid agreement to ensure that firefighting resources and personnel will be available to combat wildland urban interface fires (Santa Clara County 2008).

Based on the California Department of Forestry's wildfire hazard real estate disclosure map for Santa Clara County, the Project area is outside areas with substantial forest wildland fire hazards (California Department of Forestry 2012). However, some Project elements would be constructed in areas that could pose wildfire risks under dry conditions. Portions of Reaches 7A, 7B, and 8 are located less than 1 mile from a very high fire hazard severity zone in a local area of responsibility (CAL FIRE 2008).

Airports

The nearest public airport to the Project is San Martin Airport, located less than 0.20 mile from Reach 6 and less than 0.40 mile from Reach 14.

Schools

As discussed in Section 3.14, Utilities and Public Services, several schools occur within 0.25 mile of the Project reaches and are listed in Table 3.18-2.

Table 3.18-2 Schools within 0.25 mile of a Project Reach

Project Reach	School(s)	Address
4	No schools within 0.25 mile	
5	No schools within 0.25 mile	
6	San Martin/Gwinn Elementary School	100 North Street, San Martin, CA 95046
7A and 7B	Kiddie Academy of Morgan Hill	15750 Monterey Street, Morgan Hill, CA 95037
8	Paradise Valley Elementary School Oakwood School Stratford School Britton Middle School P.A Walsh School	1400 La Crosse Drive, Morgan Hill, CA 95037 105 John Wilson Way, Morgan Hill, CA 95037 410 Llagas Road Morgan Hill, CA 95037 80 W. Central Avenue, Morgan Hill, CA 95037 353 West Maine Avenue, Morgan Hill CA 95037
14	No schools within 0.25 mile	

3.18.3 Regulatory Environment

The following federal, state, regional, and local requirements for the Project are described below.

3.18.3.1 Federal

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as Superfund, was passed to facilitate the cleanup of the nation's toxic waste sites. In 1986, the Superfund was amended through the Superfund Amendment and Reauthorization Act Title III (community right-to-know laws). Title III states that past and present owners of land contaminated with hazardous substances can be held liable for the entire cost of the clean-up, even if the material was dumped illegally when the property was under different ownership. Weiss identified sites in Phase I and Phase II site investigations conducted in the study area that have released hazardous waste (Table 3.18-1) and may be subject to CERCLA regulation. Phase I site assessments have a limited (12 month) life span for property transactions. Even though a Phase I was performed for a property historically, it can only be referenced and does not waive liability for acquisition or easement unless a current investigation is performed. Similarly Phase II investigations while citable, do not represent current data (<6 months) and any soil disposal would require current delineation of extent and analysis for proper waste classification. These mitigations represent compliance with ASTM Standard E1527-05.[2] and ASTM E1903 to allow for any pre-existing liability issues to be retained by the current land owner.

Resource Conservation and Recovery Act (RCRA)

The Resource Conservation and Recovery Act (RCRA) enables the EPA to administer a regulatory program that extends from the manufacture of hazardous materials to their disposal, thus, regulating the generation, transport, treatment, storage, and disposal of hazardous waste at all facilities and sites in the nation, including the Project sites.

Federal Insecticide, Rodenticide, and Fungicide Act (FIFRA)

The Federal Insecticide, Rodenticide, and Fungicide Act (FIFRA) (7 USC 136 et seq.) was originally passed in 1947. The purpose of FIFRA is to establish federal jurisdiction over the distribution, sale, and use of pesticides. Key provisions of FIFRA require pesticide applicators to pass a licensing examination for status as "qualified applicators", create a view and registration process for new pesticide products, and ensure thorough and understandable labeling that includes instructions for safe use. Some Project maintenance activities may require the application of pesticides, the proper use of which falls under FIFRA.

3.18.3.2 State

California regulations are equal to, or more stringent than, federal regulations. USEPA has granted the State of California primary oversight responsibility to administer and enforce hazardous waste management to ensure that hazardous wastes are handled, stored, and disposed of properly to reduce risks to human health and the environment. Several key laws pertaining to hazardous wastes are discussed below and apply to the Project, because hazardous materials may be used (e.g., fuels, lubricants, and pesticides) and may be encountered (e.g., naturally-occurring asbestos) during activities, such as excavation.

Hazardous Materials Release Response Plans and Inventory Act of 1985

The Hazardous Materials Release Response Plans and Inventory Act, also known as the Business Plan Act, requires businesses using hazardous materials to prepare a report that describes their facilities, inventories, emergency response plans, and training programs. Hazardous materials are defined as raw

or unused materials that are part of a process or manufacturing step. They are not considered to be hazardous waste. Health concerns pertaining to the release of hazardous materials, however, are similar to those relating to hazardous waste.

Hazardous Waste Control Act

The Hazardous Waste Control Act created the state hazardous waste management program, which is similar to, but more stringent than, the federal Resource Conservation and Recovery Act program. The act is implemented by regulations contained in Title 26 of the California Code of Regulations, which describes the following required aspects for the proper management of hazardous waste:

> Identification and classification;

> Generation and transport;

> Design and permitting of recycling, treatment, storage, and disposal facilities;

> Treatment standards;

> Operation of facilities and staff training; and

> Closure of facilities and liability requirements.

These regulations list more than 800 materials that may be hazardous and establish criteria for identifying, packaging, and disposing of them. Under the Hazardous Waste Control Act 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.

Safe Drinking Water and Toxic Enforcement Act (1986)

The Safe Drinking Water and Toxic Enforcement Act of 1986, better known by its original name of Proposition 65, requires the state to publish a list of chemicals known to cause cancer or birth defects or other reproductive harm. This list, which must be updated at least once a year, has grown to include approximately 800 chemicals since it was first published in 1987.

Proposition 65 requires businesses to notify Californians about significant amounts of chemicals in the products they purchase, in their homes or workplaces, or that are released into the environment. By providing this information, Proposition 65 enables Californians to make informed decisions about protecting themselves from exposure to these chemicals. Proposition 65 also prohibits California businesses from knowingly discharging significant amounts of listed chemicals into sources of drinking water.

The Office of Environmental Health Hazard Assessment (OEHHA) administers the Proposition 65 program. As part of the Cal/EPA, OEHHA, also evaluates all currently available scientific information on substances considered for placement on the Proposition 65 list (CalEPA 2010).

Emergency Services Act

Under the Emergency Services Act, the state developed an emergency response plan to coordinate emergency services provided by federal, state, and local agencies. Rapid response to incidents involving hazardous materials or hazardous waste is an important part of the plan, which is administered by the California Office of Emergency Services. The office coordinates the responses of other agencies, including the EPA, the California Highway Patrol, regional water quality control boards, air quality management districts, and county disaster response offices.

California Code of Regulations, Title 17, Section 93105

The ATCM for Construction, Grading, Quarrying and Surface Mining Operations was signed into state law on July 22, 2002, and became effective in the BAAQMD on November 19, 2002. The purpose of this regulation is to reduce public exposure to naturally-occurring asbestos (NOA) from construction and mining activities that emit dust which may contain NOA. The ATCM requires regulated operations engaged in road construction and maintenance activities, construction and grading operations, and quarrying and surface mining operations in areas where NOA is likely to be found, to employ the best available dust mitigation measures in order to reduce and control dust emissions.

Areas are subject to the regulation if they are identified on maps published by the Department of Conservation as ultramafic rock units or if the BAAQMD or owner/operator has knowledge of the presence of ultramafic rock, serpentine, or naturally-occurring asbestos on the site. The ATCM also applies if ultramafic rock, serpentine, or asbestos is discovered during any operation or activity. The Project area is subject to this regulation, because local geographic information suggests the potential for serpentinite, an ultramafic rock (Weiss 2011).

Applicable requirements of the ATCM include the following:

> Road construction and operations and maintenance must use dust control measures for a specified set of emission sources and prevent visible emissions crossing the project boundaries. BAAQMD must also be notified before any work begins.

> For construction and grading projects that will disturb 1 acre or less, the regulation requires several specific actions to minimize emissions of dust, such as vehicle speed limitations, application of water prior to and during the ground disturbance, keeping storage piles wet or covered, and track-out prevention and removal. Construction projects that will disturb more than 1 acre must prepare and obtain BAAQMD approval for an asbestos dust mitigation plan. The plan must specify how the operation will minimize emissions and must address specific emission sources. Regardless of the size of the disturbance, activities must not result in emissions that are visible crossing the property line.

California Occupational Safety and Health Administration Standards

Title 8 of the California Occupational Safety and Health Administration (Cal/OSHA) regulations specifies that workers who may be exposed to contaminated soils, vapors that could be inhaled, or possibly groundwater containing hazardous levels of constituents, be subject to monitoring and personal safety equipment requirements that specifically address airborne contaminants. The primary intent of the Title 8 requirements is to protect worker health.

3.18.3.3 Local

The following goals and policies from the local general plans apply to the Project, because they concern protection from hazardous materials exposure and effective hazardous materials management.

Santa Clara County General Plan, 1995–2010

Goal 7.2. Safety from Natural and Other Hazards. Human life and property protected from exposure to man-made hazards, such as unhealthy noise levels, hazardous wastes and materials, aviation accidents, and unsafe structures.

> *Strategy #1.* Manage Hazardous Materials Safely and Efficiently. By adhering to adopted building and development standards (i.e., Uniform Fire Code, Uniform Building Code, Hazardous Materials Management Plan, etc.), the county and cities can ensure that new development is designed and maintained in a manner that will shield or distance people and the environment from dangerous materials and activities.

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

> *Policy C-HS 15.* To achieve a more effective, efficient, and economical regulatory environment, all feasible means to simplify and coordinate locally implemented hazardous materials management regulations should be considered.

> *Policy C-HS 23.* Local governments and hazardous materials users should work jointly to identify the most effective and economically feasible measures to prevent hazardous materials incidents and ensure the swift post-incident recovery of all effected.

City of Morgan Hill General Plan

Goal 3. Avoidance of exposure to hazardous substances.

> *Policy 3a.* In order to minimize potential hazards, require generators of hazardous waste to use on-site pretreatment prior to discharging treated waste effluent into the sewer system, using such methods as neutralization, precipitation and oxidation. (South County Joint Area Plan [SCJAP] 9.05)

> *Policy 3f.* Require submittal of a hazardous materials handling plan as a prerequisite for developments requiring zone changes and use permits. (SCJAP 9.04)

> *Policy 3h.* Vehicles and other equipment that may threaten the quality of water from leaking fuel tanks or oil spills should be removed from the site and/or repaired. (SCJAP 9.07)

> *Policy 3k.* Monitor the transportation of hazardous materials and wastes to reduce risks and ensure notification of South County jurisdictions in the event of a leak or spill. (SCJAP 9.10)

> *Policy 3n.* To reduce the risk involved in transporting hazardous waste and decrease the volume of waste that must be disposed of, encourage the generators of hazardous waste to use on-site pretreatment, such as: neutralization, precipitation and oxidation. (SCJAP 9.15)

> *Policy 3q.* The Santa Clara County Hazardous Waste Management Plan is herewith incorporated in this General Plan by reference. It is a city policy to restrict offsite hazardous materials operations (Hazardous Materials Reprocessing uses as defined by the Zoning Ordinance) to industrially-zoned sites which have received Conditional Use Permits and which comply with the Santa Clara County Hazardous Waste management Plan or a city-designated equivalent.

> *Policy 3t.* Provide mitigation to remedy the effects of new or expanding development over areas with environmental contamination of any and all unauthorized discharges.

City of Gilroy General Plan

GOAL. Minimal risks associated with the use and handling of hazardous materials and wastes, ensuring compliance with local, state, and federal regulations.

> *Policy 27.01.* Hazardous Materials Inspections and Monitoring. Continue to provide inspections and monitoring to ensure compliance with local, state, and federal regulations and to reduce the risks associated with the use and handling of hazardous materials and wastes.

> *Policy 27.02.* Hazardous Waste Reduction. Minimize the potential hazards posed by the storage and transport of hazardous materials and waste by encouraging source reduction, waste minimization, and on-site pretreatment.

> *Policy 27.04.* Potential Hazardous Soil Conditions. Evaluate new development on sites that may have involved hazardous materials, to ensure there is no public health danger prior to granting development approvals.

> *Action 27.A.* Hazardous Materials Joint Pretreatment Program. Continue to implement the Joint Powers Pretreatment Program for industrial and commercial hazardous material users and/or hazardous waste generators, coordinated as appropriate with Memorandum of Understanding (MOU) inspections, Hazardous Materials Storage Ordinance (HMSO) regulations, and implementation of applicable state laws.

> *Action 27.B.* HMSO. Continue to regularly inspect activities that store and/or use hazardous materials, including above-ground and underground storage tanks and related equipment, to ensure compliance with the city Hazardous Materials Storage Ordinance.

Santa Clara County Integrated Pest Management Ordinance

The Integrated Pest Management (IPM) program was implemented in 2002, through adoption of an IPM ordinance by the Board of Supervisors. The intent of this ordinance is to protect the health and safety of county employees and the general public, the environment, and water quality, as well as to provide sustainable solutions for pest control on county property. The ordinance seeks to eliminate or reduce pesticide applications on county property to the maximum extent feasible, and to provide preference to available non-pesticide alternatives, where feasible, before considering the use of pesticides on county property (Santa Clara County 2012c).

3.18.4 Impact Analysis

3.18.4.1 Significance Criteria

For the purposes of this analysis, the Project could result in a significant impact if it were to:

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

> Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school.

> Be located on a site, which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.

> 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, result in a safety hazard for people residing or working in the Project area.

> For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the Project area.

> Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

> Increased breeding or harborage of disease vector organisms, leading to elevated public health risk.

> Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

Each impact discussion includes a summary table identifying the level of impact associated with each Project activity, followed by text analysis.

3.18.4.2 Approach to Analysis

The analysis for this section considered the potential for adverse impacts on public health and safety as a result of hazardous materials exposure, vector-borne diseases, and wildland fire. Risks were evaluated qualitatively based on available information.

SCVWD has performed assessments of the environmental conditions of properties within the Project area in accordance with its Hazardous Substance Liability Assessment (HSLA) guidance, which requires HSLAs for any project that requires acquisition of a new property (Weiss 2011). The following assessments have been performed and are cited as in the Weiss assessment (2011):

> Summary Level 1 Hazardous Materials Investigation performed by SCVWD for Reaches 4, 5, 6A, 7A, and 8, was conducted in August 1997 (SCVWD 1997) to identify property conditions along the entire Project area.

> Phase II ESA performed in August 1997 in Reach 7A to assess the potential for recognized environmental conditions associated with agricultural use in the area, a junk yard, a manure pile, and a release of petroleum hydrocarbons to soil and groundwater identified during the Phase I HSLA performed by the SCVWD in August 1997 (Kleinfelder 1997, amended in November and December 1997).

> Phase I ESA performed in September 2002 to support property acquisition in Reaches 4 and 7B (Piers 2002a).

> Phase I ESA performed in November 2002 to support property acquisition in Reaches 5 and 6 (Piers 2002b).

> Phase I ESA performed in April 2003 in Reach 8 (Piers 2003a).

> Phase I ESA performed in December 2004 in Reaches 4, 5, 6, and 7B (Piers 2003b).

> Phase II ESA performed in August 2004 in Reaches 4, 5, 6, and 7B (Piers 2003b).

> Phase II ESA performed in August 2004 of selected parcels in Reaches 4 and 5 per recommendations of Phase I assessments to assess the presence of pesticides, coliform, and nitrate in soils (Piers 2004).

> Phase II ESA for Reach 7A performed in August 2004 to review the potential for recognized environmental conditions associated with agricultural use for the area that SCVWD allowed after the completion of earlier assessments (LAS 2004).

> Phase I ESA performed in February 2005 in Reach 14 of parcels owned by SCVWD for the purpose of identifying environmental concerns prior to construction related to the Project in this location (Piers 2005).

Outstanding Phase I ESA Recommendations

Weiss reviewed all completed Phase l ESAs. Actions recommended in the completed Phase I ESA reports (and those actions that are recommended in Phase II, discussed below) will be performed by SCVWD where permission is obtained from current property owners. The Phase I actions generally fall into the following categories:

> Additional site reconnaissance to determine the locations of hazardous materials that may impact soil and groundwater such as pesticide use or storage areas and oil stains.

> Assessment of pesticide impacts due to agricultural uses of parcels within the Project area.

> Assessment of asbestos and lead-based paint in buildings constructed prior to 1978 that may be demolished.

> Assessment and/or closure of utility-related structures such as transformers, water wells, ponds, and septic tanks located in or near the study area.

Phase II Investigations

Weiss also reviewed Phase II investigations conducted in areas of Reaches 4, 5, 7A, 7B, and 14. These investigations evaluated the presence of the following contaminants:

> Fecal coliform in Reach 4.

> Pesticides in Reaches 4, 5, 7A, and 7B.

> Nitrate in Reach 7A.

> PCBs and SVOCs in Reaches 7A and 7B.

> VOCs in Reaches 5, 7A, and 7B.

> Perchlorate in Reach 14.

No samples were collected in Reaches 6, 8, or 14. Per Weiss (2011), the results of Phase II ESA performed in the areas of Reaches 4, 5, 7A, and 7B indicate the following:

> Known hazardous materials releases occurred at sites within and adjacent to the study area.

> Dieldrin, endosulfan, 4,4'-DDE, and heptachlor are present in soil and groundwater above screening levels from application of pesticides and herbicides on parcels that were actively cultivated as orchards or for row crops.

> Arsenic, chromium, cobalt, nickel, and vanadium are present in soil and groundwater at concentrations exceeding screening levels. These metals are thought to be naturally occurring.

> Animal grazing or manure piles have led to nitrate contamination in groundwater beneath Reach 7A.

> Building and utility structures (septic tanks, wells, and transformers) that may contain hazardous materials (PCBs, lead-based paint, and asbestos) are located in the study area.

Soil borings were collected in Reach 6 in September of 2013 by Pacific Geotechnical Engineering to assess the historic landfill that overlaps the current SCVWD right-of-way for Llagas Creek.

Outstanding Phase II Environmental Site Assessments

Additional Phase II ESAs will be conducted as property is acquired, and prior to the start of excavation as called out in the Weiss report, including:

> Additional investigation will be conducted to determine if residual pesticides are present in soils and groundwater at Reaches 6, 8, and 14.

> Buildings that may contain asbestos and lead-based paint were identified in all reaches, surveys will be conducted to determine the presence of asbestos or lead-based paint in the buildings.

> An investigation will be performed for soil stains and potential oil release to soil as identified in Reaches 4, 5, and 7B.

> Additional investigation into potential contamination from utility structures, septic tanks, and leach fields will be conducted in Reaches 4, 6, and 8.

> The Olin site, located between Reach 7B and U.S. 101, was identified as a source of perchlorate contamination in regional groundwater and may have impacted groundwater within the study area. Groundwater will be evaluated for perchlorate contamination in the Project area.

3.18.5 Impacts and Mitigation Measures

3.18.5.1 No Project Alternative

Under the No Project Alternative, the Project would not be built, and no new land purchases or construction activities would occur. Flooding in the residential areas of Morgan Hill and San Martin would continue. Storm runoff would continue through the West Little Llagas Creek, East Little Llagas Creek, and Llagas Creek channel reaches. The bypass channel in Reach 7A would not be constructed under the No Project Alternative, and channel bank erosion and widening would likely continue. Maintenance of the Upper Llagas Creek facilities would be conducted in accordance with the guidelines established in the SCVWD SMP Update 2012–2022 (SCVWD 2011b). Impacts from hazards and hazardous materials from this maintenance would be less than significant.

HAZ-1 NP—Creation of hazard through transport, use, or disposal of hazardous material

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sediment removal and bank stabilization	N/A	LTS
Vegetation management	N/A	LTS
Minor maintenance/canal maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No channel modification or improvements would be constructed; therefore, no hazards or hazardous materials impacts would occur as a result of construction.

Operations and Maintenance

Operations of the flood management system through passive flow of water does not involve the transport, use, or disposal of hazardous materials. Existing maintenance activities conducted by the SCVWD are completed under the SMP. The SMP established procedures for routine maintenance of stream channels involving sediment removal, vegetation management, bank protection, and associated minor activities.

Instream sediment removal and bank protection work is carried out from June 15 to October 30, or the first significant rainfall (0.5 inch of rain in a 24-hour period) after October 15, whichever occurs first. Typical maintenance activities that may involve hazards or hazardous materials include sediment removal and bank stabilization; vegetation management; and minor maintenance, as described below.

Sediment Removal and Bank Stabilization

Sediment removal and bank stabilization activities would require the use of fuels and lubricants for maintenance equipment. These hazardous materials would be transported to and from maintenance sites and removed once projects were completed. Hazardous materials would not be stored permanently at maintenances sites. However, if hazardous materials were released into water or soil during refueling or maintenance activities, contamination and harm to people or the environment could result.

Vegetation Management

The SMP vegetation management activities would also include the use of fuels and lubricants. In addition, the activities would include the application of herbicides to areas including instream and bank bench

areas. The use, transport, or accidental spills of hazardous materials could potentially harm people or wildlife if released into the ground or water.

Minor Maintenance

Minor maintenance would potentially involve the use of hazardous materials during the use of heavy equipment for grading or sediment removal.

Best Management Practices (BMPs) (from SCVWD SMP)

The SCVWD performs routine maintenance activities within the Project area in accordance with the SMP. The SMP includes BMPs that are similar to BMP's proposed for action alternatives that are implemented to reduce potential impacts to levels less than significant and include the following:

> **GEN-2:** Instream Herbicide Application Work Window.

> **GEN-19:** Work Site Housekeeping.

> **GEN-21:** Staging and Stockpiling of Materials.

> **GEN-24:** On-Site Hazardous Materials Management.

> **GEN-25:** Existing Hazardous Materials.

> **GEN-26:** Spill Prevention and Response.

> **GEN-30:** Vehicle and Equipment Maintenance.

> **GEN-31:** Vehicle Cleaning.

> **GEN-32:** Vehicle and Equipment Fueling.

> **GEN-37:** Implement Public Safety Measures.

> **GEN-39:** Planning for Pedestrians, Traffic Flow, and Safety Measures.

> **HM-4:** Posting and Notification for Pesticide Use.

Implementation of the BMPs above would reduce potential impacts to less than significant.

HAZ-2 NP—Exposure of workers or the public to existing hazardous materials contamination

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sediment removal and bank stabilization	N/A	LTS
Vegetation management	N/A	LTS
Minor maintenance/canal maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No channel modification or improvements would be constructed; therefore, no hazards or hazardous materials impacts would occur as a result of construction.

Operations and Maintenance

Sediment Removal and Bank Stabilization

Workers could encounter illegally dumped waste, and ground excavation activities and bank repairs could disturb previously unknown contamination.

Other Maintenance Activities

Other SMP maintenance activities could involve ground disturbance and, therefore, have the potential to disturb contaminated sites. However, by implementing the BMPs, listed below, if potential contaminants were found during SMP activities, the area would be treated as if a hazardous spill had occurred and any ground-disturbing activities, including disturbance of previously undiscovered contamination, would be handled in a manner that would protect human health and the environment. The impact would be less than significant.

Best Management Practices (BMPs)

Under the No Project Alternative, the SCVWD's established BMPs under the SMP (2012) would be implemented to reduce the impacts to levels to less-than-significant and would include the following:

> **GEN-3:** Avoid Exposing Soils with High Mercury Levels.

> **GEN-4:** Minimize the Area of Disturbance.

> **GEN-23:** Stream Access.

> **GEN-25:** Existing Hazardous Materials.

> **GEN-26:** Spill Prevention and Response.

Implementation of the BMPs above would reduce potential impacts to less than significant.

HAZ-3 NP—Generation of hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sediment removal and bank stabilization	N/A	LTS
Vegetation management	N/A	LTS
Minor maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No channel modification or improvements would be constructed; therefore, no hazards or hazardous materials impacts would occur as a result of construction.

Operations and Maintenance

Sediment Removal and Bank Stabilization

Potential hazardous materials used as part of sediment removal and bank stabilization activities implemented near schools (Table 3.18-2) would include fuels and oils associated with the use of heavy

equipment. Improper storage or use of these materials could pose a risk to human health if accidental releases occurred.

Vegetation Management

Vegetation management activities would include the application of herbicides. Improper use or storage of herbicides near schools could pose a potential risk to children who may be exposed.

Minor Maintenance

Maintenance activities could involve the use of heavy equipment and subsequent use of hazardous materials (i.e., fuels, oil). Children could potentially be exposed to these materials if an accidental release occurred near a school.

Best Management Practices (BMPs) (from SCVWD SMP)

Implementation of the BMPs, described below, would reduce impacts to less-than-significant levels and no additional mitigation would be required.

> **GEN-24:** On-Site Hazardous Materials Management.

> **GEN-25:** Existing Hazardous Materials.

> **GEN-26:** Spill Prevention and Response.

> **GEN-30:** Vehicle and Equipment Maintenance.

> **GEN-31:** Vehicle Cleaning.

> **GEN-32:** Vehicle and Equipment Fueling.

> **HM-4:** Posting and Notification for Pesticide Use.

Implementation of the BMPs above would reduce potential impacts to less than significant.

HAZ-4 NP—Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sediment removal and bank stabilization	N/A	LTS
Vegetation management	N/A	LTS
Minor maintenance/canal maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No channel modification or improvements would be constructed; therefore, no hazards or hazardous materials impacts would occur as a result of construction.

Operations and Maintenance

All SMP activities, such as sediment removal activities, could potentially disturb known existing contaminated sites. Furthermore, portions of the Project area may contain naturally-occurring asbestos.

Maintenance activities involving ground disturbance, such as sediment removal and bank stabilization, could potentially expose asbestos and release it into the environment. With implementation of the BMPs, described below, these potential impacts would be reduced to levels less than significant.

Best Management Practices (BMPs) (from SCVWD SMP)

Under the No Project Alternative, the SCVWD's established BMPs under the SMP would be implemented to reduce the impacts to levels less than significant and include the following:

> **GEN-3:** Avoid Exposing Soils with High Mercury Levels.

> **GEN-4:** Minimize the Area of Disturbance.

> **GEN-23:** Stream Access.

> **GEN-27:** Existing Hazardous Sites.

Implementation of the BMPs above would reduce potential impacts to less than significant.

HAZ-5 NP—Potential to result in safety hazard due to location within 2 miles of a public use airport

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sediment removal and bank stabilization	N/A	LTS
Vegetation management	N/A	LTS
Minor maintenance/canal maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No channel modification or improvements would be constructed; therefore, no hazards or hazardous materials impacts would occur as a result of construction.

Operations and Maintenance

Although operations and maintenance under the No Project Alternative may be performed within 2 miles of San Martin Airport, these activities would not interfere with airport operations, would not involve the use of any equipment that would affect aircraft utilizing the airport, and would not result in a substantial safety hazard to people residing or working in the vicinity of the airport. The impacts would be less than significant.

Best Management Practices (BMPs)

None applicable

HAZ-6 NP—Interference with emergency response or evacuation plan

Impact Determination: significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sediment removal and bank stabilization	N/A	S
Vegetation management	N/A	S
Minor maintenance/canal maintenance	N/A	S

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No channel modification or improvements would be constructed; therefore, no hazards or hazardous materials impacts would occur as a result of construction.

Operations and Maintenance

The SMP activities could involve temporary road or lane closures, as well as traffic that could potentially interfere with emergency response.

Under the No Project Alternative, no improvements would be made to creeks in the Project area to minimize known flooding risks. Flooding in the residential areas of Morgan Hill and San Martin would continue and may potentially impede emergency response or evacuation efforts during flooding events. The unimproved operations of the existing flood management system would result in an impact that would be significant.

Best Management Practices (BMPs) (from SCVWD SMP)

Under the No Project Alternative, the SCVWD's established BMPs under the SMP would be implemented to reduce the impacts related to SMP activities to levels less than significant and include the following:

> **GEN-36:** Public Outreach.

> **GEN-39:** Planning for Pedestrians, Traffic Flow, and Safety Measures.

Impacts would remain significant because BMPs would not prevent interference to emergency response caused by flooding.

HAZ-7 NP—Breeding or harborage of disease vector organisms

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sediment removal and bank stabilization	N/A	LTS
Vegetation management	N/A	LTS
Minor maintenance/canal maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No channel modification or improvements would be constructed; therefore, there would be no changes to opportunities for vectors to breed or spread as a result of construction.

Operations and Maintenance

The SMP activities are not likely to create standing water that would foster mosquitos or interfere with current and future Santa Clara Vector Control District (SCVCD) abatement efforts. Impacts would be less than significant.

Best Management Practices (BMPs)

None applicable

HAZ-8 NP—Exposure of people or structures to risk of wildland fires

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Sediment removal and bank stabilization	N/A	LTS
Vegetation management	N/A	LTS
Minor maintenance	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

Construction

No channel modification or improvements would be constructed; therefore, there would be no new fire hazards as a result of construction.

Operations and Maintenance

Vegetation Management

Vegetation management activities for the SMP would potentially include mowing, discing, and flaming activities. Without cautious equipment use, such activities performed near dry vegetation could cause uncontrolled fires.

Other SMP Activities

Maintenance activities would potentially require the use of heavy equipment to stabilize the channel banks, remove sediments, perform grading, and/or alter animal habitats. The use of heavy equipment near dry vegetation could present a potential wildland fire threat. Through implementation of SMP BMPs, flaming equipment may be used cautiously and maintenance activities would be performed in a way to minimize the potential for the creation of wildland fires. The SCVWD would obtain the required burn permit or authorization from applicable city or county fire marshals before using flaming equipment. The impact would be less than significant.

Best Management Practices (BMPs) (from SCVWD SMP)

Under the No Project Alternative, the SCVWD's established BMPs under the SMP would be implemented to reduce the impacts to levels less than significant and include the following:

> **GEN-28:** Fire Prevention.

> **GEN-36:** Public Outreach.

> **VEG- 4:** Use Flamers with Caution.

> **VEG-5:** Conduct Flaming During Appropriate Weather and Seasonal Conditions.

Implementation of the BMPs above would reduce potential impacts to less than significant.

3.18.5.2 Tunnel Alternative (Preferred Alternative)

The key feature of the Preferred Alternative is to use an underground concrete tunnel instead of channel widening and deepening proposed through Reach 8 in downtown Morgan Hill. The tunnel would be constructed under the Nob Hill Terrace neighborhood, and a sediment detention basin would be constructed in the 600 feet of channel between Wright Avenue and Hillwood Lane with an 18-foot-wide maintenance/access road for maintenance access to the sediment detention basin.

HAZ-1 T—Creation of hazard through transport, use, or disposal of hazardous material

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTS	N/A
Excavation and construction of a diversion channel	LTS	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTS	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTS	N/A
Relocation of some homes, farm structures, and wells[1] within the ROW	LTS	N/A
Relocation of utility and public service facilities	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1.

Construction

Construction activities for channel improvements, a diversion channel, permanent access roads, RCBs, and relocation of structures and public service facilities would require the use of hazardous substances, such as vehicle fuels, lubricants, and solvents in construction equipment and vehicles, and herbicides to clear vegetation for certain locations. Impacts of improper storage and handling could be significant, including spills, releases and exposure of workers and the general public to toxins and carcinogens. However, hazardous and potentially hazardous materials used in construction would be transported, stored, and handled in a manner consistent with all relevant regulations and guidelines, including those recommended and enforced by the DOT and Santa Clara County Department of Environmental Health.

During tunnel construction, blasting would be used as a construction method. Typically, less than 20 pounds of explosives per delay would be used. A Blasting Plan would be prepared for this alternative to provide guidelines for the safe use and storage of blasting materials that may be used during

construction. It is intended to help ensure the safety of construction personnel, the public, nearby facilities and sensitive resources. The Blasting Plan would include, but not be limited to, the following elements:

> Proposed blasting activity;

> Blasting procedures;

> Blasting contractor qualification;

> Applicable federal, state, and local regulations;

> Blasting monitoring;

> Noise, vibration, and fly-rock mitigation;

> Safety during blasting; and

> Storage and disposal of explosives.

The SCVWD incorporates standard BMPs related to the transport, use, and disposal of hazardous materials to ensure these impacts are not significant.

Operations and Maintenance

Much like construction, periodic activities required to maintain the new Project elements would require the use of vehicle fuels and lubricants and could require solvents, paints, paving media, and other substances. The SCVWD incorporates standard BMPs related to the transport, use, and disposal of hazardous materials to ensure these impacts are not significant.

Best Management Practices (BMPs)

The SCVWD has a standard list of BMPs implemented on all projects. The following BMPs would be implemented as part of the Project. A detailed listing of activities associated with each BMP is provided in Appendix C, Upper Llagas Creek Project Comprehensive Best Management Practices. In addition to the Project BMPs, the SCVWD also conducts public outreach to keep the community informed about upcoming Project work. The public will be informed of construction or operation and maintenance activities prior to the start of work.

> Neighborhood Work Notices will be distributed prior to the start of work.

> Local governments (cities and county) will be notified of scheduled maintenance work.

> The SCVWD will post specific information on individual project activities on a project website.

For high profile portions of the Project signs will be posted in the neighborhood to notify the public at least 1 week in advance of work schedules and traffic closures as necessary and possible. Signage used at work sites will include contact information for lodging comments and/or complaints regarding the construction or operation and maintenance activities.

The following summarizes SCVWD BMPs that would avoid and minimize impacts related to significant hazards to the public or the environment through the routine transport, use, or disposal of hazardous materials under the Preferred Alternative.

> **BI-4:** Minimize Access Impacts.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-Target Species—applicable to the construction and operations phase of all activities.

> **HM-4:** Post Areas Where Pesticides will be Used.

> **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas—applicable to the construction and operations phase of all activities.

> **HM-8:** Comply with Restrictions on Herbicide Use in Aquatic Areas—applicable to the construction and operations phase of all activities.

> **HM-9:** Limit Vehicle and Equipment Cleaning to Appropriate Locations.

> **HM-10:** Ensure Proper Vehicle and Equipment Cleaning to Appropriate Locations.

> **HM-12:** Ensure Proper Hazardous Materials Management.

> **HM-13:** Utilize Spill Prevention Measures.

> **TR-1:** Incorporate Public Safety Measures.

Mitigation Measures

None required

Impacts related to the transport, use, or disposal of hazardous materials would be less than significant with implementation of BMPs.

HAZ-2 T—Exposure of workers or the public to existing hazardous materials contamination

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTSM	N/A
Excavation and construction of a diversion channel	LTSM	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTSM	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTSM	N/A
Relocation of some homes, farm structures, and wells[1] within the ROW	LTSM	N/A
Relocation of utility and public service facilities	LTSM	N/A
Stream operation and maintenance activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1.

The Project reaches are located in areas with a history of agricultural land uses, so there is a possibility of undocumented soil and/or groundwater contamination with pesticides, fuels, fertilizers, or other compounds used in agriculture. Additional concerns identified for the Project reaches include nitrates and fecal coliform, potentially hazardous chemicals, petroleum hydrocarbons, heavy metals, asbestos-containing building materials, lead-based paint, and PCB-containing lighting fixtures, as discussed in the Section 3.18.2.1, Environmental Setting.

The Olin site, located at 425 Tennant Avenue, has affected groundwater quality underlying an area that includes all of the parcels in Reaches 4, 5, and 6. This site has been identified as having a previous significant release of PCE (Piers 2003 as cited in Weiss 2011). Other sites, listed in Table 3.18-1, had

previous hazardous materials releases. Additional existing hazardous materials in the Project vicinity may include the following:

> *Agricultural chemicals, former orchards, and row crop areas*: Phase I ESAs identified large portions of the study area as occupying former agricultural lands and recommended sample collection. Weiss recommends additional soil and groundwater sampling at former agricultural lands within the study area and analysis for organochlorine pesticides.

> *Arsenic, cobalt, nickel, and vanadium in soil*: Concentrations of arsenic, cobalt, nickel, and vanadium reported in Phase II ESAs for Reaches 7A and 7B exceed screening levels. It appears that these metals are naturally occurring, but it is not clear if soil concentrations of these metals are elevated across the entire Project area or only in Reaches 7A and 7B. Weiss recommends additional evaluation and additional soil and groundwater sample collection to assess metal concentrations within the study area.

> *Chromium in soil*: Total chromium in most shallow and deep soils samples exceeded 10 x STLC. Weiss recommends additional analysis to demonstrate that the chromium is insoluble trivalent chromium.

> *Landfill materials*: The San Martin Closed Landfill is a deed restricted property located in Reach 6 that overlaps with the current SCVWD right-of-way. The planning of any ground disturbing work within the parcel requires consultation with the CCRWQCB. All materials removed from the former landfill would require proper disposal at another waste management facility.

> *Metals in groundwater in Reach 7A*: Metal concentrations in groundwater samples from Reach 7A exceeded screening levels (LAS 2004 as cited in Weiss 2011). Weiss recommends additional limited analysis to assess the source of metals.

> *Nitrate from former manure storage*: Nitrate concentrations in groundwater samples collected in Reach 7A exceed screening levels (Kleinfelder 1997 as cited in Weiss 2011). If groundwater with elevated nitrate concentrations were to be encountered during construction, it would require special handling. Livestock management in other locations within the study area may have resulted in groundwater impacts. Weiss recommends an evaluation of livestock operations to identify potential nitrate impacts.

Construction

Construction workers or the public could be exposed to the hazardous substances, including those discussed above, through accidental disturbance during Project construction, potentially constituting a significant impact. Construction activities, in particular, excavation and other ground-disturbing tasks, would have significant potential to expose workers and the public to hazardous materials, unless appropriate precautions are taken. Such exposure could represent a significant public health impact. Mitigation Measures HAZ-2a through HAZ-2g T will reduce potential effects associated with exposure of hazardous materials during excavation to a less-than-significant level. Measures include keeping work areas clean (Mitigation Measure HAZ-2a T), preparation of a soil and groundwater management plan (Mitigation Measure HAZ-2b T), conducting online site searches of areas where ground disturbance would occur (Mitigation Measure HAZ-2c T), conducting hazardous materials investigations and follow up remediation of acquired properties (Mitigation Measure HAZ-2d T), minimizing the area of disturbance (Mitigation Measure HAZ-2e T), and stopping work if unanticipated hazardous materials are discovered (Mitigation Measure HAZ-2f T).

Uncontaminated excavated soils may be reused within the Project area for fill materials. Excess material may be stockpiled at Anderson Dam for reuse on a future project. In the event of an unanticipated discovery of potentially impacted soils or groundwater, Mitigation Measure HAZ-2i T would be implemented, which requires evaluation of soils for reuse.

Buildings and structures within the project construction footprint potentially identified for demolition (see Section 2.4.2, Table 2.4-1) could contain asbestos or lead, which is a potentially significant impact. The SCVWD will conduct surveys for asbestos and lead in building prior to demolishing or moving structures consistent with Mitigation Measure HAZ-2g T. This would reduce the potential impact to a -less-than-significant level.

In the event of an unanticipated discovery of NOA, the SCVWD will comply with the BAAQMD ATCM, which regulates NOA emissions (Section 3.18.2.1) and would implement Mitigation Measure HAZ-2h T requiring preparation of an asbestos dust planto ensure that there are not significant impacts from naturally occurring asbestos.

During tunnel construction, blasting would be used as a construction method. A Blasting Plan would be prepared for this alternative to provide guidelines for the safe use and storage of blasting materials. The Blasting Plan is intended to help ensure the safety of construction personnel, the public, nearby facilities and sensitive resources. The Blasting Plan would include, but not be limited to, the following elements:

> Proposed blasting activity;

> Blasting procedures;

> Blasting contractor qualification;

> Applicable federal, state, and local regulations;

> Blasting monitoring;

> Noise, vibration, and fly-rock mitigation;

> Safety during blasting; and

> Storage and disposal of explosives.

The SCVWD will comply with the BAAQMD ATCM, which regulates NOA emissions (Section 3.18.2.1).

Operations and Maintenance

During operations and maintenance activities, described in Section 2.6.5, the SCVWD will conduct an online database search for known contaminated sites in the Project area consistent with Mitigation Measure HAZ-2c T prior to ground disturbing activities and will inform neighbors of impending work. Mitigation Measure HAZ-2f T will be implemented if hazardous materials are encountered during work. These measures would reduce potential impacts to less-than-significant levels.

Pesticides and herbicides may be used in maintenance activities related to vegetation management. BMPs BI-4, BI-6, HM-4, HM-7, and HM-8 would minimize the potential for impacts related to exposure to contaminants associated with pesticide and herbicide use.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that avoid and minimize impacts related to exposure of workers or the public to existing hazardous materials contamination.

> **BI-4:** Minimize Access Impacts.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-Target Species—applicable to the construction and operations phase of all activities.

> **HM-4:** Post Areas Where Pesticides will be Used.

> **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas—applicable to the construction and operations phase of all activities.

> **HM-8:** Comply with Restrictions on Herbicide Use in Aquatic Areas—applicable to the construction and operations phase of all activities.

> **HM-9:** Limit Vehicle and Equipment Cleaning to Appropriate Locations.

> **HM-10:** Ensure Proper Vehicle and Equipment Cleaning to Appropriate Locations.

> **HM-12:** Assure Proper Hazardous Materials Management—applicable to the construction and operations phase of all activities

> **HM-13:** Utilize Spill Prevention Measures—applicable to the construction and operations phase of all activities.

Mitigation Measures

Mitigation Measure HAZ-2a T: Work Site Housekeeping Procedures. To reduce impacts related to unknown hazardous materials releases from construction and operations and maintenance, the following measures will be implemented:

> The work site, areas adjacent to the work site, and access roads will be maintained in an orderly condition, free and clear from debris and discarded materials. Personnel will not sweep, grade, or flush surplus materials, rubbish, debris, or dust into storm drains or waterways.

> Upon completion of work, all building materials, debris, unused materials, concrete forms, and other construction-related materials will be removed from the work site.

> To prevent mosquito breeding on construction sites, the SCVWD will ensure that surface water is gone within 4 days (96 hours). All outdoor grounds will be examined and unnecessary water that may stand longer than 96 hours will be drained. Construction personnel will properly dispose of unwanted or unused artificial containers and tires. If possible, any container or object that holds standing water that must remain outdoors will be covered, inverted, or have drainage holes drilled.

Mitigation Measure HAZ-2b T: Soil and Groundwater Management Plan. Prior to ground breaking activities, the SCVWD shall include in construction specifications the implementation of a Soil and Groundwater Management Plan (SGMP) prepared by state registered hazardous waste investigation and remediation professionals. The SGMP shall be present on site at all times and readily available to site workers. The SGMP shall include a health and safety plan, emergency notification protocols, and handling and sampling procedures for site workers in accordance with OSHA and Santa Clara County Hazardous Materials Compliance Division requirements. The SGMP shall also describe protocols for offsite disposal of contaminated soils or groundwater. In addition, the SGMP shall include coordination and notification protocols and requirements for any inadvertent releases of hazardous materials within the vicinity of any schools.

Mitigation Measure HAZ-2c T: Existing Hazardous Site Search. Prior to construction, and for maintenance activities as part of its annual preparation of the Notice of Proposed Work (NPW), the SCVWD will conduct a search for existing known contaminated sites on the State Water Resource Control Board's GeoTracker Web site (http://www.geotracker.waterboards.ca.gov). The GeoTracker search will only be performed for the SCVWD's ground disturbing activities. For any proposed ground disturbing maintenance sites located within 1,500 feet of any "open" sites where contamination has not been remediated, the SCVWD will contact the RWQCB case manager listed in the database. The SCVWD will work with the case manager to ensure construction and maintenance activities would not affect cleanup or monitoring activities or threaten the public or environment.

Mitigation Measure HAZ-2d T: Implement Recommended Phase I or Phase II Hazardous Materials Investigation and Any Required Follow-Up Remediation. Prior to Project-related groundbreaking at sites for which a Level I/Phase I investigation has identified the need for a Phase II investigation within the

Project footprint, the SCVWD would conduct a Phase II hazardous materials investigation consistent with all applicable federal, state, and local codes and regulations. The SCVWD would also be responsible for ensuring that all recommendations of the Phase II investigation, including site remediation and/or additional coordination with regulatory agencies, would be implemented consistent with the Phase II and all applicable codes, standards, and regulations. If waste disposal is necessary, the SCVWD will ensure that all hazardous materials removed during construction would be handled and disposed of by a licensed waste-disposal contractor and transported by a licensed hauler to an appropriately licensed and permitted disposal or recycling facility, in accordance with local, state, and federal requirements.

Mitigation Measure HAZ-2e T: Minimize the Area of Disturbance. To minimize potential impacts from unknown soil contamination, soil disturbance will be kept to the minimum footprint necessary to complete the construction or maintenance activity.

Mitigation Measure HAZ-2f T: Stop Work and Implement Hazardous Materials Investigations and Remediation in the Event that Unknown Hazardous Materials are Encountered. In the event that unknown hazardous materials are encountered during construction or maintenance activities, all work in the area of the discovery will stop and the SCVWD will conduct a Phase II hazardous materials investigation to identify the nature and extent of contamination and evaluate potential impacts on Project construction and human health.

If no Phase I investigation was previously conducted and is identified as appropriate, it may be done concurrent with or prior to Phase II. If necessary, based on the outcomes of the Phase II investigation, the SCVWD will implement Phase III remediation measures consistent with all applicable local, state, and federal codes and regulations.

Construction in areas known or reasonably suspected to be contaminated will not resume until remediation is complete. If waste disposal is necessary, the SCVWD will ensure that all hazardous materials removed during construction are handled and disposed of by a licensed waste-disposal contractor and transported by a licensed hauler to an appropriately licensed and permitted disposal or recycling facility, in accordance with local, state, and federal requirements.

Mitigation Measure HAZ-2g T: Conduct Asbestos and Lead Surveys for Buildings that need to be Demolished. Prior to construction, the SCVWD would conduct an asbestos and lead-based paint survey of any buildings that need to be demolished or relocated and verify that soil around the building(s) is free of lead chips. If asbestos is found, proper disposal methods would be implemented as described under BMP HM-12, Assure Proper Hazardous Materials Management.

Mitigation Measure HAZ-2h T: Develop an Asbestos Dust Mitigation Plan and Implement other Actions Required by the BAAQMD ATCM. In the event of an unanticipated discovery of NOA, work will be stopped, and the SCVWD will develop an Asbestos Dust Mitigation Plan to minimize emissions. The following types of operations are subject to the indicated control, administrative, and reporting requirements under the asbestos BAAQMD ATCM for construction and grading operations:

> For Construction and Grading Operations that will disturb more than 1 acre:

  – Prepare and obtain BAAQMD approval for an Asbestos Dust Mitigation Plan prior to any construction or grading activity;

  – The Asbestos Dust Mitigation Plan must specify how the operation will minimize emissions and must address specific emission sources; and

  – Prevent visible emissions from crossing the project boundaries regardless of the size of the disturbance.

> For Construction and Grading Operations that will disturb 1 acre or less:

  – Vehicle speed is limited to 15 mph or less;

- Water must be applied prior to and during ground disturbance;
- Keep storage piles wet or covered; and
- Track-out prevention and removal.

> For Road Construction and Operations and Maintenance:

- Must use dust control measures for a specified set of emission sources;
- Prevent visible emissions from crossing the project boundaries; and
- The BAAQMD must be notified before any work begins.

Mitigation Measure HAZ-2i T: Evaluation of Soil for Reuse. Prior to construction, the SCVWD will perform a limited risk assessment to determine whether constituents in soil may affect sensitive ecological receptors' or impact water quality objectives. Specifically, arsenic, cobalt, nickel, and vanadium are present in soils in study area at levels that exceed ESLs established by RWQCB-SF on the basis of the Urban Area Ecotoxicity Exposure Criteria. Nickel concentrations in soil also exceed commonly used screening values (for San Francisco Bay sediments) for surface and foundation material used in wetland creation (Weiss 2011). Although the Proposed Project is in the CCRWQCB, they do not have established ESLs for ecotoxicity, so the San Francisco ESLs will be utilized in the absence of CCRWQCB standards.

The concentrations of arsenic, cobalt, nickel, and vanadium should be evaluated to ensure that soil reuse will meet the water quality objectives established in the Basin Plan and will not impair the beneficial uses of the East Little Llagas Creek, West Little Llagas Creek, Llagas Creek, or downstream water bodies.

Implementation of BMPs and mitigation measures would reduce impacts related to exposure of workers and the public to existing hazardous materials contamination to less than significant.

HAZ-3 T—Generation of hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTSM	N/A
Excavation and construction of a diversion channel	LTSM	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTSM	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTSM	N/A
Relocation of some homes, farm structures, and wells[1] within the ROW	LTSM	N/A
Relocation of utility and public service facilities	LTSM	N/A
Stream operation and maintenance activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1.

Construction

Because construction would require the use and transport of a variety of hazardous substances, including vehicle fuels and lubricants, paving media, paints, solvents, etc., there would be some potential for exposure to hazardous materials for students, school employees, and the public. However, all hazardous materials would be handled, stored, and used in a manner consistent with relevant regulations and guidelines. This would reduce risks related to the use of hazardous materials in proximity to school campuses to a level consistent with the current standard of care.

During tunnel construction in Reach 8, blasting would be used as a construction method. A Blasting Plan would be prepared for this alternative to provide guidelines for the safe use and storage of blasting materials including within the vicinity of 0.25 mile of an existing school. The nearest schools to blasting activities are PA Walsh School on West Main Avenue and Britton School on West Central Avenue near the intersection of Monterey Road. The Blasting Plan is intended to help ensure the safety of construction personnel, the public, nearby facilities, and sensitive resources, such as schools. The Blasting Plan would include, but not be limited to, the following elements:

> Proposed blasting activity;

> Blasting procedures;

> Blasting contractor qualification;

> Applicable federal, state, and local regulations;

> Blasting monitoring;

> Noise, vibration, and fly-rock mitigation;

> Safety during blasting; and

> Storage and disposal of explosives.

Impacts are anticipated to be less than significant with BMPs and Mitigation Measures HAZ-2c, HAZ-2e, HAZ-2f, and HAZ-2h T.

Operations and Maintenance

Maintenance activities within 0.25 mile of schools would carry similar risks (although, generally on a lesser scale) as for construction. Impacts related to the generation of hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school are anticipated to be less than significant with implementation of BMPs and Mitigation Measures HAZ-2c, HAZ-2e, HAZ-2f and HAZ-2h T.

Best Management Practices (BMPs)

The following SCVWD BMPs avoid and minimize impacts related to hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-Target Species—applicable to the construction and operations phase of all activities.

> **HM-4:** Post Areas Where Pesticides will be Used—applicable to the construction and operations phase of all activities.

> **HM-9:** Limit Vehicle and Equipment Cleaning to Appropriate Locations—applicable to the construction and operations phase of all activities.

> **HM-10:** Ensure Proper Vehicle and Equipment Cleaning to Appropriate Locations—applicable to the construction and operations phase of all activities.

> **HM-12:** Assure Proper Hazardous Materials Management—applicable to the construction and operations phase of all activities.

> **HM-13:** Utilize Spill Prevention Measures—applicable to the construction and operations phase of all activities.

Mitigation Measures

Mitigation Measure HAZ-2c T: Existing Hazardous Site Search.

Mitigation Measure HAZ-2e T: Minimize the Area of Disturbance.

Mitigation Measure HAZ-2f T: Stop Work and Implement Hazardous Materials Investigations and Remediation in the Event that Unknown Hazardous Materials are Encountered.

Mitigation Measure HAZ-2h T: Develop an Asbestos Dust Mitigation Plan and Implement other Actions Required by the BAAQMD ATCM.

Because construction would require the use and transport of a variety of hazardous substances, including vehicle fuels and lubricants, explosives, paving media, paints, solvents, etc., there would be some potential for exposure to hazardous materials for students, school employees, and the public. However, all hazardous materials would be handled, stored, and used in a manner consistent with relevant regulations and guidelines. This would reduce risks related to the use of hazardous materials in proximity to school campuses to a level consistent with the current standard of care. Impacts would be less than significant with BMPs and Mitigation Measures HAZ-2c, HAZ-2e, HAZ-2f, and HAZ-2h T.

HAZ-4 T—Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTSM	N/A
Excavation and construction of a diversion channel	LTSM	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTSM	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTSM	N/A
Relocation of some homes, farm structures, and wells[1] within the ROW	LTSM	N/A
Relocation of utility and public service facilities	LTSM	N/A
Stream operation and maintenance activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1.

Construction

Weiss identified sites, including several Leaking Underground Storage Tank (LUST) cleanup sites, listed on hazardous materials databases (Table 3.18-1) and located within or near the study area. Construction activities near these sites have the potential to create significant hazards to the public or the environment if they are released during Project construction and impacts would be significant. With implementation of Mitigation Measures HAZ-2c through HAZ-2f T, impacts related to potential releases from construction on a site with known hazardous materials is less than significant.

Operations and Maintenance

Operation and maintenance activities that involve ground disturbance, such as sediment removal, and are located near identified hazardous materials sites would have the potential to create hazards to the public or the environment. Impacts would be significant levels without BMPs and implementation of mitigation measures as during construction.

Best Management Practices (BMPs)

The following SCVWD BMPs avoid and minimize impacts related to Project activities located near hazardous materials sites:

> **HM-9:** Limit Vehicle and Equipment Cleaning to Appropriate Locations.

> **HM-10:** Ensure Proper Vehicle and Equipment Cleaning to Appropriate Locations.

> **HM-12:** Ensure Proper Hazardous Materials Management.

> **HM-13:** Utilize Spill Prevention Measures.

Mitigation Measures

Mitigation Measure HAZ-2c T: Existing Hazardous Site Search.

Mitigation Measure HAZ-2d T: Implement Recommended Phase I or Phase II Hazardous Materials Investigation and Any Required Follow-Up Remediation.

Mitigation Measure HAZ-2e T: Minimize the Area of Disturbance.

Mitigation Measure HAZ-2f T: Stop Work and Implement Hazardous Materials Investigations and Remediation in the Event that Unknown Hazardous Materials are Encountered.

For construction and maintenance, BMPs and mitigation measures for this impact would reduce potential impacts to less than significant.

HAZ-5 T—Potential to result in safety hazard due to location within 2 miles of a public use airport

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTS	N/A
Excavation and construction of a diversion channel	LTS	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTS	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTS	N/A
Relocation of some homes, farm structures, and wells[1] within the ROW	LTS	N/A
Relocation of utility and public service facilities	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1.

Construction

San Martin Airport is located within 2 miles of Reaches 4, 5, 6, 7A, and 14. However, Project construction activities would not interfere with airport operations, would not involve the use of any equipment that would affect aircraft utilizing the airport, and would not result in a substantial safety hazard risk to people residing or working in the vicinity of the airport. The impacts would be less than significant, and no mitigation would be required.

Operations and Maintenance

Although operations and maintenance may be performed within 2 miles of San Martin Airport, these activities would not interfere with airport operations, would not involve the use of any equipment that would affect aircraft utilizing the airport, and would not result in a substantial safety hazard to people residing or working in the vicinity of the airport. The impacts would be less than significant, and no mitigation would be required.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

HAZ-6 T—Interference with emergency response or evacuation plan

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTSM	N/A
Excavation and construction of a diversion channel	LTSM	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTSM	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTSM	N/A
Relocation of some homes, farm structures, and wells[1] within the ROW	LTSM	N/A
Relocation of utility and public service facilities	LTSM	N/A
Stream operation and maintenance activities	N/A	B

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1.

Construction

The presence of construction equipment and vehicles, worker activities, and materials storage would have the potential to impede emergency access to the Project sites and/or interfere with emergency evacuation plans. To ensure that Project construction does not impede emergency response or evacuations, the SCVWD will develop and implement a project specific traffic control plan (as part of the Project) for each site, including a requirement to maintain emergency access to/through the site. Section 3.10, Traffic and Circulation provides details on the elements required in the plan. With the development of the traffic control plan and implementation Mitigation Measure UPS-3 T described in Section 3.14, the impact is less than significant.

Operations and Maintenance

Maintenance activities that have the potential to affect public roads would require implementation of the BMP TR-2, thereby reducing potential impacts.

During operations, the Preferred Alternative would provide an increased level of flood protection for urban areas, specifically: a 1-percent flood in Morgan Hill (Reaches 8, 7A, and 7B); 10-percent flood management for the semi-urban area around East Little Llagas Creek (Reach 14); and avoid induced flooding elsewhere on Llagas Creek (Reaches 6, 5, and 4) due to upstream improvements. Due to increased flood protection from operation and maintenance activities, the impact of the Preferred Alternative on implementation of Emergency Response or Evacuation Plans would be beneficial because less flood induced emergencies would occur, and the use of maintenance roads in all reaches of the Project area would eliminate potential interference with other emergency responses.

Best Management Practices (BMPs)

> **TR-2:** Minimize Impacts on Traffic, Bicycles, and Pedestrians.

Mitigation Measures

Mitigation Measure UPS-3 T: Emergency Response Plan and Notification.

With implementation of BMP TR-2, development of a traffic control plan, and implementation of Mitigation Measure UPS-3 T impacts related to interference with an emergency response or evacuation plan would be less than significant. This alternative would provide an increased level of flood protection for urban areas and operations related impacts on emergency response or evacuation plans would be beneficial.

HAZ-7 T—Breeding or harborage of disease vector organisms

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTSM	N/A
Excavation and construction of a diversion channel	LTSM	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTSM	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTSM	N/A
Relocation of some homes, farm structures, and wells[1] within the ROW	LTSM	N/A
Relocation of utility and public service facilities	LTSM	N/A
Stream operation and maintenance activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1.

Construction

During construction there could be the potential for standing water to accumulate that could breed mosquitos. The contractor would be required to employ “work site housekeeping” measures to prevent the accumulation of standing water throughout the Project area. To limit the potential for mosquitos to breed, implementation of Mitigation Measure HAZ-2a T would reduce this to less-than-significant impact.

Operations and Maintenance

The Preferred Alternative would include operation and maintenance of a new sediment detention basin in Reach 8, which could increase the opportunity for standing water to accumulate and potentially increase mosquito breeding. The proposed sediment detention basin is designed and intended to function in a manner that would collect sediments but allow water to quickly drain out of the detention basin following rainfall-runoff events. However, as sediments collect in the detention basin it is possible that small residual pools of water could develop and could be retained for a period of time following runoff, providing mosquito breeding habitat. SCVWD will implement Mitigation Measure HAZ-7 T, which requires the preparation of a mosquito and vector control plan to reduce the potential impact to a less-than-significant level.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure HAZ-2a T: Work Site Housekeeping Procedures.

Mitigation Measure HAZ-7 T: Prepare and Implement a Mosquito and Vector Control Plan. Prior to construction, the SCVWD would retain a qualified professional to prepare a mosquito and vector control plan for the sediment detention basin. The plan will be developed in coordination with the SCCVCD and will be subject to SCCVCD approval. The plan would comply with requirements of the county IPM Ordinance (NS-517.70). The approved plan would be implemented as part of the Proposed Project. The plan would identify areas where mosquito larvae are likely to be present onsite (e.g., in areas with standing water) and will specify mosquito management methods. The management methods may include the use of chemicals (e.g., pesticides), biological methods, and/or control of excess runoff and areas where water can accumulate.

With the inclusion of Mitigation Measures HAZ-2a T and HAZ-7 T, potential health risks related to the increased breeding or harborage of disease-carrying mosquitoes would be reduced to a less- than-significant level.

HAZ-8 T—Exposure of people or structures to risk of wildland fires

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTS	N/A
Excavation and construction of a diversion channel	LTS	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTS	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTS	N/A
Relocation of some homes, farm structures, and wells within the ROW[1]	LTS	N/A
Relocation of utility and public service facilities	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1.

Construction

The use of construction equipment, in particular equipment with internal combustion engines, gasoline-powered tools, and equipment or tools that produce a spark, fire, or flame—in grassland and woodland areas could pose a fire risk. Some Project elements would be constructed in areas that could pose wildfire risks under dry conditions. Portions of Reaches 7A, 7B, and 8 are located less than 1 mile from a very high fire hazard severity zone in a local area of responsibility. With the implementation of BMP HM-14, which incorporates fire prevention measures into construction activities, the impact is less than significant.

Operations and Maintenance

The potential for fire risk would also be true for maintenance activities, although to a lesser degree, because fewer pieces of equipment and vehicles would typically be involved. However, impacts would be reduced to a less than significant level with implementation of BMP HM-14, described below. No mitigation is required.

Best Management Practices (BMPs)

> **HM-14:** Incorporate Fire Prevention Measures—applicable to the construction and operations phase of all elements.

Mitigation Measures

None required

With implementation of BMP HM-14, impacts related to a very high fire hazard severity zone would be less than significant.

3.18.5.3 Natural Resources Conservation Service (NRCS) Alternative

See Section 3.18.5.2 for a discussion of hazards and hazardous materials impacts under the Preferred Alternative, which would also apply to the NRCS Alternative. The difference between the NRCS Alternative and the Preferred Alternative is the NRCS Alternative would implement channel widening and deepening throughout downtown Morgan Hill in Reach 8 without a sediment detention basin.

HAZ-1 NRCS—Creation of hazard through transport, use, or disposal of hazardous material

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTS	N/A
Excavation and construction of a diversion channel	LTS	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTS	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTS	N/A
Relocation of some homes, farm structures, and wells within the ROW[1]	LTS	N/A
Relocation of utility and public service facilities	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1

Construction

Construction activities for channel improvements, a diversion channel, permanent access roads, RCBs, and relocation of structures and public service facilities would require the use of hazardous substances such as vehicle fuels, lubricants, and solvents in construction equipment and vehicles, and herbicides to clear vegetation for certain locations. Impacts of improper storage and handling could be significant, including spills, releases and exposure of workers and the general public to toxins and carcinogens.

However, hazardous and potentially hazardous materials used in construction would be transported, stored, and handled in a manner consistent with all relevant regulations and guidelines, including those recommended and enforced by the DOT and Santa Clara County Department of Environmental Health.

Operations and Maintenance

Much like construction, periodic activities required to maintain the new Project elements, described in Section 2.5.5, would require the use of vehicle fuels and lubricants and could require solvents, paints, paving media, and other substances. The SCVWD incorporates standard BMPs related to the transport, use, and disposal of hazardous materials to ensure these impacts are not significant.

Best Management Practices (BMPs)

The SCVWD has a standard list of BMPs implemented on all projects. The following are the BMPs that would be implemented as part of the Project. A detailed listing of activities associated with each BMP is provided in Appendix C, Upper Llagas Creek Project Comprehensive Best Management Practices. In addition to the Project BMPs, the SCVWD also conducts public outreach to keep the community informed about upcoming Project work. The public will be informed of construction or operation and maintenance activities prior to the start of work.

> Neighborhood Work Notices will be distributed prior to the start of work.

> Local governments (cities and county) will be notified of scheduled maintenance work.

> The SCVWD will post specific information on individual project activities on a project website.

For high profile portions of the Project signs will be posted in the neighborhood to notify the public at least 1 week in advance of work schedules and traffic closures as necessary and possible. Signage used at work sites will include contact information for lodging comments and/or complaints regarding the construction or operation and maintenance activities.

The following summarizes SCVWD BMPs that would avoid and minimize impacts related to significant hazards to the public or the environment through the routine transport, use, or disposal of hazardous materials under the NRCS Alternative.

> **BI-4:** Minimize Access Impacts.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-Target Species—applicable to the construction and operations phase of all activities.

> **HM-1:** Comply with All Pesticide Application Restrictions and Policies

> **HM-4:** Post Areas Where Pesticides will be Used.

> **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas—applicable to the construction and operations phase of all activities.

> **HM-8:** Comply with Restrictions on Herbicide Use in Aquatic Areas—applicable to the construction and operations phase of all activities.

> **HM-9:** Limit Vehicle and Equipment Cleaning to Appropriate Locations.

> **HM-10:** Ensure Proper Vehicle and Equipment Cleaning to Appropriate Locations.

> **HM-12:** Ensure Proper Hazardous Materials Management.

> **HM-13:** Utilize Spill Prevention Measures.

Mitigation Measures

None required

Impacts related to the transport, use, or disposal of hazardous materials would be less than significant with implementation of BMPs.

HAZ-2 NRCS—Exposure of workers or the public to existing hazardous materials contamination

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTSM	N/A
Excavation and construction of a diversion channel	LTSM	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTSM	N/A
Construction of reinforced concrete boxes (RCBs-need definition) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTSM	N/A
Relocation of homes, farm structures, all wells where they are within the ROW[1]	LTSM	N/A
Relocation of utility and public service facilities	LTSM	N/A
Stream operation and maintenance activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1

Construction

Similar to the Preferred Alternative, construction would require the use of hazardous substances, such as vehicle fuels, lubricants, and solvents in construction equipment and vehicles, and herbicides to clear vegetation for certain locations. Impacts of improper storage and handling could be significant, including spills, releases, and exposure of workers and the general public to toxins and carcinogens. Hazardous and potentially hazardous materials used in construction would be transported, stored, and handled in a manner consistent with all relevant regulations and guidelines, including those recommended and enforced by the DOT and Santa Clara County Department of Environmental Health. In addition, the SCVWD will require contractors to implement measures to ensure that water quality is protected during construction as discussed in Section 3.2 Hydrology and Water Quality.

Operations and Maintenance

Similar to the Preferred Alternative, and much like construction activities, periodic activities required to maintain the new Project elements would require the use of vehicle fuels and lubricants and could require solvents, paints, paving media, and other substances. Impacts related to the transport, use, or disposal of hazardous materials would be less than significant with mitigation.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that avoid and minimize impacts related to exposure of workers or the public to existing hazardous materials contamination.

> **BI-4:** Minimize Access Impacts.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-Target Species—applicable to the construction and operations phase of all activities.

> **HM-4:** Post Areas Where Pesticides will be Used.

> **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas—applicable to the construction and operations phase of all activities.

> **HM-8:** Comply with Restrictions on Herbicide Use in Aquatic Areas—applicable to the construction and operations phase of all activities.

> **HM-9:** Limit Vehicle and Equipment Cleaning to Appropriate Locations.

> **HM-10:** Ensure Proper Vehicle and Equipment Cleaning to Appropriate Locations.

> **HM-12:** Assure Proper Hazardous Materials Management—applicable to the construction and operations phase of all activities

> **HM-13:** Utilize Spill Prevention Measures—applicable to the construction and operations phase of all activities.

Mitigation Measures

Mitigation Measure HAZ-2a T: Work Site Housekeeping Procedures.

Mitigation Measure HAZ-2b T: Soil and Groundwater Management Plan.

Mitigation Measure HAZ-2c T: Existing Hazardous Site Search.

Mitigation Measure HAZ-2d T Implement Recommended Phase I or Phase II Hazardous Materials Investigation and Any Required Follow-Up Remediation.

Mitigation Measure HAZ-2e T: Minimize the Area of Disturbance.

Mitigation Measure HAZ-2f T: Stop Work and Implement Hazardous Materials Investigations and Remediation in the Event that Unknown Hazardous Materials are Encountered.

Mitigation Measure HAZ-2g T: Conduct Asbestos and Lead Surveys for Buildings that need to be Demolished.

Mitigation Measure HAZ-2h T: Develop an Asbestos Dust Mitigation Plan and Implement other Actions Required by the BAAQMD ATCM.

Mitigation Measure HAZ-2i T: Evaluation of Soil for Reuse.

For construction and maintenance, BMPs, and mitigation measures for this impact would be the same as those described under HAZ-2 T; and the impact would be less than significant with mitigation.

HAZ-3 NRCS—Generation of hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTSM	N/A
Excavation and construction of a diversion channel	LTSM	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTSM	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTSM	N/A
Relocation of some homes, farm structures, and wells within the ROW[1]	LTSM	N/A
Relocation of utility and public service facilities	LTSM	N/A
Stream operation and maintenance activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1

Construction

Because construction would require the use and transport of a variety of hazardous substances, including vehicle fuels and lubricants, paints, solvents, etc., there would be some potential for exposure to hazardous materials for students and school employees at schools, as listed in Table 3.18-2. However, all hazardous materials would be handled, stored, and used in a manner consistent with relevant regulations and guidelines. This would reduce risks related to the use of hazardous materials in proximity to school campuses to a level consistent with the current standard of care. Impacts would be less than significant with implementation of BMPs and Mitigation Measures HAZ-2c, HAZ-2e, HAZ-2f and HAZ-2h T.

Operations and Maintenance

Maintenance activities within 0.25 mile of schools would carry similar risks (although, generally on a lesser scale) as for construction. Impacts related to the generation of hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school are anticipated to be less than significant with implementation of BMPs and Mitigation Measures HAZ-2c T, HAZ-2e T, HAZ-2f T, and HAZ-2h T.

Best Management Practices (BMPs)

The following SCVWD BMPs avoid and minimize impacts related to hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-Target Species—applicable to the construction and operations phase of all activities.

> **HM-4:** Post Areas Where Pesticides will be Used - applicable to the construction and operations phase of all activities.

> **HM-9:** Limit Vehicle and Equipment Cleaning to Appropriate Locations—applicable to the construction and operations phase of all activities.

> **HM-10:** Ensure Proper Vehicle and Equipment Cleaning to Appropriate Locations—applicable to the construction and operations phase of all activities.

> **HM-12:** Assure Proper Hazardous Materials Management—applicable to the construction and operations phase of all activities.

> **HM-13:** Utilize Spill Prevention Measures—applicable to the construction and operations phase of all activities.

Mitigation Measures

Mitigation Measure HAZ-2c T: Existing Hazardous Site Search.

Mitigation Measure HAZ-2e T: Minimize the Area of Disturbance

Mitigation Measure HAZ-2f T: Stop Work and Implement Hazardous Materials Investigations and Remediation in the Event that Unknown Hazardous Materials are Encountered.

Mitigation Measure HAZ-2h T: Develop an Asbestos Dust Mitigation Plan and Implement other Actions Required by the BAAQMD ATCM.

Impacts would be less than significant with implementation of BMPs and Mitigation Measures HAZ-2c, *HAZ-2e,* HAZ-2f, and HAZ 2h T.

HAZ-4 NRCS—Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTSM	N/A
Excavation and construction of a diversion channel	LTSM	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTSM	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTSM	N/A
Relocation of some homes, farm structures, and wells within the ROW[1]	LTSM	N/A
Relocation of utility and public service facilities	LTSM	N/A
Stream operation and maintenance activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1

Construction

Weiss identified sites, including several Leaking Underground Storage Tank (LUST) cleanup sites, listed on hazardous materials databases (Table 3.18-1) and located within or near the study area. Construction

activities near these sites have the potential to create significant hazards to the public or the environment if they are released during Project construction and impacts would be significant. With implementation of Mitigation Measures HAZ-2c through HAZ-2f T, impacts related to potential releases from construction on a site with known hazardous materials is less than significant.

Operations and Maintenance

Operation and maintenance activities that involve ground disturbance, such as sediment removal, and may be located near identified hazardous materials sites would have the potential to create hazards to the public or the environment. Impacts would be significant levels without BMPs and implementation of mitigation measures as during construction.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

Mitigation Measure HAZ-2c T: Existing Hazardous Site Search.

Mitigation Measure HAZ-2d T: Implement Recommended Phase I or Phase II Hazardous Materials Investigation and Any Required Follow-Up Remediation.

Mitigation Measure HAZ-2e T: Minimize the Area of Disturbance.

Mitigation Measure HAZ-2f T: Stop Work and Implement Hazardous Materials Investigations and Remediation in the Event that Unknown Hazardous Materials are Encountered.

For construction and maintenance, BMPs and Mitigation Measures HAZ 2c T through 2f T impact would reduce potential impacts to less than significant.

HAZ-5 NRCS—Potential to result in safety hazards due to location within 2 miles of a public use airport

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTS	N/A
Excavation and construction of a diversion channel	LTS	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTS	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTS	N/A
Relocation of some homes, farm structures, and wells within the ROW[1]	LTS	N/A
Relocation of utility and public service facilities	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1

Construction

San Martin Airport is located within 2 miles of Reaches 4, 5, 6, 7A, and 14. However, Project construction activities would not interfere with airport operations, would not involve the use of any equipment that would affect aircraft utilizing the airport, and would not result in a substantial safety hazard risk to people residing or working in the vicinity of the airport. The impacts would be less than significant, and no mitigation would be required.

Operations and Maintenance

Although operations and maintenance under the No Project Alternative may be performed within 2 miles of San Martin Airport, these activities would not interfere with airport operations, would not involve the use of any equipment that would affect aircraft utilizing the airport, and would not result in a substantial safety hazard to people residing or working in the vicinity of the airport. The impacts would be less than significant and no mitigation would be required.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

HAZ-6 NRCS—Interference with emergency response or evacuation plan

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTSM	N/A
Excavation and construction of a diversion channel	LTSM	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTSM	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTSM	N/A
Relocation of some homes, farm structures, and wells within the ROW[1]	LTSM	N/A
Relocation of utility and public service facilities	LTSM	N/A
Stream operation and maintenance activities	N/A	B

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1

Construction

The presence of construction equipment and vehicles, worker activities, and materials storage on or near public roads would have the potential to impede emergency access to the Project sites and/or interfere with emergency evacuation plans. To ensure that Project construction does not impede emergency response or evacuations, the SCVWD will develop and implement a traffic control plan as part of the Project for each site, which will include a requirement to maintain emergency access to/through the site.

Section 3.10, Traffic and Circulation provides details on the elements required in the plan. With the development of the traffic control plan, and implementation of Mitigation Measure UPS-3 T, described in Section 3.14, Utilities and Public Services, the impact would be less than significant.

Operations and Maintenance

Maintenance activities that have the potential to affect public roads would require implementation of the BMP TR-2, thereby reducing potential impacts.

During operations, the NRCS Alternative would provide an increased level of flood protection for urban areas, specifically: a 1-percent flood in Morgan Hill (Reaches 8, 7A, and 7B); 10 percent flood management for the semi-urban area around East Little Llagas Creek (Reach 14); and avoid induced flooding elsewhere on Llagas Creek (Reaches 6, 5, and 4) due to upstream improvements. Due to increased flood protection from operation and maintenance activities, the impact of the NRCS Alternative on implementation of Emergency Response or Evacuation Plans would be beneficial because less flood induced emergencies would occur, and the use of maintenance roads in all reaches of the Project area would eliminate potential interference with other emergency responses.

Best Management Practices (BMPs)

> **TR-2:** Minimize Impacts on Traffic, Bicycles and Pedestrians.

Mitigation Measures

Mitigation Measure: UPS-3 T Emergency Response Plan and Notification.

With implementation of BMP TR-2, development of a traffic control plan, and implementation of Mitigation Measure UPS-3 T impacts related to interference with an emergency response or evacuation plan would be less than significant. This alternative would provide an increased level of flood protection for urban areas and operations; related impacts on emergency response or evacuation plans would be beneficial.

HAZ-7 NRCS—Breeding or harborage of disease vector organisms

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTSM	N/A
Excavation and construction of a diversion channel	LTSM	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTSM	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTSM	N/A
Relocation of some homes, farm structures, and wells within the ROW[1]	LTSM	N/A
Relocation of utility and public service facilities	LTSM	N/A
Stream operation and maintenance activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1

Construction

The principal concern relative to disease vectors relates to the potential for the Project to create or expand the potential for mosquito breeding in the Project area. During construction, contractors would be required to employ "work site housekeeping", Mitigation Measure HAZ-2a T, to prevent the accumulation of standing water on construction sites.

Operations and Maintenance

Unlike the Preferred Alternative, there would be no sediment detention basin constructed in Reach 8. However, there would be small pools constructed in Reach 7A for aquatic habitat (a feature applicable to all action alternatives), which may retain water because the groundwater table is shallow at the downstream end of this reach. The pools incorporated in Reach7A could contribute to mosquito habitat.With Mitigation Measure HAZ-7 T operation and maintenance would not result in a significant increase in mosquito breeding; therefore, the impact would be reduced to less than significant.

Best Management Practices

None applicable

Mitigation Measures

Mitigation Measure HAZ-2a T: Work Site Housekeeping Procedures.

Mitigation Measure HAZ-7 T: Prepare and Implement a Mosquito and Vector Control Plan.

With the inclusion of Mitigation Measure HAZ-2a T and HAZ-7 T, potential health risks related to the increased breeding or harborage of disease-carrying mosquitoes would be reduced to a less-than-significant level.

HAZ-8 NRCS—Exposure of people or structures to risk of wildland fires

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTS	N/A
Excavation and construction of a diversion channel	LTS	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTS	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTS	N/A
Relocation of some homes, farm structures, and wells within the ROW[1]	LTS	N/A
Relocation of utility and public service facilities	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1

Construction

The use of construction equipment, in particular, equipment with internal combustion engines, gasoline-powered tools, and equipment or tools that produce a spark, fire, or flame—in grassland and woodland areas could pose a fire risk. Some Project elements would be constructed in areas that could pose wildfire risks under dry conditions. Portions of Reaches 7A, 7B, and 8 are located less than 1 mile from a very high fire hazard severity zone in a local area of responsibility. With the implementation of BMP HM-14, which incorporates fire prevention measures into construction activities, the impact is less than significant.

Operations and Maintenance

The potential for fire risk would also be true for maintenance activities, although to a lesser degree, because fewer pieces of equipment and vehicles would typically be involved. However, impacts would be reduced to a less than significant level with implementation of BMP HM-14, described below. No mitigation is required.

Best Management Practices (BMPs)

> **HM-14:** Incorporate Fire Prevention Measures—applicable to the construction and operations phase of all elements.

Mitigation Measures

None required

With implementation of BMP HM-14, impacts related to a very high fire hazard severity zone would be less than significant.

3.18.5.4 Culvert/Channel Alternative

See Section 3.18.5.2 for a discussion of hazards and hazardous materials impacts under the Preferred Alternative, which would also apply to the Culvert/Channel Alternative except without the sediment detention basin. In Reach 8, the Culvert/Channel Alternative would require a smaller ROW, reduce the amount of vegetation to be removed along the existing West Little Llagas channel, and would allow easier maintenance access. The key feature of the Culvert Alternative is elimination of the need for channel deepening and widening through residential properties, between West Main Avenue and West 2nd Street in Reach 8.

HAZ-1 CC—Creation of hazard through transport, use, or disposal of hazardous material

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTS	N/A
Excavation and construction of a diversion channel	LTS	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTS	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTS	N/A
Relocation of some homes, farm structures, and wells[1] within the ROW	LTS	N/A
Relocation of utility and public service facilities	LTS	N/A
Realign segment of box culverts	LTS	N/A
Continue the double box culvert under Del Monte Avenue approximately 900 feet to West 2nd Street	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1.

Construction

Similar to the Preferred Alternative, construction would require the use of hazardous substances, such as vehicle fuels, lubricants, and solvents in construction equipment and vehicles, and herbicides to clear vegetation for certain locations. Impacts of improper storage and handling could be significant, including spills, releases and exposure of workers and the general public to toxins and carcinogens. However, hazardous and potentially hazardous materials used in construction would be transported, stored, and handled in a manner consistent with all relevant regulations and guidelines, including those recommended and enforced by the DOT and Santa Clara County Department of Environmental Health. In addition, the SCVWD will require contractors to implement measures to ensure that water quality is protected during construction.

Operations and Maintenance

Similar to the Preferred Alternative, and much like construction activities, periodic activities required to maintain the new Project elements would require the use of vehicle fuels and lubricants and could require solvents, paints, paving media, and other substances. The SCVWD incorporates standard BMPs related to the transport, use, and disposal of hazardous materials to ensure these impacts are not significant.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that would avoid and minimize impacts related to significant hazards to the public or the environment through the routine transport, use, or disposal of hazardous materials under the Preferred Alternative.

> **BI-4:** Minimize Access Impacts.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-Target Species—applicable to the construction and operations phase of all activities.

> **HM-4:** Post Areas Where Pesticides will be Used.

> **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas—applicable to the construction and operations phase of all activities.

> **HM-8:** Comply with Restrictions on Herbicide Use in Aquatic Areas—applicable to the construction and operations phase of all activities.

> **HM-9:** Limit Vehicle and Equipment Cleaning to Appropriate Locations.

> **HM-10:** Ensure Proper Vehicle and Equipment Cleaning to Appropriate Locations.

> **HM-12**: Ensure Proper Hazardous Materials Management.

> **HM-13:** Utilize Spill Prevention Measures.

> **TR-1:** Incorporate Public Safety Measures.

> **TR-2:** Minimize Impacts on Traffic, Bicycles and Pedestrians.

Mitigation Measures

None required

Impacts related to the transport, use, or disposal of hazardous materials would be less than significant with implementation of BMPs.

HAZ-2 CC—Exposure of workers or the public to existing hazardous materials contamination

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTSM	N/A
Excavation and construction of a diversion channel	LTSM	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTSM	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTSM	N/A
Relocation of some homes, farm structures, and wells[1] within the ROW	LTSM	N/A
Relocation of utility and public service facilities	LTSM	N/A
Realign segment of box culverts	LTSM	N/A
Continue the double box culvert under Del Monte Avenue approximately 900 feet to West 2nd Street	LTSM	N/A
Stream operation and maintenance activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1.

Construction

Construction workers or the public could be exposed to the hazardous substances through accidental disturbance during Project construction, potentially constituting a significant impact. Construction activities, in particular, excavation and other ground-disturbing tasks, would have significant potential to expose workers and the public to hazardous materials, unless appropriate precautions are taken. Such exposure could represent a significant public health impact. The SCVWD will comply with the BAAQMD ATCM which regulates NOA emissions (Section 3.18.2.1).

Operations and Maintenance

Similar to the Preferred Alternative, and much like construction activities, periodic activities, described in Section 2.7.5, required to maintain the new Project elements would require the use of vehicle fuels and lubricants and could require solvents, paints, paving media, and other substances. Impacts related to the transport, use, or disposal of hazardous materials would be less than significant with mitigation.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that avoid and minimize impacts related to exposure of workers or the public to existing hazardous materials contamination.

> **BI-4:** Minimize Access Impacts.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-Target Species—applicable to the construction and operations phase of all activities.

> **HM-4:** Post Areas Where Pesticides will be Used.

> **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas—applicable to the construction and operations phase of all activities.

> **HM-8:** Comply with Restrictions on Herbicide Use in Aquatic Areas—applicable to the construction and operations phase of all activities.

> **HM-9:** Limit Vehicle and Equipment Cleaning to Appropriate Locations.

> **HM-10:** Ensure Proper Vehicle and Equipment Cleaning to Appropriate Locations.

> **HM-12:** Assure Proper Hazardous Materials Management—applicable to the construction and operations phase of all activities

> **HM-13:** Utilize Spill Prevention Measures—applicable to the construction and operations phase of all activities.

Mitigation Measures

Mitigation Measure HAZ-2a T: Work Site Housekeeping Procedures.

Mitigation Measure HAZ-2b T: Soil and Groundwater Management Plan.

Mitigation Measure HAZ-2c T: Existing Hazardous Site Search.

Mitigation Measure HAZ-2d T: Implement Recommended Phase I or Phase II Hazardous Materials Investigation and Any Required Follow-Up Remediation.

Mitigation Measure HAZ-2e T: Minimize the Area of Disturbance.

Mitigation Measure HAZ-2f T: Stop Work and Implement Hazardous Materials Investigations and Remediation in the Event that Unknown Hazardous Materials are Encountered.

Mitigation Measure HAZ-2g T: Conduct Asbestos and Lead Surveys for Buildings that need to be Demolished.

Mitigation Measure HAZ-2h T: Develop an Asbestos Dust Mitigation Plan and Implement other Actions Required by the BAAQMD ATCM.

Mitigation Measure HAZ-2i T: Evaluation of Soil for Reuse.

For construction and operations, BMPs and mitigation measures for this impact would be the same as those described under HAZ-2 T; and the impact would be less than significant with mitigation.

HAZ-3 CC—Generation of hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTSM	N/A
Excavation and construction of a diversion channel	LTSM	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTSM	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTSM	N/A
Relocation of some homes, farm structures, and wells[1] within the ROW	LTSM	N/A
Relocation of utility and public service facilities	LTSM	N/A
Realign segment of box culverts	LTSM	N/A
Continue the double box culvert under Del Monte Avenue approximately 900 feet to West 2nd Street	LTSM	N/A
Stream operation and maintenance activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1.

Construction

Because construction would require the use and transport of a variety of hazardous substances, including vehicle fuels and lubricants, paving media, paints, solvents, etc., there would be some potential for exposure to hazardous materials for students, school employees, and the public. However, all hazardous materials would be handled, stored, and used in a manner consistent with relevant regulations and guidelines. This would reduce risks related to the use of hazardous materials in proximity to school campuses to a level consistent with the current standard of care. Impacts are anticipated to be less than significant with BMPs and Mitigation Measures HAZ-2c, HAZ-2e, HAZ-2f, and HAZ-2h T.

Operations and Maintenance

Maintenance activities within 0.25 mile of schools would carry similar risks (although, generally on a lesser scale) as for construction. Impacts related to the generation of hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school are anticipated to be less than significant with implementation of BMPs and Mitigation Measures HAZ-2c, HAZ-2e, HAZ-2f, and HAZ-2h T.

Best Management Practices (BMPs)

The following SCVWD BMPs avoid and minimize impacts related to hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-Target Species—applicable to the construction and operations phase of all activities.

> **HM-4:** Post Areas Where Pesticides will be Used—applicable to the construction and operations phase of all activities.

> **HM-9:** Limit Vehicle and Equipment Cleaning to Appropriate Locations—applicable to the construction and operations phase of all activities.

> **HM-10:** Ensure Proper Vehicle and Equipment Cleaning to Appropriate Locations—applicable to the construction and operations phase of all activities.

> **HM-12:** Assure Proper Hazardous Materials Management—applicable to the construction and operations phase of all activities.

> **HM-13:** Utilize Spill Prevention Measures—applicable to the construction and operations phase of all activities.

Mitigation Measures

Mitigation Measure HAZ-2c T: Existing Hazardous Site Search.

Mitigation Measure HAZ-2e T: Minimize the Area of Disturbance.

Mitigation Measure HAZ-2f T: Stop Work and Implement Hazardous Materials Investigations and Remediation in the Event that Unknown Hazardous Materials are Encountered.

Mitigation Measure HAZ-2h T: Develop an Asbestos Dust Mitigation Plan and Implement other Actions Required by the BAAQMD ATCM.

Impacts would be less than significant with BMPs and Mitigation Measures HAZ-2c, HAZ-2e, HAZ-2f, and HAZ 2h T.

HAZ-4 CC—Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTSM	N/A
Excavation and construction of a diversion channel	LTSM	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTSM	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTSM	N/A
Relocation of some homes, farm structures, and wells[1] within the ROW	LTSM	N/A
Relocation of utility and public service facilities	LTSM	N/A
Realign segment of box culverts	LTSM	N/A
Continue the double box culvert under Del Monte Avenue approximately 900 feet to West 2nd Street	LTSM	N/A
Stream operation and maintenance activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1.

Construction

Weiss identified sites, including several LUST cleanup sites, listed on hazardous materials databases (Table 3.18-1) and located within or near the study area. Construction activities near these sites have the potential to create significant hazards to the public or the environment if they are released during Project construction and impacts would be significant. With implementation of Mitigation Measures HAZ-2c through HAZ-2f T, impacts related to potential releases from a construction on a site with known hazardous materials would be less than significant.

Operations and Maintenance

Operation and maintenance activities that involve ground disturbance, such as sediment removal, and are located near identified hazardous materials sites would have the potential to create hazards to the public or the environment. Impacts would remain at significant levels without BMPs and implementation of mitigation measures.

Best Management Practices (BMPs)

The following SCVWD BMPs avoid and minimize impacts related to Project activities located near hazardous materials sites:

> **HM-9:** Limit Vehicle and Equipment Cleaning to Appropriate Locations.

> **HM-10:** Ensure Proper Vehicle and Equipment Cleaning to Appropriate Locations.

> **HM-12:** Ensure Proper Hazardous Materials Management.

> **HM-13:** Utilize Spill Prevention Measures.

Mitigation Measures

Mitigation Measure HAZ-2c T: Existing Hazardous Site Search.

Mitigation Measure HAZ-2d T: Implement Recommended Phase I or Phase II Hazardous Materials Investigation and Any Required Follow-Up Remediation.

Mitigation Measure HAZ-2e T: Minimize the Area of Disturbance.

Mitigation Measure HAZ-2f T: Stop Work and Implement Hazardous Materials Investigations and Remediation in the Event that Unknown Hazardous Materials are Encountered.

For construction and operations, BMPs and Mitigation Measures HAZ-2c T through 2f T would reduce potential impacts to less than significant.

HAZ-5 CC—Potential to result in safety hazards due to location within 2 miles of a public use airport

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTS	N/A
Excavation and construction of a diversion channel	LTS	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTS	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTS	N/A
Relocation of some homes, farm structures, and wells[1] within the ROW	LTS	N/A
Relocation of utility and public service facilities	LTS	N/A
Realign segment of box culverts	LTS	N/A
Continue the double box culvert under Del Monte Avenue approximately 900 feet to West 2nd Street	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1.

Construction

San Martin Airport is located within 2 miles of Reaches 4, 5, 6, 7A, and 14. However, Project construction activities would not interfere with airport operations, would not involve the use of any equipment that would affect aircraft utilizing the airport, and would not result in a substantial safety hazard risk to people residing or working in the vicinity of the airport. The impacts would be less than significant, and no mitigation would be required.

Operations and Maintenance

Although operations and maintenance under the Culvert/Channel Alternative may be performed within 2 miles of San Martin Airport, these activities would not interfere with airport operations, would not involve the use of any equipment that would affect aircraft utilizing the airport, and would not result in a

substantial safety hazard to people residing or working in the vicinity of the airport. The impacts would be less than significant, and no mitigation would be required.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

HAZ-6 CC—Interference with emergency response or evacuation plan

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTSM	N/A
Excavation and construction of a diversion channel	LTSM	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTSM	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTSM	N/A
Relocation of some homes, farm structures, and wells[1] within the ROW	LTSM	N/A
Relocation of utility and public service facilities	LTSM	N/A
Realign segment of box culverts	LTSM	N/A
Continue the double box culvert under Del Monte Avenue approximately 900 feet to West 2nd Street	LTSM	N/A
Stream operation and maintenance activities	N/A	B

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1.

Construction

The presence of construction equipment and vehicles, worker activities, and materials storage would have the potential to impede emergency access to the Project sites and/or interfere with emergency evacuation plans. To ensure that Project construction does not impede emergency response or evacuations, the SCVWD would require contractors to develop and implement a traffic control plan for each site, including a requirement to maintain emergency access to/through the site. Section 3.10 Traffic and Circulation provides details on the elements required in the plan. With the development of the traffic control plan and implementation of Mitigation Measure UPS-3 T described in Section 3.14 Utilities and Public Services the impact would be less than significant.

Operations and Maintenance

The potential for interference would also be true for maintenance activities, although to a lesser degree, because fewer pieces of equipment and vehicles would typically be involved. Similar requirements regarding traffic control plans would be imposed for maintenance activities.

The Culvert Alternative would provide the same 1-percent flood management as the Preferred Alternative in Reach 8 protecting downtown Morgan Hill. All other Project reaches would have the same level of protection, and the same Project features would be constructed as described for the Preferred Alternative. The impact of the Culvert/Channel Alternative on emergency response or evacuation plans would be beneficial because less flood induced emergencies would occur, and the use of maintenance roads in all reaches of the Project area would eliminate potential interference with other emergency responses.

Overall, impacts related to operations and maintenance of the Project as it relates to interference with an emergency response or evacuation plan would be reduced to less than significant with implementation of BMPs and mitigation.

Best Management Practices (BMPs)

> **TR-2:** Minimize Impacts on Traffic, Bicycles and Pedestrians.

Mitigation Measure

Mitigation Measure UPS-3 T: Emergency Response Plan and Notification.

With implementation of BMP TR-2, development of a traffic control plan, and Mitigation Measure UPS-3 T impacts related to interference with an emergency response or evacuation plan would be less than significant. This alternative would provide an increased level of flood protection for urban areas and operations; related impacts on emergency response or evacuation plans would be beneficial.

HAZ-7 CC—Breeding or harborage of disease vector organisms

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTSM	N/A
Excavation and construction of a diversion channel	LTSM	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTSM	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTSM	N/A
Relocation of some homes, farm structures, and wells[1] within the ROW	LTSM	N/A
Relocation of utility and public service facilities	LTSM	N/A
Realign segment of box culverts	LTSM	N/A
Continue the double box culvert under Del Monte Avenue approximately 900 feet to West 2nd Street	LTSM	N/A
Stream operation and maintenance activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1.

Construction

The principal concern relative to disease vectors relates to the potential for the Project to create or expand the potential for mosquito breeding in the Project area. Contractors would be required to employ "work site housekeeping", Mitigation Measure HAZ-2a T, to prevent the accumulation of standing water on construction sites as areas subject to grading could have ponding during and after it rains.

With Mitigation Measure HAZ-2a T in place, construction would not result in a significant increase in mosquito breeding; therefore, the impact would be reduced to less than significant.

Operations and Maintenance

Unlike the Preferred Alternative, there would be no sediment detention basin constructed in Reach 8. However, there would be small pools constructed in Reach 7A for aquatic habitat (a feature applicable to all action alternatives), which may retain water because the groundwater table is shallow at the downstream end of this reach. The pools incorporated in Reach 7A could contribute to mosquito habitat. With implementation of Mitigation Measure HAZ-7 T in place, operations and maintenance would not result in a significant increase in mosquito breeding; therefore, the impact would be reduced to less than significant.

Best Management Practices

None applicable

Mitigation Measures

Mitigation Measure HAZ-2a T: Work Site Housekeeping Procedures.

Mitigation Measure HAZ-7 T: Prepare and Implement a Mosquito and Vector Control Plan.

With the inclusion of Mitigation Measures HAZ-2a T and HAZ-7 T, potential health risks related to the increased breeding or harborage of disease-carrying mosquitoes would be reduced to a less-than-significant level.

HAZ-8 CC—Exposure of people or structures to risk of wildland fires

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTS	N/A
Excavation and construction of a diversion channel	LTS	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTS	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTS	N/A
Relocation of some homes, farm structures, and wells[1] within the ROW	LTS	N/A
Relocation of utility and public service facilities	LTS	N/A
Realign segment of box culverts	LTS	N/A
Continue the double box culvert under Del Monte Avenue approximately 900 feet to West 2nd Street	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1.

Construction

The use of construction equipment, in particular equipment with internal combustion engines, gasoline-powered tools, and equipment or tools that produce a spark, fire, or flame—in grassland and woodland areas could pose a fire risk. Some Project elements would be constructed in areas that could pose wildfire risks under dry conditions. Portions of Reaches 7A, 7B, and 8 are located less than 1 mile from a very high fire hazard severity zone in a local area of responsibility. With the implementation of BMP HM-14, which incorporates fire prevention measures into construction activities, the impact is less than significant.

Operations and Maintenance

The potential for fire risk would also be true for maintenance activities, although to a lesser degree, because fewer pieces of equipment and vehicles would typically be involved. However, impacts would be reduced to a less-than-significant level with implementation of BMP HM-14, described below. No mitigation would be required.

Best Management Practices (BMPs)

> **HM-14:** Incorporate Fire Prevention Measures—applicable to the construction and operations phase of all elements.

Mitigation Measures

None required

With implementation of BMP HM-14, impacts related to a very high fire hazard severity zone would be less than significant.

3.18.5.5 Reach 6 Bypass Alternative

The construction and maintenance BMPs and necessary mitigation for the Reach 6 Bypass Alternative would be the same as those previously described under the Preferred Alternative.

The Reach 6 Bypass Alternative would construct a high-flow bypass channel between Reach 6 of Llagas Creek and Reach 14 of East Little Llagas Creek. The bypass would be designed so that no flood capacity improvements would be needed along Reach 6 or Reach 5 of Llagas Creek downstream of the proposed bypass. Additionally, in Reach 8, through the City of Morgan Hill, the Project will be exactly the same as the Preferred Alternative. Flood conveyance modifications for the upstream Project Reaches 7A and 7B and for the downstream Reach 4 would remain the same as that described for the Preferred Alternative.

The Reach 6 Bypass Alternative would include maintenance for the bypass channel hydraulic control structure constructed in Reach 6; however, this maintenance would not result in impact levels different than those described under the Preferred Alternative.

HAZ-1 BY—Creation of hazard through transport, use, or disposal of hazardous material

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTS	N/A
Excavation and construction of a diversion channel	LTS	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTS	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTS	N/A
Relocation of some homes, farm structures, and wells within the ROW[1]	LTS	N/A
Relocation of utility and public service facilities	LTS	N/A
Construction of a hydraulic control structure at Reach 6	LTS	N/A
Construction of a bypass channel from Reach 6 to Reach 14	LTS	N/A
Three bridge replacements	LTS	N/A
Reach 14 creek improvements	LTS	N/A
Culverts modifications in Reach 14 at Sycamore Avenue bridge and East San Martin Avenue bridge	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1.

Construction

Construction would require the use of hazardous substances, such as vehicle fuels, lubricants, and solvents, in construction equipment and vehicles and herbicides to clear vegetation for certain locations. Impacts of improper storage and handling could be significant, including spills, releases, and exposure of workers and the general public to toxins and carcinogens. However, hazardous and potentially hazardous

materials used in construction would be transported, stored, and handled in a manner consistent with all relevant regulations and guidelines, including those recommended and enforced by the DOT and Santa Clara County Department of Environmental Health. In addition, the SCVWD will require contractors to implement measures to ensure that water quality is protected during construction.

During tunnel construction in Reach 8, blasting would be used as a construction method. A Blasting Plan would be prepared for this alternative to provide guidelines for the safe use and storage of blasting materials. The Blasting Plan is intended to help ensure the safety of construction personnel, the public, nearby facilities, and sensitive resources. The Blasting Plan would include, but not be limited to, the following elements:

> Proposed blasting activity;

> Blasting procedures;

> Blasting contractor qualification;

> Applicable federal, state, and local regulations;

> Blasting monitoring;

> Noise, vibration, and fly-rock mitigation;

> Safety during blasting; and

> Storage and disposal of explosives.

Operations and Maintenance

Much like construction, periodic activities required to maintain the new Project elements, described in Section 2.8.5, would require the use of vehicle fuels and lubricants and could require solvents, paints, paving media, and other substances. Impacts related to the transport, use, or disposal of hazardous materials would not be significant with implementation of BMPs.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that would avoid and minimize impacts related to significant hazards to the public or the environment through the routine transport, use, or disposal of hazardous materials under the Preferred Alternative.

> **BI-4:** Minimize Access Impacts.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-Target Species—applicable to the construction and operations phase of all activities.

> **HM-4:** Post Areas Where Pesticides will be Used.

> **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas—applicable to the construction and operations phase of all activities.

> **HM-8:** Comply with Restrictions on Herbicide Use in Aquatic Areas—applicable to the construction and operations phase of all activities.

> **HM-9:** Limit Vehicle and Equipment Cleaning to Appropriate Locations.

> **HM-10:** Ensure Proper Vehicle and Equipment Cleaning to Appropriate Locations.

> **HM-12:** Ensure Proper Hazardous Materials Management.

> **HM-13:** Utilize Spill Prevention Measures.

> **TR-1:** Incorporate Public Safety Measures.

Mitigation Measures

None required

Impacts related to the transport, use, or disposal of hazardous materials would be less than significant with implementation of BMPs.

HAZ-2 BY—Exposure of workers or the public to existing hazardous materials contamination

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTSM	N/A
Excavation and construction of a diversion channel	LTSM	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTSM	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTSM	N/A
Relocation of some homes, farm structures, and wells within the ROW[1]	LTSM	N/A
Relocation of utility and public service facilities	LTSM	N/A
Construction of a hydraulic control structure at Reach 6	LTSM	N/A
Construction of a bypass channel from Reach 6 to Reach 14	LTSM	N/A
Three bridge replacements	LTSM	N/A
Reach 14 creek improvements	LTSM	N/A
Culverts modifications in Reach 14 at Sycamore Avenue bridge and East San Martin Avenue bridge	LTSM	N/A
Stream operation and maintenance activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1.

Construction

Construction workers or the public could be exposed to the hazardous substances through accidental disturbance during Project construction, potentially constituting a significant impact. Construction activities, in particular, excavation and other ground-disturbing tasks, would have significant potential to expose workers and the public to hazardous materials unless appropriate precautions are taken. Such exposure could represent a significant public health impact. The SCVWD will comply with the BAAQMD ATCM, which regulates NOA emissions (Section 3.18.2.1).

During tunnel construction in Reach 8, blasting would be used as a construction method. A Blasting Plan would be prepared for this alternative to provide guidelines for the safe use and storage of blasting materials. The Blasting Plan is intended to help ensure the safety of construction personnel, the public, nearby facilities, and sensitive resources. The Blasting Plan would include, but not be limited to, the following elements:

- Proposed blasting activity;
- Blasting procedures;
- Blasting contractor qualification;
- Applicable federal, state, and local regulations;
- Blasting monitoring;
- Noise, vibration, and fly-rock mitigation;
- Safety during blasting; and
- Storage and disposal of explosives.

Operations and Maintenance

Similar to the Preferred Alternative, and much like construction activities, periodic activities, described in Section 2.8.5, needed to maintain the new Project elements would require the use of vehicle fuels and lubricants and could require solvents, paints, paving media, and other substances. Impacts related to the transport, use, or disposal of hazardous materials would remain significant without implementation of mitigation.

Best Management Practices (BMPs)

The following summarizes SCVWD BMPs that avoid and minimize impacts related to exposure of workers or the public to existing hazardous materials contamination.

- **BI-4:** Minimize Access Impacts.
- **BI-6:** Minimize Adverse Effects of Pesticides on Non-Target Species—applicable to the construction and operations phase of all activities.
- **HM-4:** Post Areas Where Pesticides will be Used.
- **HM-7:** Comply with Restrictions on Herbicide Use in Upland Areas—applicable to the construction and operations phase of all activities.
- **HM-8:** Comply with Restrictions on Herbicide Use in Aquatic Areas—applicable to the construction and operations phase of all activities.
- **HM-9:** Limit Vehicle and Equipment Cleaning to Appropriate Locations.
- **HM-10:** Ensure Proper Vehicle and Equipment Cleaning to Appropriate Locations.
- **HM-12:** Assure Proper Hazardous Materials Management—applicable to the construction and operations phase of all activities
- **HM-13:** Utilize Spill Prevention Measures—applicable to the construction and operations phase of all activities.

Mitigation Measures

Mitigation Measure HAZ-2a T: Work Site Housekeeping Procedures.

Mitigation Measure HAZ-2b T: Soil and Groundwater Management Plan.

Mitigation Measure HAZ-2c T: Existing Hazardous Site Search.

Mitigation Measure HAZ-2d T: Implement Recommended Phase I or Phase II Hazardous Materials Investigation and Any Required Follow-Up Remediation.

Mitigation Measure HAZ-2e T: Minimize the Area of Disturbance.

Mitigation Measure HAZ-2f T: Stop Work and Implement Hazardous Materials Investigations and Remediation in the Event that Unknown Hazardous Materials are Encountered.

Mitigation Measure HAZ-2g T: Conduct Asbestos and Lead Surveys for Buildings that need to be Demolished.

Mitigation Measure HAZ-2h T: Develop an Asbestos Dust Mitigation Plan and Implement other Actions Required by the BAAQMD ATCM.

Mitigation Measure HAZ-2i T: Evaluation of Soil for Reuse.

For construction and operations, BMPs and mitigation measures for this impact would be the same as those described under HAZ-2 T, and the impact would be less than significant with mitigation.

HAZ-3 BY—Generation of hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school.

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTSM	N/A
Excavation and construction of a diversion channel	LTSM	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTSM	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTSM	N/A
Relocation of some homes, farm structures, and wells within the ROW[1]	LTSM	N/A
Relocation of utility and public service facilities	LTSM	N/A
Construction of a hydraulic control structure at Reach 6	LTSM	LTSM
Construction of a bypass channel from Reach 6 to Reach 14	LTSM	LTSM
Three bridge replacements	LTSM	LTSM
Reach 14 creek improvements	LTSM	LTSM
Culverts modifications in Reach 14 at Sycamore Avenue bridge and East San Martin Avenue bridge	LTSM	LTSM
Stream operation and maintenance activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1.

Construction

Because construction would require the use and transport of a variety of hazardous substances, including vehicle fuels and lubricants, paving media, paints, solvents, etc., there would be some potential for exposure to hazardous materials for students, school employees, and the public. However, all hazardous materials would be handled, stored, and used in a manner consistent with relevant regulations and

guidelines. This would reduce risks related to the use of hazardous materials in proximity to school campuses to a level consistent with the current standard of care. Impacts are anticipated to be less than significant with BMPs and Mitigation Measures HAZ-2c, HAZ-2e, HAZ-2f, and HAZ-2h T.

During tunnel construction in Reach 8, blasting would be used as a construction method. A Blasting Plan would be prepared for this alternative to provide guidelines for the safe use and storage of blasting materials, including within the vicinity of 0.25 mile of an existing school. The Blasting Plan is intended to help ensure the safety of construction personnel, the public, nearby facilities, and sensitive resources, such as schools. The Blasting Plan would include, but not be limited to, the following elements:

> Proposed blasting activity;

> Blasting procedures;

> Blasting contractor qualification;

> Applicable federal, state, and local regulations;

> Blasting monitoring;

> Noise, vibration, and fly-rock mitigation;

> Safety during blasting; and

> Storage and disposal of explosives.

Operations and Maintenance

Maintenance activities within 0.25 mile of schools would carry similar risks (although, generally on a lesser scale) as for construction. Impacts related to the generation of hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school would be less than significant with implementation of BMPs and Mitigation Measures HAZ-2c, HAZ-2e, HAZ-2f, and HAZ-2h T.

Best Management Practices (BMPs)

The following SCVWD BMPs avoid and minimize impacts related to hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school.

> **BI-6:** Minimize Adverse Effects of Pesticides on Non-Target Species—applicable to the construction and operations phase of all activities.

> **HM-4:** Post Areas Where Pesticides will be Used—applicable to the construction and operations phase of all activities.

> **HM-9:** Limit Vehicle and Equipment Cleaning to Appropriate Locations—applicable to the construction and operations phase of all activities.

> **HM-10:** Ensure Proper Vehicle and Equipment Cleaning to Appropriate Locations—applicable to the construction and operations phase of all activities.

> **HM-12:** Assure Proper Hazardous Materials Management—applicable to the construction and operations phase of all activities.

> **HM-13:** Utilize Spill Prevention Measures—applicable to the construction and operations phase of all activities.

Mitigation Measures

Mitigation Measure HAZ-2c T: Existing Hazardous Site Search.

Mitigation Measure HAZ-2e T: Minimize the Area of Disturbance.

Mitigation Measure HAZ-2f T: Stop Work and Implement Hazardous Materials Investigations and Remediation in the Event that Unknown Hazardous Materials are Encountered.

Mitigation Measure HAZ-2h T: Develop an Asbestos Dust Mitigation Plan and Implement other Actions Required by the BAAQMD ATCM.

Impacts would be to be less than significant with BMPs and Mitigation Measures HAZ-2c, HAZ-2e, HAZ-2f, and HAZ-2h T.

HAZ-4 BY—Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTSM	N/A
Excavation and construction of a diversion channel	LTSM	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTSM	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTSM	N/A
Relocation of some homes, farm structures, and wells within the ROW[1]	LTSM	N/A
Relocation of utility and public service facilities	LTSM	N/A
Construction of a hydraulic control structure at Reach 6	LTSM	N/A
Construction of a bypass channel from Reach 6 to Reach 14	LTSM	N/A
Three bridge replacements	LTSM	N/A
Reach 14 creek improvements	LTSM	N/A
Culverts modifications in Reach 14 at Sycamore Avenue bridge and East San Martin Avenue bridge	LTSM	N/A
Stream operation and maintenance activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1.

Construction

Weiss identified sites, including several LUST cleanup sites, listed on hazardous materials databases (Table 3.18-1) and located within or near the study area. Construction activities near these sites have the potential to create significant hazards to the public or the environment if they are released during Project construction, and impacts would be significant. With implementation of Mitigation Measures HAZ-2c through HAZ-2f T, impacts related to potential releases from a construction on a site with known hazardous materials would be less than significant.

Operations and Maintenance

Operation and maintenance activities that involve ground disturbance, such as sediment removal, and are located near identified hazardous materials sites would have the potential to create hazards to the public or the environment. Impacts would remain at significant levels without BMPs and implementation of mitigation measures.

Best Management Practices (BMPs)

The following SCVWD BMPs avoid and minimize impacts related to Project activities located near hazardous materials sites:

> **HM-9:** Limit Vehicle and Equipment Cleaning to Appropriate Locations.

> **HM-10:** Ensure Proper Vehicle and Equipment Cleaning to Appropriate Locations.

> **HM-12:** Ensure Proper Hazardous Materials Management.

> **HM-13:** Utilize Spill Prevention Measures.

Mitigation Measures

Mitigation Measure HAZ-2c T: Existing Hazardous Site Search.

Mitigation Measure HAZ-2d T: Implement Recommended Phase I or Phase II Hazardous Materials Investigation and Any Required Follow-Up Remediation.

Mitigation Measure HAZ-2e T: Minimize the Area of Disturbance.

Mitigation Measure HAZ-2f T: Stop Work and Implement Hazardous Materials Investigations and Remediation in the Event that Unknown Hazardous Materials are Encountered.

For construction and operations, BMPs and mitigation measures for this impact would reduce potential impacts to less than significant.

HAZ-5 BY—Potential to result in safety hazards due to location within 2 miles of a public use airport

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTS	N/A
Excavation and construction of a diversion channel	LTS	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTS	N/AB
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTS	N/A
Relocation of some homes, farm structures, and wells within the ROW[1]	LTS	N/A
Relocation of utility and public service facilities	LTS	N/A
Construction of a hydraulic control structure at Reach 6	LTS	N/A
Construction of a bypass channel from Reach 6 to Reach 14	LTS	N/A
Three bridge replacements	LTS	N/A
Reach 14 creek improvements	LTS	N/A
Culverts modifications in Reach 14 at Sycamore Avenue bridge and East San Martin Avenue bridge	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1.

Construction

San Martin Airport is located within 2 miles of Reaches 4, 5, 6, 7A, and 14. However, Project construction activities would not interfere with airport operations, would not involve the use of any equipment that would affect aircraft utilizing the airport, and would not result in a substantial safety hazard risk to people residing or working in the vicinity of the airport. The impacts would be less than significant, and no mitigation would be required.

Operations and Maintenance

Although operations and maintenance under the Reach 6 Bypass Alternative may be performed within 2 miles of San Martin Airport, these activities would not interfere with airport operations, would not involve the use of any equipment that would affect aircraft utilizing the airport, and would not result in a substantial safety hazard to people residing or working in the vicinity of the airport. The impacts would be less than significant, and no mitigation would be required.

Best Management Practices (BMPs)

None applicable

Mitigation Measures

None required

HAZ-6 BY—Interference with emergency response or evacuation plan

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTSM	N/A
Excavation and construction of a diversion channel	LTSM	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTSM	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTSM	N/A
Relocation of some homes, farm structures, and wells within the ROW[1]	LTSM	N/A
Relocation of utility and public service facilities	LTSM	N/A
Construction of a hydraulic control structure at Reach 6	LTSM	N/A
Construction of a bypass channel from Reach 6 to Reach 14	LTSM	N/A
Three bridge replacements	LTSM	N/A
Reach 14 creek improvements	LTSM	N/A
Culverts modifications in Reach 14 at Sycamore Avenue bridge and East San Martin Avenue bridge	LTSM	N/A
Stream operation and maintenance activities	N/A	B

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1.

Construction

The presence of construction equipment and vehicles, worker activities, and materials storage would have the potential to impede emergency access to the Project sites and/or interfere with emergency evacuation plans. To ensure that Project construction does not impede emergency response or evacuations, the SCVWD would require contractors to develop and implement a traffic control plan for each site, including a requirement to maintain emergency access to/through the site. Section 3.10, Traffic and Circulation, provides details on the elements required in the plan. With implementation of BMP TR-2, development of the traffic control plan, and Mitigation Measure UPS-3 T described in Section 3.14 Utilities and Public Services. Impacts related to interference with an emergency response or evacuation plan would be less than significant with mitigation.

Operations and Maintenance

The potential for interference would also be true for maintenance activities, although to a lesser degree, because fewer pieces of equipment and vehicles would typically be involved. Similar requirements regarding traffic control plans would be imposed for maintenance activities.

The alternative includes the construction of a high-flow bypass channel between Reach 6 of Llagas Creek and Reach 14 of East Little Llagas Creek. The bypass would be designed so that no flood capacity improvements would be needed along Reach 6 or Reach 5 of Llagas Creek downstream of the proposed bypass. Flood conveyance improvements for the upstream Project Reaches 8, 7A, and 7B, and for the downstream Reach 4 would remain the same as that described for the Preferred Alternative.

This alternative would provide an increased level of flood protection; and the operations related impacts of the HAZ-6 BY Alternative on emergency response or evacuation plans would be beneficial.

Best Management Practices (BMPs)

> **TR-2:** Minimize Impacts on Traffic, Bicycles and Pedestrians.

Mitigation Measures

Mitigation Measure UPS-3 T: Emergency Response Plan and Notification.

With implementation of BMP TR-2, development of a traffic control plan, and Mitigation Measure UPS-3 T impacts related to interference with an emergency response or evacuation plan would be less than significant. This alternative would provide an increased level of flood protection for urban areas and operations; related impacts on emergency response or evacuation plans would be beneficial because less flood induced emergencies would occur, and the use of maintenance roads in all reaches of the Project area would eliminate potential interference with other emergency responses.

HAZ-7 BY—Breeding or harborage of disease vector organisms

Impact Determination: less than significant with mitigation

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTSM	N/A
Excavation and construction of a diversion channel	LTSM	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTSM	N/A
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTSM	N/A
Relocation of some homes, farm structures, and wells within the ROW[1]	LTSM	N/A
Relocation of utility and public service facilities	LTSM	N/A
Construction of a hydraulic control structure at Reach 6	LTSM	N/A
Construction of a bypass channel from Reach 6 to Reach 14	LTSM	N/A
Three bridge replacements	LTSM	N/A
Reach 14 creek improvements	LTSM	N/A
Culverts modifications in Reach 14 at Sycamore Avenue bridge and East San Martin Avenue bridge	LTSM	N/A
Stream operation and maintenance activities	N/A	LTSM

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1.

Construction

The principal concern relative to disease vectors relates to the potential for the Project to create or expand the potential for mosquito breeding in the Project area. Contractors would be required to employ "work site housekeeping", Mitigation Measure HAZ-2a T, to prevent the accumulation of standing water on construction sites.

Operations and Maintenance

As with Impact HAZ-7 T, a sediment detention basin would be constructed along Hale Avenue (Reach 8) in Morgan Hill. Operations of the new sediment detention basin could increase the opportunity for standing water to accumulate and potentially increase mosquito breeding. The proposed sediment detention basin is designed and intended to function in a manner that would collect sediments but allow water to quickly drain out of the detention basin following rainfall-runoff events. However, as sediments collect in the detention basin it is possible that small residual pools of water could develop and could be retained for a period of time following periods of runoff, providing mosquito breeding habitat. SCVWD will implement Mitigation Measure HAZ-7 T, which requires the preparation of a mosquito and vector control plan to reduce the potential impact to a less-than-significant level..

Best Management Practices

None applicable

Mitigation Measures

Mitigation Measure HAZ-2a T: Work Site Housekeeping Procedures.

Mitigation Measure HAZ-7 T: Prepare and Implement a Mosquito and Vector Control Plan.

With the inclusion of Mitigation Measures HAZ-2a and HAZ-7 T, potential health risks related to the increased breeding or harborage of disease-carrying mosquitoes would be reduced to a less-than-significant level.

HAZ-8 BY—Exposure of people or structures to risk of wildland fires

Impact Determination: less than significant

Project Activity	Construction Impact Level	Operation/Maintenance Impact Level
Channel improvements	LTS	N/A
Excavation and construction of a diversion channel	LTS	N/A
Construction of permanent access roads on both banks within permanent easements for construction and maintenance access	LTS	N/AB
Construction of reinforced concrete boxes (RCBs) of rectangular cross sections, which are sized to pass the design flood flow under roadways and at tributary junctions	LTS	N/A
Relocation of some homes, farm structures, and wells within the ROW	LTS	N/A
Relocation of utility and public service facilities	LTS	N/A
Construction of a hydraulic control structure at Reach 6	LTS	N/A
Construction of a bypass channel from Reach 6 to Reach 14[1]	LTS	N/A
Three bridge replacements	LTS	N/A
Reach 14 creek improvements	LTS	N/A
Culverts modifications in Reach 14 at Sycamore Avenue bridge and East San Martin Avenue bridge	LTS	N/A
Stream operation and maintenance activities	N/A	LTS

NI = no impact; S = significant; LTS = less than significant; LTSM = less than significant with mitigation; B = beneficial; N/A = not applicable

[1] Locations of wells within 500 feet of the Project are illustrated in Figure 3.14-1.

Construction

The use of construction equipment, in particular equipment with internal combustion engines, gasoline-powered tools, and equipment or tools that produce a spark, fire, or flame—in grassland and woodland areas could pose a fire risk. Some Project elements would be constructed in areas that could pose wildfire risks under dry conditions. Portions of Reaches 7A, 7B, and 8 are located less than 1 mile from a very high fire hazard severity zone in a local area of responsibility. With the implementation of BMP HM-14, which incorporates fire prevention measures into construction activities, the impact is less than significant.

Operations and Maintenance

The potential for fire risk would also be true for maintenance activities, although to a lesser degree, because fewer pieces of equipment and vehicles would typically be involved. However, impacts would be reduced to a less than significant level with implementation of BMP HM-14, described below. No mitigation would be required.

Best Management Practices (BMPs)

> **HM-14:** Incorporate Fire Prevention Measures—applicable to the construction and operations phase of all elements.

Mitigation Measures

None required

With implementation of BMP HM-14, impacts related to a very high fire hazard severity zone would be less than significant.

3.18.6 Summary of Impacts to Hazard and Hazardous Materials

The potential environmental concerns related to hazards and hazardous materials identified for the Project reaches include the discovery of pesticides and fertilizers, nitrates and fecal coliform, potentially hazardous chemicals, petroleum hydrocarbons, heavy metals, and naturally-occurring asbestos during excavation activities; the exposure to asbestos-containing building materials, lead-based paint, and PCB-containing lighting fixtures in moving or demolishing structures in the Project footprint; use of diesel, solvents, oil, and herbicides during construction and maintenance; creation of mosquito breeding grounds; and potential fire hazards. With the implementation of BMPs and mitigation measures, the potential impacts from these concerns can be reduced to levels less than significant.

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3.19 Environmental Justice

3.19.1 Introduction

This section describes the environmental justice implications of the Project in the Project study area, including an analysis of communities of concerns for both minority and low-income characteristics and the disproportionate distribution of negative effects on communities of concern.

3.19.2 Study Area

The Project study area for this analysis is all of the 2010 Census Tracts intersected by the Project footprint, which includes Tracts 5123.07, 5123.13, 5123.14, 5124.01, and 5124.02 (Figure 3.19-1). These tracts are located in Santa Clara County, California. This area contains the urban city of Morgan Hill and the unincorporated area of San Martin.

3.19.2.1 Environmental Setting

This section describes the demographic characteristics by Project reach as described in Chapter 2, Project Description, and by geographic region. Demographic characteristics are used to identify communities of concern in environmental justice analyses. The geographic region is defined for the purpose of taking a census tract. For a more detailed investigation of population and housing see Section 3.16, Population and Housing. For a more detailed investigation of socioeconomics see Section 3.17, Socioeconomic Resources.

Reach 4 and Reach 5

Reaches 4 and 5 are contained within Census Tract 5124.01. According to the U.S. Census Bureau (Bureau of Census as defined in Title 13 U.S.C. § 11), the 2010 population in this tract was 4,782 people and its population density was 299 persons per square mile. Of this population, 65.5 percent reported their race as White, 43.1 percent reported their ethnicity as Hispanic or Latino, and 6.4 percent reported their ethnicity as Asian (U.S. Census Bureau 2010b). The median household income is $79,213 and 9.6 percent of people have income below the poverty level (U.S. Census Bureau 2011a).

Reach 6 and Reach 6 Bypass

A small portion of Reach 6 lies within Census Tract 5124.01, which is described above. The majority of Reach 6 and all of Reach 6 Bypass lie within Census Tract 5124.02. According to the U.S. Census, the 2010 population in this tract was 5,167 people and its population density was 321 persons per square mile. Of this population, 63.3 percent reported their race as White, 40.7 percent reported their ethnicity as Hispanic or Latino, and 7.7 percent reported their ethnicity as Asian (U.S. Census Bureau 2010b). The median household income is $113,125 and 6.6 percent of people have income below the poverty level (U.S. Census Bureau 2011a).

Reach 7A

The proposed Reach 7A is contained within Census Tract 5123.07. According to the U.S. Census, the 2010 population in this tract was 6,344 people and its population density was 3,003 persons per square mile. Of this population, 74.9 percent reported their race as White, 23.5 percent reported their ethnicity as Hispanic or Latino, 7.6 percent reported their ethnicity as Asian, and 1.6 percent reported their ethnicity as Black or African American (U.S. Census Bureau 2010b). The median household income is $95,357 and 1.2 percent of people have income below the poverty level (U.S. Census Bureau 2011a).

Reach 7B

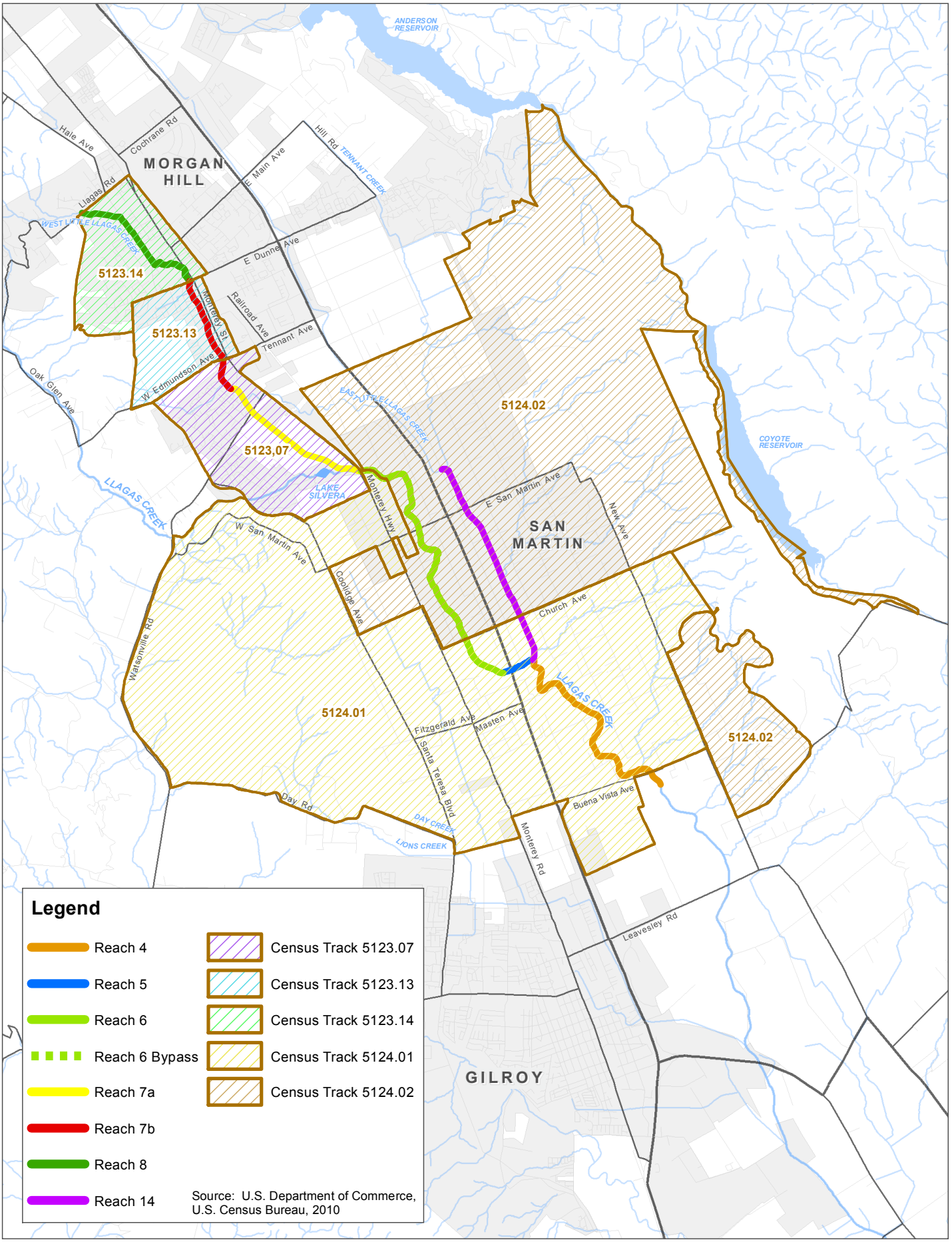
A small portion of Reach 7B lies within Census Tract 5123.07, which is described above. The majority of Reach 7B lies within Census Tract 5123.13. According to the U.S. Census, the 2010 population in this tract was 3,887 people and its population density was 3,831 persons per square mile. Of this population, 55.4 percent reported their race as White, 55.3 percent reported their ethnicity as Hispanic or Latino, 5.5 percent reported their ethnicity as Asian, and 2.4 percent reported their ethnicity as Black or African American (U.S. Census Bureau 2010b). The median household income is $77,103 and 19.2 percent of people have income below the poverty level (U.S. Census Bureau 2011a).

Reach 8

Reach 8 is contained within Census Tract 5123.14. According to the U.S. Census, the 2010 population in this tract was 5,932 people and its population density was 4,132 persons per square mile. Of this population, 60.7 percent reported their race as White, 48.3 percent reported their ethnicity as Hispanic or Latino, 7.3 percent reported their ethnicity as Asian, 1.6 percent reported their ethnicity as Black or African American, and 1.2 percent reported their ethnicity as American Indian and Alaska Native (U.S. Census Bureau 2010b). The median household income is $65,913 and 24.6 percent of people have income below the poverty level (U.S. Census Bureau 2011a).

Reach 14

A small portion of Reach 14 lies within Census Tract 5124.01 and the majority of Reach 14 lies within Census Tract 5124.02. These tracts are described above for Reach 6.



Cardno ENTRIX

Upper Llagas Creek Project EIR

FIGURE 3.19-1
Environmental Justice Study Area

3.19.3 Regulatory Environment

The following federal and state requirements for the Project are described below.

3.19.3.1 Federal

Executive Order 12898 & NEPA

Executive Order 12898, issued by the President on February 11, 1994, requires each federal agency to identify and address disproportionately high and adverse human health or environmental impacts, including social or economic impacts of programs, policies, and activities on minority and low-income populations of the United States (CEQ 1997). The memorandum accompanying the order specifies that federal agencies should analyze the environmental effects on minority and low-income populations, and Indian tribes of federal actions, when such analysis is required by NEPA (CEQ 1997).

The CEQ provides additional guidance on environmental justice analysis, including definitions of minority and low-income populations in their 1997 publication, *Environmental Justice Guidance under the National Environmental Policy Act (NEPA)* (CEQ 1997*)*. In 2004, the Environmental Protection Agency (EPA) published a *Toolkit for Assessing Potential Allegations of Environmental Injustice* to provide some standardization in methodology for performing environmental justice analysis within the NEPA framework (USEPA 2004).

3.19.3.2 State

California State Government Code Section 65040.12(e) defines environmental justice as *"the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation and enforcement of environmental, regulations and policies"*.

The Cal/EPA is the public agency that implements the state's environmental justice programs. The Cal/EPA is required to *"promote enforcement of all health and environmental statutes within its jurisdiction in a manner that ensures the fair treatment of people of all races, cultures, and income levels, including minority populations and low-income populations of the state (California Public Resource Code Section 71110(b))"*.

3.19.3.3 Local

No specific local regulations govern environmental justice for the Project.

3.19.4 Impact Analysis

3.19.4.1 Significance Criteria

While no significance criteria for environmental justice have been established, the definition of environmental justice, provided in Executive Order 12898, defines it as a disproportionately high and adverse environmental or human health impact on a community of concern. The order defines a community of concern as either a low-income population or a minority population. A low-income population is identified using the annual statistical poverty threshold from the U.S. Census for individuals in a community or geographic proximity (which could include, for example, a migrant worker community). The order further defines adverse environmental impacts as impacts on the natural or physical environment, which may include ecological, cultural, human health, economic, or social impacts on communities of concern when those impacts are interrelated to impacts on the natural or physical environment (CEQ 1997).

The order defines a minority population as a population whose members are of the following: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. It further

specifies that if a minority population of an affected area exceeds 50 percent of the total population or the percentage of minorities in the population is meaningfully greater than the percentage of the minority population in the general population or other appropriate unity of geographic analysis (CEQ 1997), therefore, for the purposes of this analysis, the Project would result in an environmental injustice if a significant and unavoidable impact identified elsewhere in Chapter 3 would:

EJ-1—Disproportionately Affect a Community of Concern

3.19.4.2 Approach to Analysis

A community of concern was defined as a 2010 Census Tract intersected by the Project that had a:

a. U.S. Census designated poverty percentage statistically significantly higher than the average for all Census Tracts in Santa Clara County, California (P<0.05) or a poverty rate greater than 50 percent.

   -or-

b. Hispanic population percentage statistically significantly higher than the average for all Census Tracts in Santa Clara County, California (P<0.05) or a Hispanic population greater than 50 percent.

The aggregate of all Census Tracts in Santa Clara County represents the reference population in this analysis and was chosen because of California's high minority population and uneven distribution, as well as the localized nature of this Project. Therefore, each Census Tract intersected by the Project was compared to the average of all tracts in the county.

Table 3.19-1, below, summarizes the Hispanic and low-income characteristics of each Census Tract intersected by the Project and the average for all Census Tracts in Santa Clara County.

Table 3.19-1 Summary of Study Area Demographic Characteristics

Demographic Characteristic	Tract 5123.07 (Reach 7A and portion of 7B)	Tract 5123.13 (majority portion of Reach 7B)	Tract 5123.14 (Reach 8)	Tract 5124.01 (Reaches 4, 5 and 14, and portion of Reach 6)	Tract 5124.02 (portion of Reach 6 and all of Reach 6 Bypass)	Avg. of all Tracts in Santa Clara County
% Low-Income	1.2	19.2	24.6	9.6	6.6	**9.4**
% Hispanic	23.5	55.3	48.3	43.1	40.7	**26.1**

Source: U.S. Census Bureau 2010b; U.S. Census Bureau 2011a

Tract 5123.14, which corresponds to Reach 8, has a population of low-income individuals that is statistically significantly higher than the average of the tracts in the county (P<0.05) and is, therefore, a community of concern. Tract 5123.13, which corresponds to Reach 7B, has a population of Hispanic individuals that is over 50 percent and is, therefore, a community of concern. The following section evaluates each alternative by reach to determine if any of the significant impacts identified elsewhere in Chapter 3 would disproportionately impact Reaches 7B or 8.

3.19.5 Impacts and Mitigation Measures

The impacts related with environmental justice originate in the resource assessments in the preceding sections of Chapter 3. This section evaluates if those resource impacts disproportionately affect a community of concern in the study area. The details associated with the original impacts are provided in the associated resource section, but the distribution of those impacts on the communities is discussed below. The structure of this section is dissimilar than the resource sections, because it takes a broader

view of the effects of alternatives by construction and maintenance activities as it relates to the communities.

3.19.5.1 No Project Alternative

The following impacts are associated with:

Construction

Impact ECON-4 NP is identified in Section 3.17.5.1, Socioeconomic Resources, as a potentially significant impact to the environment due to intermittent flooding causing business disruptions in and around Reach 8, impacting social and economic resources in the study area. As compared to the Project alternatives, which increase flood protection in Reaches 8, 7B, 7A, and 14, and with no induced flooding in Reaches 6, 5, and 4, the No Project Alternative would result in continued intermittent flooding. The impact to economic resources is disproportionately distributed throughout the Project area, primarily impacting Reach 8, downtown Morgan Hill, due to its high proportion of commercial land use that are exposed to intermittent flooding. No other reach was identified as being significantly economically impacted by flooding. Therefore, the No Project Alternative disproportionately impacts the environmental justice community of concern in Reach 8.

Impact Determination: disproportionate adverse effect

The following impacts are associated with:

Operations and Maintenance

Impact HYDRO-1 NP is identified in Section 3.2.6.1, Hydrology and Water Quality, as a potentially significant impact to the environment due to the potential to violate water quality standards. Ongoing operations continue to contribute to bank erosion and sedimentation while ongoing flooding continues to contribute to water quality degradation and impairment of existing water quality standards in Reaches 8 and 7B, a disproportionate impact to environmental justice communities of concern.

Impact Determination: disproportionate adverse effect

Impact HYDRO-2 NP is identified in Section 3.2.6.1, Hydrology and Water Quality, as a potentially significant impact to the environment due to substantially degrading water quality. Ongoing operations continue to contribute to bank erosion and sedimentation while ongoing flooding continues to contribute to water quality degradation and impairment of existing water quality standards in Reaches 8 and 7B, a disproportionate impact to environmental justice communities of concern.

Impact Determination: disproportionate adverse effect

Impact HYDRO-5 NP is identified in Section 3.2.6.1, Hydrology and Water Quality, as a potentially significant impact to the environment due to alteration of drainage pattern and course of stream resulting in substantial erosion or siltation on or off site. Ongoing operations would continue causing channel down-cutting contributing to bank erosion and sedimentation. The operations currently take place in all Project reaches and would not disproportionately impact an environmental justice community of concern.

Impact Determination: no disproportionate adverse effect

Impact HYDRO-6 NP is identified in Section 3.2.6.1, Hydrology and Water Quality, as a potentially significant impact to the environment due to alteration of drainage pattern and course of stream resulting in flooding or increased surface runoff. Flooding would continue, potentially exposing structures and people to 100-year-flood hazard. According to Section 3.17.5.1, continued flooding imposes a potentially

significant impact to the businesses in Reach 8 due to the costs of business interruptions and preventing the sale of goods and services. Reach 8 is disproportionately impacted by continued flooding.

Impact Determination: disproportionate adverse effect

Impact TRAFFIC-3 NP is identified in Section 3.10.1.12, Traffic and Circulation, as a potentially significant impact to the environment due to interference and inadequate emergency access during flood events. This interference would be temporary and would impact the areas that experience flooding under the No Project Alternative, particularly in Reach 8 where the population density is the greatest and, therefore, would experience the highest need for emergency services and evacuation routes during a flood event. Reach 8 is disproportionately impacted by interference of emergency access during flood events.

Impact Determination: disproportionate adverse effect

Impact TRAFFIC-4 NP is identified in Section 3.10.1.12, Traffic and Circulation, as a potentially significant impact to the environment due to interference with public transit, bicycle, and pedestrian facilities during flood events. This interference would be temporary and would impact the areas that experience flooding under the No Project Alternative, particularly Reach 8 where the population density, access to public transit, number of bicycle, and pedestrian facilities is the highest. Reach 8 is disproportionately impacted by interference of emergency access during flood events.

Impact Determination: disproportionate adverse effect

Impact TRAFFIC-5 NP is identified in Section 3.10.1.12, Traffic and Circulation, as a potentially significant impact to the environment due to failure to provide safe access, obstruct access to nearby uses, or fail to provide for future street right-of-way, particularly during flood events. This interference would be temporary and would impact the areas that experience flooding under the No Project Alternative, particularly in Reach 8 where the flooding is greatest. Reach 8 would be disproportionately impacted.

Impact Determination: disproportionate adverse effect

Impact HAZ-6 NP is identified in Section 3.18.5.1, Hazards and Hazardous Materials, as a potentially significant impact to the environment due to interference with emergency response or evacuation plans. This interference would be temporary and would impact the areas that experience flooding under the No Project Alternative, particularly in Reach 8 where the population density is the greatest and, therefore, would experience the highest need for emergency services and evacuation routes during a flood event. Reach 8 is disproportionately impacted by interference of emergency access during flood events.

Impact Determination: disproportionate adverse effect

Best Management Practices (BMPs)

No additional BMPs, beyond what were described in Sections 3.2.6.1, 3.10.1.12, 3.17.5.1, and 3.18.5.1, are required.

3.19.5.2 Tunnel Alternative (Preferred Alternative)

The following impacts are associated with:

Construction

Impact BOT-1 T is identified in Section 3.4.5.2, Botanical Resources, as a potentially significant impact to the environment due to removal or temporary disturbance of vegetation that potentially provides suitable habitat for special-status plant species or that support rare or important plan communities. Table 3.4-1 Vegetation Types and Habitats in the Study Area describes the total acres of each vegetation type per reach. According to tables 3.4-4 Impacts to Vegetation Types and Habitats within CDFW Jurisdiction for the Preferred Alternative and table 3.4-6 Impacts to Vegetation Types and Habitats outside of CDFW

Jurisdiction for the Preferred Alternative, 100% of the vegetation in reach 7B (for habitats riparian forest (native and non-native), riparian scrub-shrub (native and non-native), and upland herbaceous) will be temporarily or permanently impacted. Reach 7B experiences the most severe impacts to vegetation than any other reach; therefore, an environmental justice community of concern is disproportionately impacted.

Impact Determination: disproportionate adverse effect

Impact AQ-2 T is identified in Section 3.11.5.2, Air Quality and Greenhouse Gases, as a potentially significant impact to the environment due to Project-related short-term construction equipment emissions which, although temporary, could contribute to an existing or projected air quality violation due to peak daily emissions of nitrogen oxides (NO_X, as NO and NO_2), which is an ozone (O_3) precursor. These emissions would result from short-term construction activities in every reach, and are considered significant due to their contribution to regional nonattainment of the ozone standards. Such construction emissions would be short-term, because they would permanently cease when construction is completed after a period of approximately 5 years. This impact would be relatively evenly distributed throughout the Project area; however, the construction of the tunnel would result in a slight increase in NO_X emissions compared to excavation of the other reaches, about 16 percent more, but the increase would not be large enough to be considered a disproportionate impact in Reach 8, because it is within 20 percent estimation precision for construction projects. Comparing Tables 3.11-11 and 3.11-12, the change in peak NO_X emissions would be about 43 pounds per day, which would not impact Reach 7B.

Impact Determination: no disproportionate adverse effect

Impact AQ-3 T is identified in Section 3.11.5.2, Air Quality and Greenhouse Gases, as a potentially significant impact to the environment due to a net increase of any criteria pollutant for which the Project region is nonattainment. The channel excavation and widening and other construction activity would result in an exceedance of the significance threshold for NOx. This impact would be relatively evenly distributed throughout the Project area and would not, therefore, disproportionately impact an environmental justice community of concern.

Impact Determination: no disproportionate adverse effect

Impact NOI-1 T is identified in Section 3.12.5.2, Noise, as a potentially significant impact to the environment due to Project-related noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies. The construction related to the portal and tunnel as well as blasting would result in higher noise levels for Reach 8 than any other Project reach with levels of 107 dBA (according to Table 3.12-25), which would be louder than a jet taking off and almost as loud as a rock concert (Purdue N.D.). This noise level could cause serious hearing damage in an 8-hour exposure. The next highest noise level occurs in Reach 4 at 92 dBA (according to Table 3.12-14), which would be a little louder than a lawn mower. This noise level could likely cause hearing damage in an 8-hour exposure. Reach 8 is, therefore, disproportionately impacted.

Impact Determination: disproportionate adverse effect

Impact NOI-2 T is identified in Section 3.12.5.2, Noise, as a potentially significant impact to the environment due to the generation of excessive groundborne vibration or groundborne noise levels during construction. The construction related to the portal and tunnel, as well as blasting, would result in higher vibration levels for Reach 8 than any other Project reach, but would not be high enough to cause structural damage. However, all reaches would experience vibration levels that could exceed state standards for annoyance. Therefore, the impacts would not disproportionately impact Reaches 8 or 7B.

Impact Determination: no disproportionate adverse effect

Impact NOI-4 T is identified in Section 3.12.5.2, Noise, as having a potentially significant impact to the environment due to temporary and periodic increases in ambient noise levels in the Project vicinity above existing baseline levels. According to Table 3.12-24, Estimated Noise Levels for Construction Activities

Compared with Existing Noise Levels, Reaches 7A, 7B, and 8 have similar potential short-term increased noise levels of 38.7, 35.7, and 38.1 dBA, respectively. Reaches 4 and 5 could experience similar potential changes to short-term noise levels, with estimated increases of 31.6 and 26.8 dBA, respectively. Reaches 6 and 14 could experience similar potential changes to short-term noise levels, with estimated increases of 23.9 and 21.1 dBA, respectively. The potential short-term noise increases are relatively evenly distributed across the Project area and, thus, would not disproportionately impact Reaches 8 or 7B.

Impact Determination: no disproportionate adverse effect

Location of Project Features

Impact AG-1 T is identified in Section 3.7.5.2, Agricultural and Forest Resources, as having a potentially significant impact to the environment due to 50 acres of Prime Farmland, Unique Farmland, or Farmland of Statewide and Local Importance being converted to non-agricultural uses. According to Table 3.7-2, Important Farmlands Within Project Footprint by Reach, Reaches 7B and 8 contain 0.0 acre of Prime Farmland, Unique Farmland, or Farmland of Statewide and Local Importance. Therefore, Reach 7B or Reach 8 is not disproportionately affected.

Impact Determination: no disproportionate adverse effect

Impact AG-2 T is identified in Section 3.7.5.2, Agricultural and Forest Resources, as having a potentially significant impact to the environment due to 17 acres of Williamson Act designated land being subject to permanent conversion. According to Table 3.7.3, Williamson Act Lands Within Project Footprint by Reach, Reaches 7B and 8 contain 0.0 acre of Williamson Act lands. Therefore, Reach 7B or Reach 8 is not disproportionately affected.

Impact Determination: no disproportionate adverse effect

The following impacts are associated with:

Operations and Maintenance

Impact NOI-1 T is identified in Section 3.12.5.2, Noise, as a potentially significant impact to the environment due to routine operation and maintenance activities that could produce periodic increases in ambient noise levels during the life of the Project in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies. According to Table 3.12-13, the NRCS Alternative Reaches 8, 7B, and 4 could experience similar periodic noise elevations. Under the Preferred Alternative, operations and maintenance would be similar to the NRCS Alternative, with the exception of increased maintenance in Reach 8. The nearest residences along all reaches would exceed corresponding noise standards under the NRCS Alternative; and under the Preferred Alternative, Reach 8 would have the highest noise of any reach. Therefore, the impact would disproportionately impact Reach 8, an environmental justice community of concern.

Impact Determination: disproportionate adverse effect

Best Management Practices (BMPs)

No additional BMPs, beyond what were described in Sections 3.4.5.2, 3.7.5.2, 3.12.5.2, and 3.13.5.2, are required.

Mitigation Measures

No additional mitigation measures, beyond what are described in Section 3.12.5.3, are required.

3.19.5.3 Natural Resources Conservation Service (NRCS) Alternative

The following impacts are associated with:

Construction

Impact BOT-1 NRCS is identified in Section 3.4.5.3, Botanical Resources, as a potentially significant impact to the environment due to removal or temporary disturbance of vegetation that potentially provides suitable habitat for special-status plant species or that support rare or important plan communities. Except for the undefined area in Reach 8, the impacts are expected to be similar to the impacts in the preferred alternative. Table 3.4-1 Vegetation Types and Habitats in the Study Area describes the total acres of each vegetation type per reach. According to tables 3.4-4 Impacts to Vegetation Types and Habitats within CDFW Jurisdiction for the Preferred Alternative and table 3.4-6 Impacts to Vegetation Types and Habitats outside of CDFW Jurisdiction for the Preferred Alternative, 100% of the vegetation in reach 7B (for habitats riparian forest (native and non-native), riparian scrub-shrub (native and non-native), and upland herbaceous) will be temporarily or permanently impacted. Reach 7B experiences the most severe impacts to vegetation than any other reach; therefore, an environmental justice community of concern is disproportionately impacted.

Impact Determination: disproportionate adverse effect

Impact AQ-2 is identified in Section 3.11.5.3, Air Quality and Greenhouse Gases, as a potentially significant impact to the environment due to Project-related short-term construction equipment emissions which, although temporary, could contribute to an existing or projected air quality violation for peak daily mono-nitrogen oxides (NO and NO_2 [nitric oxide and nitrogen dioxide]), NO_x emissions. The emissions would result from short-term construction activities in every reach and are considered significant due to their contribution to regional nonattainment of the ozone standard. Although the construction emissions are short-term, because they will end when construction is completed, the construction would be ongoing for approximately 5 years. This impact is relatively evenly distributed throughout the Project area and, thus, would not impact Reaches 8 or 7B disproportionately.

Impact Determination: no disproportionate adverse effect

Impact AQ-3 NRCS is identified in Section 3.11.5.3, Air Quality and Greenhouse Gases, as a potentially significant impact to the environment due to a net increase of any criteria pollutant for which the Project region is nonattainment. The channel excavatgion and widening and other construction activity would result in an exceedance of the significance threshold for NOx. This impact would be relatively evenly distributed throughout the Project area and would not, therefore, disproportionately impact an environmental justice community of concern.

Impact Determination: no disproportionate adverse effect

Impact NOI-1 NRCS is identified in Section 3.12.5.3, Noise, as a potentially significant impact to the environment due to Project-related noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies. According to Table 3.12-14, Construction Noise at Nearest Residential Receptors by Reach, Reaches 8 and 4 have similar potential noise levels at the nearest receptors with dBA levels of 95 and 92, respectively, which are louder than a lawn mower (Purdue N.D.). Reaches 6, 7A, and 7B have similar potential noise levels at the nearest receptors with dBA levels of 85, 85, and 86, respectively, which are louder than a garbage disposal (Purdue N.D.). Reaches 5 and 14 have similar potential noise levels at the nearest receptors with dBA levels of 79 and 80, respectively, which are as loud as a garbage disposal. The potential noise is relatively evenly distributed across the Project area and thus would not disproportionately impact Reaches 8 or 7B.

Impact Determination: no disproportionate adverse effect

Impact NOI-2 NRCS is identified in Section 3.12.5.3, Noise, as a potentially significant and unavoidable impact to the environment due to the generation of excessive groundborne vibration or groundborne noise levels during construction. According to Table 3.12-22, Construction Vibration at Nearest Residential Receptors by Reach, none of the nearest residential receptors would experience vibration that would cause damage; but adjacent receptors in Reaches 4, 6, 7A, 7B, 8 and 14 would experience vibration levels that could exceed state standards for annoyance. Because these impacts would occur over several Project reaches, the vibration annoyance would not disproportionately impact Reaches 8 or 7B.

Impact Determination: no disproportionate adverse effect

Impact NOI-4 NRCS is identified in Section 3.12.5.3, Noise, as having a potentially significant impact to the environment due to temporary and periodic increases in ambient noise levels in the Project vicinity above existing baseline levels. According to Table 3.12-24, Estimated Noise Levels for Construction Activities Compared with Existing Noise Levels, Reaches 7A, 7B, and 8 have similar potential short-term increased noise levels of 38.7, 35.7, and 38.1 dBA, respectively. Reaches 4 and 5 could experience similar potential changes to short-term noise levels, with estimated increases of 31.6 and 26.8 dBA, respectively. Reaches 6 and 14 could experience similar potential changes to short-term noise levels, with estimated increases of 23.9 and 21.1 dBA, respectively. The potential short-term noise increases are relatively evenly distributed across the Project area and, thus, would not disproportionately impact Reaches 8 or 7B.

Impact Determination: no disproportionate adverse effect

The following impacts are associated with:

Location of Project Features

Impact AG-1 NRCS is identified in Section 3.7.5.3, Agricultural and Forest Resources, as having a potentially significant impact to the environment due to 50 acres of Prime Farmland, Unique Farmland, or Farmland of Statewide and Local Importance being converted to non-agricultural uses. According to Table 3.7-2, Important Farmlands Within Project Footprint by Reach, Reaches 7B and 8 contain 0.0 acre of Prime Farmland, Unique Farmland, or Farmland of Statewide and Local Importance. Therefore, Reach 7B or Reach 8 is not disproportionately affected.

Impact Determination: no disproportionate adverse effect

Impact AG-2 NRCS is identified in Section 3.7.5.3, Agricultural and Forest Resources, as having a potentially significant impact to the environment due to 17 acres of Williamson Act designated land being subject to permanent conversion. According to Table 3.7.3, Williamson Act Lands Within Project Footprint by Reach, Reaches 7B and 8 contain 0.0 acre of Williamson Act lands. Therefore, Reach 7B or Reach 8 is not disproportionately affected.

Impact Determination: no disproportionate adverse effect

The following impacts are associated with:

Operations and Maintenance

Impact NOI-1 NRCS is identified in Section 3.12.5.3, Noise, as a potentially significant impact to the environment due to routine operation and maintenance activities that could produce periodic increases in ambient noise levels during the life of the Project in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies. According to Table 3.12-21, Operation and Maintenance Noise at Nearest Residential Receptors by Reach, residents and other sensitive receptors located near Reaches 8, 4, and 7B could experience similar periodic noise levels of 87, 84, and

84 dBA, respectively. Receptors located near Reaches 6 and 7A could experience similar potential noise levels of 81 and 81 dBA, respectively. Receptors located near Reaches 5 and 14 could experience similar potential noise levels of 75 and 77 dBA, respectively. These potential noise impacts are relatively evenly distributed across the Project area and, thus, do not disproportionately impact Reaches 8 or 7B.

Impact Determination: no disproportionate adverse effect

Best Management Practices (BMPs)

No additional BMPs, beyond what were described in Sections 3.4.5.3, 3.7.5.3, and 3.12.5.3, are required.

Mitigation Measures

No additional mitigation measures, beyond what are described in Section 3.12.5.3, are required.

3.19.5.4 Culvert/Channel Alternative

The following impacts are associated with:

Construction

Impact BOT-1 CC is identified in Section 3.4.5.4, Botanical Resources, as a potentially significant impact to the environment due to removal or temporary disturbance of vegetation that potentially provides suitable habitat for special-status plant species or that support rare or important plan communities. Except for the undefined area in Reach 8, the impacts are expected to be similar to the impacts in the preferred alternative. Table 3.4-1 Vegetation Types and Habitats in the Study Area describes the total acres of each vegetation type per reach. According to tables 3.4-4 Impacts to Vegetation Types and Habitats within CDFW Jurisdiction for the Preferred Alternative and table 3.4-6 Impacts to Vegetation Types and Habitats outside of CDFW Jurisdiction for the Preferred Alternative, 100% of the vegetation in reach 7B (for habitats riparian forest (native and non-native), riparian scrub-shrub (native and non-native), and upland herbaceous) will be temporarily or permanently impacted. Reach 7B experiences the most severe impacts to vegetation than any other reach; therefore, an environmental justice community of concern is disproportionately impacted.

Impact Determination: disproportionate adverse effect

Impact AQ-2 is identified in Section 3.11.5.4, Air Quality and Greenhouse Gases, as a potentially significant impact to the environment due to Project-related short-term construction equipment emissions which, although temporary, could contribute to an existing or projected air quality violation for peak daily mono-nitrogen oxides (NO and NO_2 [nitric oxide and nitrogen dioxide]), NO_x emissions. The emissions would result from short-term construction activities in every reach and are considered significant due to their contribution to regional nonattainment of the ozone standard. Although the construction emissions are short-term, because they will end when construction is completed, the construction would be ongoing for approximately 5 years. This impact is relatively evenly distributed throughout the Project area and thus would not impact Reaches 8 or 7B disproportionately.

Impact Determination: no disproportionate adverse effect

Impact AQ-3 CC is identified in Section 3.11.5.4, Air Quality and Greenhouse Gases, as a potentially significant impact to the environment due to a net increase of any criteria pollutant for which the Project region is nonattainment. The channel excavatgion and widening and other construction activity would result in an exceedance of the significance threshold for NOx. This impact would be relatively evenly distributed throughout the Project area and would not, therefore, disproportionately impact an environmental justice community of concern.

Impact Determination: no disproportionate adverse effect

Impact NOI-1 CC is identified in Section 3.12.5.4, Noise, as a potentially significant impact to the environment due to Project-related noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies. The Culvert/Channel Alternative would produce similar potential noise levels as the NRCS Alternative. According to Table 3.12-14, Construction Noise at Nearest Residential Receptors by Reach, Reaches 8 and 4 have similar potential noise levels at the nearest receptors with dBA levels of 95 and 92, respectively, which are louder than a lawn mower (Purdue N.D.). Reaches 6, 7A, and 7B have similar potential noise levels at the nearest receptors with dBA levels of 85, 85, and 86, respectively, which are louder than a garbage disposal (Purdue N.D.). Reaches 5 and 14 have similar potential noise levels at the nearest receptors with dBA levels of 79 and 80, respectively, which are as loud as a garbage disposal. The potential noise is relatively evenly distributed across the Project area and thus would not disproportionately impact Reaches 8 or 7B.

Impact Determination: no disproportionate adverse effect

Impact NOI-2 CC is identified in Section 3.12.5.4, Noise, as a potentially significant impact to the environment due to the generation of excessive groundborne vibration or groundborne noise levels during construction. According to Table 3.12-22, Construction Vibration at Nearest Residential Receptors by Reach, which provide worst-case scenario estimates applicable to both the NRCS and Culvert/Channel alternatives, none of the nearest residential receptors would experience vibration that would cause damage, but adjacent receptors in Reaches 4, 6, 7A, 7B, 8, and 14 would experience vibration levels that could exceed state standards for annoyance. Because these impacts would occur over several reaches, the vibration annoyance would not disproportionately impact Reaches 8 or 7B.

Impact Determination: no disproportionate adverse effect

Impact NOI-4 CC is identified in Section 3.12.5.4, Noise, as having a potentially significant impact to the environment due to temporary and periodic increases in ambient noise levels in the Project vicinity above existing baseline levels. According to Table 3.12-24, Estimated Noise Levels for Construction Activities Compared with Existing Noise Levels, Reaches 7A, 7B, and 8 have similar potential short-term increased noise levels of 38.7, 35.7, and 38.1 dBA, respectively. Reaches 4 and 5 could experience similar potential changes to short-term noise levels, with estimated increases of 31.6 and 26.8 dBA, respectively. Reaches 6 and 14 could experience similar potential changes to short-term noise levels, with estimated increases of 23.9 and 21.1 dBA, respectively. The potential short-term noise increases are relatively evenly distributed across the Project area and thus would not disproportionately impact Reaches 8 or 7B.

Impact Determination: no disproportionate adverse effect

The following impacts are associated with:

Location of Project Features

Impact AG-1 CC is identified in Section 3.7.5.4, Agricultural and Forest Resources, as having a potentially significant impact to the environment due to 50 acres of Prime Farmland, Unique Farmland, or Farmland of Statewide and Local Importance being converted to non-agricultural uses. According to Table 3.7-2, Important Farmlands Within Project Footprint by Reach, Reaches 7B and 8 contain 0.0 acre of Prime Farmland, Unique Farmland, or Farmland of Statewide and Local Importance. Therefore, Reach 7B or Reach 8 is not disproportionately affected.

Impact Determination: no disproportionate adverse effect

Impact AG-2 CC is identified in Section 3.7.5.4, Agricultural and Forest Resources, as having a potentially significant impact to the environment due to 17 acres of Williamson Act designated land being subject to permanent conversion. According to Table 3.7.3, Williamson Act Lands Within Project Footprint by Reach, Reaches 7B and 8 contain 0.0 acre of Williamson Act lands. Therefore, Reach 7B or Reach 8 is not disproportionately affected.

Impact Determination: no disproportionate adverse effect

The following impacts are associated with:

Operations and Maintenance

Impact NOI-1 CC is identified in Section 3.12.5.4, Noise, as a potentially significant impact to the environment due to routine operation and maintenance activities that could produce periodic increases in ambient noise levels during the life of the Project in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies. The Culvert/Channel Alternative would produce similar potential noise levels as the NRCS Alternative. Table 3.12-21, Operation and Maintenance Noise at Nearest Residential Receptors by Reach, residents and other sensitive receptors located near Reaches 8, 4, and 7B could experience similar periodic noise levels of 87, 84, and 84 dBA, respectively. Receptors located near Reaches 6 and 7A could experience similar potential noise levels of 81 and 81 dBA, respectively. Receptors located near Reaches 5 and 14 could experience similar potential noise levels of 75 and 77 dBA, respectively. These potential noise impacts are relatively evenly distributed across the Project area and thus do not disproportionately impact Reaches 8 or 7B.

Impact Determination: no disproportionate adverse effect

Best Management Practices (BMPs)

No additional BMPs, beyond what were described in Sections 3.4.5.4, 3.7.5.4, 3.12.5.4, and 3.13.5.4, are required.

Mitigation Measures

No additional mitigation measures, beyond what are described in Section 3.12.5.4, are required.

3.19.5.5 Reach 6 Bypass Alternative

The following impacts are associated with:

Construction

Impact BOT-1 BY is identified in Section 3.4.5.5, Botanical Resources, as a potentially significant impact to the environment due to removal or temporary disturbance of vegetation that potentially provides suitable habitat for special-status plant species or that support rare or important plan communities. Except for the undefined area in Reach 8, the impacts are expected to be similar to the impacts in the preferred alternative. Reach 6 is also expected to have less impact in the Reach 6 Bypass Alternative than in the Preferred Alternative. Table 3.4-1 Vegetation Types and Habitats in the Study Area describes the total acres of each vegetation type per reach. According to tables 3.4-4 Impacts to Vegetation Types and Habitats within CDFW Jurisdiction for the Preferred Alternative and table 3.4-6 Impacts to Vegetation Types and Habitats outside of CDFW Jurisdiction for the Preferred Alternative, 100% of the vegetation in reach 7B (for habitats riparian forest (native and non-native), riparian scrub-shrub (native and non-native), and upland herbaceous) will be temporarily or permanently impacted. Reach 7B experiences the most severe impacts to vegetation than any other reach; therefore, an environmental justice community of concern is disproportionately impacted.

Impact Determination: disproportionate adverse effect

Impact TRAFFIC-1 BY is identified in section 3.10.5.5, Traffic and Circulation, as being a potentially significant impact to the environment due to increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system. The construction of bridges to accommodate the Reach 6 bypass channel is anticipated to interfere with local traffic patterns and parking and with traffic along

U.S. 101. Since this construction mainly impacts Reaches 5 and 6, Reaches 7B or 8 will not be disproportionately impacted.

Impact Determination: no disproportionate adverse effect

Impact AQ-2 is identified in Section 3.11.5.5, Air Quality and Greenhouse Gases, as a potentially significant impact to the environment due to Project-related short-term construction equipment emissions which, although temporary, could contribute to an existing or projected air quality violation due to peak daily emissions of nitrogen oxides (NO_X, as NO and NO_2), which is an ozone (O_3) precursor. These emissions would result from short-term construction activities in every reach and are considered significant due to their contribution to regional nonattainment of the ozone standards. Such construction emissions would be short-term, because they would permanently cease when construction is completed after a period of approximately 5 years. This impact would be relatively evenly distributed throughout the Project area, however, the construction of the tunnel would result in a slight increase in NO_X emissions compared to excavation of the other reaches, about 16 percent more; but the increase would not be large enough to be considered a disproportionate impact in Reach 8 because it is within 20 percent estimation precision for construction projects. Comparing Tables 3.11-11 and 3.11-12, the change in peak NO_X emissions would be about 43 pounds per day, which would not impact Reach 7B.

Impact Determination: no disproportionate adverse effect

Impact AQ-3 BY is identified in Section 3.11.5.5, Air Quality and Greenhouse Gases, as a potentially significant impact to the environment due to a net increase of any criteria pollutant for which the Project region is nonattainment. The channel excavatgion and widening and other construction activity would result in an exceedance of the significance threshold for NOx. This impact would be relatively evenly distributed throughout the Project area and would not, therefore, disproportionately impact an environmental justice community of concern.

Impact Determination: no disproportionate adverse effect

Impact NOI-1 BY was identified in Section 3.12.5.5, Noise, as a potentially significant impact to the environment due to short-term Project-related noise in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies. According to Table 3.12-25, Construction Noise at Nearest Residential Receptors by Reach, receptors located near Reach 8 could experience noise levels of 107 dBA, almost as loud as a rock concert (Purdue N.D.). Receptors located near Reach 6 (Bypass) could experience noise levels of 101 dBA, louder than a jet take-off (Purdue N.D.). Receptors near Reach 4 could experience a potential short-term noise level of 92 dBA. Receptors near Reaches 7A and 7B could experience similar potential noise levels of 85, and 86 dBA, respectively. Reach 14 has a potential noise level at the nearest receptor of 80 dBA. Based on the thresholds, the nearest residences along Reaches 4, 6 (Bypass), 7A, 7B, 8, and 14 would all exceed corresponding noise standards; but Reach 8 would have the highest noise level and most likely to cause nearby residences hearing damage of any reach in the Project, disproportionately impacting an environmental justice community of concern.

Impact Determination: disproportionate adverse effect

Impact NOI-2 BY was identified in Section 3.12.5.5, Noise, as a potentially significant impact to the environment due to the generation of excessive groundborne vibration or groundborne noise levels during construction. The construction related to the portal and tunnel, as well as blasting, would result in higher vibration levels for Reach 8 than any other Project reach; but would not be high enough to cause structural damage. However, all reaches would experience vibration levels that could exceed state standards for annoyance. Therefore, the impacts would not disproportionately impact Reaches 8 or 7B.

Impact Determination: no disproportionate adverse effect

Impact NOI-4 BY is identified in Section 3.12.5.5, Noise, as having a potentially significant impact to the environment due to temporary and periodic increases in ambient noise levels in the Project vicinity above existing baseline levels. According to Table 3.12-24, Estimated Noise Levels for Construction Activities Compared with Existing Noise Levels (NRCS Alternative), Reaches 7A, 7B, and 8 have similar potential short-term increased noise levels of 38.7, 35.7, and 34.1 dBA, respectively. Reaches 4 and 5 could experience similar potential changes to short-term noise levels, with estimated increases of 31.6 and 26.8 dBA, respectively. Reaches 6 and 14 could experience similar potential changes to short-term noise levels, with estimated increases of 23.9 and 21.1 dBA, respectively. The Reach 6 Bypass Alternative would result in higher noise levels in Reach 8 than the NRCS Alternative. However, all reaches are above the significance criteria of 5 dBA L_{EQ} and, thus, would not disproportionately impact Reaches 8 or 7B.

Impact Determination: no disproportionate adverse effect

The following impacts are associated with:

Location of Project Features

Impact AG-1 BY is identified in Section 3.7.5.5, Agricultural and Forest Resources, as having a potentially significant impact to the environment due to 40 acres of Prime Farmland, Unique Farmland, or Farmland of Statewide and Local Importance being converted to non-agricultural uses. According to Table 3.7-2, Important Farmlands Within Project Footprint by Reach, Reaches 7B and 8 contain 0.0 acre of Prime Farmland, Unique Farmland, or Farmland of Statewide and Local Importance. Therefore, Reach 7B or Reach 8 is not disproportionately affected.

Impact Determination: no disproportionate adverse effect

Impact AG-2 BY is identified in Section 3.7.5.5, Agricultural and Forest Resources, as having a potentially significant impact to the environment due to 4.0 acres of Williamson Act designated land being subject to permanent conversion. According to Table 3.7.3, Williamson Act Lands Within Project Footprint by Reach, Reaches 7B and 8 contain 0.0 acres of Williamson Act lands. Therefore, Reach 7B or Reach 8 is not disproportionately affected.

Impact Determination: no disproportionate adverse effect

The following impacts are associated with:

Operations and Maintenance

Impact HYDRO-1 BY is identified in Section 3.2.5.5, Hydrology and Water Quality, as a potentially significant impact to the environment due to operations that would perpetuate channel instability (incision) and resultant water quality impacts in Reach 5 and Reach 6. This impact would not disproportionately impact Reach 7B or 8, environmental justice communities of concern.

Impact Determination: no disproportionate adverse effect

Impact HYDRO-2 BY is identified in Section 3.2.5.5, Hydrology and Water Quality, as a potentially significant impact to the environment due to operations that would perpetuate channel instability (incision) and thus water quality impacts in Reach 5 and Reach 6. This impact would not disproportionately impact Reach 7B or 8, environmental justice communities of concern.

Impact Determination: no disproportionate adverse effect

Impact HYDRO-5 BY is identified in Section 3.2.5.5, Hydrology and Water Quality, as a potentially significant impact to the environment due to operations that would perpetuate channel instability (incision) and resultant erosion and siltation impacts in Reach 5 and Reach 6. This impact would not disproportionately impact Reach 7B or 8, environmental justice communities of concern.

Impact Determination: no disproportionate adverse effect

Impact NOI-1 BY would be the same for the Reach 6 Bypass Alternative as described above for the NRCS Alternative, except that Reach 8 would require additional creek and tunnel maintenance and Reach 6 Bypass would also require maintenance. Similar to the Preferred Alternative, discussed above in Section 3.19.5.3, the nearest residences along all reaches would exceed corresponding noise standards under the NRCS and Reach 6 Bypass alternatives, Reach 8 would have the highest noise of any reach. Therefore, the impact would disproportionately impact Reach 8, an environmental justice community of concern.

Impact Determination: disproportionate adverse effect

Best Management Practices (BMPs)

No additional BMPs, beyond what were described in Section 3.12.5.5, are required.

Mitigation Measures

No additional mitigation measures, beyond what are described in Section 3.12.5.5, are required.

3.19.6 Summary of Impacts to Environmental Justice

Under the No Project Alternative, flooding would continue causing economic impact to businesses, substantial degradation and violation to water quality standards due to bank erosion and sedimentation, structures and people to be exposed to 100-year flood hazard, interference with emergency access, emergency response, evacuation plans, public transportation, bicycle paths, and pedestrian facilities, all of which would disproportionately affect an environmental justice community of concern.

All alternatives would result in temporary and permanent loss of California sycamore woodland habitat, excess noise levels, excess groundborne vibration, periodic increases in ambient noise levels, degraded visual character or quality of the surrounding area, conversion of Prime Farmland, Unique Farmland, and Farmland of Statewide and Local Importance, and conversion of Williamson Act land. However, the distribution of these impacts would be across multiple Project reaches and would not disproportionately affect an environmental justice community of concern, except for the Preferred and Reach 6 Bypass alternatives where excess noise levels disproportionately impact Reach 8, an environmental justice community of concern.

4 Other CEQA Considerations

This section discusses other sections required by the California Environmental Quality Act (CEQA) including cumulative impacts, unavoidable adverse impacts, significant irreversible environmental changes that would result from the Project's implementation, growth-inducing impacts, and energy efficiency.

4.1 Cumulative Impacts

4.1.1 Introduction

Cumulative impacts may result from individually minor but collectively significant effects of multiple projects occurring over a period of time. Cumulative effects may occur when a project's incremental impacts, added to those of other closely related past, present, and reasonably foreseeable probable future projects, become environmentally important.

Under CEQA, "cumulative impacts" refers to two or more environmental affects that, when combined, are "considerable" or which compound or increase other environmental impacts. The CEQA Guidelines (14 CFR §15130) require a discussion of cumulative impacts when they are significant. The discussion should reflect the severity of the impacts and their likelihood of occurrence and should be guided by the standards of practicability and reasonableness.

CEQA requires either (1) a list of past, present, and reasonably foreseeable future projects producing related or cumulative impacts, including those projects outside the control of the lead agency ("list approach"); or (2) a summary of projects contained in an adopted general plan or related planning document that is designed to evaluate regional or area-wide conditions ("plan approach"). This analysis uses the list approach to analyze cumulative impacts.

CEQA also requires a summary of the expected environmental effects to be produced by those projects, with specific reference to additional information stating where that information is available; and a reasonable analysis of the cumulative impacts of the relevant projects. An Environmental Impact Report (EIR) must examine reasonable options for mitigating or avoiding any significant cumulative effects of a proposed project. In some situations, the only feasible mitigation for cumulative impacts may involve the adoption of ordinances or regulations, rather than the imposition of conditions on a project-by-project basis.

4.1.2 Approach

Table 4.6-1 is a list of past, present, and reasonably probable future projects within and near the Project area that would affect similar resources in the same general geographic area in the same general timeframe and, thus, could result in cumulative impacts in combination with those of Project alternatives. This table presents the project name, location, a brief description, and proximity to the Project and the estimated initiation timeframe of the project. Cumulative project information listed in Table 4.6-1 is based on information supplied by the City of Morgan Hill, the County of Santa Clara, and the SCVWD at the time of the Notice of Preparation (NOP). The list provides a list of projects identified by the three planning jurisdictions that would likely contribute to cumulative impacts. Cumulative impacts for some resources are not quantifiable and are, therefore, discussed in general terms.

Two of the projects listed in the table recently have been completed, but are included in the cumulative impact analysis because they are located in the same area as the Proposed Project, and continued construction could affect the same or similar resources. The Butterfield Boulevard South Extension overlaps with the Project at West Little Llagas near Watsonville and Monterey roads near Reach 7A. In

addition, the Wright-Mañana Residential Development (constructed near the corner of Hale and Wright avenues, overlaps with the project in Reach 8. These two projects are included in the water quality and hydrology and biological resource discussions. The Cochrane-Borello Residential Development Project (Cochrane-Borello Project) includes removal of existing orchards and associated uses on Cochrane Road near the base of Anderson Dam. This project is considered in the cumulative assessment for biological resources, agricultural resources, and traffic and transportation (Morgan Hill 2012).

This Draft EIR concludes that impacts associated with socioeconomics, land use, and population and housing would not have the potential to result in a significant cumulative impact in combination with the projects identified in Table 4.6-1. Support for this conclusion is provided below, and no further discussion is provided in this cumulative impact assessment.

Socioeconomic impacts of the Project alternatives generally would be beneficial, and when land is acquired by easement or otherwise disrupted, property owners would receive appropriate compensation. Property tax revenues could be lowered as a result of land acquisition, but the amount would be extremely small in relation to the local tax base. Other projects included in Table 4.6-1 are not expected to result in adverse socioeconomic impacts, and many would have beneficial impacts due to the creation of employment opportunities, purchases of goods and services, and creation of housing. Therefore, no significant cumulative impacts would occur.

The Project alternatives' use of lands designated for residential, commercial, and agricultural uses for flood prevention purposes is consistent with local health and safety and environmental regulations and land use policies. Because the Project alternatives would be consistent with these regulations and policies, they would not contribute to a significant cumulative impact in combination with other projects.

The Project would not induce population growth, and although the Project alternatives could result in the displacement of up to up to 12 residences, many of the projects listed in Table 4.6-1 would create numerous new residences, and none of the other projects is known to result in a loss of residences. Therefore, no significant cumulative impacts would occur.

Table 4.6-1 Preliminary List of Projects Evaluated for Cumulative Impacts in the Upper Llagas Creek Flood Control Project Vicinity

Project Name	Location	Project Description	Distance from Proposed Project	Potential Cumulative Impact Topics	Schedule/Status
Santa Clara Valley Water District (SCVWD) Anderson Dam Seismic Studies and Retrofit Project	Anderson Reservoir is a man-made lake along Coyote Creek in Santa Clara County, California near Morgan Hill. The dam sits on the Calaveras Fault, which runs from Hollister to Milpitas.	Retrofit and strengthen Anderson Dam so it can withstand any probable earthquake.	Anderson Dam sits on Cochrane Road, east of Morgan Hill, on Coyote Creek, approximately 5 miles from Upper Llagas Creek.	Potential construction-related noise, air quality, and traffic impacts on local access roads and potential impacts on steelhead.	Planning: 2011–2013 Design: 2013–2016 Construction: 2016–2018
SCVWD Almaden Lake	Almaden Lake is a man-made lake fed by Alamitos Creek upstream of the confluence of Alamitos Creek and the Guadalupe River.	Almaden Lake, which has the high concentration of methyl mercury, is jointly owned by the SCVWD and the City of San Jose (the City); and the City is responsible for management of recreational facilities at the lake. To address the mercury issue, the SCVWD is planning the Almaden Lake project to modify the lake to achieve these objectives: > Reduce mercury in target fish and production of methyl mercury to meet applicable water quality standards; > Reduce thermal barrier to anadromous fish migration; > Remove entrainment and impacts from predatory species; and > Minimize impacts to recreational features.	Almaden Lake is approximately 17 miles for the north end of Reach 8.	Impacts to steelhead.	Planning and design: 2014 Construction: 2015
Barry Swenson Builder Downtown Morgan Hill Revitalization	Redevelopment sites A & B (1st and Monterey and 2nd and Monterey) in Downtown Morgan Hill	Barry Swenson Builder to design and develop two crucial locations in Downtown Morgan Hill.	Less than 1 mile south of Reach 8.	Potential construction-related traffic impacts on local access roads and associated air quality and noise impacts.	In Development Process.
High Speed Rail California High-Speed Rail Authority (CaHSRA)	Two routes under consideration: One route runs east of existing Union Pacific tracks through Morgan Hill. One route runs east of existing U.S. Highway 101 (U.S. 101) until around Dunne Avenue. When the freeway bends, the high speed rail keeps going straight and lines up along Murphy Avenue and continues to San Martin.	By 2029, high speed rail running from San Francisco to Los Angeles via the Central Valley, including 800 miles of new track and up to 24 stations. Morgan Hill is working with other communities, transportation groups, and the CaHSRA to identify the best location for where the High Speed rail will pass through Morgan Hill.	Less than 1 mile east of Reach 8.		Draft EIR/Environmental Impact Statement (EIS) currently underway.
Butterfield Boulevard Linear Park, Park Facilities – Part of the 5-Year Engineering Capital Improvement Projects (CIP)	Butterfield Boulevard	Provides landscaping, walkways, and combination Class 1 bikeway/walkway along Butterfield Channel.	Within 1 mile east of Reach 8.	This project would provide additional public access and recreational opportunities.	Phase 1 and Phase 2 are complete. Phase 3 (San Pedro to Tennant) in Development
Community Park Improvements, Park Facilities – Part of the 5-Year Engineering CIP	Community Park, east and south of Cosmo Avenue, west of Monterey Road, and north of West Edmundson Road	Park improvements, including addition of six tennis courts, new multi-purpose fields, expanded play area including water feature, second restroom, new tennis clubhouse, outdoor basketball court lighting, expanded parking.	Less than 0.5 mile east of Reach 7B.	Potential construction-related traffic impacts on local access roads and associated air quality and noise impacts. This project would provide additional recreational opportunities.	Phase 1 completed in Fiscal Year (FY) 07/08. Phase 2 in FY 13/14 includes all improvements west of the access road. Phases 3 and 4 contingent on relocation of PW Corp Yard and Bus Barn.
Madrone Channel Trail, Park Facilities – Part of the 5-Year Engineering CIP	Between Cochrane Road and Tennant Avenue	Construct an unpaved trail on existing SCVWD service road, adjacent to Madrone recharge channel east of Hwy 101, between Cochrane Road and Tennant Avenue. Construction includes minor improvements to existing maintenance road, rest areas, and signage.	Approximately 2 miles east of Reach 8.	No overlap of construction periods is anticipated. This project would provide additional public access and recreational opportunities.	Design and construction scheduled to begin in FY 11/12.
Sanitary Sewer Rehabilitation, Sanitary Sewer – Part of the 5-Year Engineering CIP	Citywide	Maintaining the City's sewer collection system requires an ongoing program of evaluation, cleaning, improvement, and repairs. Sewer lines are routinely cleaned and video-recorded as needed to evaluate the system.	Within 2 miles of all points of Project site.	Possible overlap with the utility relocation process for the Proposed Project, which could result in an impact on utility infrastructure.	Construction slated for 2013–2014

Table 4.6-1 Preliminary List of Projects Evaluated for Cumulative Impacts in the Upper Llagas Creek Flood Control Project Vicinity

Project Name	Location	Project Description	Distance from Proposed Project	Potential Cumulative Impact Topics	Schedule/Status
Lift Station Rehabilitation, Sanitary Sewer – Part of the 5-Year Engineering CIP	Citywide	The 14 citywide lift stations are systematically upgraded or replaced as needed. Various improvements include new pump and motor, electrical system, high level floats, alarms, generators available for (or dedicated to) each lift station, generator transfer switches, and a new telemetry system for after-hours monitoring at Public Works and City facilities.	Within 2 miles of all points of Project site.	Possible overlap with the utility relocation process for the Proposed Project, which could result in an impact on utility infrastructure.	Lift Station P construction was completed in FY 09/10. Lift Stations M and O will be designed and reconstructed in FY 11/12 and FY 13/14, respectively.
New Sewer Mains, Sanitary Sewer – Part of the 5-Year Engineering CIP	Citywide	New sewer mains are required to ensure adequate sewer capacity as the City expands. In accordance with the 2002 Sewer Master Plan, some mains will be constructed by the City and some by developers with partial reimbursement from the City.	Within 2 miles of all points of Project site.	Potential construction-related traffic impacts on local access roads.	In FY 13/14 the second phase of the Hill-Barrett trunk sewer will be installed.
Storm Pipe and Inlet Installation, Storm Drainage – Part of the 5-Year Engineering CIP	Citywide	Construction of storm drains and storm inlets at various locations within the City to resolve existing drainage problems, as needed. Problem areas are targeted to eliminate local flooding problems.	Within 2 miles of all points of Project site.	Possible overlap with the utility relocation process for the Proposed Project, which could result in an impact on utility infrastructure.	In Process
West Little Llagas Local Drainage, Storm Drainage – Part of the 5-Year Engineering CIP	West Little Llagas Creek in Morgan Hill	Due to delay of federal funding, the City and the SCVWD have entered into a cost-sharing agreement to produce design documents for the Upper Llagas Flood Control Project (aka PL566).	Within Project footprint in Morgan Hill.	Possible overlap with the utility relocation process for the Proposed Project, which could result in an impact on utility infrastructure.	Design and Environmental Study are expected to begin in April 2010 and to be completed by January 2013.
Butterfield Detention Basin, Storm Drainage – Part of the 5-Year Engineering CIP	Maple / Railroad	Construction of 30+-acre detention basin in accordance with adopted Butterfield Boulevard. EIR. Project would be jointly managed as a Burrowing Owl habitat. Project will have potential as joint-use basin/outdoor recreation area. This project is a requirement for the construction of Butterfield from Tennant Avenue. to Watsonville Road. If this project is constructed, the Morgan Hill Ranch secondary basin, now comprising 4 acres, can be developed.	Approximately 1 mile east Reaches 8 and 7B boundary at Dewitt Creek.	No overlap of construction periods, since construction of the detention basin is complete.	Project slated to begin in 2012.
Butterfield Boulevard South Extension, Streets and Roads – Part of the 5-Year Engineering CIP	Butterfield Boulevard from Tennant Avenue to Watsonville Road, Morgan Hill	Extend Butterfield Boulevard from Tennant Avenue to Watsonville Road, including a grade separation over the Union Pacific Railroad tracks. In addition to the roadway work, a stormwater channel and detention basin will be constructed.	Project area runs less than 0.5 mile from Reach 7A.	No overlap of construction periods, since construction of the road extension is complete.	Project is scheduled to be complete 2013.
Butterfield Boulevard North Extension, Streets and Roads – Part of the 5-Year Engineering CIP	Butterfield Boulevard north of Cochrane Road	Extend Butterfield Boulevard north from Cochrane Road to Madrone Parkway. Improvements include new road section per City standards, curb and gutter, sidewalks, and streetlights.	Approximately 2 miles northeast of Reach 8.	No overlap of construction periods since construction of the road extension is complete.	Scheduled to be complete 2012.
New Signal Construction, Streets and Roads – Part of the 5-Year Engineering CIP	Citywide	New traffic signals are installed as needed to meet growing traffic demands. In FY 07/08, the intersection of Monterey Road and Spring Avenue was studied. It was determined that a new signal was warranted for safety and circulation purposes. The recently approved General Plan Circulation Element includes the Study's recommendation.	Within 2 miles of all points of Project site.	Potential construction-related traffic impacts on local access roads.	In FY 12/13 and FY 14/15, signals at locations yet to be determined will be installed at warranted locations in accordance with the General Plan.
Pavement Rehabilitation Program, Streets and Roads – Part of the 5-Year Engineering CIP	Citywide	This Program involves the rehabilitation of existing street surfaces by crack sealing, slurry seal, overlay, or reconstruction in FY 10/11.	Within 2 miles of all points of Project site.	No overlap of construction periods is anticipated.	Scheduled for FY 10/11.
Cochrane Road Traffic Signal Timing/ Coordination, Streets and Roads – Part of the 5-Year Engineering CIP	Cochrane Road, Morgan Hill	Interconnect traffic signals and striping to improve traffic movement and safety. Signals are to be synchronized to facilitate efficiency.	1.5 miles north of Reach 8.	Potential construction-related traffic impacts on local access roads.	Timing based on earliest date the City may receive VTP 2035 Grant. Staff will pursue other grant opportunities to accelerate timing of project.

Table 4.6-1 Preliminary List of Projects Evaluated for Cumulative Impacts in the Upper Llagas Creek Flood Control Project Vicinity

Project Name	Location	Project Description	Distance from Proposed Project	Potential Cumulative Impact Topics	Schedule/Status
Underground Monterey Utilities, Streets and Roads – Part of the 5-Year Engineering CIP	Monterey Road, Dunne to 600 feet north of Cosmo	City's goal is to underground the overhead utility lines along Monterey Road from Dunne Avenue to Tennant Avenue. PG&E is responsible for design. Sufficient Rule 20A funds are available to accomplish undergrounding from Dunne to approximately 600 feet north of Cosmo.	Less than 0.5 mile east of Reaches 8 and 7B boundary at Dewitt Creek.	No overlap of construction periods is anticipated.	Construction anticipated to begin in FY 10/11.
Residential Development Control System (RDCS) School Safety Improvements, Streets and Roads – Part of the 5-Year Engineering CIP	Citywide	Construct school pedestrian safety improvements in accordance with RDCS ordinance. Funds can also be used to supplement improvement projects undertaken by developers near schools.	Within 2 miles of all points of Project site.	Potential construction-related traffic impacts on local access roads noise impacts.	2010–2015
Underground Utilities, Streets and Roads – Part of the 5-Year Engineering CIP	Misc. Locations – Citywide	The Utility Undergrounding fund receives revenues from developers authorized by the City to pay an in-lieu fee for the utility undergrounding required of their projects according to the Municipal Code. The funds collected are aggregated to pay for utility undergrounding at key locations in the City. The CIP carries a placeholder for these funds so that they may be used either as a stand-alone CIP project or contributed to a larger project to accomplish undergrounding beyond the limits and responsibility of that project.	Within 2 miles of all points of Project site.	Potential construction-related traffic impacts on local access roads and associated air quality and noise impacts. Possible overlap with the utility relocation process for the Proposed Project, which could result in an impact on utility infrastructure.	2010–2015
U.S. 101 / Tennant Interchange, Streets and Roads – Part of the 5-Year Engineering CIP	U.S. 101 / Tennant Interchange	Widen Tennant Avenue bridge over U.S. 101 and construct a loop ramp for eastbound Tennant Avenue to northbound U.S. 101. In FY 06/07, the Project Study Report was finalized, completing the environmental clearance for the project.	Less than 2 miles east of Reach 7B.	No overlap of construction periods is anticipated.	Construction began in FY 09/10 and is scheduled to be completed in spring of 2011.
Downtown Parking, Streets and Roads – Part of the 5-Year Engineering CIP	Downtown Morgan Hill	Provide more parking downtown by acquiring properties, creating new lots, and expanding or connecting existing lots. In addition, the City's parking lot on the east side of Monterey between Second and Third streets is targeted for expansion. Other parking lots will be constructed as sites become available.	Less than 1 mile east of Reach 8.	Potential construction-related traffic impacts on local access roads and associated air quality and noise impacts.	2010–2015
Santa Teresa Construction, Streets and Roads – Part of the 5-Year Engineering CIP	From Main Avenue to Spring Avenue	Construct Santa Teresa from Main Avenue to DeWitt. Project scope includes roadway improvements, sidewalks, bike lanes, and streetlights. The recently adopted General Plan Circulation Element update has designated this road segment to be a two-lane arterial.	Less than 1 mile east of Reaches 8 and 7B boundary at Dewitt Creek.	No overlap of construction periods is anticipated.	Final design, right-of-way (ROW) acquisition, and environmental review may occur in FY 10/11, followed by construction in FY 11/12.
West Dunne Avenue Widening, Streets and Roads – Part of the 5-Year Engineering CIP	West Dunne Avenue from Monterey Road to Peak Avenue	W. Dunne Avenue to be improved to its ultimate width from Monterey to Peak. No increase in number of travel lanes at this time: will be one lane each direction, with center turning lane. Project will feature safety improvements including new sidewalks, curbs, gutters, streetlights and bike lanes, and will underground existing overhead utility lines.	Within 2 miles of Reaches 8 and 7B boundary at Dewitt Creek.	No overlap of construction periods is anticipated.	In FY 08/09 final design, environmental review and ROW acquisition began, construction expected to begin early FY 10/11.
Cochrane Road Widening, Streets and Roads – Part of the 5-Year Engineering CIP	Cochrane Road, 300 feet East of Sutter Boulevard to U.S. 101	Widen Cochrane Road, east-bound direction, to provide Class II Bike lane and new sidewalk. The City received $162,000 in Transportation Fund for Clean Air (TFCA) grant funds in July of 2009 for this project.	1.5 miles north of Reach 8.	Potential construction-related traffic impacts on local access roads and associated air quality and noise impacts.	2010–2015
Downtown Street Revitalization, Streets and Roads – Part of the 5-Year Engineering CIP	Downtown Morgan Hill	MTC Planning grant program focusing on revitalization of Monterey Road. downtown, including lighting/landscaping of median between Dunne Avenue and Main Avenue. RDA funding for downtown area provided includes pavement repair, curb/gutter/sidewalk repair, water and sewer upgrades, lighting and landscaping upgrades.	Less than 1 mile east of Reach 8.	Potential construction-related traffic impacts on local access roads and associated air quality and noise impacts.	2011–2015
RDCS Miscellaneous Public Improvements, Streets and Roads – Part of the 5-Year Engineering CIP	Citywide	Construct public improvements, including street and utility improvements, to fill gaps and enhance safety, determined by the need to construct public improvements in areas where gaps exist with emphasis on major arterial streets and other locations shown on the RDCS List of Street Improvements.	Within 2 miles of all points of Project site.	Potential construction-related traffic impacts on local access roads and associated air quality and noise impacts. Possible overlap with the utility relocation process for the Proposed Project, which could result in an impact on utility infrastructure.	2010–2015

Table 4.6-1 Preliminary List of Projects Evaluated for Cumulative Impacts in the Upper Llagas Creek Flood Control Project Vicinity

Project Name	Location	Project Description	Distance from Proposed Project	Potential Cumulative Impact Topics	Schedule/Status
Water Main Replacement, Water – Part of the 5-Year Engineering CIP	Citywide	This project budgets for regular improvements to the City's existing water system.	Within 2 miles of all points of Project site.	No overlap of construction periods is anticipated.	The replacement of water main located in Main Avenue from Peak to Monterey is scheduled to be installed in FY 10/11.
New Water Mains, Water – Part of the 5-Year Engineering CIP	Citywide	New water mains are required to provide adequate water supply as the City expands. In accordance with the 2002 Water Master Plan, some mains will be constructed by the City, and some by developers with partial reimbursement from the City.	Within 2 miles of all points of Project site.	No overlap of construction periods is anticipated. Possible relocation required if within footprint of the utility relocation process for the Proposed Project, which could result in an impact on utility infrastructure.	The new main in Mast Avenue from Church Street to Railroad Avenue is scheduled to be installed in FY 12/13.
Morgan Hill Bikeways Master Plan Bicycle and Trails Advisory Committee (BTAC)	Citywide	Would reduce air pollution by increasing use of bicycles for commuting, reducing automobile use and emissions. Would increase numbers of children cycling to school.	Within 2 miles of all points of Project site.	This project would provide additional public access opportunities.	Slowly incorporated as other transportation projects are developed.
Hale Avenue Extension Project (previously Santa Teresa Boulevard Improvement Project) Project 546007, part of the 5-Year Engineering CIP	From Hale Avenue to DeWitt Avenue, crossing Dunne Avenue	Currently, north-south traffic west of Monterey Road must take a circuitous route through residential neighborhoods. Should the Santa Teresa Boulevard connection be constructed, north-south traffic will use an arterial street that won't have houses fronting the street, thus providing a safer and more efficient means of driving north or south through the western part of Morgan Hill. It will also improve emergency vehicle access.	Less than 0.5 mile of Reaches 8 and 7B boundary at Dewitt Creek.	Potential construction-related traffic impacts on local access roads and associated air quality and noise impacts.	Project is planned for construction beginning in 2013.
The Lodge at Morgan Hill Community Development Partners	Northwest corner of Butterfield Boulevard and Barrett Avenue	138 unit, three-story Senior Apartment project on 5.643 acres. Building amenities include a 3,132-square-foot (sf) commercial kitchen, dining commons, hair salon, card room, computer room, family dining room, reading room, two elevators, exercise room, six laundry rooms, staff locker room, and storage areas for management staff. Site amenities include Bocce court, BBQ area, decorative masonry seating area, two landscaped ponds, covered walkway to vehicle drop off location, vegetated emergency vehicle EVA access road, and meandering sidewalks for outdoor exercise.	Approximately 1 mile east of Reach 7B.	No overlap of construction periods is anticipated.	Vertical Construction began at the end of February and is scheduled to be completed December 2013.
Wright-Mañana Residential Development	Corner of Hale and Wright avenues	15 single-family-residential structures	Within Project footprint in Reach 8.	No overlap of construction periods since construction of the of the housing development is complete.	Completed in 2012.
Cochrane-Borello Residential Development	Cochrane Road near the base of Anderson Dam	Development of a gated residential community, consisting of 244 single-family homes, up to 180 secondary units; a private recreation center (including community pool, tennis court, basketball court, tot lot, fitness center, and outdoor gathering areas), private streets, approximately 23 acres of private open space, private parks, and surrounding landscaping.	Within range of haul route of excavated earth materials from Proposed Project.	Construction-related traffic impacts on local roads and cumulative impacts related to biological resources, noise, air quality, and agricultural resources.	EIR completed 2012. Project completion estimated 2023.
Monterey Dynasty	Monterey Road, across from California Department of Forestry (CDF) Fire Station	Retail Commercial, 268,888 sf.	Within 1 mile southeast of Reach 7B.	No overlap of construction periods is anticipated.	In Process March 2012
Michael Dunn, Villas of San Marcos II	Barrett Avenue, Morgan Hill	41 Multi-Family Units, Low Density, Open Market (consisting of projects of more than 15 dwelling units at build-out).	Approximately 2 miles east of Reach 7B.	Potential construction-related traffic impacts on local access roads and associated air quality impacts.	(unknown)
Standard Pacific Homes, Rose Garden	Between Barrett Avenue and San Pedro, Morgan Hill	53 Single-Family Units, Medium Density, Open Market (consisting of projects of more than 15 dwelling units at build-out).	Approximately 1 mile east of Reach 7B.	No overlap of construction periods is anticipated.	Under Construction, March 2012
City Ventures, Huntington Square	Main Avenue and Butterfield Boulevard, Morgan Hill	148 Multi-Family Units, Open Market (consisting of projects of more than 15 dwelling units at build-out).	Less than 1 mile east of Reach 8.	Potential construction-related traffic impacts on local access roads and associated air quality and noise impacts.	(unknown)
EAH, Inc., Casa Diana	Dunne Avenue and Butterfield Boulevard, Morgan Hill	80 Multi-Family Units, Open Market (consisting of projects of more than 15 dwelling units at build-out).	Less than 1 mile east of Reach 8.	No overlap of construction periods is anticipated.	Under Construction, March 2012

Table 4.6-1 Preliminary List of Projects Evaluated for Cumulative Impacts in the Upper Llagas Creek Flood Control Project Vicinity

Project Name	Location	Project Description	Distance from Proposed Project	Potential Cumulative Impact Topics	Schedule/Status
Gunter Building, Vista Del Toro	17620 Monterey Road, Morgan Hill	15 Small Vertical Mixed Use Units: a mix of ground floor retail or office and residential use allowed in mixed use districts	Less than 1 mile east of Reach 8.	No overlap of construction periods is anticipated.	4 Units Approved, March 2012
Tri Pointe Homes, Ironhorse	E. Central Avenue at Calle Mazatan, Morgan Hill	32 Single-Family Units, Open Market (consisting of projects of more than 15 dwelling units at build-out).	Less than 1 mile east of Reach 8.	Potential construction-related traffic impacts on local access roads and associated air quality and noise impacts.	Site Review in Process, March 2012
Monterey Dynasty, Diamond Creek	Monterey Road, between Vineyard and Watsonville	131 Multi-Family Units, Rental, Open Market (consisting of projects of more than 15 dwelling units at build-out).	Less than 0.5 mile east of Reach 7A.	Potential construction-related traffic impacts on local access roads and associated air quality and noise impacts.	Tentative Map Approved, March 2012
City Ventures, E. Dunne – City Ventures	E. Dunne Avenue and Church Street, Morgan Hill	50 Multi-Family Units, Open Market (consisting of projects of more than 15 dwelling units at build-out).	Less than 0.5 mile east of Reach 7B.	No overlap of construction periods is anticipated.	Under Construction, March 2012
E & H Third Fam, Campoli - E & H	Campoli Drive and Old Monterey Road, Morgan Hill	Small Project, 11 Single-Family Units	Less than 0.5 mile east of Reach 8.	No overlap of construction periods is anticipated.	Under Construction, March 2012
City Ventures, San Gregorio	Between Hale Avenue and Del Monte Avenue, Morgan Hill	45 Single-Family Units, Open Market (consisting of projects of more than 15 dwelling units at build-out).	Less than 1 mile east of Reach 8.	No overlap of construction periods is anticipated.	Under Construction, March 2012
Monterey Dynasty, Red Jasper	Monterey Road, North of Cosmo Avenue, Morgan Hill	CC-R/CL-R Project, 38 Multi-Family Units	Less than 0.5 mile east of Reach 7B.	Potential construction-related traffic impacts on local access roads and associated air quality and noise impacts.	(unknown)
Dividend Homes, Connemara	Watsonville Road, Morgan Hill	Senior, 37 Single-Family Units	Less than 0.5 mile from Reach 7A.	Potential construction-related traffic impacts on local access roads and associated air quality and noise impacts.	Under Construction, August 2013
Dividend Investments, Mission Ranch	Mission View and Cochrane Road Morgan Hill	328 Single Family Units, Open Market (housing of any type typically consisting of projects of more than 15 dwelling units at build-out). Developments can be sold at rates moderate and above moderate income households	Less than 1 mile east of Reach 8.	Potential construction-related traffic impacts on local access roads and associated air quality and noise impacts.	Under Construction, August 2013
San Sebastian MH General Partnership	Peet Road between Hill Road and Cochrane Road, Morgan Hill	244 Single-Family Units, Open Market (consisting of projects of more than 15 dwelling units at build-out).	1.5 miles north of Reach 8.	Potential construction-related traffic impacts on local access roads and associated air quality impacts.	Under Construction, August 2013
Meritage Homes, AS 13-06	2060 Hecker Pass Hwy, Morgan Hill	187-Single Family Homes	Less than 0.5 mile east of Reach 7B.	No overlap of construction periods since construction of the housing development is complete.	Complete, September 2013
Meritage Homes, Hale-Meritage Homes	Between Hale and Old Monterey Road, Morgan Hill	108 Single-Family Units, Open Market (consisting of projects of more than 15 dwelling units at build-out).	Less than 1 mile east of Reach 8.	Potential construction-related traffic impacts on local access roads and associated air quality and noise impacts.	EIR Completed October 2013

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The study area for cumulative impacts varies by resource, as shown in Table 4.6-2, depending on the likelihood that impacts from the Project alternatives could combine with those of other projects. For some resources, such as noise and aesthetic resources, the study area is limited to the Project vicinity because projects that were located farther away would not have the potential to affect the same areas. For other resources, such as air quality, the study area includes a broader area because impacts of the Project alternatives could disperse throughout the region or affect resources located throughout the region, thereby affecting the same resources as other projects.

Table 4.6-2 Defined Study Area of each Resource Analyzed for Cumulative Impacts

Resource	Study Area
Geology and Soils	Llagas Creek corridor
Hydrology and Water Quality	Llagas Creek watershed
Mineral Resources	Southern Santa Clara County
Biological Resources (Aquatic, Wildlife, and Botanical)	Southern Santa Clara County
Agricultural and Forest Resources	All agricultural lands within Santa Clara County
Recreation Resources	The City of Morgan Hill and Sphere of Influence (SOI) of the City of Gilroy, and unincorporated Santa Clara County along Upper Llagas Creek
Cultural Resources	Santa Clara County
Traffic and Circulation	Traffic networks intersecting the Upper Llagas Creek vicinity and haul routes
Air Quality and Greenhouse Gases	San Francisco Bay Area Air Basin
Noise	Lands bordering Reaches 4, 5, and 6 on Upper Llagas Creek, Reaches 7A, 7B, and 8 on West Little Llagas Creek, and Reach 14 on East Little Llagas Creek
Aesthetic Resources	Upper Llagas Creek viewshed
Utilities and Public Services	The City of Morgan Hill and SOI of the City of Gilroy, and unincorporated Santa Clara County along Upper Llagas Creek
Hazards and Hazardous Materials	Morgan Hill and unincorporated Santa Clara County along the Upper Llagas Creek
Environmental Justice	Lands bordering Reaches 4, 5, and 6 on Upper Llagas Creek, Reaches 7A, 7B, and 8 on West Little Llagas Creek, and Reach 14 on East Little Llagas Creek

4.1.3 Cumulative Impact Discussion

The following describes the potential for cumulative impacts on each resource area listed in Table 4.6-2.

4.1.3.1 Geology and Soils

Impact 4.1—Cumulative erosion and loss of topsoil and exposure of people or structures to geologic and seismic hazards

Impact Determination: less than cumulatively significant with mitigation

As discussed in Section 3.1, construction and maintenance would require activities, such as excavation, stockpiling, and transportation of soils and could result in substantial erosion and loss of topsoil. However,

implementation of SCVWD Best Management Practices (BMPs) that would avoid or minimize soil erosion and off-site sediment transport would adequately prevent impacts associated with erosion and sediment delivery, resulting in a less-than-significant impact. In addition, state (Construction General Permit) and local regulations (SCVWD BMPs) are in place to prevent the erosion and transportation of topsoil associated with construction activities required for the Project alternatives. Other projects would also be required to meet regulatory standards to prevent erosion and loss of topsoil. Therefore, impacts associated with erosion and loss of topsoil would be less than cumulatively significant and no further mitigation measures would be required.

The Project alternatives also would include deepening and widening of existing earthen channels and construction of hydraulic structures, such as box culverts and roads. Potential damage to Project features, due to earthquake-induced liquefaction, could impede the function of the flood control system, diminish flood capacity, and present physical hazards, such as ground ruptures; thus, these failures could threaten public health and safety. Other projects listed in Table 4.6-1 also would be subject to seismic hazards, which could result in an impact to public health and safety. Thus, the cumulative impact would be significant, and the Project alternative's contribution would be cumulatively considerable. Post-earthquake inspections would be implemented as mitigation for the Project alternatives, which would reduce their contribution to less than cumulatively considerable. Therefore, this cumulative impact is less than significant with mitigation. The Project alternatives, as well as other projects, also would be required to meet regulatory standards to minimize seismic-induced damage and impacts of liquefaction and other geohazards.

Mitigation Measures

Mitigation Measure GEO-1a T: Post Earthquake Inspections.

Mitigation Measure GEO-1b T: Post Earthquake Tunnel Inspection.

4.1.3.2 Hydrology and Water Quality

Impact 4.2—Cumulative impacts to groundwater levels, groundwater recharge, flooding, and water quality

Impact Determination: less than cumulatively significant

As discussed in Section 3.2, the Project alternatives would not affect groundwater levels or groundwater recharge. Thus, no cumulative impacts would occur. They would have a beneficial impact on flooding, so would not contribute to a significant cumulative impact related to flooding. Water quality impacts from construction would be minimized by compliance with BMPs and the SWPPP required under the GCP, which would prevent cumulative water quality impacts. The potential for bat roosting with consequent contamination and degradation of water quality by bat guano in the tunnel section of Reach 8 is identified as a less than significant impact with mitigation for the Preferred and Reach 6 Bypass alternatives. No other projects were identified that are known to have the potential to affect water quality in Llagas Creek; therefore, no cumulative impacts would occur.

Implementation of state and local regulations requiring the use of BMPs during construction would prevent impacts on water quality related to runoff. Other construction projects would also be required to implement BMPs and major projects would need to obtain authorization under the National Pollutant Discharge Elimination System Construction General Permit. In addition, the geomorphic design of the creek would reduce erosion that currently occurs, thus further reducing impacts to water quality. The mitigation required for the Butterfield Boulevard Extension included rock riprap and other appropriate erosion control measures that were installed along critical points of potential erosion from water flow, including at the outfalls into West Little Llagas Creek and along areas where the Butterfield Channel may overbank into surrounding land (City of Morgan Hill 2010a). The Wright-Mañana Residential Development was required to prepare an Erosion Control Plan as a standard condition prior to issuance of building

and/or site development permit, subject to review and approval of the Director of Public Works. In addition, post-construction BMPs implemented by the Wright-Mañana Residential Development to reduce pollutant loading in local waterways included installation of a hydrodynamic separator, proper maintenance and disposal of sediments in the proposed underground detention system, and stenciling of stormwater catch basins to avoid illegal dumping (City of Morgan Hill 2005). As provided in Section 3.2.4.3, Local Regulatory Environment, both the City of Morgan Hill and the county have policies in place that require developers to include mitigation to eliminate the flood-inducing impacts of their projects and protect water quality from contamination. The City of Morgan Hill Storm Drainage Master Plan would also include installation of storm drains within the vicinity of the Project. The use of BMPs and adherence to regulations would result in less than cumulatively significant impacts to water quality.

Mitigation Measures

None required

4.1.3.3 Mineral Resources

Impact 4.3—Cumulative impact on mineral resources

Impact Determination: less than cumulatively significant with mitigation

As discussed in Section 3.3, Mineral Resources, the Project alternatives could inadvertently cause an impact on poppy jasper, a local mineral of importance. The likelihood is low, however, because the existing identified deposits of poppy jasper are located outside of the Project boundary, and it is unlikely that a new sizable deposit would be discovered during construction. There is, however, a potential for other projects listed in Table 4.6-1 to also inadvertently affect poppy jasper. If this happened, the cumulative effect would be significant, and the Project's contribution would be cumulatively considerable. Mitigation Measure MIN-2 T would reduce the Project alternatives' contribution to less than cumulatively considerable because it would require evaluation of any discoveries by a qualified geologist and notification of the property owner, who could determine the appropriate course of action. Therefore, the Project alternatives' contribution to the cumulative impact would be less than cumulatively considerable with mitigation.

Mitigation Measures

Mitigation Measure MIN-2 T: Inadvertent Discovery of Poppy Jasper.

4.1.3.4 Biological Resources (Aquatic, Wildlife, and Botanical)

Impact 4.4—Cumulative impact on biological resources

Impact Determination: less than cumulatively significant with mitigation

As discussed in Section 3.4, Botanical Resources, the Project could temporarily and permanently affect native vegetation and jurisdictional wetlands and waters that are located within the stream reaches, and these impacts would be less than significant with mitigation. The projects identified within the Project footprint (Wright-Mañana Residential Development and Butterfield Boulevard South Extension) did not affect wetlands. Given that most of the proposed development is in urban areas, they are unlikely to affect wetlands, and while proposed trails could be located near wetlands, it is not likely that wetlands would be removed to allow their construction. Thus, cumulative impacts to wetlands are not expected to occur. If other projects did affect wetlands, cumulative impacts would be significant, and the Project alternatives' contribution would be considerable. It would be reduced to less than significant through implementation of Mitigation Measures BOT-1c T, BOT-1d T, and BOT-1e T, as described in Section 3.4.

All of the Project alternatives would have less than significant impacts with mitigation on sensitive plant communities (except California sycamore woodlands), riparian communities, special-status plants and

their habitats. Impacts on sycamore woodlands would be significant and unavoidable for all alternatives. The Wright-Mañana Residential Development, Butterfield Boulevard South Extension, and Cochrane–Borello Residential Development Project, also had or would have impacts on trees. The Wright-Mañana Residential Development removed 36 trees; the Butterfield Extension removed 25 trees, 13 of which met the definition of a significant size (City of Morgan Hill 2010d); and the Cochrane–Borello Residential Development Project would remove 58 ordinance-sized trees in addition to all the orchard trees in the Project area (Morgan Hill 2012). It is likely that other projects could affect botanical resources, as well.

Thus, the cumulative impact would be significant, and the Project alternatives' contribution would be considerable. It would be reduced to less than cumulatively considerable with the implementation of Mitigation Measures BOT-1a T, BOT-1b T, BOT-1c T, BOT-1d T, and BOT-1e T because impacts would be reduced or avoided, with the exception of impacts to sycamore trees, which would remain significant. Other projects would be required to implement measures to reduce or avoid impacts as well.

The requirements outlined in the Butterfield Boulevard Extension Mitigated Negative Declaration (MND) (City of Morgan Hill 2010d) to protect trees and replace trees impacted or removed during demolition and grading activities also demonstrates that projects in the area are held to a high standard for tree preservation.

The Butterfield Boulevard Extension also had a riparian habitat restoration plan with a replacement ratio of 3:1 (3 acres of habitat created for each acre disturbed), and the restoration will be monitored for 5 years (City of Morgan Hill 2010d). The local agencies are controlling the cumulative reduction of vegetation in the region, as demonstrated in the conditions of these projects.

Mitigation required with the Proposed Project would result in defined riparian zones, which would be beneficial to both aquatic and terrestrial wildlife and would likely be an improvement over current conditions. Thus, no cumulative impacts would occur.

As discussed in Section 3.5, Wildlife Resources, the Project alternatives could adversely affect sensitive habitats used by special-status species, including burrowing owl, western pond turtle, California tiger salamander (CTS), special-status birds, and San Francisco dusky-footed woodrat. Direct mortality or injury could occur from animals being crushed by construction vehicles, or becoming entrapped in construction trenches associated with channel excavation. Implementation of various SCVWD BMPs related to water quality and biological resources would minimize the Project's potential impacts on special-status birds and bats, CTS, and western pond turtle, although impacts would remain significant, requiring mitigation. Other projects likely would have impacts on wildlife resources, as well, and cumulative impacts would be significant. In particular, future projects could have the potential to affect dusky footed woodrats and CTS related to the High Speed Rail Project and various trails, parks, and recreational master plans or housing development in areas that currently of minimal urban disturbance. The Project alternatives' contribution to this impact would be considerable, but would be reduced to less than considerable by implementation of Mitigation Measures WILD-1a T, WILD-1b T, WILD-1c T, WILD-2c T, WILD-2d T, WILD-2f T, as well as other measures described in Section 3.5.

Other projects would be required to implement mitigation measures, as well. The City of Morgan Hill has a Burrowing Owl Habitat Mitigation Plan, which includes a 250-foot buffer from occupied burrows during breeding season (City of Morgan Hill 2005, 2010d). In addition, the California Department of Fish and Wildlife (CDFW) has new protocols for burrowing owls, established in 2012. These regulations are focused on preventing cumulative impacts on burrowing owls in the area.

The Wright-Mañana Residential Development permit also contained conditions to protect nesting raptors. The permit contains time periods for avoiding nesting season and surveys and buffers in consultation with CDFW if breeding season could not be avoided (City of Morgan Hill 2005). The Butterfield project proposed to conduct vegetation and tree removal during non-breeding season (scheduled removal to occur between September 1 and February 1) (City of Morgan Hill 2010d). The Cochrane-Borello Residential Development Project EIR included mitigation requiring that project construction be scheduled

to commence between February 1 and August 31; a preconstruction survey will be conducted by a qualified biologist for nesting birds within the onsite trees, as well as all trees within 250 feet of the site. This survey will occur within 30 days of the onset of construction. If pre-construction surveys undertaken during the nesting season locate active nests within or near construction zones, these nests and an appropriate buffer around them (as determined by a qualified biologist) will remain off-limits to construction until the nesting season is over. Suitable setbacks from occupied nests will be established by a qualified biologist and maintained until the conclusion of the nesting season.

Between the Project, the Butterfield Extension, the Wright-Mañana Residential Development Project, and the Cochrane-Borello Residential Development Project, approximately 2,300 trees were or would be removed, and additional trees could be removed by other development. The trees defined as significant in size that could be considered roosting habit could total 100 trees or more between the four projects. Although 100 trees are being removed, ample trees would remain in the area that would be available for nesting including the upper reaches of Llagas Creek; therefore, the impact on roosting and nesting habitat for raptors and bats would be cumulatively less than significant.

The Santa Clara Valley Habitat Plan is an important program to prevent cumulative impacts to sensitive biological resources in Santa Clara County. The Plan will protect, enhance, and restore natural resources in specific areas of Santa Clara County and contribute to the recovery of certain special-status species. Rather than separately permitting and mitigating individual projects, the Plan evaluates natural-resource impacts and mitigation requirements comprehensively in a way that is more efficient and effective for at-risk species and their essential habitats. The Plan allows the County of Santa Clara, Santa Clara Valley Water District, Santa Clara Valley Transportation Authority, and the cities of Gilroy, Morgan Hill, and San Jose to receive endangered-species permits for activities and projects they conduct and those under their jurisdiction. Although the Project is not part of the Plan, all covered activities with potential impacts to sensitive biological resources would need to comply with the relevant mitigations outlined in the Plan to obtain necessary permits, which will reduce the overall cumulative impact to sensitive biological resources in the county.

As described in Section 3.6, Aquatic Resources, the Project alternatives would result in significant impacts requiring mitigation on steelhead migration and spawning and rearing habitat in Llagas Creek during construction and maintenance, as well as other less than significant impacts. They also would result in less than significant impacts on other aquatic resources. Two other SCVWD projects have been identified that could affect steelhead and other aquatic resources in other watersheds–the Anderson Dam Seismic Retrofit project and the Almaden Lake Project, both of which are in the planning stages.

The impacts of the Project alternatives that are characterized as less than significant would not result in significant cumulative impacts in combination with the impacts of other projects because SCVWD BMPs would be implemented that would effectively minimize the potential for adverse impacts on aquatic resources so that no population-level impacts would occur, and no other projects are located in the same watershed that could compound (worsen) the effects of the Project alternatives.

The SCVWD's BMPs include provisions to conduct preconstruction surveys by a qualified biologist to determine the potential for presence of aquatic species prior to the start of construction and avoidance and minimization of impacts to salmonids by avoiding routine use of vehicles and equipment in live salmonid streams between January 1 and June 15 for all instream work. Regardless, the Project alternatives would cause changes in spawning habitat usage and quality, affect rearing habitat, and impede downstream migration of juveniles. The Anderson Dam and Almaden Lake projects also would affect steelhead by potential water quality degradation or impeding migration specific to their watersheds. The impact would be cumulatively significant because each of these projects could adversely affect the population of steelhead, and the Project alternatives' contribution would be considerable.

The Project alternatives' contribution would be reduced to less than considerable through implementation of mitigation measures AQUA-2a T, AQUA 2b, BOT-1b T, and BOT-1d T (construction); and AQUA-1a T

and AQUA-1b T (maintenance), which would reduce or avoid impacts. Additionally, other conditions may be imposed during the permitting process for all three projects, which would further reduce the potential for cumulative impacts.

Mitigation Measures

Mitigation Measure BOT-1a T: Conduct Focused Protocol-level Surveys for Special-status Plant Species.

Mitigation Measure BOT-1b T: Prepare a Mitigation Plan for Special-status Plant Species.

Mitigation Measure BOT-1c T: Prepare a Revegetation, Monitoring, and Mitigation Plan

Mitigation Measure BOT-1d T: Prepare a Monitoring Plan for West/East Little Llagas Creek.

Mitigation Measure BOT-1e T: Dispose of Invasive Non-native Species.

Mitigation Measure WILD-1a T: Vegetation Removal during Avian Non-breeding Season.

Mitigation Measure WILD-1b T: Western Burrowing Owl Preconstruction Surveys and Avoidance Measures.

Mitigation Measure WILD-1c T: Implementing Compensatory Mitigation for Western Burrowing Owl.

Mitigation Measure WILD-2c T: Relocate Special-status Species from Construction Area

Mitigation Measure WILD-2d T: Implement Compensatory Mitigation for Special-status Amphibians and Reptiles, including California tiger salamander.

Mitigation Measure WILD-2f T: Special-status Species Environmental Awareness Training and Construction Avoidance Measures.

Mitigation Measure AQUA-1a T: Steelhead Passage: Channel and Structure Design.

Mitigation Measure AQUA-1b T: Steelhead Passage: Inspection of In-channel of Large Woody Debris

Mitigation Measure AQUA-2a T: Preconstruction Surveys prior to In-water Construction

Mitigation Measure AQUA-2b T: Biological Monitor for Dewatering Activities.

4.1.3.5 Agriculture and Forest Resources

Impact 4.5—Cumulative Impact on Agriculture

Impact Determination: cumulatively significant

Agriculture is an important industry in Santa Clara County, which has policies in place to discourage the conversion of productive farmland to other land uses, as discussed in Section 3.7. However, the Project alternatives would permanently remove between 40 and 65 acres of Prime Farmland, Unique Farmland, or Farmland of Statewide and Local Importance, and lands under Williamson Act contracts from production, which would be a significant unavoidable impact. Although state and local policies discourage farmland conversion, other projects also could convert farmland to a non-agricultural use. For example, the Cochrane-Borello Project will result in a net loss of 99.9 acres of Prime Farmland over the next 12 years. Thus, the cumulative impact would be significant, and the Project's contribution would be cumulatively considerable. Implementation of Project mitigation measures, described in Section 3.7, protect other agriculturally productive land in the region on a 1:1 basis, but would not eliminate the net loss of farmland. Therefore, Project impacts on agriculture conversion would be cumulatively considerable and, therefore, significant, even with mitigation. Further mitigation, such as converting lands currently not available for farming to agricultural use was dismissed as too costly to be considered as a feasible mitigation. No other feasible mitigation is available to reduce the impact to a less-than-significant level. The mitigation measures for the Cochrane-Borello Project are similar to those developed this

Project; but, overall there would be a net loss of Prime Farmland, Unique Farmland, or Farmland of Statewide and Local Importance in South County.

Mitigation Measures

Mitigation Measure AG-1b T: Agricultural Conversion Offsets.

Mitigation Measure AG-2 T: Williamson Act Lands Conversion Offsets.

4.1.3.6 Recreation Resources

Impact 4.6–Cumulative Impact on Recreation

Impact Determination: less than cumulatively significant

As discussed in Section 3.15, recreational opportunities in the Project footprint include two facilities that are partially within, or very close to, the Project footprint (these facilities are adjacent to each other near the Morgan Hill Community Park along Reach 7B): the Skate and BMX Park and Centennial Recreation Center. Also, the Project footprint is close to Galvan Park and Britton Field ball fields adjacent to Britton Middle School (both along Reach 8). The Culvert/Channel Alternative would cross under the ball fields. Currently, a trail is located along Reach 7B near La Crosse Drive and the West Llagas Trail in Morgan Hill provides opportunities for walking and other trail-related activities. The trails are within the Project footprint and would be affected by the various alternatives. Construction activities in the vicinity of the Project footprint may create temporary impacts to recreation resources due to noise, visual quality issues, or traffic attributable to construction-related activities. Additionally, there is the potential to affect parklands if construction occurs on or around these facilities, given the proximity of the Project to recreational facilities along Reaches 7A, 7B, and 8. These impacts to recreational facilities would be temporary and end with the completion of construction. No other projects have been identified that would result in a cumulative impact on the same recreational facilities in the same general timeframe as the Project; therefore, no cumulative impacts from construction activities would occur.

Santa Clara County and Morgan Hill General Plan recreation policies, provided in Section 3.15, promote trails along Llagas Creek, as well as other creek corridors. Although two trails would be removed by the Project alternatives, access to the newly constructed maintenance roads, although unpaved, would be available after the Project construction was complete. This would at least partially offset impacts from the trail removal. Adverse impacts on recreational resources have not been identified for other projects listed in Table 4.6-1; moreover, several of the projects would result in enhanced recreational resources. Therefore, cumulative impacts would be less than significant.

Mitigation Measures

None required

4.1.3.7 Cultural Resources

Impact 4.7—Cumulative Impact on Cultural Resources

Impact Determination: less than cumulatively significant with mitigation

As discussed in Section 3.9, a variety of cultural resources exist in the Project area. Any known cultural resources would be avoided during Project design. SCVWD BMPs CU-1 and CU-2 would require the Project stop work if any cultural resources are discovered during construction activities. Nonetheless, impacts of the Project alternatives on previously undiscovered resources, including paleontological resources, would be significant, and construction could disturb known resources as well. Other projects listed in Table 4.6-1 also could result in the unanticipated discovery and disturbance of prehistoric resources and potentially could affect historic resources, as well. Therefore, the cumulative impact would

be significant, and the Project alternatives' contribution would be considerable. Implementation of the mitigation measures and BMPs described in Section 3.9 would reduce the Project's contribution to less than cumulatively considerable because cultural resources would be protected.

Mitigation Measures

Mitigation Measure CU-2 T: Avoid Known Cultural Resources during Implementation.

4.1.3.8 Traffic and Circulation

Impact 4.8—Cumulative impact on transportation network

Impact Determination: less than cumulatively significant with mitigation

The Project would result in a temporary increase in traffic levels during construction, largely in the immediate Project area and along access routes. Construction would involve heavy equipment access, construction-related traffic, truck trips to dispose of fill at Anderson Dam (223,866 truck trips over a 6-year period), deterioration of local roads, temporary detours on U.S. 101 (Reach 6 Bypass Alternative only), and temporary impacts to parking spots at the Morgan Hill Plaza Shopping. The Project alternatives were found to cause an increase in traffic in relation to the existing traffic load and capacity of the street system for a number of local roads, including Cochrane Road.

These effects are expected to be separated in location and time from the traffic effects of other projects, with the exception of the Cochrane-Borelo Project. The Cochrane-Borello Project has a schedule similar to that for the proposed Project and would require use of some of the same major roadways, primarily Cochrane Road. According to the project's EIR, the Cochrane-Borello proposed project would result in approximately 3,255 new daily vehicle trips, and 248 and 324 new morning and afternoon peak hour vehicle trips, respectively. The project-generated vehicle trips would be distributed as follows: 45 percent from the north on US 101, 25 percent from the south on US 101, and 30 percent from the west on Cochrane Road. According to the EIR, the addition of project trips would not degrade acceptable LOS E freeway operations to unacceptable levels (LOS F), and under project conditions, all study intersections are estimated to operate at acceptable levels of service, at LOS C or better during both peak hour periods. The addition of traffic associated with Project construction to that generated by the Cochrane-Borelo Project would cause a significant cumulative impact on Cochrane Road during construction, and the Project's contribution would be cumulatively considerable. The Project's contribution to the significant impact would be reduced to less than cumulatively considerable by the implementation of mitigation measures included in Section 3.10 and implementation of the Traffic Management Plan.

Mitigation Measures

Mitigation Measure TRAFFIC-1aT: Maintain Access to Local Residences and Businesses.

Mitigation Measure TRAFFIC-1bT: Coordinate with Local Business Regarding Parking.

Mitigation Measure TRAFFIC-1cT: Coordinate with Local Business Regarding Access.

4.1.3.9 Air Quality and Greenhouse Gases

Impact 4.9—Cumulative impact on air quality in the region

Impact Determination: cumulatively significant

Given the nonattainment status for particulates (PM_{10} and $PM_{2.5}$), NOx, and ROG in the San Francisco Bay Area Air Basin, the combined emissions of these contaminants, by the Project and other projects, is considered a significant cumulative impact, and the Project's contribution would be cumulatively considerable. Project construction activities would require daily use of construction equipment and vehicles powered by diesel and gasoline fuel, the combustion of which would emit criteria air pollutants,

including NOx, ROG, and exhaust-based PM_{10}, and $PM_{2.5}$. In addition, Project ground-disturbing activities would release fugitive dust emissions of fine particulate matter—both PM_{10} and $PM_{2.5}$.

The thresholds for a significant project-level impact related construction-related emissions are summarized in Section 3.11. These thresholds also represent the levels at which a project's individual emissions of criteria air pollutants, precursors, would result in a considerable contribution to existing air quality impairments.

As discussed in Impact AQ2 and AQ3, the Project's construction emissions are estimated to exceed the Bay Area Air Quality Management District (BAAQMD) daily emission threshold for NO_X. Even with the implementation AQ2 NRCS above, NO_X emissions would still exceed BAAQMD's threshold. Therefore, the Project's construction activities on cumulative air quality impact are expected to be significant and unavoidable. There are no feasible mitigation measures available to further reduce the impact to a less than significant level.

Project construction would generate some greenhouse gas (GHG) emissions, but would not conflict with present plans, policies, or regulations which primarily affect large stationary sources in California. No significant impact would occur as a result of the Project, and BMPs would further reduce emissions and subsequent impacts. Even with BMPs, the Project would generate GHG emissions and incrementally contribute to climate change, but only in the short-term.

When Project emissions are viewed in combination with world-wide GHG emissions that are contributing to the existing cumulative impact on global climate change, the incremental contribution of Project emissions would not be cumulatively considerable, because they would occur over the short-term. Therefore, the Project would not have a cumulatively considerable impact on global climate change. With the implementation of Mitigation Measures AQ-2 / AQ-3 NRCS: Exhaust Emissions Reduction Measures, the Project's incremental contribution would be reduced further. Therefore, long-term cumulative impacts on climate change by the Project would be less than significant.

Mitigation Measures

Mitigation Measure AQ-2 T: Exhaust Emissions Reduction Measures

4.1.3.10 Noise

Impact 4.11—Cumulative exposure of existing and future noise and vibration sensitive land uses

Impact Determination: cumulatively significant

As discussed in Section 3.12, noise generated by the Project alternatives during construction and operations/maintenance activities could exceed established standards and cause a substantial temporary or periodic increase in ambient noise levels. Nearby receptors also would be exposed to excessive groundborne vibration due to the limited distance from the work areas to the nearest sensitive receptors. Overall, noise and vibration impacts would be localized, involving only the receptors in the immediate vicinity, and because construction of the Project would occur along a linear alignment, no receptor would be exposed to excessive noise levels or vibration from construction for an extended period of time. Noise and vibration impacts from some activities would be significant and unavoidable, however.

Noise attenuates, or is reduced, rapidly with distance, and most of the projects identified in Table 4.6-1 are located too far from the Project area to generate noise that could contribute to a cumulative impact in combination with the Project alternatives. The two projects located within the footprint have already been constructed, and it is anticipated that any noise generated by maintenance activities from these developments would be temporary and minor. Certain development projects would be located nearby, however, and capital improvement projects could be implemented in the immediate Project area, such as the sanitary sewer rehabilitation projects, underground utilities, and storm drainage projects, and new construction, upgrades, and repairs could generate considerable noise. If such projects were

implemented in the same general timeframe and location as the Project while construction or maintenance was underway, cumulative impacts would be significant, and the Project's contribution would be considerable.

Implementation of District SCVWD BMPs NO-1 and NO-2 and mitigation measures, discussed in Section 3.12, would minimize noise and vibration impacts associated with construction and operations/maintenance activities; however, residual noise impacts would remain significant.

Mitigation Measures

Mitigation Measures NOI-1a T: Reduce Noise from Construction and Operational Activity.

Mitigation Measure NOI-1b T: Noise and Vibration Control Plan.

Mitigation Measure NOI-1c T: Notify Residents of Construction Work; Implement Noise Complaint Procedure.

4.1.3.11 Aesthetic Resources

Impact 4.12—Cumulative degradation of the existing visual character of the region

Impact Determination: less than cumulatively significant

As described in Section 3.13, the Project has the potential to degrade the existing visual character and quality of the Project area and surroundings for viewer groups, because construction would require the removal of vegetation within the construction footprint. Additionally, the presence of construction equipment and construction personnel may impede views of the creek during construction activities and may generally change the visual character in the area during construction activities. Removal of structures related to channel widening and realignment during construction, as discussed in Table 2.5-1, would also change the general visual character in all reaches where removal or relocation is necessary. During the operations phase of the Project, the primary visual issues would involve the permanent change in visual character of the area due to the flood management improvements along all reaches. The primary visual issues would involve changes in views in terms of channel widening, addition of new access roads, and removal/relocation of structures and vegetation within the Project footprint. As the vegetation matures, the areas of the Project within the viewshed would be improved from its current state, which includes areas of debris accumulation. Although the Wright-Mañana Residential Development and Butterfield Boulevard South Extension required removal of a number of trees within or adjacent to the Proposed Project footprint, they were required to be replaced. Thus, the cumulative impact on visual resources would be less than significant.

Mitigation Measures

None required

4.1.3.12 Utilities and Public Services

Impact 4.13—Cumulative impact to utility service by damaging or displacing infrastructure and insufficient landfill capacity

Impact Determination: less than cumulatively significant with mitigation

As discussed in Section 3.14, a network of underground and overhead utility lines providing water, electricity, phone service, sewer, among other utilities services to customers exists in the Project footprint. Excavation for construction, depending on depth, could result in damage to existing underground utilities and wells providing water for households, industrial, or agricultural users, and some utilities would require relocation. Use of construction equipment could also result in damage or disruption of aboveground utilities. The Morgan Hill Master Plan for storm drainage and sewer also could cause disruption of utilities,

and it if is going to be implemented in the Project area within in the next 5 years, it may overlap with the relocation process for the Project. This would result in a cumulatively significant impact on utility infrastructure if utilities were relocated, and then upgraded within a short period of time, and the Project alternatives' contribution would be considerable. Implementation of Mitigation Measures UPS-1b and 4.3 would reduce potential cumulative impacts to less than considerable because projects would be scheduled to minimize disruption.

Currently, landfills serving Santa Clara County have sufficient capacity for the construction waste and unsuitable excavation materials to be generated by the Project alternatives. In addition, the maximum 1.3 million CY of excavated material is planned to be reused and only the non-suitable materials would be disposed of. Because landfills have sufficient capacity to accommodate planned development within the construction timeframe, this impact is less than cumulatively less than significant.

Mitigation Measures

Mitigation Measure UPS-1b T: Emergency Response Plan and Notification.

Mitigation Measure 4.3: Utility Infrastructure Upgrade Schedule Coordination. If the schedule for the sewer and stormwater upgrades overlap with the Proposed Project, the SCVWD will coordinate the Proposed Project utility relocation with sewer and stormwater infrastructure upgrade plans by the City of Morgan Hill, so that disruption of utilities can be completed one time rather than once for the upgrade and again for the relocation.

4.1.3.13 Hazards and Hazardous Materials

Impact 4.14—Cumulative impact to hazards and hazardous materials

Impact Determination: less than cumulatively significant with mitigation

As discussed in Section 3.18, the Project alternatives would improve some contaminated areas as part of the excavation and in preparation of the revegetation sites, resulting in less overall contamination in the area. The Project alternatives also could result in the accidental release of hydrocarbons, routine emission of dust and pollutants, hazardous materials used within 0.25 mile of a school, and excavation near sites known to have soil or groundwater pollution. Cumulative development in the County of Santa Clara and the cities of Gilroy and Morgan Hill, shown in Table 4.6-1 could result in the additional release of hazardous materials in the area, primarily during construction. Hazards and hazardous materials impacts are generally site-specific and are contingent on past and present land uses and existing soil and groundwater conditions. Due to the potential for releases within the local community, cumulative impacts are significant, and the Project alternatives' contribution would be considerable. Implementation of SCVWD BMP HM-12 (Hazardous Materials Management) would address the risk of an unanticipated encounter with hazardous materials and require that all workers are trained in implementation of the appropriate procedures in the event of encountering hazardous materials, which would reduce the Project alternatives' contribution to less than cumulatively considerable.

The presence of construction equipment and vehicles, worker activities, and materials storage could have the potential to impede emergency access to the Project sites and/or interfere with emergency evacuation plans. As part of the Project, a Traffic Control Plan would be developed to ensure that construction activities do not impede emergency response or evacuations. Therefore, any cumulative impacts associated with emergency access would be less than significant.

The use of construction equipment, in particular, equipment with internal combustion engines, gasoline-powered tools, and equipment or tools that produce a spark, fire, or flame—in grassland and woodland areas could pose a fire risk. Some Project elements would be constructed in areas that could pose wildfire risks under dry conditions. Portions of Reaches 7A, 7B, and 8 are located less than 1 mile from a very high fire hazard severity zone in a local area of responsibility. SCVWD BMP HM-14: Incorporate Fire

Prevention Measures, is applicable to the construction and operations phase of all elements. In addition, this Project, as well as other projects, would be required to adhere to fire safety provisions of the Public Resources Code. Therefore, the cumulative impact would be less than significant.

Mitigation Measures

Mitigation Measure HAZ-2c T: Existing Hazardous Site Search.

Mitigation Measure HAZ-2f T: Stop Work and Implement Hazardous Materials Investigations and Remediation in the Event that Unknown Hazardous Materials are Encountered.

Mitigation Measure HAZ-2g T: Conduct Asbestos and Lead Surveys for Buildings that need to be Demolished.

4.1.3.14 Environmental Justice

Impact 4.11—Cumulative exposure of existing and future noise and vibration sensitive land uses

Impact Determination: cumulatively significant

The Preferred and Reach 6 Bypass alternatives would result in disproportionate environmental justice effects where excess noise levels would disproportionately impact Reach 8, an environmental justice community of concern. If capital improvement projects were implemented in the same area in the same general timeframe as these alternatives, the cumulative impact would be significant, and the Project's contribution would be considerable. The following mitigation measures would minimize the impacts from the Project, but the cumulative impact would remain significant and unavoidable, as discussed under section 4.1.3.11.

Mitigation Measures

Mitigation Measures NOI-1a T: Reduce Noise from Construction and Operational Activity.

Mitigation Measure NOI-1b T: Noise and Vibration Control Plan.

Mitigation Measure NOI-1c T: Notify Residents of Construction Work; Implement Noise Complaint Procedure.

4.2 Significant, Unavoidable, and Adverse Impacts

Unavoidable significant adverse impacts are those effects that would significantly affect either natural systems or other community resources, and cannot be mitigated to less than significant. Nearly all the potentially significant impacts associated with the Project alternatives identified could be reduced to less-than-significant levels by mitigation measures specified in this EIR. Almost all of the potentially significant unavoidable impacts associated with the action alternatives are short-term and associated with construction. Resources with the only significant impacts associated with the No Project Alternative include: Aquatic Resources, Land Use and Planning, Utilities and Public Services, Socioeconomic Resources, and Hazards and Hazardous Materials. Significant, unavoidable impacts are summarized below by environmental resource area.

4.2.1 Hydrology and Water Quality

As stated in Section 3.2, there are no significant and unavoidable impacts associated with the Preferred, NRCS, or Culvert/Channel Alternatives. There is a significant and unavoidable impact associated with alteration of the drainage pattern resulting in substantial erosion and siltation in the Reach 6 Bypass Alternative (impact significance criteria HYDRO-5). This is due to the ongoing processes of channel incision that over time would cause over-steepening of streambanks, bed and bank instability, erosion, and sedimentation in Reach 5 and Reach 6 downstream of the proposed bypass channel location. There

is no construction in Reach 5 and 6 because the bypass channel would divert that portion of the high flow which is generated by the upstream flood improvements so that there is no induced flooding in these downstream reaches. As such, the Reach 5 and 6 channel segments do not need to be deepened and widened to accommodate the additional flow from the upstream flood improvements. But as a result, and unlike the other action alternatives, there would be no stable channel form constructed in either reach. Consequently, Reach 5 and Reach 6 would be subject to incision and erosion. Additionally, over time the unstable Reach 5 and 6 channel segments would be subject to degradation of water quality and would have a potential to violate water quality standards as erosion and siltation progresses. These are significant and unavoidable impacts of the Reach 6 Bypass Alternative.

Operation and maintenance activities under the No Project Alternative would also have significant and unavoidable impacts associated with the potential for substantial erosion (impact significance criteria HYDRO-5). This is the same channel instability issue as described for the Reach 6 Bypass Alternative, except that the incision and erosion process is applicable to all of the Project reaches. There would also continue to be flooding under the No Project Alternative (significance criteria HYDRO-6), since no flood protection improvements would be implemented, and there would be a potential to degrade water quality and violate water quality standards due to both channel instability and periodic flooding (significance criteria HYDRO-1 and HYDRO-2).

4.2.2 Biological Resources (Aquatic, Wildlife, and Botanical)

As discussed in Section 3.4, Botanical Resources, all action alternatives will have unavoidable significant impacts to California sycamore woodlands. The alternatives would remove up to 11.2 acres of sycamore woodland, which is identified as a sensitive habitat type by the CDFW. Due to the poor soils and altered hydrology of Llagas Creek, it is not feasible to replant sycamores in the Project area except at Lake Silveira, the lower segment of Reach 7A and the upper end of Reach 6. While sycamores will be replanted wherever physical conditions allow, there is not enough area to fully mitigate for the loss of all the sycamores to be removed and the impact would be significant and unavoidable.

In Aquatic Resources (Section 3.6), under The No Project Alternative, warming in Lake Silveira raises downstream temperatures above optimal temperature range for juvenile steelhead (59–65°F). Daily average temperatures in late August exceeded 75°F, which are stressful and potentially lethal to rearing juvenile steelhead. The DO and temperature water quality effects under the No Project alternative are significant ongoing impacts to steelhead rearing.

4.2.3 Agricultural and Forest Resources

Section 3.7 states that all of the alternatives, except the No Project Alternative, have significant unavoidable impacts to agricultural resources. The potential impact to agricultural resources is the conversion of approximately 65 acres of Prime Farmland, Unique Farmland, or Farmland of Statewide and Local Importance and Williamson Act contracted land combined. These lands are subject to conversion to non-agricultural use under all action alternatives, except the Reach 6 Bypass Alternative, which does not impact farmland in Reaches 5 and 6. Many of these agricultural lands, to be converted to non-agricultural use, are under Williamson Act contract, which also would be a significant impact. A mitigation measure is recommended to protect other agriculturally productive land in the region; however, since the Project will result in a net loss of agricultural lands, this impact is still considered significant after mitigation. This impact would be significant at the Project level and is also cumulatively considerable.

4.2.4 Land Use and Planning

Ongoing operations under the No Project Alternative conflicts with at least two county policies: *Health and Safety Policy C-HS 34* and *Health and Safety Policy C-HS (i) 32*; and a City of Morgan Hill policy (General Plan 4i), as cited above. The benefits of reduced flooding would not be realized for the No Project Alternative; thus, the local agency goals and policies related to flood protection would not be realized.

This impact is significant since it does not provide for flood protection which conflicts with local jurisdictions' policies designed to avoid an environmental effect.

4.2.5 Traffic and Circulation

Significant impacts associated with the No Project Alternative would occur because the Project would not be implemented, which in turn would not alleviate current flooding and would create temporary, significant impacts to emergency vehicle access, obstruct access to nearby uses, and conflict with adopted policies and plans associated with alternative transportation during storm events.

Section 3.10 states temporary rerouting of traffic on U.S. 101 for construction of three new bridges is planned for construction activities related to the Reach 6 Bypass Alternative. The detour of U.S. 101 traffic would be a temporary, significant impact on the regional roadway network (U.S. 101). A Traffic Control Plan would be prepared and implemented to maintain access to the extent possible and provide public noticing and safety measures. However, given the extent of use of U.S. 101 as part of a regional commute network and the likelihood of slow-downs for the detour over a three-quarter-year period, this impact is significant and unavoidable.

4.2.6 Air Quality and Greenhouse Gases

Section 3.11 discusses impacts to air quality. Peak Daily NO_X emissions, which range between 260 and 303 lbs/day for the action alternatives, exceed the BAAQMD threshold of 54 lbs/day. This would be a temporary significant and unavoidable impact. Emissions would cease upon Project construction completion. Mitigation is required to utilize construction equipment that meets the most recent California Air Resource Board standards to reduce NOx emissions. However, it is not possible to reduce NOx emissions to a level that would be under the 54 lbs/day threshold. This is both a Project impact and a cumulatively considerable impact.

4.2.7 Noise

As detailed in Section 3.12, implementation of mitigation measures listed in the impact discussions would reduce potentially significant impacts, but not to less-than-significant levels; therefore significant impacts would remain for all action alternatives due to exceedance of noise standards for construction and operations/maintenance, excessive groundborne vibration for construction, and temporary noise level increases from construction.

This is both a Project impact and a cumulatively considerable impact.

4.2.8 Utilities and Public Services

Implementation of mitigation measures for the Proposed Project, discussed in Section 3.14, would reduce impacts to less than significant. However, under the No Project alternative, future flooding of the creek could damage or disrupt utility services and other infrastructure (DWR and USACE 2013), as there is no additional protection from 100-year flooding. Under existing conditions, a substantial portion of the urbanized portion of Morgan Hill is susceptible to flooding under the 100-year flood scenario. This may result in damage to existing utility infrastructure and constitutes a significant impact.

4.2.9 Socioeconomic Resources

The No Project Alternative results in a significant and unavoidable impact to socioeconomics resources, due to displacement or substantial disruption of business operations in downtown Morgan Hill caused by periodic flooding. In the absence of the proposed Project, damages similar to those sustained by local business in an around Morgan Hill during the floods of 2008 and 2009 would continue.

4.2.10 Hazards and Hazardous Materials

Under the No Project Alternative, no improvements would be made to creeks in the Project area to minimize known flooding risks. Flooding in the residential areas of Morgan Hill and San Martin would continue and may potentially impede emergency response or evacuation efforts during flooding events. The unimproved operations of the existing flood management system would result in an impact that would be significant and unavoidable.

4.3 Relationship of Short-Term Uses and Long-Term Productivity

Effects on resources are often characterized with respect to their being of short- or long-term duration. This section highlights some of the broader relationships between the short- and long-term effects and is not intended to repeat analyses already provided in this EIR. Rather this discussion presents some of the tradeoffs in "the relationships between the local short-term uses of the human environment and the maintenance and enhancement of long-term productivity" (42 USC 4332; 40 CFR 1502.16). Short-term refers to the duration of construction of the Project alternatives and long-term refers to an indefinite period following the completion of the upgrade of the flood management system on the Upper Llagas Creek in the Project area.

Project construction including creek excavation, sediment transport, culvert improvements and construction, and utility relocation would cause short-term localized effects to the Project area. Where sites are permanently altered, including tunnel construction, bypass channel construction, and bridge and road improvements, long-term commitments of farmland and private properties would occur.

The Project's long-term environmental benefits would include:

> Reduction in soil erosion,

> Reduction in channel aggradation that causes impediments to aquatic migration; and

> Reduction in water quality degradation associated with flood inundation into agricultural, residential, and urban areas.

4.4 Significant Irreversible Impacts

CEQA Guidelines Section 15126.2(c) requires that this EIR discuss the significant irreversible environmental changes that would result from the implementation of a proposed project. These changes include use of nonrenewable resources during a project's initial and continued phases, because a large commitment of such resources makes their future use thereafter unlikely. A project's primary and secondary impacts that would commit future generations to similar uses (e.g., highway improvements that provide access to a previously inaccessible area) would be irreversible changes.

Construction of any of the Project alternatives would result in an irreversible commitment of natural resources through the direct consumption of fossil fuels, primarily through the use of refined petroleum products. The alternatives would also require commitment of other nonrenewable resources, including lumber and other forest products; sand and gravel for concrete; petrochemical construction materials, such as solvents, engine coolant, and lubricants, for construction machinery; steel, copper, lead, and other metals for reinforced concrete and pipes; and water for dust suppression and erosion control. However, this irreversible consumption of natural resources would occur mainly as construction-related impacts and their duration would be limited to approximately 6 years.

Implementation of any of the Project alternatives would also result in the permanent conversion of land within the Project study area. Long-term changes associated with flood risk management measures along the Upper Llagas Creek would require up to 291 acres of land, depending on the alternative, for permanent easements. Additionally, out of the total acres of land required for permanent easement, approximately 65 acres of Prime Farmland, Unique Farmland, or Farmland of Statewide and Local

Importance and Williamson Act contracted land combined would be converted from agriculture to nonagricultural uses. However, implementation of Mitigation Measure AG-1 NRCS would offset agricultural conversion on a 1:1 basis. The use of the land would result in a long-term change and would preclude other development or use of land along each reach. However, the land would retain a riparian corridor that has been impacted through urban development in the past.

Accidental releases of fuels, paints, or other chemicals could occur during construction of any of the Project alternatives. However, pursuant to California Health and Safety Code Sections 25500–25520, the construction contractor would be required to limit spills by training construction workers, supervising all construction work, and reporting and cleaning up any inadvertent spills of chemicals used during construction (e.g., fuel, lubricants) with oversight from Santa Clara County Department of Environmental Health Hazardous Materials Compliance Division and the California Department of Toxic Substances Control.

4.5 Growth-Inducing Impacts

CEQA Guidelines Section 15126.2(d) requires that this EIR consider whether some characteristic of a project might encourage or facilitate other activities that could have significant environmental effects, either individually or cumulatively. This discussion should include consideration of ways in which a project could directly or indirectly foster economic or population growth, or the construction of additional housing, in adjacent and/or surrounding areas. Projects that could remove obstacles to population growth (such as major public service expansion) must also be considered in this discussion. According to CEQA, it must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

The Project alternatives propose varying flood risk management measures along the Upper Llagas Creek. Each alternative would largely employ a local construction workforce that is expected to be primarily drawn from the construction labor pool available in Santa Clara County. As such, the new construction jobs generated by each alternative would not substantially increase demand for new housing units. Additionally, following construction, none of the Project alternatives would directly foster population growth as no residential, commercial, or other buildings are proposed. In general, population has increased rapidly within Santa Clara County (67%) from 1970–2010. Morgan Hill and Gilroy have grown at an even greater rate over the same time period (483% and 285%, respectively). The Project alternatives would not have the potential to indirectly foster population growth, even though they would significantly reduce flooding risks in the Project study area. As discussed in Section 3.16, Population and Housing, when comparing the 2010 census data with the projected 2060 population, the increase is expected to be 23 percent over the time period. Therefore, the rate of growth has not been affected by flooding and the reduction of flooding in the future would not encourage additional growth.

Construction of the Project alternatives would directly stimulate substantial short-term activity in the local economy in the form of increased economic output, income, and jobs. However, the Project alternatives would not induce significant direct or indirect economic growth following construction completion.

Additionally, none of the Project alternatives would remove an obstacle to growth, because it would not increase the supply of a resource (such as water) that currently limits growth in and around the Project study area. Therefore, none of the Project alternatives would induce population or economic growth.

4.6 Energy Conservation

According to CEQA Guidelines, Appendix F, each EIR must consider a project's energy use and efficiency potential. In particular, Appendix F states that a project must describe, where relevant, the following:

> Whether the project would result in the wasteful, inefficient, or unnecessary consumption of energy;

> Whether the project would result in an increased demand on available energy resources that are not renewable; or

> Whether the project would fail to comply with existing established energy standards.

Each Project alternative would result in short-term energy consumption over the construction period, estimated to last approximately six years. Construction of any of the Project alternatives would result in the direct consumption of fossil fuels, primarily through the use of refined petroleum products. Implementation of Mitigation Measures BMP AQ-1 and AQ-2 / GHG-1 would reduce Project-related fuel consumptions to the extent practical (e.g., by limiting vehicle speeds on unpaved roads to 15 mph; minimizing idling times; maintaining correct tire inflation; and ensuring that all construction equipment is maintained and properly tuned).

As such, it is expected that construction-period fuel consumption associated with each Project alternative would not be more inefficient, wasteful, or unnecessary than at other construction sites in the region; would not result in substantially increased demand for nonrenewable energy sources; and would not conflict with existing energy standards.

In addition, the Project alternatives would not result in any increased operational demand for energy resources. Under each alternative, no permanent uses are proposed that would use additional energy resources. Maintenance activities would use roughly the same amount of energy as under current conditions, as some channel maintenance would be reduced compared to current conditions and more maintenance may be required for maintenance roads and access ramps in the long term.

4.7 Environmentally Superior Alternative

The CEQA Guidelines (Section 15126.6 (e)(2)) require that an EIR identify the “environmentally superior alternative” among those considered in the document. The environmentally superior alternative is generally defined as the alternative that would result in the least adverse environmental impacts to the project site and surrounding area. CEQA does not require that an agency select the environmentally superior alternative.

Table 4.7-1 provides a comparison of the alternatives considered in this EIR. For clarity, the impacts that would result from each alternative are compared to Preferred Alternative impacts. The table is organized by resource area and identifies the most severe impact for each resource. Although the impact determination level (e.g., No Impact, Less Than Significant, Less Than Significant With Mitigation, Significant, Significant and Unavoidable) may be the same for all Alternatives across a given resource, the relative degree of the impact may be distinguished between each of the alternatives. Table 4.7-1 identifies both the impact level and if the impact degree is more, less, or the same as the Preferred Alternative. The differences in the degree of an impact are related to the geographical or temporal. The following summarizes, by resource section, the impact level determinations and the degree to which there may be differences even though the designated “impact level” may be the same.

Table 4.7-1 Alternatives Comparison with the Preferred Alternative

Resource Category	No Project Alternative	Preferred Alternative	NRCS Alternative	Culvert/Channel Alternative	Reach 6 Bypass Alternative
Geology and Soils	NI	LTSM	LTSM (-)	LTSM (-)	LTSM (+)
Hydrology and Water Quality	SU	LTSM	LTS	LTS	SU
Mineral Resources	NI	LTSM	LTSM (+)	LTSM(+)	LTSM (-)
Botanical Resources	NI	SU	SU(+)	SU(+)	SU(-)
Wildlife Resources	LTS	LTSM	LTSM(+)	LTSM(+)	LTSM(-)
Aquatic Resources	SU	LTSM	LTSM(=)	LTSM(=)	LTSM(+)
Agricultural and Forest Resources	NI	SU	SU(=)	SU(=)	SU(-)
Land Use and Planning	SU	LTS	LTS(+)	LTS(+)	LTS(-)
Cultural Resource	NI	LTSM	LTSM(+)	LTSM(+)	LTSM(-)
Traffic and Circulation	SU	LTSM	LTSM(+)	LTSM(+)	SU
Air Quality and Greenhouse Gases	LTS	SU	SU(-)	SU(-)	SU(-)
Noise	LTS	SU	SU(-)	SU(-)	SU(=)
Aesthetic Resources	NI	LTSM	LTSM(+)	LTSM(+)	LTSM(+)
Utilities and Public Services	SU	LTSM	LTSM(+)	LTSM(+)	LTSM(-)
Recreation Resources	NI	LTSM	LTSM(=)	LTSM(+)	LTSM(=)
Population and Housing	NI	LTS	LTS(+)	LTS(+)	LTS(-)
Socioeconomic Resources	SU	LTS	LTS(=)	LTS(=)	LTS(-)
Hazards and Hazardous Materials	SU	LTSM	LTSM(+)	LTSM(+)	LTSM(-)
Environmental Justice	DAE	DAE	NDAE	NDAE	DAE(=)

NI: No Impact
(-): Level of impacts are less severe than the Preferred Alternative
LTS: Less Than Significant
(+): Level of impacts are more severe than the Preferred Alternative
LTSM: Less Than Significant with Mitigation
(=): Level of impacts are equal to the Preferred Alternative
SU: Significant and Unavoidable
DAE: Disproportionate Adverse effect
NDAE: No disproportionate Adverse Effect

4.7.1 Geology and Soils and Minerals Resources

The construction of the tunnel has the highest degree of impact to geology when comparing the alternatives, because it would be creating a new feature that could be impacted in the case of an earthquake. However the impacts would be of a greater degree for the Reach 6 Bypass Alternative, because it contains more structures that could be susceptible to failure in the event of a large magnitude earthquake, including the hydraulic bypass structure in Reach 6 and the modifications to U.S. Highway 101 (U.S. 101) by building a bridge.

4.7.2 Hydrology and Water Quality

There is a significant and unavoidable impact associated with alteration of the drainage pattern resulting in substantial erosion and siltation in the Reach 6 Bypass Alternative. This is due to the ongoing processes of channel incision that over time would cause over-steepening of streambanks, bed and bank instability, erosion, and sedimentation in Reach 5 and Reach 6 downstream of the proposed bypass channel location due to the lack of channel improvements in those reaches for the Reach 6 Bypass Alternative.

4.7.3 Biological Resources (Aquatic, Wildlife, and Botanical)

As discussed in Section 3.6, Aquatic Resources, there is essentially no habitat for special-status aquatic species in Reach 8. Therefore, the increased excavation along the existing channel under the NRCS and Culvert/Channel alternatives compared to the Preferred Alternative does not increase effects on aquatic resources. This results in an equal level of impacts associated with the Preferred, NRCS, and Culvert/Channel alternatives for aquatic resources, because the main impacts, such as to sensitive habitats, are in the less urbanized reaches (4, 5, 6, 7a, and 14) where construction for each of the alternatives would be the same. The Reach 6 Bypass Alternative will not include the habitat improvement features (e.g., large wood debris, boulder clusters) in Reaches 5 or 6 that will be part of the Project aquatic features and resultant benefits associated with the NRCS, Preferred, and Culvert Channel alternatives.

There is a slightly greater degree of impacts to wildlife and botanical resources from the NRCS and Culvert/Channel alternatives related to the greater number of trees removed, which would have a greater degree of impact to birds in the area. Although the impacts will be mitigated for all the alternatives, the mature trees that are identified to be removed will be absent for 10 years or more until there is regeneration of mature trees. The Reach 6 Bypass would have less impact to mature trees because of the lack of no construction is required in Reaches 5 and 6.

4.7.4 Agricultural and Forest Resources

Under the Reach 6 Bypass Alternative, impact level determinations are the same but to a lesser degree compared with the Preferred Alternative, because of the lack of construction in Reaches 5 and 6. As shown on Tables 3.7.2 and 3.7.3, Reach 5 has 6.5 acres of Important Farmland and 2.6 acres of Williamson Act; and Reach 6 has 5.0 and 10.8 acres that would be impacted by the NRCS, Preferred, and Culvert/Channel alternatives.

4.7.5 Cultural Resources

As is the case with mineral resources, there is greater degree of impact related to the larger spatial extent of construction excavation in Reach 8 associated with the NRCS and Culvert/Channel alternatives due to the increased risk of unanticipated discoveries of cultural resources. The Reach 6 Bypass Alternative has the least risk for unanticipated discoveries due to the reduced extent of excavation.

4.7.6 Traffic and Circulation

The degree of traffic and transportation impacts would be greater for the NRCS and Culvert/Channel alternatives because construction would occur in a larger portion of the urban area in Reach 8, along roads causing more detours and interaction between construction-related activities and traffic at various areas in Morgan Hill. However, the Reach 6 Bypass Alternative has a higher impact level determination compared with all of the other alternatives due to the detour on U.S. Highway 101 during construction of the bypass channel.

4.7.7 Air Quality and Greenhouse Gases

In relation to Air Quality and Greenhouse Gases, the Reach 6 Bypass Alternative estimated emissions from fuel combustion would be higher than the NRCS or Culvert Channel alternatives. Fugitive dust would be lower in the Reach 6 Bypass Alternative than all other action alternatives as show on Table 3.11-17. The Reach 6 Bypass Alternative avoids the need for extensive excavation and earthmoving work in Reaches 5 and 6; but comparing to the tunnel construction, more emissions will be generated constructing the tunnel than excavating the creek; however, the difference between the Preferred and Bypass alternative is minute. The end result is the Preferred Alternative has the highest emissions because of the tunnel construction and excavation of all the channel reaches downstream.

4.7.8 Noise

In relation to Noise, the greatest degree of impact is associated with the construction of the tunnel, which is in close proximity to residences. Consequently, the Reach 6 Bypass Alternative has the same degree of impacts as the Preferred Alternative (both alternatives use the tunnel feature) while the Culvert/Channel and NRCS alternatives have a lower degree of impacts.

4.7.9 Aesthetic Resources

Aesthetic impacts would be to a higher degree for the NRCS and Culvert/Channel alternatives compared with the Preferred Alternative, because more trees and structures would be removed in the urban areas (Reaches 7A and 8) where the change would be apparent to more viewers. However, the Reach 6 Bypass Alternative would also have a higher degree of impact than the Preferred Alternative due to the addition of the bypass channel in Reach 6, which is a new feature on the existing landscape.

4.7.10 Utilities and Public Services

The NRCS and Culvert/Channel alternatives' excavation footprint in Reach 8 would increase the required abandonment and/or relocation of some utilities compared to the tunnel construction. The Reach 6 Bypass Alternative will likely affect the fewest utilities since no construction in Reaches 6 and 5 compared with the Preferred Alternative.

4.7.11 Recreation

Recreation impacts are the same, except for having a higher degree of impact under the Culvert/Channel Alternative, because of the temporary closure of the Britton ball fields adjacent to Britton Middle School for installation of the culvert.

4.7.12 Land Use and Planning, Population and Housing, and Socioeconomics Resources

Under the Reach 6 Bypass Alternative, impact level determinations are the same but to a lesser degree compared with the Preferred Alternative for Land Use and Planning, Population and Housing, and Socioeconomics Resources. This is due to the lack of construction in Reaches 5 and 6 under the Reach 6 Bypass Alternative, which reduces the amount of agriculture lands taken out of production and structures that are located in the construction right of way that may be subject to removal. The Culvert/Channel and NRCS alternatives have a higher degree of impact on land use and population and housing because of the greater number of structures likely to be removed and residential land use conversion in the urban Reach 8. There would be equal impacts associated with socioeconomics resources for all alternatives, because the loss of agricultural lands would be the same. Important Farmland and Williamson Act lands will equally be impacted by the NRCS, Preferred, and Culvert/Channel alternatives. As shown on Tables 3.7.2 and 3.7.3, Reach 5 has 6.5 acres of Important Farmland and 2.6 acres of Williamson Act lands; and Reach 6 has 5.0 and 10.8 acres that would be impacted.

4.7.13 Hazards and Hazardous Materials

In regards to Hazards and Hazardous Materials, there is greater degree of impact related to the larger extent of construction excavation associated with the NRCS and Culvert/Channel alternatives because of the increased risk of unanticipated discoveries of contaminated soil. Also, the extensive work in the urban area could interfere with emergency responses if routes overlap with the construction area.

4.7.14 Environmental Justice

As discussed in Section 3.19, Environmental Justice, the definition of environmental justice is a disproportionately high and adverse environmental or human-health impact on a community of concern. A community of concern is either a low-income population or a minority population. In the Project area, the community of concern is in Reaches 8 and 7B. The No Project Alternative has the most disproportionate adverse effects due to the continued impact on Reach 8, due to flooding. The Preferred and the Reach 6 Bypass alternatives have a disproportionate adverse effect on Reach 8 due to noise and vibration caused by construction of the tunnel. The NRCS and Culvert/Channel alternatives have no disproportionate impact to communities of concern.

4.7.15 Summary

The No Project Alternative has the most resources with determinations of “No Impact” but also with the most “Significant Impact” determinations. The significant impacts are related to the continued flooding and its effects on various resources, noise generated during more frequent maintenance and also to degradation of the creek channel (due to ongoing incision and to water quality issues associated with flooding), which indicates it is not the environmentally superior alternative.

The Reach 6 Bypass Alternative has the least severe impacts relative to the Preferred Alternative, except for the significant impact associated with traffic effects on U.S. 101, lack of fish passage improvements in Reaches 5 and 6 to benefit steelhead, and ongoing channel incision in Reaches 5 and 6 with attendant lack of geomorphic stability that leads to bank erosion and associated adverse water quality effects down Llagas Creek and the Pajaro River. The Reach 6 Bypass Alternative would minimize potential environmental effects during construction when compared to the other alternatives, particularly in relation to Biological Resources, Cultural Resources, Agricultural and Forest Resources, Land Use and Planning, Utilities and Public Services, Population and Housing, Socioeconomics Resources, and Hazards and Hazardous Materials. The severity of many of the impacts is less due to the elimination of construction in Reaches 5 and 6; and particularly in Reach 6, which has a section of perennial water that supports aquatic habitat. However, over the long term, without improvements to arrest incision in Reaches 5 and 6, the ecology of the stream will be degraded in the Reach 6 Bypass Alternative compared to the Preferred Alternative and will eventually require greater bank erosion control and maintenance. Therefore, with the mitigation implemented to restore the riparian habitat after construction, and the aquatic benefits of additional channel stability, the Preferred Alternative would be the Environmentally Superior Alternative.

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5 Agency Consultation and Public Outreach

5.1 Scoping Program

Pursuant to California Environmental Quality Act ([CEQA] Guidelines § 15201), the Santa Clara Valley Water District (SCVWD) prepared an Initial Study and filed a Notice of Preparation (NOP) that an Environmental Impact Report (EIR) was to be prepared for the Proposed Upper Llagas Creek Project (Project) with the California Office of Planning and Research on August 7, 2001 (State Clearinghouse No. 2001082034). Pursuant to National Environment Policy Act (NEPA), 40 CFR 1501.7(b) , U.S. Army Corps of Engineers (USACE) published a Notice of Intent (NOI) to prepare an Environmental Assessment (EA) for the Proposed Project in the Tuesday, August 7, 2001, Federal Register (66 FR 41212). Previous environmental reviews are outlined in Section 1.5.1.

5.1.1 Purpose of Scoping Meetings

To meet the flood risk management goals of the SCVWD for the Project additional scoping meetings have been conducted to identify the public's issues and concerns pertaining to implementation of the newly evolved and further designed Proposed Action and to provide schedule updates on the development of this EIR.

Some meetings involved members of the interested public as part of the community process and some meetings were conducted to keep permitting agencies informed of the progressing scope and design of the Project. The SCVWD held nine formal meetings from May 2001 to Fall 2013 (Table 5-1), with the objective of listening to and recording questions and comments from the general public; stakeholders; and local, state, and federal agencies. Questions and comments provided by the meeting attendees are addressed and incorporated into the alternatives formulation and the environmental assessment in this document. Section 1.3, Permits, Approvals, and Regulatory Requirements, is a synopsis of the federal, state, and local regulatory requirements that must be met prior to the implementation of the Project.

Table 5-1 Meeting Records

Date	Topic
May 30, 2001	Public Meeting
November 14, 2001	Public Scoping Meeting
October 3 2002	Llagas Creek Public Workshop Meeting
September 22, 2004	Coordination Act Report Joint Agency Meeting
February 24, 2011	Update Meeting
October 25, 2012	Public Scoping/Update Meeting
August 2, 2012	Design Update Joint Agency Meeting
April 10, 2013	Lake Silveira Public Meeting
July 16 and 18, 2013	Property Owner Meetings
November 6 and 7, 2013	Property Owner Meetings

Official transcripts of the most recent Public Scoping/Update Meeting in October 2012 were prepared by Leila S. Strand, Certified Shorthand Reporter 2098. The scoping process involved solicitation of

comments from the general public; local focus groups; and input from federal, state, and local agencies and organizations with interest or jurisdiction within the Upper Llagas Creek watershed.

At the 2012 scoping meeting, the SCVWD provided information on the background and purpose of the Proposed Action, requested public comment on relevant environmental and socioeconomic issues to be addressed in the EIR analysis, and provided preliminary information to the public on the CEQA process. Individuals spoke on behalf of themselves, stakeholders, or local and state government agency representatives. A total of 28 questions were received during the October 3, 2002 meeting. A total of 29 unique Project-related questions were also received during the October 25, 2012 meeting. A comment summary is presented in Table 5-2. The public was invited to submit written comments by November 12, 2012. During that meeting, several comments were made by attendees that just upstream from the Project there has been a persistent, long-term flooding problem at Llagas Road. The public requested SCVWD to consider whether the flooding could be addressed under the Proposed Project design. As a result of the meeting and the stated public concerns, the SCVWD incorporated measures into the Project design to address flooding at Llagas Road.

SCVWD has made available the presentation given on October 25, 2012, at the following web address: http://www.valleywater.org/Services/UpperLlagas.aspx.

5.2 Summary of Scoping Comments

All unique Project-related comments received during public scoping meetings are summarized in Table 5-2. Written comments received by November 12, 2012 are included in Appendix A. Comments received are categorized into four broad categories: (1) Project components, (2) scope of the impacts analysis, (3) alternatives analysis for the EIR, and (4) miscellaneous.

Table 5-2 Comments Received During Public Scoping

Category	Comment Summary	Date
Project Components	Are flood control measures being installed for the Butterfield extension across Monterey Road?	October 25, 2012
Project Components	Which reaches affect each community because the population density is so high in Morgan Hill and less in San Martin?	October 25, 2012
Project Components	Why wasn't the reach of the creek north of Reach 8 on Llagas Road part of the project? Why would it start at Wright Ave?	October 25, 2012
Project Components	Llagas Creek Road intersection has double culverts and one is blocked, Llagas Road floods almost every year. Is addressing that problem part of this project?	October 25, 2012
Project Components	In Reach 6, the freeboard of the channel is being increased, but why is that not increasing our level of flood protection?	October 25, 2012
Project Components	How much are you going to widen the creek in Morgan Hill?	October 25, 2012
Project Components	What are the dimensions for widening the creek in Reach 4?	October 25, 2012
Project Components	The first project completed on the other side of Buena Vista is the same width almost all the way down, is this project going to be the same width?	October 25, 2012
Project Components	What is going to be the required setback in Reach 7?	October 25, 2012
Project Components	If Reach 7A is being completed in the first phase of construction, when is Reach 7B being completed?	October 25, 2012
Project Components	Before 7B is completed will the water continue to back up on Watsonville Road?	October 25, 2012

Table 5-2 Comments Received During Public Scoping

Category	Comment Summary	Date
Project Components	If Reaches 4 and 7A are being completed during the first phase, how will the construction be sequenced?	October 25, 2012
Project Components	Will West Little Llagas Creek be disconnected when Reach 7A is built?	October 25, 2012
Alternatives Analysis	Were the discarded alternatives decided with City engineers and officials or was the decision financial?	October 25, 2012
Alternatives Analysis	Quantify the land acquisition required under Alternative B [Reach 6 Bypass Channel] which was described as having the least amount of land acquisition required.	October 25, 2012
Alternatives Analysis	Which alternative would have the least amount of easements required?	October 25, 2012
Alternatives Analysis	How will Alternative D [Culvert/Channel Alternative] double box culverts cross Britton Middle School and how long will it take to cross the fields as it will be an impact on the community?	October 25, 2012
Scope of the Impacts Analysis	What is the potential for possible pollution with equipment working in the creek?	October 25, 2012
Miscellaneous	If we weren't trying to get money from the federal government would we still need to have a federal lead agency?	October 25, 2012
Miscellaneous	Under Alternative E [?], it was stated no homes or structures would be taken, does this mean nothing would be taken through eminent domain?	October 25, 2012
Miscellaneous	Does this mean the entire project through all reaches nothing would be taken through eminent domain?	October 25, 2012
Miscellaneous	With all the agencies consulted will the District be using the Habitat Conservation Plan?	October 25, 2012
Miscellaneous	When this project is complete will it affect our FEMA insurance will the District be handling the change in flood protection with FEMA or is there something each homeowner will need to do when the project is complete?	October 25, 2012
Miscellaneous	How does the District coordinate with County Roads & Airports so there is not any unnecessary flooding around Columbet Avenue, and how do we get assistance with the maintenance when we are in County jurisdiction?	October 25, 2012
Miscellaneous	Where are the funds coming from to support this project?	October 25, 2012
Miscellaneous	What is the District's current plan for buying easements?	October 25, 2012
Miscellaneous	What percentage of the 2000 bond is going toward the project now?	October 25, 2012
Miscellaneous	If Measure B passes does that give the District access to property through eminent domain?	October 25, 2012
Miscellaneous	What is the Benefit to Cost Ratio?	October 25, 2012

5.3 Resource Agency Consultations

Between 2010 and 2012, five resource agency meetings were held with USACE, National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), Central Coast Regional Water Quality Control Board (CCRWQCB), and California Department of Fish and Wildlife (CDFW) to actively engage the resource agencies in the Project. Resource agency meetings are listed in Table 5-3. Comment letters received from agencies are located in Appendix A. The following agencies and organizations were contacted during development of the Proposed Project EIR:

Federal Agencies

> U.S. Army Corps of Engineers, San Francisco District
> NOAA Fisheries (National Marine Fisheries Service)
> Natural Resource Conservation Service
> U.S. Fish and Wildlife Service
> U.S. Environmental Protection Agency

State Agencies

> California Department of Fish and Wildlife
> Central Coast Regional Water Quality Control Board
> California Department of Conservation
> California Department of Transportation (Caltrans)

Regional and Local Agencies

> Santa Clara County
  - Planning Department
  - Parks and Recreation Department, Environmental Resource Agency
  - Fire Department
> Santa Clara Valley Water District
> South County Airport
> City of Morgan Hill
  - Department of Parks and Recreation
  - Department of Public Works
  - Planning Department
  - Department of Public Works
> San Martin
  - San Martin County Water District

Local Utilities and Organizations

> Charter Communications
> Pacific Gas and Electric Company
> Streams for Tomorrow

Table 5-3 Agency Consultation Meeting Records

Date	Topic	Agencies
September 14, 2010	Resource Agency Site Tour	
April 28, 2011	Kickoff of Quarterly Resource Agency Meeting and Field Tour	
November 16, 2011	Project Update at CWIWG Meeting	
January 13, 2012	Site Tour and Meeting with USFWS	USFWS
August 2, 2012	Resource Agency Design Update Meeting	USFWS, NMFS, CCRWQB, CDFW
March 14, 2013	Meeting with Central Coast RWQCB	CCRWQCB
June 25, 2013	Resource Agency Design Update Meeting	CDFW, EPA, NMFS, CCRWQCB, USFWS
June 27, 2013	Meeting at Lake Silveira	CCRWQCB
June 28, 2013	Meeting at Lake Silveira	NMFS, CDFW
August 6, 2013	Conference Call – Project Discussions	CCRWQCB
November 18, 2013	Resource Agency Mitigation Strategy Meeting	USFWS, NMFS, CDFW

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6 List of Preparers

The following personnel were directly involved in preparation of this Environmental Impact Report (EIR):

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CEQA Considerations ..... Christie Robinson
Purpose and Need ..... Christie Robinson
Aesthetics Resources ..... Shruti Rarmaker
Agricultural and Forest Resources ..... William Spain
Air Quality and Greenhouse Gases ..... Brad Boyes
Aquatic Resources ..... Thomas DeGabriele / Neil Lassettre
Botanical Resources ..... Tamara Klug / Michele Lee
Cultural Resources ..... Joshua Peabody
Environmental Justice ..... Catherine Clark
Geology and Soils ..... Erin DeVine / Mitchell Swanson
Hazards and Hazardous Materials ..... Erin DeVine / Shruti Ramaker
Hydrology and Water Quality ..... Mitchell Katzel / Thomas DeGabriele
Land Use and Planning ..... William Spain
Mineral Resources ..... Erin DeVine
Noise ..... Chelsea Ayala
Population and Housing ..... William Spain
Recreation Resources ..... William Spain
Socioeconomic Resources ..... Ryan Stifter / Adam Swadley
Traffic and Circulation ..... Shruti Ramaker
Utilities and Public Services ..... William Spain
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7 References

Advisory Council on Historic Preservation. 1999. 36 CFR Part 800. *Protection of Historic Properties (with Recommended Approach for Consultation on Recovery of Significant Information from Archaeological Sites)*. Final Rule and Notice. Federal Register 5/18, 64 FR 27071-87. Available online at: http://www.achp.gov/archguide.html.

Air Nav. 2013. *South County Airport of Santa Clara County*. Available online at: http://www.airnav.com/airport/E16. Accessed on February 15, 2013.

Alta Planning and Design. 2013. *Transportation Study: Llagas Creek Flood Control Improvements Project*. Prepared for Santa Clara Valley Water District under subcontract to Cardno ENTRIX. May 9, 2013.

American Meteorological Society (AMS). 2012. *Glossary of Meteorology*. Available online at: http://amsglossary.allenpress.com/glossary/search?id=climate-change1. Accessed on February 15, 2013.

Arcement, G.J. and V.R. Schneider. 1989. *Guide for selecting Manning's roughness coefficients for natural channels and flood plains*. U.S. Geological Survey Water-Supply Paper 2339.

Association of Bay Area Governments and Metropolitan Transportation Commission (2013). *Selected Census Data from the San Francisco Bay Area.* Available online at: http://www.bayareacensus.ca.gov/index.html. Accessed on February 15, 2013.

ATS Consulting. 2013. Final Construction Noise and Vibration Report, SR 520, West Connection Bridge Project. Prepared for Washington State Department of Transportation. Website: http://www.wsdot.wa.gov/NR/rdonlyres/2EE44011-6783-4D44-B5B9-566CD71049C7/0/SR520_FBL_WCB_NoiseVibrationRprt_FINAL.pdf. Accessed on October 25, 2013.

Balance Hydrologics. 2013. Field Assessment of Hydrogeologic Conditions Near Lake Silveira and Identification of Potential Effects of Proposed Reach 7A of the Upper Llagas Creek Flood Protection Project. Prepared for SCVWD. November 8.

Balance Hydrologics. 2012. *Recommended bankfull geometries for flood protection channel design, upper Llagas Creek*. Prepared for RMC Water and Environment. February.

Balance Hydrologics, Santa Clara Valley Water District (SCVWD), and Condor Country Consulting, Inc. 2012. *Hydrography, Hydrology, Water Quality, and Plant Communities of Lake Silveira, Morgan Hill area, Santa Clara County.* Prepared for Cardno ENTRIX. July 23.

Bank of America Corporation. 2013. *Mortgage Payment Calculator*. Available online at: https://www.bankofamerica.com/home-loans/mortgage/mortgage-calculators.go. Accessed on June 2013.

Barnhart, R. A. 1986. *Species Profiles: Life Histories and Environment Requirements of Coastal Fishes and Invertebrates (Pacific Southwest: Steelhead. Performed for the Coastal Ecology Group, Waterways Experiment Station, United States Army Corps of Engineers, Vicksburg, MS, and National Coastal Ecosystems Team, Research and Development, Fish and Wildlife Service, United States Department of the Interior*. Biological Report 82 (11.60) TR EL-82-4.

Bay Area Air Quality Management District (BAAQMD). 2013. *Annual Bay Area Air Quality Summaries (2009, 2010, 2011)*. Available online at: http://www.baaqmd.gov/Divisions/Communications-and-Outreach/Air-Quality-in-the-Bay-Area/Air-Quality-Summaries.aspx. Accessed on February 15, 2013.

Bay Area Air Quality Management District (BAAQMD). 2012a. *Air Quality Plans – Planning for the Future*. Available online at: http://www.baaqmd.gov/Divisions/Planning-and-Research/Plans.aspx. Accessed on February 15, 2013.

Bay Area Air Quality Management District (BAAQMD). 2012b. *Updated CEQA Guidelines*. Available online at: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Updated-CEQA-Guidelines.aspx. Accessed on February 15, 2013.

Bay Area Air Quality Management District (BAAQMD). 2010a. *Updated Guidelines Effective January 1, 2011*. Available online at: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Updated-CEQA-Guidelines.aspx. Accessed on August 25, 2010.

Bay Area Air Quality Management District (BAAQMD). 2010b. *Bay Area Climatology*. Available online at: http://www.baaqmd.gov/Divisions/Communications-and-Outreach/Air-Quality-in-the-Bay-Area/Bay-Area-Climatology.aspx. Accessed on February 15, 2013.

Bay Area Air Quality Management District (BAAQMD). 2010c. *Updated CEQA Guidelines*. Available online at: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Updated-CEQA-Guidelines.aspx. Accessed on October 31, 2013.

Bay Area Air Quality Management District (BAAQMD). 2010d. *Source Inventory of Bay Area Greenhouse Gas Emissions*. Available online at: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/Emission%20Inventory/regionalinventory2007_2_10.ashx. Accessed on February 15, 2013.

Bay Area Air Quality Management District (BAAQMD). 2006. *Asbestos Airborne Toxic Control Measure (ATCM) for Construction and Grading Projects*. Compliance and Enforcement Division. Compliance Advisory. August 8.

Bay Area Air Quality Management District (BAAQMD). 2004. *Toxic Air Contaminants Inventory*. Available online at: http://www.baaqmd.gov/Divisions/Engineering/Air-Toxics/Toxic-Air-Contaminant-Control-Program-Annual-Report.aspx. Accessed on February 15, 2013.

Bay Area Air Quality Management District (BAAQMD). 1999. *BAAQMD CEQA Guidelines - Assessing the Air Quality Impacts of Projects and Plans*. Available online at: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/Plans/CEQA%20Guide/ceqa_guide.ashx. Accessed on February 15, 2013.

Bay-Delta Conservation Plan (BDCP). 2013. *Chapter 2- Existing Ecological Conditions*. March 14. Available online at: http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/BDCP_Chapter_2_%e2%80%93_Existing_Ecological_Conditions_3-14-13.sflb.ashx. Accessed on November 26, 2013.

Beck, Warren and Ynez D. Haase. 1974. *Historical Atlas of California*. University of Oklahoma Press, Norman, Oklahoma.

Beedy, E.C. and W.J. Hamilton III. 1999. *Tricolored Blackbird (Agelaius tricolor).* In: *The Birds of North America*, No. 423 (A. Poole and F. Gill [eds.]). The Birds of North America, Inc. Philadelphia, Pennsylvania.

Bin, O., & Polasky, S. 2004. *Effects of Flood Hazards on Property Values: Evidence Before and after Hurricane Floyd. Land Economics* 80: 490-500.City of Morgan Hill, 2009. Morgan Hill Downtown Specific Plan. City of Morgan Hill, California. November.

Bjornn, T.C. and D.W. Reiser. 1991. *Habitat Requirements of Salmonids in Stream*. In: *Influences of Forest and Rangeland Management on Salmonid Fishes and Their Habitats*. W.R. Meehan, Ed. American Fisheries Society Special Publication 19: 83-138.

Bogan, M.A., E.W. Valdez and K.W. Navo. 2005. *Yuma myotis (Myotis yummanensis) species account*. Prepared for the Western Bat Working Group (WBWG). Available online at http://www.wbwg.org/speciesinfo/species_accounts/vespertilonidae/myyu.pdf.

Bolster, C. 2005. *Western red bat (Lasiurus blossevillii) species account*. Prepared for the Western Bat Working Group (WBWG). Available online at: http://www.wbwg.org/speciesinfo/species_accounts/species_accounts.html.

Breschini, G. S. and T. Haversat. 1992. *Baseline Archaeological Studies at Rancho San Carlos, Carmel Valley, Monterey County, California*. Archives of California Prehistory 36. Coyote Press, Salinas.

Breschini, G. S. 1983. *Models of Population Movements in Central California Prehistory*. Coyote Press, Salinas.

Broadbent, S.M. 1972. *The Rumsen of Monterey: an Ethnography from Historical Sources*. University of California Archaeological Research Facility Contributions 14.

Broadbent, S.M. 1951a. *Field Notes from Site CA-Mnt-101*. Manuscript on file at the Pacific Grove Museum, Pacific Grove, California.

Broadbent, S.M. 1951b. *Field Notes from Mnt-107*, Berwick Park, Pacific Grove. University of California Archaeological Survey Manuscripts 125.

Cal Recycle. 2013. *Facility Information Toolbox Remaining Lifetime Landfill Capacity Data Sheet Santa Clara County*. Available online at: http://www.calrecycle.ca.gov/FacIT/Facility/DisposalGap.aspx. Accessed on December 24, 2013.

Cal Recycle. 2011. *Five–Year CIWMP/RAIWMP Review Report for Santa Clara County*. Sacramento, California.

California Air Resources Board (CARB). 2012a. *California Ambient Air Quality Standards (CAAQS)*. Available online at: http://www.arb.ca.gov/research/aaqs/aaqs2.pdf. Accessed on February 15, 2013.

California Air Resources Board (CARB). 2012b. *Area Designations Maps / State and National*. Available online at: http://www.arb.ca.gov/desig/adm/adm.htm. Accessed on February 15, 2013.

California Air Resources Board (CARB). 2012c. *Statewide Portable Equipment Registration Program*. Available online at: http://www.arb.ca.gov/portable/portable.htm. Accessed on February 15, 2013.

California Air Resources Board (CARB). 2012d. *Mobile and Stationary Source Airborne Toxic Control Measures (ATCMs)*. Available online at: http://www.arb.ca.gov/toxics/atcm/atcm.htm. Accessed on February 15, 2013.

California Air Resources Board (CARB). 2011a. *Trends in California Greenhouse Gas Emissions for 2000 to 2009 by Category as Defined in the Air Resources Board's 2008 Scoping Plan*. Available online at: http://www.arb.ca.gov/cc/inventory/data/data.htm. Accessed on February 15, 2013.

California Air Resources Board (CARB). 2011b. *California Greenhouse Gas Inventory for 2000-2009 by Category as Defined in the [Air Resources Board's 2008] Scoping Plan*. Available online at: http://www.arb.ca.gov/cc/inventory/data/data.htm. Accessed on February 15, 2013.

California Air Resources Board (CARB). 2008. *Climate Change Scoping Plan - A Framework for Change*. Available online at: http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm. Accessed on February 15, 2013.

California Air Resources Board (CARB). 2005. *Characterization of Ambient PM_{10} and $PM_{2.5}$ in California*. Available online at: http://www.arb.ca.gov/pm/pmmeasures/pmch05/stateover05.pdf. Accessed on February 15, 2013.

California Code of Regulations, Title 14, Natural Resources, Division 6. Resources Agency, Chapter 3. *Guidelines for Implementation of the California Environmental Quality Act, Article 20. Definitions, Appendix G Environmental Checklist Form*. Available online at: http://ceres.ca.gov/ceqa/guidelines/Appendix_G.html. Accessed on February 11, 2013.

California Department of Conservation. 2010. *Santa Clara County Important Farmland (Map)*. Sacramento, California.

California Department of Fish and Game (CDFG). 2012a. *Staff Report on Burrowing Owl Mitigation*. State of California Natural Resources Agency, Department of Fish and Game. March 7.

California Department of Fish and Game (CDFG). 2012b. *Fully Protected Animals*. Available online at: http://www.dfg.ca.gov/wildlife/nongame/t_e_spp/fully_pro.html. Accessed on October 10, 2012.

California Department of Fish and Game (CDFG). 2011. *Special Animals*. State of California Department of Fish and Gam Habitat Conservation Division. January. Available online at: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/SPAnimals.pdf. Accessed on April 2013.

California Department of Fish and Game (CDFG). 2010. *List of Vegetation Alliances and Associations. Vegetation Classification and Mapping Program, California Department of Fish and Game*. Sacramento, California. September 2010. Available online at: http://www.dfg.ca.gov/biogeodata/vegcamp/pdfs/natcomlist.pdf.

California Department of Fish and Game (CDFG). 2009. *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities*. November 24.

California Department of Fish and Game (CDFG). 2008a. *California Wildlife Habitat Relationships System, Version 8.2*. Available online at: http://www.dfg.ca.gov/biogeodata/cwhr/wildlife_habitats.asp. Accessed on January 19, 2012.

California Department of Fish and Game (CDFG). 2008b. *CWHR Version 8.0 Personal computer program*. California Interagency Wildlife Task Group Division, Sacramento, California. Available online at: http://www.dfg.ca.gov/biogeodata/cwhr/morecwhr.asp.

California Department of Fish and Game (CDFG). 2005. *Species Account- Yellow Warbler.* California Wildlife Habitat Relationships System. California Interagency Wildlife Task Group. Available online at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2109&inline=1. Accessed on February 17, 2013.

California Department of Fish and Game (CDFG). 1990. *California Wildlife Habitat Relationship System, Yuma myotis.* California Department of Fish and Game, California Interagency Wildlife Task Group. Available online at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2319&inline=1. Accessed on November 18, 2012.

California Department of Fish and Wildlife (CDFW). 2013. *CalFish, A California Cooperative Anadromous Fish and Habitat Data Program*. Electronic database accessed April 5, 2013.

California Department of Fish and Wildlife (CDFW). 2012. *California Natural Diversity Database, Rarefind3. 7.5 minute quadrangle search: Morgan Hill, Mount Madonna, and Gilroy, Chittenden, Gilroy Hot Springs, Loma Prieta, Mississippi Creek, Mount Sizer, San Felipe, Santa Teresa Hills, Watsonville East, and Watsonville West; and records within 5 miles of the Project area*. December 30.

California Department of Forestry and Fire Protection (CAL FIRE). 2008. *Very High Fire Hazard Severity Zones in LRA. Fire and Rescue Assessment Program*. Available online at: http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_zones.php. Accessed on February 7, 2013.

California Department of Forestry. 2012. *Wildlife Hazard Real Estate Disclosure*. Available online at: http://frap.cdf.ca.gov/projects/hazard/hazard.html#SRAdef. Accessed on February 1, 2013.

California Department of Health Services. 2005. *Vector-Borne Disease Section. Overview of Mosquito Control Practices in California*. August. Available online at: http://westnile.ca.gov/website/mosq_control/Overview_Mosquito_Control_Practices_CA.pdf. Accessed on January 29, 2013.

California Department of Public Health. 2013. *2012 WNV Activity by County*. Available online at: http://westnile.ca.gov/case_counts.php?year=2012&option=print. Accessed on January 29, 2013.

California Department of Transportation (Caltrans). 2013. *Officially Designated State Highways*. Available online at: http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm. Accessed on February 14, 2013.

California Department of Transportation (Caltrans). 2004. *Transportation and Construction-Induced Vibration Guidance Manual*. Available online at: http://www.dot.ca.gov/hq/env/noise/pub/vibrationmanFINAL.pdf. Accessed on February 13, 2013.

California Department of Transportation (Caltrans). 1986. *Historic Bridge Inventory*. Updated 2010. Available online at: http://www.dot.ca.gov/hq/structur/strmaint/historic.htm.

California Department of Water Resources (DWR). 2004. California's Ground Water – Bulletin 118, Gilroy-Hollister Ground Water basin, Llagas Subbasin. Februrary.

California Department of Water Resources (DWR). 1981. *Evaluation of Groundwater Resources South San Francisco Bay Volume IV South Santa Clara County Area: Bulletin 118-1*. May.

California Department of Water Resources (DWR) and U.S. Army Corp of Engineers (USACE). 2013. *California's Flood Future: Recommendations for Managing the State's Flood Risk (Public Review Draft)*. Sacramento, California.

California Energy Commission. 2010. *Climate Action Team Report to the Governor and Legislature*. Available online at: http://www.energy.ca.gov/2010publications/CAT-1000-2010-005/CAT-1000-2010-005.PDF. Accessed on February 15, 2013.

California Energy Commission. 2007. *California Electric Utility Systems Areas (Map)*. Sacramento, California.

California Environmental Protection Agency (CalEPA), Office of Environmental Health Hazard Assessment (OEHHA), Air Toxicology and Epidemiology Branch. 2009. *Technical Support Document for Cancer Potency Factors: Methodologies for derivation, listing of available values, and adjustments to allow for early life stage exposures. Appendix A: Hot Spots Unit Risk and Cancer Potency Values*. Available online at: http://www.oehha.ca.gov/air/hot_spots/tsd052909.html. Accessed on February 15, 2013.

California Environmental Protection Agency (CalEPA). 2010. *Proposition 65 in Plain Language. Office of Environmental Health Hazard Assessment*. February. Available online at: http://www.oehha.org/prop65/background/p65plain.html. Accessed on February 5, 2013.

California Geological Survey (CGS). 2010a. *2010 Geologic Map of California, Geologic Data Map No. 2*. Available online at: http://www.quake.ca.gov/gmaps/GMC/stategeologicmap.html. Accessed on February 15, 2013.

California Geological Survey (CGS). 2010b. *Historical California Earthquakes*. Available online at: http://redirect.conservation.ca.gov/cgs/rghm/quakes/historical/degreemap.asp?Map=12237#Map. Accessed on February 15, 2013.

California Invasive Plant Council (Cal-IPC). 2006. *California Invasive Plant Inventory*. February 2006. Available online at: http://www.cal-ipc.org/ip/inventory/index.php.

California Native Plant Society (CNPS). 2012. *Inventory of Rare, Threatened, and Endangered Plants of California*. online database. Available online at: http://www.rareplants.cnps.org/. 7.5 minute quadrangle search: Morgan Hill, Mount Madonna, and Gilroy, Chittenden, Gilroy Hot Springs, Loma Prieta, Mississippi Creek, Mount Sizer, San Felipe, Santa Teresa Hills, Watsonville East, and Watsonville West.

California Native Plant Society (CNPS). 2001. *Inventory of Rare and Endangered Plants of California* (sixth edition). Rare Plant Scientific Advisory Committee, David P. Tibor, Convening Editor. CNPS, Sacramento, California. Available online at: http://www.rareplants.cnps.org/.

California Public Utilities Commission. 2007. *Telephone Exchange Areas of California (map)*. Sacramento, California.

California Regional Water Quality Control Board Central Coast Region (CRWQCB). 2011. *Water Quality Control Plan for the Central Coastal Basin*. June.

California State Water Resources Control Board (SWRCB). 2010. *Integrated Report-statewide: Clean Water Act Section 303(d) List /305(b) Report*. Available online at: http://www.swrcb.ca.gov/water_issues/programs/tmdl/integrated2010.shtml.

California Wildlife Habitat Relationships System (CWHR). 2006. *Mule Deer (Odocoileus hemionus)*. California Department of Fish and Game, California Interagency Wildlife Task Group. February.

California Department of Fish and Game (CDFG). 2005. *Species Account- Yellow Warbler.* California Wildlife Habitat Relationships System. California Interagency Wildlife Task Group. Available online at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2109&inline=1. Accessed on February 17, 2013.

California Wildlife Habitat Relationships System (CWHR). 1988a. *Cropland (CRP).* California Department of Fish and Game, California Interagency Wildlife Task Group. Available online at: http://www.dfg.ca.gov/biogeodata/cwhr/pdfs/MCH.pdf. Accessed on February 18, 2013.

California Wildlife Habitat Relationships System (CWHR). 1988b. *Barren (BAR).* California Department of Fish and Game, California Interagency Wildlife Task Group. Available online at: http://www.dfg.ca.gov/biogeodata/cwhr/pdfs/BAR.pdf. Accessed on February 15, 2013.

California Wildlife Habitat Relationships System (CWHR). 1988c. *Eucalyptus (EUC).* California Department of Fish and Game, California Interagency Wildlife Task Group. Available online at: http://www.dfg.ca.gov/biogeodata/cwhr/pdfs/EUC.pdf. Accessed on February 15, 2013.

California Wildlife Habitat Relationships System (CWHR). 1988d. *Mixed Chaparral (MCH).* California Department of Fish and Game, California Interagency Wildlife Task Group. Available online at: http://www.dfg.ca.gov/biogeodata/cwhr/pdfs/MCH.pdf. Accessed on February 15, 2013.

Cardno ENTRIX. 2012a. *Upper Llagas Creek Flood Protection Project Site Characterization Report*. Unpublished report prepared for the Santa Clara Valley Water District. June.

Cardno ENTRIX. 2012b. *Final Upper Llagas Creek Project Baseline Biological Resources Report*. Prepared for the Santa Clara Valley Water District. December.

Carraway, L. N. and B. J. Verts. 1991. *Neotoma fuscipes*. Mammalian Species 386:1-10.

Cartier, R. 1993. *The Saunders Site: MNT-391. A Littoral Site of the Early Period*. Scotts Valley Historical Society, Scotts Valley, California.

Casagrande, J. 2012. *Uvas and Llagas Creek juvenile steelhead distribution and abundance, 2011*. Prepared for the California Department of Fish and Game. 49 pp.

Casagrande, J. 2011. *Uvas Creek steelhead distribution, density, growth, and habitat use, 2010*. Prepared for the California Department of Fish and Game. 30 pp.

CBS – San Francisco Bay Area. 2013*. Morgan Hill Is First City To Sign Fire Service Pact With Cal Fire*. January 5. Available online at: http://sanfrancisco.cbslocal.com/2013/01/05/morgan-hill-is-first-city-to-sign-fire-service-pact-with-cal-fire/. Accessed on February 12, 2013.

City of Gilroy. 2013. *South County Regional Wastewater Authority*. Available online at: http://www.cityofgilroy.org/cityofgilroy/city_hall/community_development/bles/industrial_waste/default.aspx. Accessed on February 16, 2013.

City of Gilroy. 2011. *2007–2014 Housing Element (Public Review Draft).* Gilroy, California.

City of Gilroy. 2002. *City of Gilroy General Plan 2002 to 2020*. Adopted June 2010. Gilroy, California. Available online at: http://www.cityofgilroy.org/cityofgilroy/city_hall/community_development/planning/general_plan/default.aspx. Accessed on February 15, 2013.

City of Gilroy Water Department. 2011. *Annual Water Quality Report – 2011*. Gilroy, California.

City of Gilroy, City of Morgan Hill, and Santa Clara County. 2010. *Regional Storm Water Management Plan*. February.

City of Gilroy, City of Morgan Hill, Santa Clara County. 2009. *Revised Regional Storm Water Management Plan*. Santa Clara County, California. September 1.

City of Morgan Hill. 2013a. *Sewer Division*. Available online at: http://www.morgan-hill.ca.gov/index.aspx?NID=589. Accessed on February 15, 2013.

City of Morgan Hill. 2013b. Map: *Downtown Morgan Hill*. City of Morgan Hill, California. Available online at: http://www.morgan-hill.ca.gov/DocumentCenter/View/10656. Accessed on May 29, 2013.

City of Morgan Hill. 2012. *Cochrane-Borello Residential Development Project Environmental Impact Report*. August. Available online at: http://www.morgan-hill.ca.gov/documentcenter/view/5951.

City of Morgan Hill. 2011. *Addendum to an Environmental Impact Report Butterfield Boulevard and Channel Extension Project (Second Addendum to the Sutter Boulevard Extension & Flood Protection Facilities Final EIR)*. Available online at: http://www.morgan-hill.ca.gov/DocumentCenter/Home/View/4930.

City of Morgan Hill. 2010a. *Morgan Hill General Plan – Revised 2010*. Morgan Hill, California. Available online at: http://www.morgan-hill.ca.gov/index.aspx?NID=75. Accessed on February 15, 2013.

City of Morgan Hill. 2010b. *City Council Policy Briefing: Solid Waste Management and Recycling*. Morgan Hill, California.

City of Morgan Hill. 2010c. *Draft Housing Element.* Morgan Hill, California.

City of Morgan Hill. 2010d. *Butterfield Boulevard South Extension Mitigated Negative Declaration*. June.

City of Morgan Hill. 2009. *City of Morgan Hill Downtown Specific Plan and Master EIR*. Morgan Hill, California. November.

City of Morgan Hill. 2008. *Morgan Hill Bikeways and Trails Master Plan.* Morgan Hill, California. May.

City of Morgan Hill. 2006. *City of Morgan Hill Parks, Facilities, and Recreation Programming Master Plan*. City of Morgan Hill. Available online at: http://www.morgan-hill.ca.gov/index.aspx?NID=371. Accessed on February 24, 2013.

City of Morgan Hill. 2005. *Initial Study, Wright-Mañana Residential Development*. December.

City of Morgan Hill. 2003. *Citywide Burrowing Owl Habitat Mitigation Plan*. June.

Coder, Kim D. 2010. Tree conservation during site development. University of Georgia Warnell School of Forestry & Natural Resources, Outreach Monograph WSFNR 10-24, page 28.

Condor Country Consulting, Inc. 2012a. *Baseline Biological Resources/Habitat Mapping—Verification and updated habitat map of the 2006 Tetra Tech habitat map and updated California Natural Diversity Database (CNDDB) query of the Upper Llagas Creek Flood Protection Project*. Prepared for Cardno ENTRIX. July 3.

Condor Country Consulting, Inc. 2012b. *Wetland Delineation and Preliminary Jurisdictional Determination Santa Clara Valley Water District Upper Llagas Creek Flood Protection Project Santa Clara County, California*. Prepared for Cardno ENTRIX. August 1.

Conservation Biology Institute (CBI). 2006. *Report of Independent Science Advisors for Santa Clara Valley Habitat Conservation Plan/Natural Community Conservation Plan*. Dated December 2006.

Council on Environmental Quality (CEQ). 1997. *Environmental Justice Guidance Under the National Environmental Policy Act*. Available online at: http://www.epa.gov/compliance/ej/resources/policy/ej_guidance_nepa_ceq1297.pdf. Accessed on February 15, 2013.

County of Santa Clara, City of San José, City of Morgan Hill, City of Gilroy, Santa Clara Valley Water District, and Santa Clara Valley Transportation Authority. 2012. *Final Santa Clara Valley Habitat Plan*. August. Available online at: http://scv-habitatplan.org/www/site/alias__default/346/final_habitat_plan.aspx.

Court of Appeal of the State of California, First Appellate District, Division Five (CA). 2013. *California Building Industry Association v. Bay Area Air Quality Management District (A135335 & A136212)*. Available online at: http://www.courts.ca.gov/opinions/documents/A135335.PDF. Accessed on October 31, 2013.

Cranford, J.A. 1982. *The effect of woodrat houses on population density of Peromyscus*. J. Mammal. 63:663-666.

Dietz, S. A., W. Hildebrandt, and T. L. Jones. 1988. *Archaeological Investigations at Elkhorn Slough: CA-MNT-229, a Middle Period Site on the Central California Coast*. Papers in Northern California Anthropology. Northern California Archaeology Group. Berkeley.

Dietz, S. A. 1985. *Archaeological Reconnaissance for Pacific Bell Projects NE1841T and NE1843T Located from Olmsted Road to Torero Drive on Highway 68 and from Jackson Street to Del Monte Avenue and Castroville to Boronda Road on Highway 183, Monterey County, California*. Report on file Northwest Information Center, Sonoma State University, Rohnert Park, California.

Dunk, J. R. 1995. *White-tailed Kite (Elanus leucurus)*.In *The Birds of North America*, No. 178 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, and The American Ornithologists' Union, Washington, D.C. Available online at: http://bna.birds.cornell.edu/bna/species/178/articles/introduction.

E.I. du Pont de Nemours & Co. 1971. *Condensed Laboratory Handbook.*

Elssaser, A.E. 1986. *Part I: Review of the Prehistory of the Santa Clara Valley Region, California*. Coyote Press Archives of California Prehistory, Number 7. Available online at: http://www.coyotepress.com/page07.html#anchor5.

Environmental Laboratory, Department of the Army. 1987. *Corps of Engineers Wetland Delineation Manual (Technical Report Y-87-1)*. January. U.S. Army Corps of Engineers. Waterways Experimental Station. Vicksburg, Mississippi, USA.

Federal Communications Commission. 2013. *Home Broadband Coverage Map (interactive)*. Available online at: http://www.fcc.gov/maps/connect-compete-home-broadband-coverage-map. Accessed on February 12, 2013.

Federal Highways Administration. 1988. *Visual Impact Assessment for Highway Projects*. Available online at: http://www.dot.ca.gov/ser/vol1/sec3/community/ch27via/chap27via.htm#via. Accessed on February 12, 2013.

Federal Register (FR). 1994. *Endangered and threatened wildlife and plants; designation of critical habitat for the least Bell's vireo.* 50 CFR Part 17, Page 4845-4867. February 2. (Volume 59, Number 22).

Federal Register (FR). 1986. *Endangered and threatened wildlife and plants: determination of endangered status for the least Bell's vireo.* 50 CFR Part 17 Page 16474-16481. May 2, 1986 (Volume 51, Number 85).

Gillies, E.L.1998. *Effects of regulated streamflows on the Sycamore Alluvial Woodland riparian community.* Master's Theses, San Jose State University. Available online at: http://scholarworks.sjsu.edu/cgi/viewcontent.cgi?article=2626&context=etd_theses&sei-redir=1&referer=http%3A%2F%2Fwww.google.com%2Furl%3Fsa%3Dt%26rct%3Dj%26q%3Dsycamore%2520alluvial%2520woodland%26source%3Dweb%26cd%3D2%26ved%3D0CDMQFjAB%26url%3Dhttp%253A%252F%252Fscholarworks.sjsu.edu%252Fcgi%252Fviewcontent.cgi%253Farticle%253D2626%2526context%253Detd_theses%26ei%3DuqihUO3uCoXo2QWQ6YGwAg%26usg%3DAFQjCNF3hQEaEWl2BtjhjlBZ6f1BfVN20w#search=%22sycamore%20alluvial%20woodland%22.

Gilroy Unified School District. 2013. *Gilroy Unified School District website*. Available online at: http://www.gusd.k12.ca.us/. Accessed on February 7, 2013.

Golomshtok, E. A. 1921. *Monterey, Pacific Grove, and Salinas Mounds*. University of California Archaeological Survey Manuscripts 374.

Greengo, R.E. 1951. *Molluscan Species in California Shell Middens*. University of California Archaeological Survey Reports 13:1-29.

H.T. Harvey & Associates. 2013a. *Lake Silveira Restoration Project Design Development Report (Project # 3161-02)*. Prepared for RMC Water and Environment. October 18.

H.T. Harvey & Associates. 2013b. *Upper Llagas Creek Stormwater Improvements Project Preliminary Delineation of Wetlands and Other Waters, Santa Clara County, California*. July 5.

H.T. Harvey & Associates. 2013c. *Upper Llagas Creek Flood Protection Project 65% Design Habitat Impact Analysis Technical Memorandum (Project # 3270-21)*. Prepared for SCVWD. June 17.

H.T. Harvey & Associates. 2013d. *Upper Llagas Creek Flood Protection Project – Revegetation Acreage and Planting Polygon Refinement Technical Memorandum*. April 5, Revised June 6.

H.T. Harvey & Associates. 2013e. *Upper Llagas Creek Bridge and Culvert Surveys for Bat Habitat (HTH Project #3270-18)*. Prepared for SCVWD. January 28.

H.T. Harvey & Associates. 2013f. *Upper Llagas Creek Flood Protection Project Burrowing Owl Survey and Impact Assessment (Project # 3270-22)*. Prepared for SCVWD. July 5.

H.T. Harvey & Associates. 2013g. *Upper Llagas Creek Flood Protection Project West Little Llagas Creek Wildlife Habitat Assessment Technical Memorandum (Project # 3270-21)*. Prepared for SCVWD. September 13.

H.T. Harvey & Associates. 2012a. *Upper Llagas Creek Tunnel Bat Exclusion Design (HTH Project 33270-17)*. Prepared for Santa Clara Valley Water District. December 21.

H.T. Harvey & Associates. 2012b. *California Tiger Salamander Surveys and Site Assessments at Selected Santa Clara County Locations*. August 29.H.T. Harvey & Associates. 2011. *Upper Llagas Creek Flood Protection Project Least Bell's vireo Assessment*. Prepared for SCVWD. September 26.

H.T. Harvey & Associates. 2010. *Lower Llagas Creek Least Bell's Vireo Surveys.* Prepared for SCVWD. August 19.

H.T. Harvey & Associates. 2004. *California Bat Mitigation Techniques, Solutions, and Effectiveness*. Prepared for California Department of Transportation. December 29.

H.T. Harvey & Associates. 1997. *California Red-legged frog distribution and status—1997*. Prepared for Santa Clara Valley Water District.

Harrington, J.P. 1942. *Culture Element Distributions, XIX: Central California Coast*. University of California Anthropological Records 7(1):1-46.

Harrington, J.P. 1933. *Report of Fieldwork on Indians of Monterey and San Bernardino Counties*. 49th Annual Report of the Bureau of American Ethnology for the Years 1931-1932 Washington.

Harvey and Stanley Associates. 1988. *Biotic Resources Report for Silveira Lake Park Master Plan Morgan Hill, California*. Prepared for Ms. Kerry Daane Loux, Amphion Environmental, Inc.

Hildebrandt, W.R. and P. Mikkelsen. 1993. *Archaeological Test Excavations at Fourteen Sites Along Highways 101 and 152, Santa Clara and San Benito Counties, California, Volume 1*. Submitted to Caltrans District 4, Contract No. 0E633-EP. Report S-15442. Report on file Northwest Information Center, Sonoma State University, Rohnert Park, California.

Hill, W. W. 1929. *Monterey County Sites, General*. University of California Archaeological Survey Manuscripts 38.

Holland, R. F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California.* California Department of Fish and Game. October.

Hoover, M. B., H. E. Rensch, E. G. Rensch, and W. N. Abeloe. 1990. *Historic Spots in California*. Stanford University Press, Stanford, California.

Howell, C.A., Wood, J.K., Dettling, M.D., Griggs, K., Otte, C.C., Lina, L., Gardali, T. 2010 *Least Bell's vireo breeding records in the Central Valley following decades of extirpation*. pp. 105-113.

Hunter, B. 1980. Letter dated 8 October 1980 from Brian Hunter to D.W. *Patterson of the Soil Conservation Service, Red Bluff, California regarding proposed Llagas Creek Flood Control Project*. California Department of Fish and Game, Yountville, California.

Hylkema, M. 1991. *Prehistoric Native American Adaptations Along the Central California Coast of San Mateo and Santa Cruz Counties*. Unpublished Master's Thesis, Department of Social Science, San Jose State University.

ICF International. 2012a. *Final Santa Clara Valley Habitat Conservation Plan, Appendix D Species Accounts*. August 2012. Available online at: http://scv-habitatplan.org/www/site/alias__default/346/final_habitat_plan.aspx.

ICF International. 2012b*. Covered Species Accounts Bay-Delta Conservation Plan*. Appendix 2.A. Administrative Draft. February (ICF 00610.10). Available online at: http://baydeltaconservationplan.com/Library/DocumentsLandingPage/BDCPPlanDocuments.aspx Accessed on February 8, 2012.

Intergovernmental Panel on Climate Control (IPCC). 1990–2007. *IPCC Assessment Reports, Climate Change 1990, 1995, 2001, 2007 (Reports 1-4)*. Available online at: http://www.ipcc.ch/publications_and_data/publications_and_data_reports.htm. Accessed on February 15, 2013.

Jennings, B.H. 1970. *Environmental Engineering – Analysis and Practice.* International Textbook Company.

Jennings, M.R. and M.P. Hayes. 1994. *Amphibian and reptile species of special concern in California*. Report prepared for the California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova, California. 255 pp.

Jensen, L.S. 1988. *Mineral Land Classification of the San Bruno Canyon Greenstone Deposits, Morgan Hill [7.5'] Quadrangle, Santa Clara County, California -- for Aggregate Materials California Geological Survey (CGS)*. *CGS Open File Report 88-19*.

Jones, T. L. 1993. *Big Sur: A Keystone In Central California Culture History*. Pacific Coast Archaeological Society Quarterly 10:163-186.

Jones, T. L. and D.A. Jones. 1992. *Elkhorn Slough Revisited: Reassessing the Chronology of CA-MNT-229*. Journal of California and Great Basin Anthropology 14:159-179.

Jones, T. L., T. Van Bueren, S. Grantham, J. Huddleson, and T. Fung. 1992. *Phase II Archaeological Investigations for the Castroville Bypass Project, Monterey County, California*. Report on file California Department of Transportation, District 5, San Luis Obispo.

Kleinfelder, Inc. 1997. *Upper Llagas Creek Project – PLL 566 Summary Level 1 Hazardous Material Investigation*. Prepared for Santa Clara Valley Water District. December.

Kohler, S. 1999. *Update of Mineral Land Classification: Aggregate Materials in the Monterey Bay Production-Consumption Region*. *CGS Open File Report 99-01*.

Kohler-Antablin, S. 1996. *Update of Mineral Land Classification: Aggregate Materials in the South San Francisco Bay Production-Consumption Region*. *CGS Open File Report 96-03*.

Kondolf, G.M. 2000. *Assessing salmonid spawning gravel quality. Transactions of the American Fisheries Society*. 129: 262-281.

Kondolf, G. M., and M. G. Wolman. 1993. *The sizes of salmonid spawning gravels*. Water Resources Research 29:2275–2285.

Kroeber, A. L. 1915. *Monterey Bay Mounds, General*. University of California Archaeological Survey Manuscripts 27.

Langsdorff, G. H. von. 1968. *Voyages and Travels in Various Parts of the World during the Years 1803, 1804, 1805, 1806, and 1807 [1813-1814]*. 2 vols. (Biblioteca Australiana 41). New York: De Capo Press.

Levy, R. 1978. *Costanoan*. In California, edited by R.F. Heizer, pp. 485-495. Handbook of North American Indians Vol. 8, W.C. Strurtevant, general editor. Smithsonian Institute, Washington, D.C.

MacDonald, D., J. Murdoch, and H. White. 1987. *Uncertain Hazards, Insurance and Consumer Choice: Evidence from Housing Markets. Land Economics* 63: 361-371.

Martin, Michael. Santa Clara Valley Water District. 2013. Personal communication to Mitchell Katzel via email on December 20, 2013.

Maxey, Steve. City of Morgan Hill Planning Department. 2013a. Personal Communication to Christie Robinson via email on February 15, 2013.

Maxey, Steve. City of Morgan Hill Planning Department. 2013b. Personal Communication to Christie Robinson via telephone on June 5, 2013.

Mayer, K.E. and W.F. Laudenslayer Jr. 1988. *A Guide to Wildlife Habitats of California.* State of California, Resource Agency, Department of Fish and Game Sacramento, CA. 166 pp. Available at: http://www.dfg.ca.gov/biogeodata/cwhr/wildlife_habitats.asp. Accessed on February 6, 2013.

McCabe, Michael. 1999. *Flood Control for Morgan Hill Moves a Step Closer / Army engineers to study solutions.* Hearst Communications, Inc. Available online at: http://www.sfgate.com/bayarea/article/Flood-Control-for-Morgan-Hill-Moves-a-Step-Closer-2952844.php. Accessed November 6, 2013.

MH Engineering. Undated. *Upper West Branch of Little Llagas Creek Drainage Study for City of Morgan Hill*.

Milliken, R. T., J. G. Costello, C. Johnson, G. A. Laffey, A. Sayers, and P. Orozco. 1993. *Archaeological Test Excavations at Fourteen Sites Along Highways 101 and 152, Santa Clara and San Benito Counties, California, Volume 2: History, Ethnohistory, and Historic Archaeology. Report S-15442*. Report on file Northwest Information Center, Sonoma State University, Rohnert Park, California.

Minnesota IMPLAN Group, Inc. 2013. *U.S. Department of Commerce Bureau of Economic Analysis: Total Output by Industry, Santa Clara County, CA, 2010*. Database accessed on February 20, 2013.

Morgan Hill Downtown Association. 2013. *Morgan Hill Downtown Business Directory*. Available online at: http://morganhilldowntown.com/Business_Directory.html. Accessed on February 22, 2013.

Morgan Hill Unified School District. 2013. *Morgan Hill Unified School District website*. Available online at: http://www.mhu.k12.ca.us/About-MHUSD/index.html. Accessed on February 7, 2013.

Moyle, P. B. 2002. *Inland Fishes of California* (second edition). May. University of California Press.

NAICS Association. 2013. *Six-Digit NAICS Codes & Titles: Manufacturing*. Available online at: http://www.naics.com/free-code-search/sixdigitnaics.html?code=3133. Accessed on February 22, 2013.

National Institute on Deafness and Communication Disorder (NIDCD). 2008. *Noise-Induced Hearing Loss, NIH Pub. No. 97-4233*, updated October 2008. Available online at: http://www.nidcd.nih.gov/health/hearing/pages/noise.aspx. Accessed on February 11, 2013.

National Marine Fisheries Service (NMFS). 2008. *Anadromous Salmonid Passage Facility Design*. National Marine Fisheries Service Northwest Region, February 2008.

National Marine Fisheries Service (NMFS). 2006. *Endangered and threatened species; final listing determination for 10 Distinct Population Segments of west coast steelhead*. Federal Register 71: 834-862.

National Marine Fisheries Service (NMFS). 2005a. *Endangered and threatened species; designation of critical habitat for seven evolutionarily significant units of Pacific salmon and steelhead in California*. Federal Register 70: 524888-52627.

National Marine Fisheries Service (NMFS). 2005b. *Final Assessment of the National Marine Fisheries Service's Critical Habitat Annual Review Teams (CHARTs) for Seven Salmon and Steelhead Evolutionarily Significant Units (ESUs) in California*. NOAA Fisheries Protected Resources Division, Long Beach, California. July.

National Oceanic and Atmospheric Administration (NOAA). 2008. *Average Wind Data*. Available online at: http://lwf.ncdc.noaa.gov/oa/climate/online/ccd/avgwind.html. Accessed on February 15, 2013.

Newland, Michael. 1999. *Archaeological Resources Records Search for the Llagas Creek Watershed Project, Morgan Hill, Santa Clara County, California (letter report)*. Report on file Northwest Information Center, Sonoma State University, Rohnert Park, California.

Noble Consultants Inc. and Northwest Hydraulics. 2008. *Upper Llagas Creek Flood Control Project: Stable Channel Design and Sediment Impact Assessment, Final Report*. Prepared for the U.S. Army Corps of Engineers, San Francisco District. January.

Pacific Geotechnical Engineering (PGE). 2013. *Upper Llagas Creek Flood Control Ground Water Report. Prepared for Santa Clara Valley Water District*. January.

Page, Benjamin M., Thompson, G.A. and R.G. Coleman. 1998. *Late Cenozoic Tectonics of central and southern Coast Ranges California: Geological Society of America Bulletin*. vol. 110, p. 846-876.

Patch, D. and T. L. Jones. 1984. *Paleoenvironmental Change at Elkhorn Slough: Implications for Human Adaptive Strategies*. Journal of California and Great Basin Anthropology 6(1):19-43.

Pilling, A. R. 1948. *Archaeological Survey of Northern Monterey Bay County*. University of California Archaeological Survey Manuscripts 106.

Plog, B. A., Ed. 1988. *Fundamentals of Industrial Hygiene* — 3rd Edition. National Safety Council, Table 9-b, Page 168.

Purdue. N.D. *Noise Sources and Their Effects*. Available online at: http://www.chem.purdue.edu/chemsafety/training/ppetrain/dblevels.htm. Accessed on July 8, 2013.

Regional Water Quality Control Board (RWQCB). 2011. *Water Quality Control Plan for the Central Coast Basin. State Water Resources Control Board and California Environmental Protection Agency*. June.

RMC Water and Environment (RMC). 2013. Map and Construction Plan for Upper Llagas Creek Flood Protection Project. Phase 1, Vol. 1 and Vol. 2 and Phase 2, Vol. 1 and Vol. 2. Prepared for Santa Clara Valley Water District.

RMC Water and Environment (RMC). 2003. *Phase 2 Pajaro River Watershed Study.* Final. April.

Safford, H. D., J. H. Viers, and S. P. Harrison. 2005. *Serpentine Endemism in the California Flora: A Database of Serpentine Affinity.* Madroño, Vol. 52, No. 4, pp. 222-257.

San Francisco Estuary Institute (SFEI). 2008. *Final Report: South Santa Clara Valley Historical Ecology Study.* Prepared for the Santa Clara Valley Water District and the Nature Conservancy. May.

Santa Clara County Parks. 2013. *Santa Clara County Parks Website*. Available online at: http://www.sccgov.org/sites/parks/Pages/Welcome-to-Santa-Clara-County-Parks.aspx. Accessed on February 17, 2013.

Santa Clara County Vector Control District (SCVCD). 2011. *Santa Clara County Mosquito-Borne Virus Response & Operations Plan. In cooperation with: California Department of Public Health Mosquito & Vector Control Association of California, University of California*. February.

Santa Clara County. 2013. *Williamson Act*. Available online at: http://www.sccgov.org/sites/bos/Legislation/Williamson-Act/Pages/default.aspx. Accessed on February 17, 2013.

Santa Clara County. 2012a. *County Geologic Hazard Zones*. Available online at: http://www.sccgov.org/sites/planning/GIS/GeoHazardZones/Pages/SCCGeoHazardZoneMaps.aspx. Accessed on February 15, 2013. December 5.

Santa Clara County. 2012b. *Ordinance Code 2012, Chapter VIII Control of Noise and Vibration*. Available online at: http://library.municode.com/index.aspx?clientId=13790. Accessed on February 12, 2013.

Santa Clara County. 2012c. *Integrated Pest Management*. Available online at: http://www.sccgov.org/sites/ipm/Pages/Integrated-Pest-Management-Site-Home-Page.aspx. Accessed on February 5, 2013.

Santa Clara County. 2011. *Williamson Act Program: Guidelines for Commercial Agricultural Use.* Approved October 18, 2011. San Jose, California. Available online at: *http://www.sccgov.org/sites/planning/PlansPrograms/Williamson/Documents/Guideline-for-Commercial-Agricultural-Use-Approved-10-18-11.pdf*.

Santa Clara County. 2010. *County of Santa Clara Housing Element Update 2009–2014.* Adopted by the Board of Supervisors. August 2. San Jose, California.

Santa Clara County. 2008. *Santa Clara County Operational Area Emergency Operations Plan*. March.

Santa Clara County. 2006. *Chapter IV Geologic Provisions*. Available online at: http://www.sccgov.org/sites/planning/PermitsDevelopment/GeoHazards/Documents/Geologic_Ord_031902.pdf. Accessed on February 15, 2013.

Santa Clara County. 2003. *Comprehensive County Expressway Planning Study South County Working Paper*. March 12. Available online at: http://www.sccgov.org/rda/expressways2/southcountywp.pdf.

Santa Clara County. 1994. *Santa Clara County General Plan, 1995–2010*. Adopted December 20. County of Santa Clara, California. Available online at: http://www.sccgov.org/sites/planning/Plans%20-%20Programs/General%20Plan/Pages/General-Plan.aspx. Accessed on February 15, 2103.

Santa Clara County, Department of Agriculture. 2013. *2013 Growers Data (GIS and Excel Files).* Provided in emails from Santa Clara County Department of Agriculture. San Jose, California.

Santa Clara County, Department of Agriculture. 2012. *2011 Santa Clara Crop Report.* Santa Clara County, California. Available online at: http://www.sccgov.org/sites/ag/Crop%20Report/Documents/2011_crop_report.pdf.

Santa Clara Local Agency Formation Commission (LAFCO). 2011. *Santa Clara Countywide Water Service Review Final*. Adopted December 7. Prepared by Baracco and Associates, The Shibatani Group, Inc., Policy Consulting Associates, LLC.

Santa Clara Local Agency Formation Commission (LAFCO). 2010. *LAFCO of Santa Clara County 2010 Countywide Fire Service Review*. Revised Draft. December 8. Prepared by Management Partners Incorporated.

Santa Clara Local Agency Formation Commission (LAFCO). 2006. *Santa Clara LAFCO Service Reviews and Sphere of Influence Recommendations for the South Central Santa Clara County Area.* San Jose, California.

Santa Clara Local Agency Formation Commission (LAFCO). 2003. *Sphere of Influence Policies.* San Jose, California.

Santa Clara Open Space Authority. 2013. *Santa Clara County Open Space Authority website.* Available online at: http://www.openspaceauthority.org/. Accessed on February 17, 2013.

Santa Clara Valley Water District (SCVWD). 2013a. Best Management Practices Handbook, Santa Clara Valley Water District Comprehensive List. Document No W751M01. August.

Santa Clara Valley Water District (SCVWD). 2013b. *Upper Llagas Creek Flood Protection Project – Reach 7A Detention Basin Analysis Using 2006 Hydrograph Data*. Supplemental Memorandum to U.S. Army Corps of Engineers. September 26, 2013.

Santa Clara Valley Water District (SCVWD). 2013c. *Annual Groundwater Condition Report for the Calendar Year 2012*. July.

Santa Clara Valley Water District (SCVWD). 2013d. *Upper Llagas Creek Flood Protection Project: Inclusion of Bat Evaluations into Environmental Documents*. Technical Memorandum from Melissa Moore to Mitchell Katzel—Cardno ENTRIX. February 6.

Santa Clara Valley Water District (SCVWD). 2012a. *Groundwater Levels*. February.

Santa Clara Valley Water District (SCVWD). 2012b. *Groundwater Condition Report, Santa Clara County*. August.

Santa Clara Valley Water District (SCVWD). 2012c. *Stream Maintenance Program Update 2012–2022*. January 1, 2012. Available online at: http://www.swrcb.ca.gov/rwqcb2/board_info/agendas/2012/December/SCVWD/SMP_Manual.pdf.

Santa Clara Valley Water District (SCVWD). 2012d. *Where does our water come from? South County*. San Jose, California.

Santa Clara Valley Water District (SCVWD). 2011a. *Draft Subsequent Environmental Impact Report for Stream Maintenance Program Update 2012-2022*. August.

Santa Clara Valley Water District (SCVWD). 2011b. *Santa Clara Valley Water District Stream Maintenance Program Update Final Subsequent Environmental Impact Report*. December 2011. Available online at: http://www.valleywater.org/SMPSEIR2011-V2.aspx. Accessed on April 2, 2013.

Santa Clara Valley Water District (SCVWD). 2010a. *Flood Protection and Stream Stewardship Master Plan Preliminary Review Draft*. June 15.

Santa Clara Valley Water District (SCVWD). 2010b. *SCVWD website*: http://cf.valleywater.org/Water/Watersheds_-_streams_and_floods/Watershed_info_&_projects/Uvas-Llagas/Upper_Llagas/index.shtm. Accessed on August 25, 2010.

Santa Clara Valley Water District (SCVWD). 2010c. *2010 Urban Water Management Plan: April*.

Santa Clara Valley Water District (SCVWD). 2010d. *Status Report: Federal Projects for Santa Clara County, California, Fiscal Year 2010*.

Santa Clara Valley Water District (SCVWD). 2008. *Best Management Practices (BMP) Handbook, Revision A*. May 22.

Santa Clara Valley Water District (SCVWD). 2001. *Santa Clara Valley Water District Groundwater Management Plan: July*.

Santa Clara Valley Water District (SCVWD). 1997. West Little Llagas Creek Detention Pond Study (Study) and Flood Protection Measure analysis and report. May.

Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2009. A manual of California vegetation. Second edition. California Native Plant Society Press, Sacramento, USA.

Saxe, W. E. 1875. *Observations at a Shellmound at Laguna Creek, 6 Miles North of Santa Cruz*. Proceedings of the California Academy of Sciences 5:157.

Schaaf & Wheeler. 2012. Upper Llagas Creek Flood Protection Project 30% Design Hydraulic Report. Prepared for the USACE, San Francisco District, and SCVWD. July 31.

Sherwin, R. and D. A. Rimbaldini. 2005. *Pallid bat (Antrozous pallidus) species account*. Prepared for the Western Bat Working Group (WBWG). Available online at: http://www.wbwg.org/speciesinfo/species_accounts/species_accounts.html.

Shuford, W.D., and Gardali, T., editors. 2008. *Studies of Western Birds 1. Species Account – Yellow Warbler*. California Bird Species of Special Concern.

Simon Malls. 2012. *Property Fact Sheet: Gilroy Premium Outlets*. Gilroy, California. Updated May 2012. Available online at: http://www.simon.com/Mall/LeasingSheet/7857_GilroyPremiumOutlets_PropFactSheet.pdf. Accessed on May 29, 2013.

Smith, J. J. 2007. *Steelhead distribution and ecology in the upper Pajaro River system and mainstem Pajaro River (and stream descriptions, habitat quality ratings and limiting factors by reach for the Pajaro River and for the upper Pajaro River tributaries)*. Unpublished Report, Department of Biology, San José State University, November 7. 38pp.

South Coast Air Quality Management District (SCAQMD). 1993 (updates 2008). *CEQA Air Quality Handbook*. Available online at: http://www.aqmd.gov/ceqa/hdbk.html. Accessed on February 15, 2013. No longer available online pending development of new Air Quality Analysis Guidance Handbook. *Emission factors from this reference are included in Appendices 3.11-l, -m, -n, -o.*

State of California Board of Equalization. 2013a. *California City and County Sales and Use Tax Rates, 2013*. Available online at: http://www.boe.ca.gov/cgi-bin/rates.cgi.

State of California Board of Equalization. 2013b. *Detailed Description of the Sales & Use Tax Rate, 2013*. Available online at: http://www.boe.ca.gov/news/sp111500att.htm.

State of California Board of Equalization. 2011a. *2010-11 Annual Report, Statistical Appendix, Table 11*. Available online at: http://www.boe.ca.gov/annual/pdf/2011/table11_11.pdf.

State of California Board of Equalization. 2011b. *2010-11 Annual Report, Statistical Appendix, Table 14*. Available online at: http://www.boe.ca.gov/annual/pdf/2011/table14_11.pdf.

State of California Board of Equalization. 2011c. *2010-11 Annual Report, Statistical Appendix, Table 21A*. Available online at: http://www.boe.ca.gov/annual/pdf/2011/table21a_11.pdf.

State of California Employment Development Department. 2010. *Labor Market Information Division: 2010-2020 Industry Employment Projections San Jose-Sunnyvale-Santa Clara Metropolitan Statistical Area (San Benito and Santa Clara Counties)*. Available online at: http://www.labormarketinfo.edd.ca.gov/Content.asp?pageid=145. Accessed on February 22, 2013.

State of California Water Resources Control Board (SWRCB). 2013. *GeoTracker Database*. Available online at: http://geotracker.waterboards.ca.gov/. Accessed on February 19, 2013.

State of California, Department of Finance. 2013. *Report P-1 (County): State and County Total Population Projections, 2010–2060.* Sacramento, California.

The Tricolored Blackbird Working Group (TBWG). 2007. *Conservation Plan for the Tricolored Blackbird* (*Agelaius tricolor*). September.

Transportation Research Board. 2000. *High Capacity Manual*. Available online at: http://www.co.monterey.ca.us/planning/major/Pebble%20Beach%20Company/Pebble_Beach_DEIR_Nov_2011/Pebble_Beach_DEIR_Admin_Records_Nov_2011/TRB/TRB_2000HghwyCapMan_IntersectionLOSCriteria.pdf.

U.S. Army Corps of Engineers (USACE). 2010a. Memorandum for Record, Upper Llagas Creek Project Alternative and Design History. February 5.

U.S. Army Corps of Engineers (USACE). 2010b. *Upper Llagas Creek Flood Control Project with Project Hydraulic Analysis Final Report*. Prepared for Santa Clara County, California. April.

U.S. Army Corps of Engineers (USACE). 2008. Regional supplement to the Corps of Engineers wetland delineation manual: arid west region, version 2.0. ERDC/EL TR-08-28. U.S. Army Engineer Research and Development Center, Vicksburg, Mississippi, USA.

U.S. Department of Agriculture (USDA). 2011. *California County Agricultural Commissioners' Data, Total Value of Production: Santa Clara County, 2011*. Available online at: http://www.nass.usda.gov/Statistics_by_State/California/Publications/AgComm/Detail/index.asp. Accessed on February 21, 2013.

U.S. Department of Agriculture (USDA). 2007. *Census of Agriculture, Data Item: Operators, Principal-Number of Operators, Domain Category: Primary Occupation (Farming), 2007*. Available online at: http://quickstats.nass.usda.gov/?agg_level_desc=ZIP%20CODE#28EC1F47-489F-3767-A48D-705CA3B03EBD. Accessed on February 22, 2013.

U.S. Department of Agriculture (USDA). 1982. *Soil Conservation Service. Llagas Creek Watershed Environmental Impact Statement/Report Final*. Santa Clara County California. May.

U.S. Department of Agriculture (USDA). 1981. *Finding of No Significant Impact/Negative Declaration and Environmental Impact Assessment*. Prepared for Santa Clara County, California. September.

U.S. Department of Commerce Bureau of Census. 2011a. *American Community Survey 5-Year Estimates, 2007–2011. Selected Economic Characteristics*. Available online at: http://factfinder2.census.gov/faces/nav/jsf/pages/community_facts.xhtml. Accessed on February 21, 2013.

U.S. Department of Commerce Bureau of Census. 2011b. *American Community Survey 5-Year Estimates, 2007–2011. Selected Housing Characteristics*. Available online at: http://factfinder2.census.gov/faces/nav/jsf/pages/community_facts.xhtml. Accessed on February 21, 2013.

U.S. Department of Commerce Bureau of Census. 2011c. *The 2012 Statistical Abstract National Data Book. Table 728. Cost of Living Index--Selected Urban Areas: Annual Average 2010*. Council for Community and Economic Research. Arlington, Virginia.

U.S. Department of Commerce Bureau of Census. 2010a. *ZIP Code Business Patterns (ZBP), 2010*. Available online at: http://www.census.gov/econ/cbp/index.html. Accessed on February 21, 2013.

U.S. Department of Commerce Bureau of Census. 2010b. *DP-1 - Profile of General Population and Housing Characteristics: 2010*. Available online at: http://factfinder2.census.gov/faces/nav/jsf/pages/community_facts.xhtml.

U.S. Department of Commerce Bureau of Census. 2009. *American Community Survey 1-Year Estimates, 2009. Selected Housing Characteristics*. Available online at: http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t. Accessed on February 22, 2013.

U.S. Department of Commerce Bureau of Census. 2000. *DP-3 Median Value (Dollars) For All Owner-Occupied Housing Units, 2000*. Available online at: http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t. Accessed on February 22, 2013.

U.S. Department of Commerce Bureau of Census. 1992. *1990 Census of Population: General Population Characteristics - California. Section 3 of 3.* Washington D.C.

U.S. Department of Commerce Bureau of Economic Analysis. 2010. *Regional Economic Information Systems, Table CA05N Personal Income and Detailed Earnings by Industry, 2010*. Available online at: http://www.bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdn=3#reqid=70&step=1&isuri=1. Accessed on February 22, 2013.

U.S. Department of Labor, Bureau of Labor Statistics. 2011a. *Consumer Price Index- All Urban Consumers: Original Value Data, 2000–2011*. San Francisco-Oakland-San Jose, California. Available online at: http://www.bls.gov/cpi/data.htm. Accessed on February 21, 2013.

U.S. Department of Labor, Bureau of Labor Statistics. 2011b. *Occupational Employment Statistics (OES) Survey, May 2011*. Available online at: http:/stat.bls.gov/oes/home.htm.

U.S. Department of Transportation (DOT), Federal Highway Administration (FHA). 2006a. *Roadway Construction Noise Model User's Guide*. Available online at: http://www.fhwa.dot.gov/environment/noise/construction_noise/rcnm/rcnm.pdf. Accessed on February 14, 2013.

U.S. Department of Transportation (DOT), Federal Transit Administration (FTA). 2006b. *Transit Noise and Vibration Impact Assessment (FTA-VA-90-1003-06)*. Available online at: http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf. Accessed on February 12, 2013.

U.S. Environmental Protection Agency (USEPA). 2012a. *The Green Book Nonattainment Areas for Criteria Pollutants*. Available online at: http://www.epa.gov/oar/oaqps/greenbk/index.html. Accessed on February 15, 2013.

U.S. Environmental Protection Agency (USEPA). 2012b. *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2011*. Available online at: http://epa.gov/climatechange/emissions/usinventoryreport.html. Accessed on February 15, 2013.

U.S. Environmental Protection Agency (USEPA). 2012c. *Nonroad [Off-road] Standards*. Available online at: http://www.epa.gov/otaq/standards/nonroad/index.htm.; *40 CFR 89.112 [Tier 2 diesels]*. Available online at: http://www.epa.gov/otaq/standards/nonroad/nonroadci.htm; *40 CFR 1051.101-115 [ATVs]*. Available online at: http://www.epa.gov/otaq/standards/nonroad/rec-exhaust.htm; *40 CFR 90.103 [small engines, 2-stroke, 4-stroke]*. Available online at: http://www.epa.gov/otaq/standards/nonroad/smallsi-exhaust.htm; *40 CFR 91.104 [personal watercrafts & outboards]*. Available online at: http://www.epa.gov/otaq/standards/nonroad/marinesi-exhaust.htm. Accessed on February 15, 2013.

U.S. Environmental Protection Agency (USEPA). 2012d. *Plain-Language Format of Emission Regulations for Nonroad Engines*. Available online at: http://www.epa.gov/nonroad/420f12054.pdf. Accessed on February 15, 2013.

U.S. Environmental Protection Agency (USEPA). 2012e. *Climate Change Basics*. Available online at: http://www.epa.gov/climatechange/basics/. Accessed on February 15, 2013.

U.S. Environmental Protection Agency (USEPA). 2012f. *Greenhouse Gas Emissions*. Available online at: http://www.epa.gov/climatechange/ghgemissions/. Accessed on February 15, 2013.

U.S. Environmental Protection Agency (USEPA). 2012g. *Cap and Trade Programs*. Available online at: http://www.epa.gov/captrade/index.html Accessed on February 15, 2013.

U.S. Environmental Protection Agency (USEPA). 2011a. *National Ambient Air Quality Standards (NAAQS)*. Available online at: http://www.epa.gov/air/criteria.html. Accessed on February 15, 2013.

U.S. Environmental Protection Agency (USEPA). 2011b. *Compilation of Air Pollution Emission Factors (AP-42)*, Fifth Edition (1995-2011). Available online at: http://www.epa.gov/ttn/chief/ap42/. Accessed February 15, 2013.

U.S. Environmental Protection Agency (USEPA). 2011c. *AERSCREEN User's Guide (USEPA-454/B-11-001)*. Available online at: http://www.epa.gov/ttn/scram/dispersion_screening.htm. Accessed on February 15, 2013.

U.S. Environmental Protection Agency (USEPA). 2010a. *Endangered Species Facts: San Joaquin Kit Fox (Vulpes macrotis mutica)*. February. Available online at: http://www.epa.gov/espp/factsheets/san-joaquin-kitfox.pdf. Accessed on February 15, 2013.

U.S. Environmental Protection Agency (USEPA). 2010b. *Endangered Species Facts: Bay Checkspot Butterfly (Euphydryas editha bayensis)*. February. Available online at: http://www.epa.gov/espp/factsheets/bay-checkerspot-butterfly.pdf. Accessed on February 13, 2013.

U.S. Environmental Protection Agency (USEPA). 2004. *Toolkit for Assessing Potential Allegations of Environmental Injustice*. Available online at: http://www.epa.gov/compliance/ej/resources/policy/ej-toolkit.pdf. Accessed on February 15, 2013.

U.S. Environmental Protection Agency (USEPA). 1992. *Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised (USEPA 454/R-92-019)*. Available online at: http://www.epa.gov/opptintr/exposure/presentations/efast/usepa_1992b_sp_for_estim_aqi_of_ss.pdf. Accessed on February 15, 2013.

U.S. Environmental Protection Agency (USEPA). 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. (USEPA 550/9-74-004). Available online at: http://nepis.epa.gov/Exe/ZyNET.exe/2000L3LN.TXT?ZyActionD=ZyDocument&Client=EPA&Index=Prior+to+1976&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C70thru75%5CTxt%5C00000001%5C2000L3LN.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=p%7Cf&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL. Accessed on February 11, 2013.

U.S. Fish and Wildlife Service (USFWS). 2013. *Critical Habitat Portal. Available online at: http://criticalhabitat.fws.gov/crithab/.* Accessed on March 29, 2013.

U.S. Fish and Wildlife Service (USFWS). 2012. *Online List Generator for federally-listed species. Sacramento Endangered Species Office. 77.5 minute quadrangle search: Morgan Hill, Mount Madonna, and Gilroy, Chittenden, Gilroy Hot Springs, Loma Prieta, Mississippi Creek, Mount Sizer, San Felipe, Santa Teresa Hills, Watsonville East, and Watsonville West*. Available online at: http://www.fws.gov/sacramento/es_species/Lists/es_species_lists-form.cfm.

U.S. Fish and Wildlife Service (USFWS). 2008a. *Birds of Conservation Concern*. U.S. Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, Virginia. December. Available online at: http://www.fws.gov/migratorybirds/NewReportsPublications/SpecialTopics/BCC2008/BCC2008.pdf.

U.S. Fish and Wildlife Service (USFWS). 2008b. *Endangered and threatened wildlife and plants: Final determination of critical habitat for the Bay checkerspot butterfly (Euphydryas editha bayensis); Final rule*. Federal Register 73 No. 166. August 26. pp. 50406-50452.

U.S. Fish and Wildlife Service (USFWS). 2003. *Revised Draft Fish and Wildlife Coordination Act Report for the Llagas Creek Flood Protection Project, Santa Clara County, California*. Prepared for the U.S. Army Corps of Engineers, San Francisco District Office. Prepared by Richard W. Dehaven. October 2002, revised May 2003.

U.S. Fish and Wildlife Service (USFWS). 2002. *Recovery Plan for the California Red-legged Frog (Rana aurora draytonii)*. May 28.

U.S. Fish and Wildlife Service (USFWS). 1998a. *Final Recovery Plan for Upland Species of the San Joaquin Valley, California.* Available online at: http://ecos.fws.gov/docs/recovery_plans/1998/980930a.pdf. Accessed on November 27, 2013.

U.S. Fish and Wildlife Service (USFWS). 1998b. *Draft Recovery Plan for the Least Bell's Vireo (Vireo bellii pusillus)*. March.

U.S. Fish and Wildlife Service (USFWS). 1998c. *Recovery Plan for Serpentine Soils Species of the San Francisco Bay Area*.

U.S. Fish and Wildlife Service (USFWS). 1987. *Federal Register 52 No. 181*. September 18. pp. 35366-35378.

U.S. Fish and Wildlife Service (USFWS). 1967. *Endangered Species List*. 32 FR 4001. Available online at: http://ecos.fws.gov/docs/federal_register/fr18.pdf. Accessed on November 18, 2012.

U.S. Geological Survey (USGS). 2012. *USGS Water Quality Information: Conversion Factors*. Available online at: http://water.usgs.gov/owq/FieldManual/Chapter6/conversion.html. Accessed on March 1, 2013.

U.S. Geological Survey (USGS). 1957. *Gemstones of the United States*; Geological Survey Bulletin 1042-G.

United Nations Framework Convention on Climate Change (UNFCCC). 2009. *Glossary of Climate Change Acronyms*. Available online at: http://unfccc.int/essential_background/glossary/items/3666.php#G. Accessed on February 15, 2013.

Universal Industrial Gases, Inc. (UIG). 2008. *Air: Its Composition and Properties*. Available online at: http://www.uigi.com/air.html. Accessed on February 15, 2013.

Ventura County Air Pollution Control District (VCAPCD). 2003. *Ventura County Air Quality Assessment Guidelines*. Available online at: http://www.vcapcd.org/pubs/Planning/VCAQGuidelines.pdf. Accessed on February 15, 2013.

Vestal, E. H. 1938. *Biotic relations of the wood rat* (*Neotoma fuscipes*) *in the Berkeley Hills*. Journal of Mammalogy 19:1-36.

Weiss Associates. 2011. *Draft Memorandum Presenting Findings of Hazardous Materials Assessment Reports Review for Upper Llagas Creek Flood Protection Project Llagas Creek Santa Clara County, California*. Prepared for RMC Water and Environment. November 15.

Wetlands Research Associates (WRA), Inc. 2010. *Butterfield Boulevard Extension Biological Resources Assessment*. Prepared for the City of Morgan Hill. May.

Wetlands Research Associates (WRA), Inc. 2003. *Glenwood Open Space Management Plan*. San Rafael, California.

Williams, D.F. 1986. *Mammalian species of concern in California.* California Department of Fish and Game Report 86-1. Sacramento, CA: California Department of Fish and Game.

Wood, A. 1930. *Monterey Bay Mounds*. University of California Archaeological Research Facility Manuscript Nos. 380.

World Climate (WC). 2013. *Climate Data for 37°N 121°W*. Available online at: http://www.worldclimate.com/cgi-bin/grid.pl?gr=N37W121. Accessed on February 15, 2013.

Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White. 1990a. *California's wildlife: Volume III, Mammals*. Sacramento, CA: California Department of Fish and Game.

Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White. 1990b. *California's Wildlife: Volume II, Birds*. Sacramento, CA: California Department of Fish and Game.

Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White. 1988. *California's wildlife: Volume I, Amphibians and Reptiles*. Sacramento, CA: California Department of Fish and Game.

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